

RESPONSE TO REQUEST FOR PROPOSALS

# I-64 Widening and Route 623 Interchange Improvements

A DESIGN-BUILD PROJECT

GOOCHLAND COUNTY AND HENRICO COUNTY, VIRGINIA

**State Project No.:** 0064-964-110, P101, RW201,  
C501, B610-B614, B616, B617, D601-D606

**Federal Project No.:** NH-064-2(150)

**Contract ID Number:** C00070542DB55

*Volume I: Technical Proposal*

SUBMITTED TO:



SUBMITTED BY:



IN ASSOCIATION WITH:







May 30, 2013

Mr. Stephen D. Kindy, P.E.  
Virginia Department of Transportation  
1401 East Broad Street  
Annex Building, 8th Floor  
Richmond, VA 23219

RE: I-64 Widening and Route 623 Interchange Improvements  
From: 0.99 Miles West of Route 623 (WB-Route 622, EB-Route 623)  
To: 0.38 Miles West Route 271 (Pouncey Tract Road) in Short Pump  
Section 4.1 - Letter of Submittal

Dear Mr. Kindy:

Shirley Contracting Company, LLC (Shirley), is pleased to submit this Technical Proposal for the I-64 Widening and Route 623 Interchange Improvements (the Project) to the Virginia Department of Transportation (VDOT). Together with Dewberry Consultants LLC (formerly Dewberry & Davis LLC) as the Engineer of Record, we will provide VDOT and the traveling public with an unequaled level of assurance that the Project will be completed successfully and will exceed the priorities established.

Shirley Contracting Company, LLC 8435 Backlick Road Lorton, Virginia 22079 is the Offeror and legal entity that will enter into a contract with the Virginia Department of Transportation for the Project.

**Declarations:**

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

Our Official Representative and Point of Contact for this Project will be:  
**Garry A. Palleschi**  
Vice President  
Shirley Contracting Company, LLC  
8435 Backlick Road  
Lorton, Virginia 22079  
703-550-3579 (Phone) 703-550-9346 (Fax)  
gpalleschi@shirleycontracting.com

Our Principal Officer who will execute the contract for this Project will be:  
**Michael E. Post**  
President/CEO/Manager  
Shirley Contracting Company, LLC  
8435 Backlick Road  
Lorton, Virginia 22079  
703-550-8100 (Phone) 703-550-3558 (Fax)  
mpost@shirleycontracting.com

**Interim Milestone, Substantial and Final Completion Dates:**

***Substantial Completion:***

November 20, 2015

***Final Completion:***

November 20, 2015

**Proposal Payment Agreement:**

An executed Proposal Payment Agreement, Attachment 9.3.1 is included as an attachment to this Letter of Submittal.

**Certification of Debarment:**

Signed Certification of Debarment Forms are included as an attachment to this Letter of Submittal.

**Written Statement of Compliance:**

Shirley's Technical Proposal is fully compliant with the Design Criteria Table included in the RFP Technical Requirements (Part 2) as Attachment 2.3 and all other requirements of this RFP. Shirley also certifies that the proposed limits of construction, including all stormwater management facilities, are located within the right-of-way limits shown on the RFP plans with the exception of permanent and temporary easements and that our design concept does not require Design Exception and/or Design Waivers unless they are identified or included in the RFP or Addendum.

On behalf of our Team, we thank the Virginia Department of Transportation for the opportunity to submit this Technical Proposal in response to your Request for Proposals and we look forward to your favorable review.

Sincerely,



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

## 4.2 OFFEROR'S QUALIFICATIONS

## 4.2 Offeror's Qualifications

### 4.2.1 TRUE, ACCURATE, AND UPDATED INFORMATION OF SOQ

Shirley Contracting Company, LLC hereby confirms that the information submitted in our Statement of Qualifications remains true and accurate in accordance with Section 11.4 of the RFP.

### 4.2.2 ORGANIZATIONAL CHART

The Project Organization Chart shown below identifies the “chain of command” and major functions to be performed and their reporting relationships in managing, designing and constructing the Project, including quality control/quality assurance. As there are no proposed changes to the chain of command, a revised narrative is not required.



**LEGEND**

- Key Personnel (Icon: Key)
- Communication (Icon: Dashed line)
- Direct Reporting (Icon: Solid line)



## 4.3 Design Concept

The segment of I-64 between I-295 and Route 288 is a heavily travelled roadway serving both long distance travelers and local commuters by providing an east-west link between two heavily travelled north/south routes. The improvements proposed as part of this Project will provide immediate relief to the corridor through added capacity, will address the deficient bridge structures carrying I-64 over Little Tuckahoe Creek, and will improve safety by implementing proper barrier and clear zone protection to roadside hazards.

***The Shirley Team has exceeded the RFP requirements by making enhancements to the proposed improvements which will reduce traffic impacts to the public, accelerate construction of the improvements, and reduce future maintenance costs.*** As required by the RFP documents, our proposed design does not require approval of any design exceptions or design waivers beyond those identified in the RFP documents, meets all design criteria as defined in Attachment 2.3 of the RFP, and is contained completely within the existing and proposed right-of-way identified in the RFP documents (with the exception of permanent and temporary easements). Provided below is a description of our proposed improvements, the modifications we have made, and the benefits of those modifications.

### ROADWAY IMPROVEMENTS

#### Interstate 64

The improvements to I-64 include widening to the median to provide an additional thru lane and full width median shoulder, replacement of the existing outside shoulders, overlay of the existing left thru lane, and replacement of the I-64 bridges over Little Tuckahoe Creek. Our Team's concept will maintain the limits of work on I-64 and the proposed typical section with respect to lane widths, shoulder widths, and required cross slope. ***However, in the median, adjacent to the full width paved shoulder, we are exceeding the RFP requirements by proposing to install concrete curb.*** This provides several benefits to the Project, including:

- Minimizes the cut operations in the median. This reduces the amount of material which will need to be hauled offsite via I-64 construction traffic, and concerns of potential damage to the existing pavement;
- Minimizes impacts to existing wetlands within the median of I-64;
- Provides a more durable, long-lasting product than asphalt curb and back-up material.

The introduction of curb in the median of I-64 is consistent with adjacent sections of I-64 and meets design standards since a full width shoulder will be maintained. Due to the extensive grade changes in the median of the interstate, the installation of curb in cut sections will significantly reduce the amount of excavation needed for the widening. In several areas, our investigation of an "open section" concept indicated that the entire median would be impacted in areas of the deepest cuts. With the installation of curb, most of this excavation can be avoided, which not only reduces costs to the Project, but also avoids clearing mature trees in the center of the median and eliminates the need to haul significant amounts of excavated material off of the Project site. As identified in the RFP documents, there are concerns related to damage of the existing pavement within and outside of the Project limits. ***The ability of our Team to reduce the excavation and hauling needs on I-64 represents a significant improvement to the Project.***

Where necessary for hazard and slope protection, guardrail will be installed in line with the face of curb, and the shoulder width in the median will be increased from 12' to 14' to provide the lateral offset necessary to maintain the required "usable" shoulder width. At the existing overpasses of Route 622, Route 623, Route 288, and Route 271, bridge abutment and pier protection will be provided at the edges of the I-64 shoulders in accordance with current BPPS-1 criteria, as defined in the Structure and Bridge Manual, Volume V, Part 2.

Along the outside shoulder of westbound I-64, we are aware of concerns with existing wetlands and streams at the base of the existing slope, and special care will be taken to not damage the existing curbs, inlets, or storm sewer adjacent to the existing shoulder. As identified in the RFP plans, the existing shoulder will be demolished and replaced with full depth shoulder. We anticipate that in order to accommodate removal and replacement of the shoulder, the existing guardrail along the outside shoulder will also need to be removed and replaced. Removal and replacement of the guardrail will allow the shoulders to be sawcut adjacent to the existing curb, removed with normal excavation techniques, then replaced with the required pavement section. Following reconstruction of the shoulder, guardrail will be reinstalled, and any damage to inlets or existing curb will be repaired or replaced as needed.

### Route 623 Interchange Ramp Improvements

Ramp improvements at the Route 623 Interchange consist of the addition of turn lanes on the westbound (Ramp A) and eastbound (Ramp B) exit ramps to Route 623. As a project enhancement, our Team revised the baseline alignment on both ramps to be consistent with normal VDOT design practices, and have included the appropriate horizontal curve at the westbound exit ramp connection to the mainline lanes of I-64 to ensure that proper geometry and lanes widths are maintained throughout the length of the ramp.

On the westbound I-64 exit ramp, widening will be completed to the right side of the ramp, and the entire ramp restriped to provide a standard width left shoulder once the widening is completed. At the intersection with Route 623, the “pork-chop” island will be reconstructed based on the new lane configuration, as well as to ensure adequate passage of a WB-50 design vehicle. Full width milling and overlay of the ramp will be completed to provide a uniform, smooth surface at the completion of the Project.

On the eastbound I-64 exit ramp, widening will be completed to provide a dedicated left turn lane approaching the intersection with Route 623. Turn lane improvements will be constructed to the left of the existing ramp, while shoulder improvements will be made along the right side of the ramp to provide standard width shoulders on both sides approaching the intersection. Similar to the westbound exit ramp, the “pork-chop” islands at the intersection with Route 623 will be reconstructed based on the new lane configurations, as well as to ensure adequate passage of the WB-50 design vehicle. Milling and overlay of the existing ramp within project limits will be completed following construction of the widening to provide a smooth, uniform surface at the completion of the Project.

### Route 623 Improvements

Improvements to Route 623 consist of widening the roadway between the southern bridge abutment and a point south of the Ramp B intersection to provide a dedicated left turn lane from southbound Route 623 to eastbound I-64. Consistent with the RFP plans and with the approved design waivers, lane shifts will be completed such that modifications and widening of the existing Route 623 bridge over I-64 are not required. In recognition that the roadway is a two-lane undivided section, guardrail terminal treatment will be provided on both sides of the road to account for potential run-on type impacts. Lane widths approaching the intersection will be increased to 12', and full width shoulders, including 8' offsets to guardrail, will be maintained throughout the improvement area. Along Route 623 south of the intersection with Ramp B, modifications to the ditch have been made to increase the likelihood that impacts to the existing 16" water main are avoided. At this stage of design test hole information is not available to determine the depth of that existing facility. During final design, and once results of test pits are known, modification to the shoulder section through installation of curb or curb and gutter may be incorporated to avoid impacts to the facility. Introduction of curb or curb and gutter would be designed such that the WB-50 design vehicle is accommodated without offtracking beyond the pavement limits, and blunt ends

would be transitioned away from the shoulder to avoid vaulting hazards. Following the widening of the roadway, the existing pavement will be milled and overlaid to provide a smooth, uniform travelling surface for motorists.

## Bridges & Structures

For the proposed I-64 bridges over Little Tuckahoe Creek, the Shirley Team has included substantial improvements to the structures that well exceed the RFP requirements concept. Upon review of the bridge inspection reports for both of the existing bridges, it is apparent that a significant amount of repair and rehabilitation is required in order to reuse the existing piers and abutments. Reuse of the existing substructure units also restricts the types, depths, and locations of beams which can be used in the proposed design, since “all components of the existing structure (ie. foundations, pier columns, pier caps, etc.) that are to remain in place” are required by the RFP to meet all applicable AASHTO LRFD loading requirements. Additionally, we carefully studied the hydraulic documents, and realized that the existing structures are “oversized” with respect to the needed hydraulic opening and capacity. Finally, in our review of the existing bridge pier locations, it became apparent that widening of the bridges and extension of the pier configuration to maintain a consistent substructure layout would require construction of footings and piers in the limits of the Little Tuckahoe Creek channel. Each of these considerations raised separate concerns for the RFP concept of reusing the existing bridge substructures. ***To provide VDOT and the public with the highest quality project, our Team is proposing construction of completely new bridges to carry I-64 over Little Tuckahoe Creek. Not only do new bridges address each and every one of the concerns identified above, they will also eliminate continued maintenance on bridge substructure components which are almost 50 years old.***

As shown in our Volume II Conceptual Plans, our Team proposes two single-span bridges to carry each direction of I-64 over Little Tuckahoe Creek. Each bridge will consist of a single span with a span length of approximately 112'-0" for the westbound bridge and 117'-0" for the eastbound bridge. The use of a shorter, single span opening on each bridge without the need to reuse the existing structure, allows us to use concrete bulb tee girders for the proposed structures. While the bulb tees have a greater structure depth as compared to the existing bridge superstructure, our review of the hydraulic models has indicated that the substructure seats for the proposed girders can be lowered without introducing impacts or a rise in existing floodplain levels on Little Tuckahoe Creek. This will allow the finished deck elevation of both bridges to remain consistent with existing deck elevations, avoiding any additional build-up of the approach roadways. Even with the deeper superstructure, the bridges will provide more than the minimum of 1 foot of freeboard required from the low chord of each bridge to the 100-year storm water surface elevation. Both proposed bridges will meet all VDOT, AASHTO, and hydraulic requirements for the Project. The new bridges will incorporate jointless bridge details in accordance with the VDOT Structure and Bridge Manual, Volume V, Part 2, Chapter 17 and will incorporate current design requirements including low permeability concrete, and corrosion resistant reinforcing steel, providing virtually maintenance free brand new structures to VDOT.

***In addition to the improvements identified above, our concept also provides the following enhancements, which further exceed the requirements of the RFP documents:***

- The use of concrete bulb tee girders represents an improvement over the use of steel girders which would most likely be required for the RFP concept. Concrete bulb tee girders will require significantly less maintenance than steel girders.
- The construction of new bridges with improved and economized girder spacings will allow us to reduce the number of girders from 9 on each bridge to 7 on each bridge. This further reduces the future and continued maintenance of the proposed structures.
- We are able to avoid construction in the Little Tuckahoe Creek channel. The RFP plans and structure

inspection reports for the existing bridges show that the construction of at least one new pier footing for each bridge would be wholly or partially in the stream channel and require cofferdams for construction of the new piers. Our concept completely avoids construction in the stream, resulting in reduced impacts and permitting requirements for the Project.

- The RFP concept of reusing the existing substructure bridge elements did not address scour at the existing bridge piers or abutments. By constructing new bridges, we will design the bridge foundations to meet the current scour criteria.
- The construction of completely new substructure elements significantly exceeds the RFP requirements to repair and rehabilitate the existing substructures. This not only eliminates future maintenance of the existing, old substructure elements, but also provides a new structure with a significantly lengthened useful life as compared with the RFP concept.
- We have performed a hydraulic analysis of the replacement bridges that we are proposing to construct which shows that the water surface elevation for the design storm is actually reduced from the bridges shown in the RFP plans. ***Therefore our concept exceeds the requirement for no rise in the water surface elevation due to new construction.***

As required by current VDOT criteria, both the existing bridges utilized in temporary traffic configurations and the new bridges will be load rated prior to implementation of temporary or permanent traffic configurations and use. A final as-built load rating of the new bridges will also be completed.

### Hydrology and Hydraulics

Our Team has completed a thorough review and analysis of the RFP Preliminary Hydrology and Hydraulic Analysis for the I-64 crossing over Little Tuckahoe Creek. The RFP HEC-RAS model and report noted a rise in the 100 year water surface elevation (WSE) of 0.2'. The Little Tuckahoe Creek is a FEMA designated floodplain; Zone A. Virginia Department of Transportation Drainage Manual (VDM), Chapter 12 allows for an increase in the 100 year floodplain for FEMA Zone A floodplains of up to one (1) foot, provided the designers verify that there is no adverse impact to upstream properties due to an increase in the floodplain. In developing our concept to completely replace the existing bridges as identified above, we have completed a preliminary analysis of our proposed bridges to ensure that no adverse impacts are introduced along Little Tuckahoe Creek. ***Not only does our concept meet RFP requirements and VDOT standards, our concept exceeds those requirements since the proposed openings result in a reduction of the 100-year water surface elevation at the bridges.*** This represents a significant improvement compared to both the existing conditions and the conditions which would have been introduced by the RFP concept.

In addition to the preliminary H&H analysis completed by our Team, we also developed a preliminary scour analysis for both the RFP concept and our Team's design approach. The RFP bridge column layout resulted in additional impacts to the Little Tuckahoe Creek since some of the proposed pier columns would have been located in the creek. These additional pier columns would have increased scour impacts on the existing columns which have already resulted in the shifting of the channel. Based on our Team's concept, piers have been eliminated not only from the stream channel, but from the bridges completely. The existing columns will be removed, allowing the channel to return to its natural location, and pier scour concerns have been eliminated. ***This enhancement exceeds the Project requirements, eliminates all future maintenance concerns which would have been continued through construction of additional pier columns shown in the RFP concept, and represents far more environmentally sensitive concept than the RFP concept.***

## Drainage & SWM Basins

Our Team has completed a thorough investigation of the drainage and stormwater management needs for the Project. As noted in the RFP documents, we have assumed that all existing drainage pipes and culverts within Project limits are serviceable and can be incorporated into the proposed final design. This represents a significant benefit to the Project, as installation of new crossings of I-64 would require extensive temporary traffic control plans to allow for open-cut installation of new drainage facilities, or substantial additional costs to account for jack and bore installation of culverts which would avoid traffic impacts. Based on the assumption that existing drainage facilities are in serviceable condition, we have developed a drainage concept for the Project which will meet all VDOT Drainage Manual criteria and will avoid right-of-way and easement impacts for the Project. Provided below is a description of our proposed drainage concept.

### *Major Culverts*

Within the Project limits, there are several major culvert crossings of I-64. Most of these culverts maintain an opening in the median utilizing headwalls to allow for the entrance of surface flow from median ditches. Due to the median widening proposed, several of these headwalls will be buried, requiring extension of the existing culverts. Specifically, the following culverts will need to be extended to a common point in the median, resulting in a “closed” system:

- Dual 42” culverts between Sta. 565+00 and Sta. 566+00
- Triple 6’x6’ box culvert between Sta. 682+00 and Sta. 683+00

At each of these locations, surface drainage from median ditches will be drained into the culvert through a drainage inlet. Analysis will be completed to ensure that hydraulic grade line of the proposed major culvert does not adversely affect the operation/function of the ditch inlets. The remaining culvert crossings will be extended to account for the widened fill slopes, and new headwalls will be installed in accordance with current VDOT criteria for sizing, wing lengths, and orientation with respect to the roadway alignment. We have completed preliminary hydraulic analysis for each of the major culvert crossings, and believe extension of the culverts in the median, including introduction of a “closed” system in the locations identified above, will not result in any adverse impacts to the Project or upstream adjacent property. The preliminary layout of our proposed drainage improvements is included in our Volume II: Conceptual Design plans.

### *Roadway Drainage*

In areas where open shoulders are maintained, or ultimately provided following construction of the improvements, open channels and ditches will be used to convey runoff to adequate outfall locations. Ditch depths and linings will be designed in accordance with current VDOT Drainage Manual criteria. Installation of linings during construction will be based on the design flow velocity, and will ensure that future erosion concerns are eliminated. In areas of high fills, and where curb is introduced to reduce excavations as previously discussed, installation of closed system drainage will be required. In each of these areas, we intend to use DI-3 style inlets to intercept roadway surface runoff, connected to storm sewer pipes to convey to adequate outfalls. This not only will allow for placement of the drainage pipe outside of the paved shoulder, it will provide manhole access from behind guardrail as opposed to through grate openings in the shoulder, as would be the case with DI-2 series inlets. This allows for safer inspection of the proposed structures, but also reduces future maintenance concerns associated with settlement of pipes below proposed pavement.

Along the outside shoulders of I-64, several drop inlets are located adjacent to the proposed shoulder replacement areas. As noted previously, great care will be taken to ensure these inlets are not damaged or disturbed during

construction. Should damage occur, the inlets will be replaced. Each of the outfall pipes from these structures will be cleaned to ensure the hydraulic capacity following construction is consistent with the computations completed on the existing facilities, and to ensure proper collection of surface runoff from the travel lanes and shoulders.

### Stormwater Management

Our Team used the latest version of VDOT Instructional & Information Memorandums (I&IM) LD-195, VDOT's Stormwater Program Advisory (SWPA) 12-01 and 12-02, and Virginia Department of Transportation Drainage Manual (VDM) to determine the methodology and requirements for stormwater management for this Project.

In accordance with the criteria noted above, our Team analyzed the average land cover conditions to determine the requirements for stormwater management. Based on our analysis, and the modified design elements identified above, we have been able to make considerable modifications and improvements to the stormwater management concept for the Project. As shown on our conceptual plans, we have identified the need to construct approximately 7,000 linear feet of grass swales and four (4) extended detention enhanced basins. This represents a reduction of approximately 8,000 linear feet of grass swales as identified in the RFP conceptual information. Additionally, based on the introduction of the extended detention enhanced basins, ***our Team has been able to avoid installation of the engineered soil beneath the grass swales. This will represent a significant long term savings on maintenance of these elements by VDOT maintenance staff.*** Our Team has located these facilities such that no additional right-of-way or easements will be necessary for construction or access, and all of the facilities have been located to minimize impacts to existing wetlands and Waters of the U.S. to the fullest extent possible. ***Additionally, our Team's concept has improved the phosphorous removal from 29 lbs/year identified in the RFP documents to 29.3 lbs/year, providing a beneficial credit for future roadway improvements in the watershed.***

## INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

Our Team has significant experience design and installing ITS elements. Notable installations include the ITS infrastructure at the I-95 / Telegraph Road Interchange (part of the Woodrow Wilson bridge project) and the entirety of the existing ITS conduit system on I-66 between Manassas and Gainesville. We are aware of the existing CCTV cameras in the area at MM 175 EB, MM 177 WB, MM 178.5 WB and MM 179 EB and will clearly mark these locations, and the communications and power conduits and cabinets serving them so that they are not damaged during construction. Immediately upon notice-to-proceed will develop a dialogue for coordination with VDOT to ensure the existing system is properly protected and coordinated with the new CCTV locations to avoid any issues or challenges during or at the completion of the Project.

The locations of the CCTV cameras and conduit for the power and communications systems will be located in compliance with VDOT standards and best practices. Candidate locations for the new CCTV locations will be selected to achieve the goals of continuous coverage of the eastbound and westbound roadways with the combined systems (new + existing cameras) and close proximity of merge and diverge areas and any other areas that have been prone to incidents in the past. Finally these cameras will be located beyond the clear zone or behind guardrail or barrier for the protection of the traveling public.



## 4.4 Project Approach

### 4.4.1 ENVIRONMENTAL MANAGEMENT

With our extensive experience managing design-build projects for VDOT, the Shirley Team thoroughly understands the critical role environmental management plays in the overall project's success. Our Team utilizes in-house resources to efficiently manage the environmental and permitting processes, benefitting the Project by providing a comprehensive and integrated approach toward environmental management. This allows us to ensure that the environmental constraints are seamlessly integrated into the overall design-build process, thus avoiding project schedule delays, minimizing environmental risks, and providing project design and permitting that facilitates construction while at the same time, minimizing environmental impacts.

We have found that by utilizing this type of holistic approach, which includes a seat at the table for the Permitting Manager alongside roadway designers, construction supervisors, drainage/SWM engineers, utility coordinators, and any subcontractors; we are able to solve a variety of environmental challenges early in the process so that the project is seamless in its integration of environmental commitments and requirements. This process also provides for early identification of the need for additional studies and clearances which are outside of the original study areas. When additional studies cannot be avoided based on more detailed design, utility relocations, or site constraints, our Team conducts those necessary studies to obtain updated clearances and permits, notifies the appropriate VDOT personnel, and provides documentation and support to the VDOT staff to coordinate appropriate clearances through regulatory agencies as necessary.

We are proactive in providing information to and soliciting comments from the appropriate VDOT representatives and we have formed long-standing relationships with the appropriate regulatory agencies, including the Virginia Department of Environmental Quality (DEQ), the Norfolk District of the U.S. Army Corps of Engineers (USACE), the Virginia Marine Resources Commission (VMRC), the Virginia Department of Historic Resources (DHR), the U.S. Fish and Wildlife Service (USFWS), and the Virginia Department of Conservation and Recreation (DCR). Due to our early and effective coordination efforts with pertinent agencies, our Team more thoroughly understands project specific challenges for the regulatory agencies so that submittals are approved more quickly. This will ensure that we can provide a smoother permitting process in a shorter amount of time, assuring that we meet the project schedule and minimize the associated risks.

In preparation of this Technical Proposal, we have thoroughly reviewed the project history of consultation and coordination between the resource agencies, VDOT and FHWA, and have identified locations where proposed stream impacts could be reduced, introducing an environmental and cost benefit to the Project. As noted in Section 4.3, our Team plans on constructing completely new bridges instead of rehabilitation and widening the existing bridges over Little Tuckahoe Creek. ***This enhancement will result in improved minimization efforts, reduced mitigation costs, and long-term environmental benefits associated with spanning the creek instead of constructing piers in line with the existing piers in the creek.*** Additionally, we are providing water quality swales throughout the length of the Project which will provide higher water quality treatment than what was provided in the RFP design.

Another benefit to VDOT is our Team's design-build experience. As we have completed a wide variety of design-build projects, we are readily able to incorporate short-notice project challenges into the project design and construction schedule, such as those which may become apparent once the surveys for the federally listed endangered small whorled pogonia and smooth coneflower species have been completed.

As noted in the RFP documents, there will be several permits, clearances and coordination efforts required for this Project. Specifically, we will coordinate with the following agencies to receive the necessary permits and

approvals:

- VA Stormwater Management Permit (VSMP) and E&S Control Permit: Consistent with past VDOT projects, we will develop the necessary forms and plan sheets to obtain approval of the stormwater management and E&S control measures. This will be completed through development of the VDOT LD-445 sheets, properly phased E&S plans and SWPPP. Submission of these documents will coincide with plan submissions, and will be submitted when plans are approximately 60% complete. Early submission of these items, after limits of disturbance are identified, will ensure the necessary permit coverage is obtained prior to construction approval.
- Virginia Water Protection Permit and U.S. Army Corps of Engineers CWA Section 404 Permit: Based on the information provided with the RFP documents, the potential for impacting over 2000 linear feet of streams and over 1 acre of wetland impact will require an Individual Permit from both of the agencies identified above. Upon Notice to Proceed, our Team will conduct a delineation of waters of the U. S. including wetlands. These limits will be surveyed, compiled in a map and report and submitted to the US Army Corps of Engineers (USACE) for a jurisdictional determination. Once plans are developed to approximately 60% complete, including all drainage, stormwater management, E&S, and temporary traffic control plans, a Joint Permit Application will be submitted to the regulatory agencies for permit processing. This early development of permit documents will allow for approval prior to construction plan approval and commencement of field work. We will phase work if necessary to avoid sensitive areas, but anticipate that the needed permits will all be approved prior to construction plan approval.
- Virginia Marine Resources Commission (VMRC) – Subaqueous Bed Permit: According to the RFP preliminary H&H model, Little Tuckahoe Creek in this location has a drainage area of 5.05 square miles. As such this Project will also require a permit from the VMRC which will be processed through the Joint Permit Application process noted above.
- Department of Labor and Industry – Asbestos Removal and Demolition & Lead Abatement and Renovation: Prior to demolition of the existing bridges our Team will arrange for testing for asbestos containing materials (ACM's) and lead based paint by an independent subcontractor in accordance with VDOT Special Provisions. Based on these tests a report will be submitted to VDOT for their approval, and removal permits from the Department of Labor and Industry will be obtained prior to the demolition of any structures containing asbestos or lead based paint.
- Air Quality: We understand that the Project is located partially in Henrico County which is in an ozone maintenance area as well as an emission control area for volatile organic compounds (VOCs). All work done will be in compliance with the DEQ air pollution regulations listed in the RFP.
- Threatened and Endangered Species Coordination: As the habitat report for the Small Whorled Pogonia and the Smooth Coneflower survey is not available, we anticipate the potential for coordination with the USFWS to obtain concurrence for any impacts to these two species.

During development of the final plans, our environmental staff will identify any additional permits or coordination required. This could include elements such as hazardous material testing, additional endangered species surveys, time of year restrictions or other surveys. As with all of the environmental constraints and project commitments, ***our Team will first identify ways to avoid or minimize impacts to sensitive areas in an effort to reduce the amount of permits needed for construction.***

Our approach to project management and inclusive reviews with not only the design and construction staff, but regular meetings and status updates with VDOT from preliminary design through final acceptance will allow our environmental staff to provide guidance to our designers as well as an understanding of the environmental requirements as it relates to the coordination, avoidance, minimization and mitigation of impacts.

## 4.4.2 UTILITIES

The I-64 Widening and Route 623 Interchange Improvement Project will utilize the existing median for the majority of the roadway expansion. Since the corridor is wholly within VDOT Right-of-way between existing travel-ways, the area is virtually utility-free other than the overhead power line crossings as well as the existing VDOT owned ITS facilities. At the Route 623 Interchange portion of the Project, there exists a greater potential to encounter both Public and Private utilities that must be considered in our design preparation and construction consideration. Our Team has done a thorough study of the potential utility encounters, their impacts, and ways to avoid and/or minimize these impacts.

Our key to the successful completion of utility relocations within the project schedule is having the experienced resources and relationships in place at the time the Project starts. Through our 11 year history of completing design-build projects for VDOT and other Owners, the Shirley Team has gained extensive experience working with and coordinating relocations for over 30 different public and private utility owners, including all of the utility owners affected by this Project. In addition to the multitude of utility conflicts that we have avoided through alternate design solutions, our Team has successfully completed the relocation of utilities totaling more than \$50 million on our design-build projects. This direct experience has allowed us to form close relationships and a working knowledge with the individual utility companies, their processes and procedures. It is because of this experience that we have learned first-hand the importance of avoiding utility conflicts and relocations altogether. This will be our first and highest priority throughout the design and construction phases of the Project. If conflicts cannot be avoided by design, then we will work diligently to minimize these relocations through a combination of design and/or protection measures that allow the utilities to remain in place. Only as a last resort will we relocate utilities to eliminate conflicts with the new construction.

### Approach to Utility Coordination

For this Project, the Shirley Team will be following the VDOT Utility Relocation Policies and Procedures Manual with regard to the utility scope of work. We have already begun activities to ensure the success of the utility scope of work during preparation of this Technical Proposal, and the following is a general outline of the steps and activities to be performed once the Project is underway:

1. During the design phase, the Utility Manager will work closely with the design engineer(s) to obtain utility designations, test pit information and locations of existing easements. Based on this information, detailed feedback will be provided to the design, permitting and right of way discipline managers in an effort to create design solutions that provide additional avoidance and/or minimization of utility relocations.
2. The Utility Manager will make contact with each utility company to review utility relocation plans, identify relocations that are not necessary due to our Team's avoidance strategies, and communicate the schedule for Project completion. Specific attention will be given to the location of the proposed relocations so that any right of way and easements needed can be integrated into the right of way acquisition process.
3. The Utility Manager will hold UFI Meetings with private utility owners for all utilities that are in conflict with the proposed construction. He will then work closely with the individual utilities to establish a relocation plan, budget and schedule. These relocation plans and individual schedules will be integrated in the overall project schedule and coordinated with the other major project disciplines.
4. The Utility Manager will perform a thorough review of each private utility's prior rights in the early stages of the process. UT-9 forms will be prepared and pro-rata share budgets and relocation schedules will be finalized.

5. For the private utility relocations, our Utility Manager will coordinate with the utility to negotiate and execute utility agreements, and obtain utility relocation plans and cost estimates. If applicable, he will obtain a letter of “No Cost” if the utility does not have a comprehensible right or a letter of “no Conflict” where the utilities facilities have been successfully avoided. These documents will then be packaged and submitted to VDOT for approval.
6. For the public utility relocations, the Utility Manager will meet with the utility and our Design Team to identify the necessary scope for avoidance and/or relocations. These measures will then be designed by our Team. The plans will be submitted to the utility owner for review and approval and the construction activities coordinated with them to schedule inspections and outages as needed.
7. Once the utility relocation plans are completed and estimates and schedules have been approved by VDOT, our Utility Manager will then notify each utility in writing that relocations can begin. The approved plans and relocation schedule will also be communicated and coordinated with the design, construction and QA/QC teams.

Our Team’s Preliminary CPM Schedule, included with this Technical Proposal, is already integrated to include all of the utility coordination and relocation activities with appropriate ties to the design, right-of-way acquisition, and construction activities that are dependent on the utility schedule. Throughout our Team’s utility coordination efforts listed above, schedule progress will be closely monitored both by the Utility Manager and the Design-Build Project Manager as to the overall Project Schedule and with the established individual milestones. The CPM Schedule will be updated based on our avoidance and minimization efforts with activities modified and durations adjusted to reflect updated utility relocation plans and the utility companies’ work schedules. This detailed schedule integration and constant monitoring will provide our Team the earliest possible notification of potential schedule slippages allowing for more time to implement corrective measures and schedule mitigation techniques.

### Specific Project Utility Impacts

As required by Part 2, Technical Requirements of the RFP, the following Public/Private utilities are believed to be in conflict with design and will require relocation:

Exhibit 4.4.1

| UTILITY IMPACT SUMMARY                                  |                                   |        |      |   |   |
|---|-----------------------------------|--------|------|---|---|
| UTILITY/OWNER   | APPROXIMATE LOCATION              | APPROX | UNIT | KNOWN OR POTENTIAL CONFLICT                               | RELOCATION PLAN / AVOIDANCE STRATEGY  |
| <b>ELECTRIC</b>   |                                   |        |      |   |   |
| <b>Dominion VA Power</b><br>Distribution & Transmission | Throughout Project                | -      | -    | Overhead crossings at various locations                   | Coordination and Pre-Activity Safety Meetings with Dominion Power to analyze equipment clearances |
| <b>Dominion VA Power</b><br>Service Location            | Route 623 & Ramp ‘A’ Intersection | 1      | EA   | Provide/Relocate service to new signal                    | Provide coordination & load letter for new power service  |
| <b>WATER</b>  |                                   |        |      |   |   |
| <b>Goochland County Utilities</b><br>16” Water Line     | Ramp ‘B’ to Route 623 Sta 63+00   | 300    | LF   | Widening of Ramp ‘B’ and roadway crossing at intersection | Utility should be deep enough to avoid relocation. Verify with test pit                           |

### 4.4.3 GEOTECHNICAL

Our Based on our review of the preliminary geotechnical data provided with the RFP, along with our knowledge of the corridor and surrounding geologic properties, we have identified several challenges which may arise during construction of this Project. Each of these challenges is similar to those which our Team has experienced on past projects, and which we can adequately account for and develop solutions as part of the final design.

With respect to challenges expected for this Project, the first main challenge deals with the presence of loose soils throughout the Project alignment. At multiple locations throughout the Project, soils with a SPT “N” value of less than 9 blows per foot were identified, including at the approaches to the bridges over Little Tuckahoe Creek, where significant embankment widening and build-up could result in settlement concerns. Further, the bearing capacity of the existing soils at the bridge approaches will also need to be analyzed for slope stability and shear strength in areas of tall fill slopes, as well as for the bridge abutments and the associated wingwalls.

Each of these challenges is one which our Team has experienced and adequately addressed on past design-build projects. For determination of shear strength and constrained modulus of in-situ soils, particularly in existing fills and loose soils, our Team plans to perform in-situ dilatometer tests. These in-situ tests will allow us to more accurately determine the elastic and long term settlement of the existing fill and loose soils and shear strength at the bridge abutments. If settlement concerns are identified through additional testing, considerations for light-weight fill, advance compaction of existing soils, or incorporation of a waiting period following placement of fills, but before placement of finished pavement, will be considered to avoid long-term settlement and consolidation after construction of the proposed improvements.

In other areas of the Project, significant cuts may be required. Our Team has attempted to minimize these cuts through the introduction of curb adjacent to the median shoulder as previously noted. In these areas, if loose soils are encountered (especially sands), additional flattening of the slope may be warranted. We will investigate these through additional borings during the field exploration program, and areas where flattened slopes should be incorporated will be identified on the construction plans and typical sections.

Another challenge associated with this Project is that soils within project limits have highly variable natural moisture content, ranging from 5.4 to 23.8 percent, with the optimum moisture contents of the soils tested ranging from 11.5 and 14.8 percent. Based on the natural moisture content and optimum moisture content values, it is expected that moisture conditioning of in-situ soils will be necessary to obtain proper compaction during earthwork operation. Drying of on-site soils by spreading and aerating may be a suitable treatment method, as will the use of lime stabilization, so long as these treatments are applied at suitable times of the year. Although groundwater was not encountered in any of the test borings completed for the RFP documents, this could be attributed to the types of soils encountered. Soil types such as silt and clays may only allow limited amounts of water seepage into the borings, so it may not have been possible to establish the groundwater elevation from short-term observations. Accordingly, we will install temporary standpipes at select boring locations to more accurately monitor the groundwater level. We anticipate that groundwater would have been encountered at the bridge pier locations adjacent to Little Tuckahoe Creek. The elimination of the piers by our bridge concept will avoid groundwater concerns and eliminate the need to construct temporary dewatering devices and the associated erosion protection measures in the sensitive areas adjacent to Little Tuckahoe Creek.

Finally, the design of the proposed pavement sections for the exit ramps at the Route 623 Interchange may introduce challenges based on RFP limitations and information. As required by the RFP, fill material used for the construction of the ramp widening improvements is to be a minimum CBR value of 10. This is in contrast with the existing soil CBR test values which range from 1.2 to 3.5. These low CBR values for existing on-site soils will require material to be imported for construction, and the higher CBR value material may be more

difficult to find, requiring longer haul routes and borrow sites from further locations from the Project site. During design and geotechnical investigation, we will determine if any on-site soils meet the requirements for the ramp embankment construction. Alternate pavement and subbase designs may be investigated if higher CBR value material is not easily accessible.

As noted, each of these concerns is a normal component of roadway widening and construction projects. None of these represent a significant challenge which cannot be easily overcome during design and through development of a comprehensive geotechnical exploration program and set of recommendations. Since our construction inspection staff includes members from our geotechnical engineering sub-consultant, we will ensure that proper implementation of the geotechnical recommendations is adhered to during construction.

#### 4.4.4 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

The Shirley Team is committed to providing VDOT with a project that is of the highest quality. Our extensive experience in design-build has led to the development of a proven QA/QC Program, complete with comprehensive procedures which address all aspects of quality from document inception to construction completion and final acceptance. This Program has been customized for the Project to incorporate all of the Project specific contract requirements and the requirements of VDOT's Minimum Requirements for Quality Assurance and Quality Control on Design Build and Public-Private Transportation Act Projects, January 2012 (hereafter VDOT's Minimum QA/QC Requirements). Our Team has successfully implemented this Program, including utilization of independent Quality Assurance and Quality Control teams, on numerous design-build projects for VDOT over the past 11 years including the Route 28 Corridor Improvements, Battlefield Parkway, Pacific Boulevard, Route 50 Widening and Route 27/244 Interchange Modifications Design-Build Projects. As a result of our performance and commitment to QA/QC, VDOT has been able to reduce costs by minimally staffing these projects with only the basic oversight needed to confirm that quality standards are exceeded.

To protect the interests of VDOT and other Project, stakeholders this Quality Assurance and Quality Control Plan (QA/QC Plan) shall be implemented and complied with by all Project Team members including: the Design/Builder; design engineers, consultants and subconsultants; contractors, subcontractors and suppliers; and quality assurance and quality control inspectors, testing technicians and laboratories. This Plan is described on the following pages and reflects the responsibilities and unique relationships among each of the parties involved in this project for both the Design QA and QC and Construction QA and QC.

##### Description of Design QA and QC Procedures

Providing a completed project which meets VDOT's requirements and standards for plan development and long term cost effectiveness requires thorough QA and QC processes during design activities. The Shirley Team's Design QA and QC procedures have been developed to conform to VDOT's Minimum QA/QC Requirements. Our Team's design QA and QC functions are performed separately by independent staff not involved in the other quality role or the production of the design documents.

As identified in our Team's organizational structure, the Design Manager will be Steve Kuntz, PE, DBIA, of Dewberry. Mr. Kuntz will be responsible for oversight of all design disciplines, ensuring that each discipline coordinates with other disciplines to minimize rework and conflicts. He will also be responsible for monitoring the completion of the Design QA and QC functions for all design documents preparing final design certifications and signing and sealing of all final and construction documents. Design QA will be performed by Tim Belcher, PE and Design QC will be completed by competent design engineers who were not involved in development of the specific design elements they are reviewing.



the revised plan back to the QC reviewer for final review and final disposition of the comments. The QC reviewer will review the revised plan, document the final disposition for all comments that are resolved and add any additional comments that may have resulted from the design change. This back and forth process will continue until all comments are resolved and documented on the Review Comment Summary and Resolution Sheet.

The QC process will be undertaken by multiple reviewers who will review each and every aspect of the plans and computations, including geometric design (horizontal and vertical), drainage design, E&S design, maintenance of traffic (temporary traffic control) and sequence of construction, structural design, stormwater management design, signing and marking design, signal designs, etc. QC checks will be completed recognizing the design criteria identified in RFP, Part 2 Table 2.3., understanding the commitments those design criteria require in terms of geometric standards, drainage criteria, traffic designs, etc. In addition to reviewing the plan components, reviews will also be completed on all design calculations, computer input data, and project studies and reports.

**Once agreement is reached between the QC reviewer and the design engineer, formal signatures indicating completion of the QC process for that component of the submission will be documented on a check print sign-off sheet.** A sample of this “Design QC Check Print Sign-Off Sheet” is included as Figure 4.5.2. Both the “Review Comment Summary and Resolution Sheet” and “Design QC Check Print Sign-Off Sheet” will be kept in a QC notebook maintained as part of the project records at Dewberry’s Fairfax office. These documents will be available at anytime for VDOT review and audit following a formal submission.

### Constructability Reviews

Prior to formal submission to VDOT, and coincident with design QC reviews, two (2) sets of plans will be provided to the construction staff for review and comment for a constructability review. The constructability review will be conducted by qualified construction staff, designated by the Construction Manager, to ensure that the proposed design does not introduce unnecessarily difficult, unsafe, or costly work for the construction staff, and to ensure that the proposed design and sequence of construction maintains the contract schedule. Comments generated from the construction staff will be submitted to the Design Manager for distribution to the design team for incorporation or further discussion. Agreement to necessary plan changes or explanation of the proposed work will be discussed between the D-B Project Manager, Construction Manager, Design Manager, and design staff to determine what changes to the plans will be implemented. All design QC changes resulting from the constructability review will be sent to the QC Reviewer to ensure that a complete QC review is performed prior to the QA process and submission to VDOT.

FIGURE 4.5.2

### Design Quality Assurance (QA) Procedure

As shown in the organizational chart, Mr. Kuntz has assigned Mr. Tim Belcher, PE to perform the Design QA reviews. This final QA review will not take place until all QC comments have been completed and addressed by the QC reviewers and design engineers. Following completion of the design QC process, all check prints, “Review Comment Summary and Resolution Sheets” and “Design QC Check Print Sign-Off Sheets” as well as the updated/corrected set of plans and documents will be provided to the Design QA Reviewer for final review and approval. The purpose of the Design QA Review will be to:

- Verify that the design engineer assessed the design accurately and applied correct analysis
- Verify qualified personnel were assigned to the specific design tasks
- Evaluate whether the design solution is practical and cost effective
- Verify implementation of and conformance to constructability reviews and findings
- Confirm interdisciplinary reviews have been completed with all comments resolved
- Evaluate overall conformity of final design documents to the design scope of work, project criteria, and client expectations
- Confirm materials used and elements in the work have been designed to perform for the purpose intended
- Verify overall appearance, organization and technical accuracy, and
- Verify application of the seal, signature and date of the responsible registered VA Professional Engineer

**DESIGN QA REVIEW MEMORANDUM**

**SHIRLEY**  
CONTRACTING COMPANY, LLC

Client Name \_\_\_\_\_

Job Title: \_\_\_\_\_

Job Number \_\_\_\_\_

Charge Number: \_\_\_\_\_

Document Title: \_\_\_\_\_

Document Number: \_\_\_\_\_

Plan Submission Level

Concept Plan 10%

Filed Inspection Plan 30%

Right-of-Way Plan 60%

Final Plans 100%

QC Review Complete Date

Constructability Review Complete

Interdisciplinary Review Complete

VDOT LD-436 Form Complete

QA Review Complete with No Additional Comments

The design work in this submittal has been prepared in accordance with the design scope of work and industry standards of care.

Design QA Reviewer \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

I certify that the design QA/QC process is complete and the submittal is in compliance with the design QA/QC Plan.

Design Manager \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

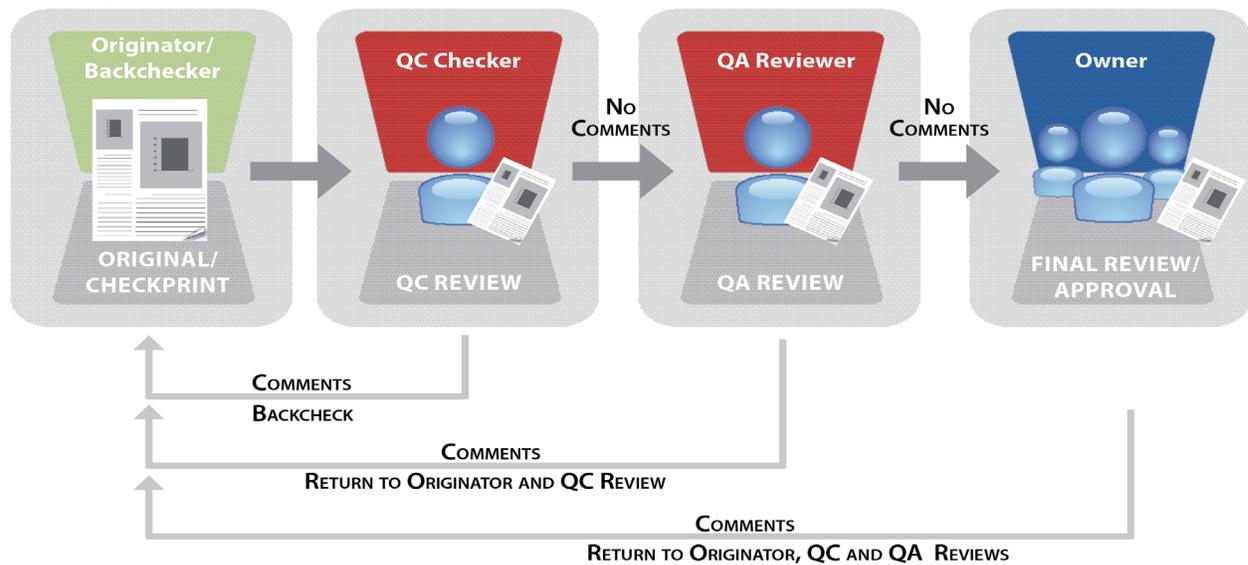
**FIGURE 4.5.3**

Once the Design QA check is completed the Design QA Reviewer and Design Manager will sign and complete the “Design QA Review Memorandum” and include a record of it in the project file. An example of the “Design QA Review Memorandum” is included as Figure 4.5.3.

The Design QC and QA processes described above are graphically illustrated by Figure 4.5.4. As indicated on figure 4.5.4, the QA/QC process could require multiple iterations to ensure the design meets contract requirements, avoids conflicts between disciplines, utilizes the appropriate materials and supplies in the correct manner, and ensures that all QA and QC review comments are adequately addressed.

As verification of the completion of the QA and QC reviews, each submission will be accompanied by copies of the completed Design QC Check print Sign-off Sheets and Design QA Review Memorandum in addition to the standard VDOT LD-436 form showing that plans have been audited and approved and include all appropriate elements for each plan submission.

## DESIGN QC AND QA PROCESSES



Procedure to be used to develop, check and review an individual document through the Design QC and QA processes. Check-prints and sign-off sheets are maintained as a record of the QC and QA activities performed.

FIGURE 4.5.4

### QA/QC Approach to Unique Design Element/Work Activity

As noted in the discussion above, our Team has developed a unique concept for this project which will completely replace the existing bridges over Little Tuckahoe Creek. This modification represents a significant enhancement to the Project by providing two completely new bridges which will meet all current design standards and significantly reduce the immediate and future maintenance requirements which would have been necessary for modifications and retrofitting of the existing bridges as identified in the RFP concept. This modification will also require coordination between multiple design disciplines, including structures, hydraulics, roadway, traffic engineering and temporary traffic control, and environmental. Our Team will provide a two (2) Stage approach to accomplish this multi-discipline design and approval.

At the outset of design, updated topography and surveys, including wetland delineations, will be completed to identify restrictions and determine the locations of the proposed bridges over Little Tuckahoe Creek. The alignment of I-64 will be established, consistent with our conceptual plans but reflective of current existing conditions. Vertical profiles for eastbound and westbound I-64 will be established based on existing roadway grades. Once this information is developed, roadway, hydraulic, structural, and environmental engineers will all meet to identify the required bridge location. Abutment locations will be finalized based on opening width requirements identified by the hydraulic engineers and with a focus on avoiding wetland and stream impacts on Little Tuckahoe Creek. Stage 1 plans and report for both bridges will be developed by structural engineers, and prior to submission formal QC and QA procedures will be completed by separate staff/teams who were not involved in the day-to-day development of the bridge plans. QC reviews of the Stage 1 plan and report will ensure:

- Horizontal alignment is consistent with the roadway plans (roadway QC)
- Vertical profile is consistent with the roadway plans (roadway QC)
- Structure depth meets requirements based on span configuration (structure QC)
- Abutment details are in conformance with current VDOT criteria – including jointless bridge criteria (structure QC)

- Bridge opening widths adequately accommodate the design flows in Little Tuckahoe Creek, and are consistent with the openings modeled as part of the H&H and floodplain analyses (hydraulic QC)
- Required freeboard from the design storm water surface elevation to low chord of the bridge is met (structure and hydraulic QC)
- Abutment scour has been accounted for in foundation design (hydraulic, geotechnical and structure QC)
- Environmental impacts have been minimized, and impacts to the stream channel are avoided (environmental QC)

Each of these independent reviews will be completed and coordinated with the structural design team to ensure any modifications are accurately and adequately accounted for. Following agreement that the Stage 1 plans meet the design requirements and are consistent with the requirements of all design disciplines, the QA process will be initiated and completed.

Following acceptance of the Stage 1 plan and report by VDOT, final design of the bridge will be completed. During final design, additional design considerations will be incorporated into the plans. One of the most important will be the proper sequence of construction which is consistent with the temporary traffic control (TTC) and transportation management plan (TMP) developed by the roadway and traffic engineers. Specifically, removal of a portion of the existing bridge deck, piers, and abutments will be identified which will both allow for construction of an adequate width of bridge to accommodate future temporary travel lane locations during Phase 3 (outside shoulder reconstruction stage), but also maintain enough existing bridge width to accommodate temporary travel lane locations during Phase 2 (median widening stage). QC of these elements will include all of the following considerations:

- **Structural Integrity** – removal of portions of the existing bridge deck, piers and abutments must allow for construction of a portion of the proposed bridges, but must also ensure that temporary travel lanes locations do not result in adverse loads on the temporary deck overhangs. Reviews will ensure that proper calculations have been completed to ensure that pier elements remaining will adequately support the temporary traffic configuration, and that significant deck overhangs are not introduced. As required by VDOT criteria, load ratings will also be completed separate from the QC review to ensure adequate load rating of the temporary traffic configuration.
- **Embankment Stability** – temporary shoring will be required between the existing bridges and proposed bridges since the bridge abutments will not be coincident during phased construction. Reviews will ensure that adequate shoring is identified at the existing and proposed abutment interfaces so that embankment for the proposed bridge abutments is contained adjacent to the open span of the existing bridge.
- **Proper Lane Configuration** – At the approaches to the temporary bridges, lane transitions and shifts will be required to transition the lanes from the approach roadway alignment to the required temporary bridge lane configuration. Barrier connections will need to be coordinated with the roadway engineers, and bolt down barrier details will be checked to ensure that bolt locations do not conflict with existing or proposed beam or haunch locations.
- **Abutment Details** – Since the proposed bridges will be in conformance with current VDOT criteria, detailing of the bridge abutments will be checked to ensure the current criteria is followed, and all proper details are incorporated into the plans. Reinforcement type in both the substructure and superstructure will be checked, as will parapet details and approach slab details.

In addition to the structural QC of the final bridge plans, environmental, hydraulic, roadway and traffic engineering reviews will be completed to ensure final details are consistent with the designs shown in the roadway plans, are consistent with the final hydraulic models and properly display appropriate water surface elevations, properly

identify temporary lane configurations for all phases of construction, and that all necessary permit requirements for both bridge construction and demolition of the existing bridges are noted as appropriate. Constructability reviews will also be completed on the bridge plans to ensure that planned construction phasing operations, construction access, and construction details are clear and coordinated to reduce challenges and the need for changes during construction.

Based on the organization of our Team's design staff, each of these reviews will be seamless, and constant coordination during design development will ensure that no major changes or issues will arise during QC and QA reviews. Plans will only be submitted after complete concurrence from design, QC and QA staff is made. This QC and QA procedure has been used effectively and seamlessly on multiple design-build projects, including several where new bridges were constructed in stages adjacent to existing bridges over waterways. Our past experience and close coordination will ensure that this project is completed just as efficiently and successfully as those past projects.

Our Team's concept of completely replacing the existing bridge rather than replace the superstructure and rehabilitate the substructure simplifies the QA/QC for the bridge design as the rehabilitation element of the design has been eliminated with our approach. One of the biggest challenges of the design of a substructure rehabilitation is always determining the types of repair required as well as the details required for the repairs as the true extent of the repair is not known until the damaged concrete and reinforcing steel is fully removed/exposed during construction. Many times, the assumptions made during design did not cover the full magnitude/extent of what is identified during design. When the actual condition is identified during construction, it frequently requires new or modified details to be developed quickly so as to allow construction to continue. The solution determined "on the fly" is not always the optimum solution as there is not time to fully vet all of the repair options due to the construction schedule. Completely replacing the bridge, as we are proposing, eliminates these sorts of quick decisions/solutions, which may not be optimal, which most likely would occur with the RFP concept of repairing and utilizing the existing substructure.

### **QA/QC Field Changes To The Design**

Field changes to the design occurring after final submission and release of the Construction Documents to the field shall be subject to the same rigorous procedures stipulated in the Design QA/QC Plan. Requests for field changes shall be reviewed by the design engineer that performed the original design. No field changes shall be allowed without approval by the design engineer indicating compliance with applicable design standards, and the certification of the Design Manager indicating completion of all Design QA and QC procedures. After certification by the Design Manager and approval by VDOT, the change can be implemented in the field and documented on the as-built drawings.

### **Description of Construction QA/QC Procedures**

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

During construction, the QA and QC Teams will follow the established and approved QA/QC Plan. The QA/QC plan is structured to ensure that QC and QA functions are performed independently and that procedures and

work products are regularly audited. Key elements of the Construction QA/QC Procedures are summarized in the following paragraphs.

### **Construction Quality Assurance**

The Quality Assurance Manager (QAM), Kenneth Shirley, P.E. with EBA Engineering Inc., is independent of the Designer, Contractor and QC Team, and is responsible for the Quality Assurance of the roadway, bridge and other physical construction operations, including the independent QA testing technicians. The QAM will report directly to the Design-Build Project Manager and have the authority and responsibility to stop work and withhold payment for any work not being performed in accordance with the Contract requirements or lacking the QA/QC documentation necessary to prove that the work meets the Contract requirements. This authority is given to the QAM in writing by the Design-Build Project Manager prior to the start of construction and a copy of the letter is included in the QA/QC Plan. The QAM will oversee and direct the personnel responsible for performing QA inspections and testing of all materials used and work performed on the Project. He will have personnel representing the QA Team that reports directly to him and are not part of the QC Team.

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

The QAM oversees the establishment and maintenance of a comprehensive system for project documentation that will organize, track and disseminate all Construction QA and QC information. The records will present a factual representation of the work performed by the Design-Builder on the Project and allow a determination by the QAM and VDOT that all work was completed and tested in accordance with the plans and specifications. All documentation will be adequately identified and cross-referenced to support a field audit by the QAM and VDOT during the life of the Project as well as final audit after project completion. As a minimum, the QAM will audit the testing and inspection records each month prior to certifying the monthly payment application.

### **Construction Quality Control**

The Construction Quality Control Manager (QCM), Richard “Rick” Riviere, with Dewberry, will manage the day-to-day QC inspections and material testing of the construction as directed by the Construction Manager and will report directly to the Construction Manager. The QCM and the QC Team are responsible for inspection of the construction activities and all QC sampling, testing and analysis of materials on the Project to ensure that construction quality is verified at frequencies exceeding those required by the VDOT Construction Manual, the Materials Manual of Instructions and Tables A3 and A4 of VDOT’s Minimum QA/QC Requirements. As the QCM, he assures that the QC materials sampling and testing is consistent with the QC plan.

Erosion and sediment controls will be inspected by the QC Team to ensure implementation in accordance with the approved plans, the erosion and sediment control laws and regulations, and the erosion and sediment control standards and specifications approved by the Virginia DCR.

All QC staff actively inspecting and/or testing segments of work will complete an Inspector Daily Report (IDR). The IDR’s will be electronic dairies in accordance with VDOT’s Construction Division Memorandum CD-2000-

14 and will include, as an attachment, copies of all QC materials tests completed for the day's activities. Signed hard copies of the IDR's will be submitted to the QCM on a daily basis for review and approval. The QCM will complete an electronic Daily General Report, which will summarize the work covered by the IDR's. Copies of all signed Daily General Reports, IDR's, and test reports will be forwarded to the Construction Manager, QA Manager and others of the Design/Build Team for use and review while the original documents will be placed in three-ring binders, by project and month and maintained as part of the permanent QC records. All binders will be stored in fireproof storage cabinets at the Project site and will be available for audit by the QAM and VDOT at any time. A weekly report will be produced by the QCM that contains summaries of tests, materials placed, actions taken for failing materials, NCR's, safety, inspection, environmental and schedule challenges.

### QA/QC Approach to Significant Construction Element/Work Activity

A unique element proposed on this project will be the construction of the two new bridges as opposed to the superstructure replacement and existing substructure repair shown in the RFP plans. The complete replacement of the existing bridge greatly simplifies the construction and consequently the QA/QC inspection of the construction as our concept eliminates the need to rehabilitate/repair the existing substructure. Without the substructure rehabilitation/repair (as a result of providing a completely new bridge – both superstructure and substructure) our concept does not require the field determination by the QA/QC staff as to the extent and type of substructure rehabilitation. Understanding that the completed VDOT Safety Inspection has identified the needed repairs cited in the RFP, with any substructure repair/rehabilitation, it is not always what is seen during the inspection of the bridge that is critical, but what is exposed/identified during the construction. With the RFP Concept, the QA/QC staff would have to work closely with the construction staff and the Department to determine exactly what is necessary once the damaged concrete is removed and the full extent of the repair is known. With our proposed concept of completely replacing the bridges (superstructure and substructure) we have eliminated the need to for the QA/QC staff to make the determination of the amount/extent of the substructure to be repaired, thus eliminating the potential to miss an element of repair. This will greatly reduce the possibility of surprises that could adversely affect the Project's cost and schedule.

As is the Shirley Team's practice, and per the minimum requirements as set forth in the VDOT QA/QC Design-Build Manual, the first step prior to starting any activity is to hold a Preparatory Meeting with the Contractor and his Subcontractors performing the work. As part of this meeting, the material submittals will be reviewed and discussed and work will not begin until all materials (and shop drawings as applicable) have been submitted and approved for use. For items such bridge beams and bearings, the Department will be notified of the fabrication schedule so the Department can efficiently schedule its offsite inspection personnel. A Source of Materials and copies of all approved shop drawings will be maintained on site so that the QA/QC inspectors know how each project element is to be, or has been, inspected when it arrives on the Project. From a QA/QC perspective, there are many construction elements that must be monitored and inspected and a description of the various elements and inspection requirements are as follows:

**Existing Bridge Demolition** – Before demolition (or partial demolition) of the existing bridge begins, a demolition plan must be prepared, submitted and reviewed. The demolition plan will work in concert with the Environmental Plan, the Traffic Management Plan (TMP), the Contractors's Safety Plan, and the Worker Health and Safety Plan. Preparation of the demolition plan is the responsibility of the construction team and review of the demolition plan in accordance with VDOT and project specific requirements as well as making sure that the plan is followed is the responsibility of the QA/QC staff. Some key elements of the demolition plan are as follows:

- Installation of temporary barrier service in accordance with the road and bridge plans and the TMP
- Installation of all temporary signs and temporary striping at both approaches to each bridge.

- Installation of temporary shoring necessary to enable the demolition of the existing piers and abutments and construction of the new abutments.
- Procedure for demolition to include staging, required equipment, equipment placement, material removal and disposal, and temporary lighting (if required), etc.
- Installation of E&S control to protect Little Tuckahoe Creek during demolition and construction activities.
- Identification of environmental areas to be protected/avoided during demolition and construction.
- Installation of temporary measures to protect Little Tuckahoe Creek to ensure that demolition debris does not fall into the water.
- Plan for protection/encapsulation of and disposal of the existing bridge structural steel elements, which are classified as a Type B elements.
- Plan for and times for any temporary traffic stoppages during demolition of any element of the demolition.

As with all elements of construction, a pre-construction, preparatory meeting will be scheduled and conducted by the QAM to ensure that all members of the construction staff and the inspection staff know what is expected during this phase of the Project (including any witness and hold points). The QAM will also ensure that the load rating analysis for any partial demolition of the existing structures has been prepared and submitted by the Design Team and approved by VDOT prior to the start of demolition. Once the demolition plan is approved, it is up to the QA/QC inspection staff to monitor that all elements of the plan are followed. If any deviation from the approved demolition plan is noticed at any time during construction, it will be brought to the attention of the QAM, who in turn will bring it to the attention of the Construction Manager for explanation and correction prior to approval to continue with demolition.

***Substructure Construction*** – The abutment construction inspection consists of several elements, each of which must be carefully monitored/inspected in turn before the next element can be constructed. A pre-construction meeting led by the QAM and attended by members of the construction staff and the construction inspection staff will be held prior to construction of each element of the abutment. The meeting will identify the requirements and expectations of each member of the team, verify materials approval, review testing and testing frequency, as well as identify any witness and hold points required for each element of the abutment construction. In addition to ensuring that the construction and materials utilized are in accordance with the plans and specifications, the QA/QC inspection staff is responsible for the following:

- Determination by the D-B Team Geotechnical Engineer that the required foundation capacity is achieved, including making sure that the abutment foundations are either located below the scour elevation indicated in the plans or that the material on which they are founded is non-scourable.
- Reviewing the stakeout of each abutment to make sure it is in accordance with the plans.
- Making certain that the forms are constructed to the dimensions shown in the plans.
- Making certain that the reinforcing steel is installed in accordance with the plans. That the proper type (black or CRR), size, splice length, cover, clearances and spacing match the plans
- Testing of concrete and casting of test cylinders to ensure compliance with approved plans, mix designs, temperature, slump, air content and yield.
- Making certain the required concrete strengths have been attained either by the use of field cylinders or 28-day break results prior to placement of concrete for the next element.
- Ensuring that anchor bolts are installed correctly (proper embedment, projection and plumbness).
- Ensuring that proper consolidation/vibration procedures are utilized to prevent segregation and ensure that concrete fills all portions of the forms.
- Ensuring that the forms are removed only after the concrete reaches the required strength.
- Ensuring that backfill material, placement and its compaction of fill are in accordance with the plans and specifications.

**Superstructure Construction** – Once the abutments have been constructed, the required concrete strength has been attained to allow placement of the bridge beams, and placement of bearing assemblies is complete and approved, construction of the superstructure can proceed. The superstructure construction consists of construction of several elements, including setting of the beams, construction of the deck slab and integral backwall and construction of the parapets. A pre-construction meeting led by the QAM and attended by members of the construction staff and the construction inspection staff will be held prior to construction of each element of the superstructure. The meeting will identify the requirements and expectations of each member of the Team as well as identify any witness and hold points required for each element of the superstructure construction. In addition to ensuring that the construction and materials utilized are in accordance with the plans and specifications, the QA/QC inspection staff is responsible for the following:

- Ensuring that shop drawings for beams, bearings, stay-in-place forms, etc. have been submitted and approved.
- Ensuring that the bridge beams, as delivered to the site, are not damaged or are repaired in accordance with approved repair procedures prior to installation.
- Ensuring that deck forms are installed in accordance with approved shop drawings, plans, specifications and as-built conditions.
- Ensuring that the reinforcing steel is installed in accordance with the plans. (that the proper type (black or CRR), size, splice length, and spacing match the plans)
- Ensuring that the proper adjustments to the screed rail are made to account for the design dead load deflections and the as-built top of girder elevations.
- Testing of concrete and casting of test cylinders to ensure compliance with approved plans, mix designs, temperature, slump, air content and yield.
- Ensuring that proper concrete placement procedures and techniques are utilized to ensure that there are no voids or honeycombing in the concrete (particularly around the beam in the integral backwall).
- Making certain the required concrete strengths have been attained either by the use of field cylinders or 28-day break results prior to placement of concrete for the next element.
- Ensuring that formwork is not removed before the required concrete strength is attained.
- Ensuring that compaction of fill under the approach slab is in accordance with project requirements.
- Ensuring that the proper joint width is constructed at the sleeper pads at the ends of the approach slabs.

Following completion of the deck, approach slabs and parapets, the QAM will also confirm that the Load Rating Analysis of the new structure has been approved by VDOT and that the VDOT Safety Inspection has occurred and punchlists completed prior to opening the structure to traffic.

To summarize, for all construction elements, the Shirley QA/QC Plan will minimize the effort VDOT must expend performing QA/QC on the Project by implementing proven and time tested QA/QC procedures that include comprehensive preparatory meetings, regular inspections using prepared checklists, thorough QA/QC documentation, regular document audits, and a system of checks and balances that begins at design and continues to project close-out.

### Project Staffing

The Construction QA Team will consist of the Quality Assurance Manager assisted by a full time Senior QA inspector and an Office Engineer to complete on-site QA inspections/testing and manage the QA/QC documentation system. The QA Team will be supplemented by Engineering & Testing Services, Inc. to complete off-site laboratory testing and additional on-site testing technicians as necessary based on construction volume.

The Construction QC Team will be comprised of two roadway inspectors, and a bridge inspector from Dewberry to complete QC inspections. GeoConcepts Engineering will provide two testing technicians to perform on-site QC testing. GeoConcepts will also perform off-site laboratory testing for the QC team and provide geotechnical engineers on an as-needed basis to inspect foundations as required by the Contract. The QC team will be supplemented by additional inspectors and testing technicians during peak construction timeframes.

### **Scheduling of Inspection and Coordination with VDOT**

During the design phase, the Design Team will identify items of work that require special attention by the Construction QA and QC Teams. The applicable levels of inspection and standards of quality of these items will be addressed with the Construction Manager, the QCM and QAM prior to the start of construction and incorporated in the QA/QC Plan and the Project's CPM Schedule. During construction the QCM will coordinate daily with the Construction Manager in reviewing the project schedule and determining the requirements of the QC Team to adequately and properly monitor the construction activities for certification of compliance to VDOT. Furthermore, the QCM will coordinate with the QC Team to continuously monitor and assure compliance with erosion and sediment control, environmental permit obligations, and maintenance-of-traffic procedures.

On a weekly basis, the Construction Manager will hold a Construction Progress Meeting attended by the QAM, QCM, VDOT representatives, and construction personnel to discuss the progress of construction, review the previous weeks QC and QA tests, and discuss the upcoming inspection requirements based on a two week look-ahead schedule. The schedule review will highlight any upcoming Witness and Hold Points to provide ample time for VDOT to schedule inspections. This meeting also provides an opportunity to discuss ongoing testing and inspection procedures, documentation, and any issues that need to be addressed/resolved. These weekly meetings have been a valuable tool on our other design-build projects, providing a regular forum to make sure the inspection and testing process is working well and that all issues are addressed.

The Quality Assurance and Quality Control procedures outlined in this section are the result of many years of completing Design-Build and PPTA projects for VDOT including the Route 28 Corridor Improvements, Battlefield Parkway Design-Build, Pacific Boulevard Design-Build, Fairfax County Parkway Phase III, and other projects. With each new project we have improved upon the QA/QC process based on project experience, VDOT expectations and feedback, and changes in VDOT QA/QC specifications. Shirley has a focused commitment to quality both to minimize rework during construction and reduce long term maintenance costs.

## 4.5 CONSTRUCTION OF THE PROJECT

## 4.5 Construction Of The Project

### 4.5.1 SEQUENCE OF CONSTRUCTION

Our Team has developed a sequence of construction for this Project which will meet the goals of the Project and complete construction by the substantial and final completion date of 11/20/15 as noted in the RFP documents. In general, construction of the proposed improvements will follow the sequence below:

- **Phase 1** – Construct temporary outside shoulder strengthening and shift traffic towards the outside
- **Phase 2** – Construct new inside travel lane and shoulders as well as the new portions of Bridges B-616 and B-617 over Little Tuckahoe Creek. Construct the improvements at the Route 623 Interchange, and shift traffic towards the median
- **Phase 3** – Reconstruct existing outside shoulders and final portions of Bridges B-616 and B-617 over Little Tuckahoe Creek
- **Phase 4** – Place Surface Asphalt and “Finishing” Items

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

#### *Phase 1*

While it is always desirable to minimize the amount of wasted material during construction, such as temporary shoulder strengthening, the existing roadway section on I-64 does not allow the outside shoulders to be permanently reconstructed as an initial stage of construction. At the outset of the Project, the existing outside shoulders will be reconstructed to provide the necessary temporary pavement strength as outlined in Part 2, Section 2.7.1 of the RFP documents. This work will be completed during night-time operations utilizing temporary single lane closures adjacent to the work. This temporary work on the existing outside shoulders is necessary to shift traffic onto the outside shoulders to facilitate construction of the median widening. Shifting traffic to the existing median shoulders as an initial construction stage is not feasible due to the existing substandard shoulder width in the median of the roadway. The work will consist of a full-depth milling and pave back operation in one shift per night. The temporary pavement thickness will be designed per RFP requirement 2.7.1. Due to the desire to maintain minimum 2' shoulder buffers during maintenance of traffic phases, the width of this initial strengthening will be approximately 5 feet from existing edge of pavement in order to accommodate the next phase of traffic sequencing. The length of the construction zone on any night will be sized to the production capabilities of the milling and paving operations. At no time will a full-depth milled section be opened to traffic without the paving being completed within 2" of the existing pavement surface. Our Team will plan the work with safety at the fore front with built-in contingencies such as back up plant capacity, and on-site aggregates and cold patch at the ready in the event of unforeseen equipment breakdown.

Since Phase 1 work will be all temporary construction and not require any right-of-way acquisitions or utility relocations, our Team will produce an early MOT/Phase 1 design package in order to get a head start on the project schedule. We have done this on many of our design-build projects with the Department with great success and maximize the opportunities for on-time completion.

Following completion of the outside shoulder strengthening, traffic lanes will be shifted to the outside shoulders, providing adequate room to maintain 12' travel lanes and a 2' buffer to the temporary concrete barrier which will be placed adjacent to the median widening work which will be completed in Phase 2.

#### *Phase 2*

Once traffic is shifted as noted at the end of Phase 1 above, construction of the majority of the project elements

will begin. Specifically, Phase 2 consists of all of the I-64 median widening, drainage improvements, stormwater management improvements, Route 623 Interchange ramp improvements, and widening of Route 623 south of the existing bridge over I-64. All work will be completed behind temporary concrete barrier to provide safety for construction and inspection staff, but also to maintain mobility of public traffic through the construction work zone. Because placement of 4.5 miles of temporary traffic barrier in the median is not desirable or practical, we intend to phase construction of the median widening along I-64. Initial work will include installation of the larger drainage structures, extension and/or connection of the existing box culverts and placement of the deeper fills. Not only will the phased sequencing of the widening avoid placement of significantly long runs of barrier, it will also ensure that areas of temporary pull-offs will be maintained throughout the Project length. As required by the Work Area Protection Manual, a minimum of one (1) emergency pull-off will be maintained per mile of temporary barrier placement in each direction of the highway. As work progresses, median pavement which was constructed as part of the initial phases will be utilized for construction vehicle acceleration areas and for vehicle break-down refuge. Details for these “pull-offs” will be incorporated in the temporary traffic control plans, and will be consistent with details our Team successfully and safely used for the recent widenings of I-66 and I-95 in Northern Virginia.

Completion of the median widening will also be staged with the construction of the proposed bridges over Little Tuckahoe Creek. Shifting traffic to the outside shoulders will allow for placement of bolt-down MB-11a barrier over the existing bridges to facilitate removal of the existing median parapets and a portion of the existing bridge decks. The width of the bridge deck removed during this stage will be based on providing enough room to construct a portion of the new bridge which will accommodate two lanes of traffic during the later construction in Phase 3.

Following completion of the construction of the new inside travel lanes and shoulders, the two travel lanes will be shifted to the median in the ultimate locations of the left and center travel lanes.

At the Route 623 Interchange, ramp improvements will be constructed by temporarily shifting traffic away from the widening area and placing temporary concrete barriers adjacent to the widening. Our modifications of the westbound exit ramp lane configuration will allow for maintenance of the existing traffic signal during construction, and the proposed signal elements will be installed to not conflict with the existing signal foundations or span wire elements. Ramp improvements will be phased within this stage so that the permanent traffic configurations can be implemented as early as possible, providing more immediate relief to motorists and commuters.

On Route 623 itself, widening will be completed in phases to eliminate placement of barrier on both sides of the road simultaneously. Two lanes will be maintained at all times throughout construction, and barrier placement will be analyzed to ensure adequate sight distances are maintained throughout all phases of construction, and that truck turning movements are not impacted by temporary barrier placement.

### *Phase 3*

Upon completion of Phase 2, crews will place temporary traffic barrier on the right side of traffic to facilitate outside shoulder removal and reconstruction, as well as to allow for removal of the remaining portions of the bridges over Little Tuckahoe Creek and construction of the remaining portions of the new bridges. Temporary shifts approaching the portions of the new bridges over Little Tuckahoe Creek will be required to utilize the ultimate median shoulder as part of a travel lane. This lane placement during this stage will provide a full width median shoulder and an approximately 6' shoulder on the right side. These shoulder widths will provide adequate room for removal of disabled vehicles, as well as to eliminate the concerns with speed reductions adjacent to temporary traffic barriers.

## Phase 4

Stage 4 work will begin with the opening of traffic it's final configuration in the correct travel lanes. Final surface pavement will be placed on new shoulders and the new inside lane. The existing travel lanes will be milled 2" and over laid with surface asphalt. Permanent pavement markings will be placed and final overhead and roadway signage will be installed.

### Sequence of Construction Benefits

The proposed sequencing of construction has several benefits, some of which were described above. These benefits include:

- Avoiding construction sequences which provide no shoulders on both sides of the road during long construction durations.
- Since Phase 1 work will be all temporary construction and not require any right-of-way acquisitions or utility relocations, our Team will produce an early MOT/Phase 1 design package in order to get a head start on the project schedule.
- Avoids placement of barrier on both sides of the road simultaneously, introducing "cattle chute" effects which can cause significant delays and make access to disabled vehicles very difficult.
- Phased construction of Phase 2 will allow temporary, emergency pull-offs and acceleration lanes to be provided during the entirety of the construction stage

These benefits to the traveling public are significant and have been identified based on our Team's successful implementation in the past. They provide significant safety benefits to the travelling public which will help generate and continue public support for the Project, and they represent areas where we have gone "above and beyond" the requirements of the RFP documents.

## 4.5.2 TRANSPORTATION MANAGEMENT PLAN

Our Team is very experienced in design and construction of phased improvements on heavily travelled corridors. We understand how development of a complete and accurate Transportation Management Plan (TMP) helps set the stage for a successful and safe project, not only for the travelling public, but for construction, inspection, and VDOT project staff. As noted in Section 2.10 of the RFP, our Team will prepare a Type B Category III TMP in accordance with VDOT I&IM 241.5 as well as a site-specific Temporary Traffic Control (TTC) plan.

All aspects of the TMP and TTC plans will be developed with a focus on maximizing safety for the travelling public and construction personnel while minimizing travel delays throughout construction. TTC and TMP plan development will be led by our Traffic Engineer, Jerry Mrykalo, P.E. who is certified as a VDOT Work Zone Traffic Control instructor. Additionally, all of our design staff are certified in the development of TTC and TMP plans based on successful completion of the VDOT Work Zone Traffic Control Training program.

We understand that in addition to the general public, there are major project stakeholders located near the Project. ***It is our goal to minimize impacts to these stakeholders to the greatest extent possible, and to maintain open and regular lines of communication with these stakeholders.*** Several stakeholders are listed below, along with their potential impacts during construction:

- **Local Businesses** – Our Team is committed to providing continuous and reliable traffic flow on I-64 and Route 623, as we recognize that numerous businesses located within the vicinity of the Project limits rely on traffic that travels on I-64 for a significant portion of their revenue. These stakeholders

include the Short Pump Town Center and other businesses located in the Short Pump area. As with all major stakeholders, regular lines of communication will be established with these businesses to inform them of temporary lane closures and any upcoming significant work activities. Significant impacts are not anticipated since daytime lane closures will be restricted to the time periods identified in the RFP documents. No full roadway closures are anticipated, and no overhead work will be required which would warrant short-term full lane closures of the roadway. All interchange ramp improvements will be completed to ensure all traffic movements are maintained at all times.

- **Quarries** – Located north of the Project along the Route 623 corridor are several large quarry operations. These quarries operate large equipment and make routine deliveries with large trucks to project sites utilizing project roadways. Based on the need to maintain access to these industrial businesses, we will ensure that any temporary lane closures and placement of barrier will accommodate all turning movements and large vehicles throughout construction. No significant impacts are anticipated for these businesses since all turning movements and interchange operations will be maintained throughout construction at Route 623. Temporary lane closures will be coordinated in advance through normal public outreach processes, and additional notification will also be made available since material required for construction of the Project may come from one or more of these quarry sources.

In addition to the major stakeholders discussed above, appropriate local agencies will be included in our public outreach effort. These include Goochland and Henrico Counties, Goochland and Henrico Public Schools, Police, Fire & Rescue, and transit. Consistent with the statements above, no significant impacts to any of these stakeholders is anticipated since no long-term lane closures are planned or anticipated to be required for construction of the Project.

In addition to coordination with major stakeholders and through public outreach methods, our Team will develop a site-specific Temporary Traffic Control (TTC) plan for this project. Our TTC plans will be developed to include the following design elements, and will account for the following temporary lane restrictions:

#### On I-64

- Two (2) 12' wide travel lanes will be maintained in each direction of travel during all stages of construction, as shown on sheet 1J of our Volume II documents
- Minimum 2' wide offsets to temporary barrier will be maintained throughout all stages of construction, and a full shoulder area will also be maintained for incident management where feasible.
- All temporary traffic shifts will be designed to meet the full design speed of the roadway. No speed reductions will be proposed for I-64.
- No temporary detours or ramp closures for I-64 traffic will be proposed
- Temporary lane closures will be in accordance with the lane closure restriction times identified in the RFP documents. Temporary lane closures are anticipated for night time paving, temporary shoulder build-up, placement of traffic barriers, delivery of materials, and bridge work.

#### On the Interchange Ramps

- Minimum 12' wide travel lane(s) will be maintained
- Minimum 2' wide shoulders will be maintained on both sides of each interchange ramp
- No speed reductions will be proposed for temporary ramp configurations
- No Temporary short-term closures are anticipated.

## On Route 623

- Two thru lanes will be maintained throughout construction to minimize impacts to the traveling public.
- Temporary flagging operations may be required for activities such as paving.
- Minimum 11' wide lanes and minimum 1' shoulders will be maintained
- No speed reductions will be proposed on Route 623.

Our Team does not anticipate the need for regulatory speed reductions thru the work zone, as all geometry and lane shifts will be designed to meet standards for the full design speed, and 12' lane widths will be maintained throughout construction on I-64. Our experience based on similar past projects has found that maintaining existing posted speed limits where geometric conditions permit has multiple benefits. In addition to minimizing motorist delay, research has proven that lowering speed limits where geometric conditions do not require the reduction actually lessen safety, since large deviations between driver's speeds commonly result in increased accidents.

The TTC plans developed for this project will detail each and every specific element required during construction of the Project. Site specific plans will be developed for each stage of construction to identify barrier and channelization locations, temporary sign locations, PCMS message text and PCMS device locations, construction access points, temporary pavement marking requirements and limits, temporary signalization, temporary drainage requirements, areas of temporary and permanent construction, and all other requirements per VDOT's I&IM-241.5.

Our Team will also employ site-specific impact management strategies that exceed RFP requirements in order to further increase safety and mobility. For example, temporary raised pavement markers will be used to supplement lane line pavement markings for increased visibility, especially at night and during wet pavement conditions. Other strategies that will be utilized where warranted include the use of wider than normal lane lines for increased delineation of lane shifts, use of temporary transverse rumble strips for alert motorists of unusual conditions, the use of tighter than required channelizing device spacing for increased work zone delineation and construction personnel safety.

The entire Shirley Team is adamant about providing and maintaining a safe work zone, and we also always look for ways to improve traffic patterns not only after construction, but during construction. On several of our recent projects, we implemented interim improvements aimed solely at improving traffic flow during construction. For example, on Route 28, temporary detour roads were constructed to include dual turn lanes in replacement of single turn lanes, providing immediate relief during construction before the interchange had been completed. On I-95, our temporary traffic patterns resulted in fewer accidents in the work zone than were experienced in the same stretch of roadway prior to construction, without implementing reduced speed limits. On this project we are committed to these safety and traffic capacity increase goals, and will accomplish this by prioritizing operational improvements, such as the construction of the I-64 westbound off-ramp widening at Route 623 during Stage 2 of construction.

Finally, our Team also recognizes that maintenance of I-64 mobility throughout construction is critical as it is a vital commercial and long-distance travel route. Therefore, we are committed to maintaining full 12' travel lanes with geometry meeting at least 70 mph throughout construction. Also full paved shoulders will be provided wherever possible. In addition, we fully understand the dangers of construction vehicle ingress / egress on high speed roadways, and therefore, construction entrances on I-64 will be designed for locations where safe deceleration and acceleration can be accomplished on the shoulders instead of in the travel lanes wherever possible. In addition our Team will prepare a comprehensive Incident Management Plan as part of the TMP, which is especially critical on I-64 given the high traffic volumes. The TMP will clearly detail roles and responsibilities for an incident and the implementation of emergency detours utilizing pre-staged equipment if necessary.



## 4.6 Disadvantaged Business Enterprises (DBE)

### COMMITMENT TO ACHIEVING THE DBE GOAL

**Shirley Contracting Company, LLC (Shirley) is committed to achieving the 10% DBE participation goal for the I-64 Widening and Route 623 Interchange Improvements Project through design and construction activities.**

As one of Virginia's largest General Contractors performing Virginia Department of Transportation work, we take pride in our 39 year history of providing opportunities to Disadvantaged Business Enterprises. Our record of compliance in meeting federal, state and local DBE goals on all of our past and present projects is an accomplishment we are proud of.

### PLAN TO MEET DBE SUBCONTRACTING GOAL

Concurrent with the preparation of this Technical Proposal, we will, as part of the Price Proposal, solicit firm pricing for the work from potential DBE subconsultants, subcontractors, and vendors. As part of the Price Proposal, we will include Form C-111 indicating how we plan to achieve the Project's DBE requirement during design and construction.

The following narrative outlines the steps that will be taken to meet this requirement during the Price Proposal preparation phase:

- Our Team will first examine the Project, the nature of the work, and our internal company DBE database to determine where we believe the opportunities for DBE participation will be available. Once we determine the areas where participation is likely, we will take the necessary steps to ensure that we communicate with and provide adequate notice of the Project opportunities to the DBE community.
- Initially, we will contact DBE firms included in our company database to inform them of the opportunity. We will include in an e-mail solicitation the scope of the Project, the construction trades we believe will be able to provide subcontracting opportunities, and notice that plans are available at our company's main office for viewing. We will establish a single point of contact for all potential DBE firms so that questions regarding the Project and potential opportunities will be directed to the contact person and answered promptly.
- In addition to e-mails to subcontractors and vendors in our database, we will continue to make follow-up telephone calls to these firms as a means of determining actual interest in the Project and to answer any questions about possible opportunities.
- We will also post the opportunity on our company website to reach a broader spectrum of contractors, vendors and other potential interested persons. Once again, the name and phone number of a contact person will be included for questions about the opportunity.
- Another method that we will utilize for soliciting interest in the I-64 Widening Design-Build Project will be to place ads in a local newspaper and other media outlets identifying the Project and the potential opportunity to supply materials and services. We will include a contact person and telephone number so that interested firms can make contact with us and discuss the potential opportunities on the Project.
- We will attend industry, major business organization and community group events where we will establish networking relationships to create interest in the Project and attract potential bidders. We also have had previous success soliciting assistance from various trade organizations in communicating with the DBE community.
- We will contact the VDOT Business Opportunity and Workforce Development Center (BOWD) and advise them of the Project and the opportunity for DBE participation. One of the primary goals of the

BOWD Center is to provide opportunities for DBE firms to partner with prime contractors.

- Throughout the development and preparation of our Technical and Price Proposals for the Project, we will track and maintain the status of our expected DBE participation. In this manner, we were immediately and constantly aware of the need to solicit increased participation from the DBE community in order to meet the goal. As the date for submission of the Price Proposal approaches, strategies for meeting the DBE participation goals are evaluated and finalized to ensure that the goal will be met with the submission of the Price Proposal. As we will plan to show on Form C-111 to be submitted with the price Proposal, Shirley plans to exceed the stated DBE goal for the Project.

As an ongoing process, Shirley stays up to date with changes and modifications to applicable DBE program rules so that we are best positioned to meet or exceed the goals established for the Project. Throughout the design and construction phases of the Project, we will continually monitor the status of our Team's DBE participation. The Design-Build Project Manager will be responsible for this task, and will develop a method to do so that will be shared with VDOT on a regular basis.

## 4.7 PROPOSAL SCHEDULE

# Proposal Schedule

## PROJECT MILESTONES

In accordance with the RFP documents, the Shirley Team has provided a Preliminary Schedule identifying our plan for all phases of the design/build process based on the following Project Milestones listed in Table 4.6.1

*Table 4.6.1a - Proposal Schedule A Dates of Project Milestone*

| MILESTONE                                  | DATE               |
|--|--------------------|
| Notice of Intent to Award                  | July 29, 2013      |
| Commonwealth Transportation Board Approval | September 18, 2013 |
| Design-Build Contract Execution            | October 16, 2013   |
| Notice To Proceed Date                     | October 17, 2013   |
| Begin Phase 1 Shoulder Strengthening       | January 27, 2014   |
| Begin Permanent Construction               | June 16, 2014      |
| Project Ready for VDOT Walkthrough         | October 31, 2015   |
| Substantial Completion Date                | November 20, 2015  |
| Final Date Completion Date                 | November 20, 2015  |

## Work Breakdown Structure

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

*01. Project Milestones:* Area reserved for easy review of the Project status.

*02. Design:* Includes preliminary engineering services, plan development, QA/QC reviews, submittal milestones, and VDOT reviews and approvals of plans. This section of the schedule includes a second level WBS structure to group design activities by type of design submission including roadway and bridge.

*03. Public Involvement:* This section of the schedule includes milestones for planned public involvement meetings and updates to the Office of Public Affairs for major traffic shifts and the VDOT website.

*04. Environmental Permitting:* Includes wetland and stream delineations and jurisdictional determination, permit management and preparation, mitigation, and permit submissions and reviews. The environmental permits schedule includes a second level WBS structure to group the joint wetlands and waters permit, the LD 455/VSMP permit, and hazardous materials.

*05. Right-of-way Acquisition:* For this project, it is not anticipated the acquisition of property rights for permanent, temporary or utility easements will not be required. We have included a section in the schedule as a placeholder in the event that Final Design reveals an unforeseen acquisition.

*06. Utility Relocations:* Includes activities for UFI meetings, preparation of preliminary engineering (PE) estimates, approval of PE estimates, utility relocation design by the utility owner, approval of the utility design, and utility relocation construction. The utility relocations are separated into second level WBS groups based on Project location and third level WBS by utility owner.

*07. Construction:* Includes all components of roadway and bridge construction. The Construction section of the schedule is segmented by four additional levels of WBS structure to divide the construction activities into groups of work packages that can be easily tracked to ensure on-time completion of the Project.

Below is a complete outline of the WBS Structure for the Project:

**Table 4.6.2 - Work Breakdown Structure**

| LEVEL 1                               | LEVELS 2, 3, 4, & 5   |
|---------------------------------------|---|
| I-64 & RTE 623.I-64 & RTE 623.A       | SCHEDULE MILESTONES I-64 & RTE 623  |
| I-64 & RTE 623.I-64 & RTE 623.B       | DESIGN PHASE I-64 & RTE 623   |
| I-64 & RTE 623.I-64 & RTE 623.B.A     | PRELIM DESIGN WORK - EARLY PHASE 1 MOT PLANS I-64 & RTE 623                       |
| I-64 & RTE 623.I-64 & RTE 623.B.B     | ROADWAY DESIGN I-64 & RTE 623   |
| I-64 & RTE 623.I-64 & RTE 623.B.C     | BRIDGE DESIGN I-64 & RTE 623  |
| I-64 & RTE 623.I-64 & RTE 623.C       | PUBLIC INVOLVEMENT I-64 & RTE 623   |
| I-64 & RTE 623.I-64 & RTE 623.D       | ENVIRONMENTAL PERMITTING I-64 & RTE 623   |
| I-64 & RTE 623.I-64 & RTE 623.E       | RIGHT OF WAY ACQUISITION/EASEMENTS (As Required) I-64 & RTE 623                   |
| I-64 & RTE 623.I-64 & RTE 623.F       | UTILITY RELOCATIONS I-64 & RTE 623  |
| I-64 & RTE 623.I-64 & RTE 623.F.A     | DOMINION VIRGINIA POWER I-64 & RTE 623  |
| I-64 & RTE 623.I-64 & RTE 623.F.C     | WATER (Only if Required by Final Design) I-64 & RTE 623                           |
| I-64 & RTE 623.I-64 & RTE 623.H       | CONSTRUCTION I-64 & RTE 623   |
| I-64 & RTE 623.I-64 & RTE 623.H.1     | PRE-CONSTRUCTION, SUBMITTALS and MATERIAL PROCUREMENT I-64 & RTE 623              |
| I-64 & RTE 623.I-64 & RTE 623.H.2     | PHASE 1 - CONSTRUCT OUTSIDE SHOULDER STRENGTHENING I-64 & RTE 623                 |
| I-64 & RTE 623.I-64 & RTE 623.H.2.A   | I-64 EASTBOUND SHOULDERS I-64 & RTE 623   |
| I-64 & RTE 623.I-64 & RTE 623.H.2.B   | I-64 WESTBOUND SHOULDERS I-64 & RTE 623   |
| I-64 & RTE 623.I-64 & RTE 623.H.3     | PHASE 2 - I-64 CONSTRUCT NEW INSIDE LANES & 1ST PHASE OF BRIDGES I-64 & RTE 623   |
| I-64 & RTE 623.I-64 & RTE 623.H.3.A   | PHASE 2 - I-64 EASTBOUND ROADWAY I-64 & RTE 623                                   |
| I-64 & RTE 623.I-64 & RTE 623.H.3.A.1 | PHASE 2 - I-64 EB BRIDGE B-616 I-64 & RTE 623                                     |
| I-64 & RTE 623.I-64 & RTE 623.H.3.B   | PHASE 2 - I-64 WESTBOUND ROADWAY I-64 & RTE 623                                   |
| I-64 & RTE 623.I-64 & RTE 623.H.3.B.1 | PHASE 2 - I-64 WB BRIDGE B617 I-64 & RTE 623                                      |
| I-64 & RTE 623.I-64 & RTE 623.H.3.C   | PHASE 2 - ROUTE 623 RAMP/INTERSECTION IMPROVEMENTS I-64 & RTE 623                 |
| I-64 & RTE 623.I-64 & RTE 623.H.4     | PHASE 3 - PERM SHOULDERS & FINAL PORTION of BRIDGES B-616 and B-61 I-64 & RTE 623 |
| I-64 & RTE 623.I-64 & RTE 623.H.4.1   | PHASE 3 - I-64 EASTBOUND PERMANENT SHOULDERS I-64 & RTE 623                       |
| I-64 & RTE 623.I-64 & RTE 623.H.4.2   | PHASE 3 - I-64 EB BRIDGE B-616 I-64 & RTE 623                                     |
| I-64 & RTE 623.I-64 & RTE 623.H.4.3   | PHASE 3 - I-64 WESTBOUND PERMANENT SHOULDERS I-64 & RTE 623                       |
| I-64 & RTE 623.I-64 & RTE 623.H.4.4   | PHASE 3 - I-64 WB BRIDGE B-617 I-64 & RTE 623                                     |
| I-64 & RTE 623.I-64 & RTE 623.H.5     | PHASE 4 - FINAL MILL/OVERLAY and OPEN LANES I-64 & RTE 623                        |

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

**Global Calendar** – All calendars are based on 8 hour work days and include the following holidays: New Years Day, Memorial Day, 4th of July, Labor Day, Thanksgiving, the day after Thanksgiving, and Christmas.

**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 Calendar” – Assigned to activities that have durations based on calendar days instead of work days. For example VDOT’s 21 calendar day review duration.

**Calendar 3** – “5-Day Winter Imp” – This calendar is based on working part-time from December 25 to March 10. It is assigned to activities that are anticipated to have reduced productivity during the winter months.

### Schedule Timing and Critical Path

The narrative below describes, in detail, the Shirley Team’s planned schedule and sequence of operations by Phase.

**Design Phase** - The design phase includes preparation, Quality Assurance/Quality Control reviews, and submission of an Advanced Phase 1 Maintenance of Traffic plan set as well as the roadway, and bridge plans at multiple stages of the design process. As specified in the RFP we have included a 21 calendar day activity for VDOT review after each submission. The design phase also includes non-critical activities for the completion of surveys, utility designations, test pits, H&HA studies, utility relocation plans, and geotechnical investigations, including a 60 calendar day 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 immediately upon Execution of the Design-Build Contract. The first formal plan submission will occur within 45 days of the October 17, 2013 Notice to Proceed date and will include the Advanced Phase 1 Maintenance of Traffic plan set in an effort to get an early start on the construction and Phase 1 shoulder strengthening. The Preliminary Schedule reflects final approval of all plans by August 16, 2014.

**Critical Path** - activities in the Design Phase of the Preliminary Schedule include the preparation, review and approvals of the Roadway and Bridge Design plans. These activities start immediately upon Notice Proceed (anticipated to be October 17, 2013) with final approval of these plans scheduled by August 16, 2014.

**Public Involvement** - The public involvement schedule includes submitting our Emergency Contact List upon Notice to Proceed, holding Public Information Meetings in incremental stages during construction, and providing regular updates to the Office of Public Affairs. The schedule includes the major milestone activities for the Public Information Meetings and major traffic changes. However, there are many other public involvement activities that our Team will perform throughout the Project, including meeting with local businesses and attending meetings with home owners associations, local government representatives, and community groups, and providing information for regular updates of the Project website and weekly lane closure plans.

**Environmental Permitting** - Environmental Permitting will begin at Notice Proceed. The Shirley Team will immediately perform wetland delineations, obtain jurisdictional determinations and prepare of the Joint Wetlands and Water Permit Application. We will provide design details, project descriptions, permit sketches, impact quantity information, and all other related information to VDOT to assist in the permit acquisition process. Following Agency Review and Approvals of the application, we will complete the requisite VDOT stormwater forms (LD-445 series), and will provide Stormwater Pollution Prevention Plans (SWPPP) and related information for inclusion on the VDOT SWPPP General Information sheets. The LD 445/VSMP permit will be acquired by April 12, 2014 prior to the start of the Permanent Phase 2 Construction.

***Right-of-Way Acquisition*** - For this project, it is not anticipated the acquisition of property rights for permanent, temporary or utility easements will not be required. We have included a section in the schedule as a placeholder in the event that Final Design reveals an unforeseen acquisition.

***Utility Relocations*** - Exhibit 4.4.1 in Section 4.4 of our Technical Proposal lists the anticipated utility relocations and potential conflicts for the Project. To simplify and track the utility relocations, we have created a work breakdown structure that groups the utility relocation activities by utility owner and Project location. This further allows us to coordinate the work with utility relocations with the construction sequencing. Within each utility owner group, we have included activities for holding the Utility Field Investigation (UFI) meeting, preparation of the Preliminary Engineering (PE) estimates by the utility owner, approval of the PE estimate, design of the utility relocation, and construction of the relocation by area. The utility relocation schedule starts with formal UFI meetings held in mid-December 2013 following completion of all utility test pits. This will enable our Team to confirm and adjust our list of utility conflicts based on the field test pit data prior to holding the formal UFI meeting. We will continue this early coordination of utilities throughout the Design Phase of the Project to ensure that the Right-of-Way and Roadway Plans are coordinated with the utility relocation plans.

## **Construction Sequence**

### ***Pre-Construction, Submittals and Material Procurement***

In this section of the schedule, we have identified early construction activities such as QA/AC Preparatory Meetings as well as major material procurement items.

***Critical Path*** activities in this section include the purchasing, shop drawing development and fabrication of the Precast Bulb Tee Bridge Girders for the Bridges over Little Tuckahoe Creek.

### **Phase 1**

With approval of the Phase 1 advanced set of MOT drawings, work will commence with the existing outside shoulders being reconstructed to provide the necessary temporary pavement strength as outlined in Part 2, Section 2.7.1 of the RFP documents. This work will be completed during night-time operations utilizing temporary single lane closures adjacent to the work. This temporary work on the existing outside shoulders is necessary to shift traffic onto the outside shoulders to facilitate construction of the median widening. The work will consist of a full-depth milling and pave back operation in one shift per night. Due to the desire to maintain minimum 2' shoulder buffers during maintenance of traffic phases, the width of this initial strengthening will be approximately 5 feet from existing edge of pavement in order to accommodate the next phase of traffic sequencing. Following completion of the outside shoulder strengthening, traffic lanes will be shifted partially onto the outside shoulders, providing adequate room to maintain 12' travel lanes and a 2' buffer to the temporary concrete barrier which will be placed adjacent to the median widening work which will be completed in Phase 2.

### **Phase 2**

Once traffic is shifted as noted at the end of Phase 1 above, construction of the majority of the Project elements will begin. Specifically, Phase 2 consists of all of the I-64 median widening including clearing and grubbing, drainage improvements, stormwater management improvements, Route 623 Interchange ramp improvements, and widening of Route 623 south of the existing bridge over I-64. All work will be completed behind temporary concrete barrier to provide safety for construction and inspection staff, but also to maintain mobility of public traffic through the construction work zone. Initial work will include installation of the larger drainage structures, extension and/or connection of the existing box culverts and placement of the deeper fills. Not only will the phased sequencing of the widening avoid placement of significantly long runs of barrier, it will also ensure

that areas of temporary pull-offs will be maintained throughout the Project length. Completion of the median widening will also be staged with the construction of the proposed bridges over Little Tuckahoe Creek. Shifting traffic to the outside shoulders will allow for placement of bolt-down MB-11a barrier over the existing bridges to facilitate removal of the existing median parapets and a portion of the existing bridge decks. It is the intent that both eastbound and westbound I-64 work will be prosecuted simultaneously in order to meet the Project schedule milestones. Multiple utility, excavation and grading and structural crews will be utilized during this Phase.

At the Route 623 Interchange, ramp improvements will be constructed by temporarily shifting traffic away from the widening area and placing temporary concrete barriers adjacent to the widening. On Route 623 itself, widening will be completed in phases to eliminate placement of barrier on both sides of the road simultaneously. Two lanes will be maintained at all times throughout construction, and barrier placement will be analyzed to ensure adequate sight distances are maintained throughout all phases of construction.

**Critical Path** activities include the construction of the I-64 eastbound roadway as well as the first phase of the I-64 eastbound Bridge B-616.

### **Phase 3**

At the conclusion of Phase 2, travel lanes will be shifted to the median in the ultimate locations of the left and center travel lanes. Phase 3 construction includes the outside shoulder removal and reconstruction, as well as removal of the remaining portions of the bridges over Little Tuckahoe Creek and construction of the remaining portions of the new bridges.

**Critical Path** activities include the re-construction of the I-64 eastbound shoulders as well as the final phase of the I-64 eastbound Bridge B-616 over Little Tuckahoe Creek.

### **Phase 4**

Phase 4 is on the **Critical Path** of the Proposal Schedule and the work will consist of placement of all final surface asphalt material and the mill and overlay of the existing I-64 travel lanes. Permanent pavement markings, roadway signage, and finish items will be complete. At the conclusion of the final mill and overlay work, our Team will request a final walk-through with VDOT and commence on any punch list items to meet the Final Completion date of November 20, 2015.

### **Project Controls**

Through our Team's experience delivering major design-build roadway projects ahead of schedule, Shirley Contracting has developed scheduling protocols to govern the development, implementation, progress tracking, and recovery of the CPM schedule through all of the Project phases. These methods have proven effective as evidenced by the fact that every design-build project completed by our Team has finished either on-time or ahead of schedule.

### **Schedule Development**

For any design-build project, it is imperative that the Project Team develop a detailed CPM schedule that considers the interrelationships between all of the design-build disciplines. This is especially important on a project with extensive right-of-way and utility impacts that must be integrated into the design and construction sequencing. The Shirley Team has developed the Preliminary CPM Schedule included in this Proposal with a Work Breakdown Structure (WBS) that clearly delineates the tasks of each discipline manager, including

Design, Permitting, Right-of-Way, Utilities, and Construction.

Each discipline manager is responsible for producing a schedule to govern his own work and providing insight into how his schedule activities affect and are affected by activities in other disciplines. Once each manager prepared his individual schedule, will hold schedule development meetings to be run by the Design-Build Project Manager and attended by all discipline managers to review the individual schedules and integrate them into the overall preliminary CPM Schedule. These meetings ensure that:

- The work packages within each discipline are comprehensive enough to define the work with no activities omitted;
- The work packages are integrated within each discipline and between disciplines to generate a clearly defined project critical path, confirm that the critical path makes sense, and that the schedule shows that the Project will complete on-time or ahead of schedule;
- Each discipline manager understands the schedules of the other disciplines and how their work inter-relates with the other disciplines;
- Each discipline manager understands how his work affects the critical path of the Project and the priorities of the D-B Project Manager and the other discipline managers; and
- The schedule meets the requirements of the Contract.

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

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

### **Procedures for Monitoring and Reporting Schedule Progress to Ensure Timely Project Completion**

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

dates on other activities and disciplines; identification of ways to advance the schedule ahead of the planned completion or mitigate schedule delays; and general design review, constructability, and determination of means and methods.

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

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

An additional technique that Shirley uses to monitor construction progress is the “Daily Shift Cost Report” (DSCR). At the end of each day, the construction field personnel compare the quantity of work, and the cost to do so, completed that day with the budgeted production and cost. Not only does this analysis provide an early indicator of cost concerns, but it also instantly highlights potential issues with the schedule by focusing on production rates. Religiously completing and reviewing the DSCR’s allows the construction team to make immediate “real-time” adjustments to work crews, equipment, trucking, subcontractor resources, and material deliveries to adjust production rates in order to maintain the Project schedule. Our Team will also review and adjust the durations of future schedule activities based on the DSCR production rates to help identify and mitigate schedule concerns for the later phases of the Project.

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

### **Procedures for Rescheduling Activities and Schedule Recovery**

If during the course of the Project, delays to the Project critical path are encountered, we will complete a Time Impact Analysis (TIA), re-sequence the schedule, and prepare a schedule recovery plan to reclaim lost time. This plan may include increasing work shifts, adding crews and resources to construct critical path activities concurrently, and changing MOT schemes or modifying the design to remove activities from the critical path. If it is early in the Project at the time the delay is encountered, schedule recovery may require adjustments by any or all of discipline managers including, Design, Permitting, Right-of-Way, Utility Relocation, and Construction. However, if all other design-build disciplines have completed their tasks, re-sequencing the construction schedule by the Construction Manager will be the primary focus in order to mitigate the delay.

One example of our Team’s ability to mitigate delays and initiate schedule recovery is the Battlefield Parkway Project. During construction of Battlefield Parkway, the Town of Leesburg approached VDOT and requested that they add a “T” intersection and stub for a future roadway. At no cost to VDOT, our Team prepared exhibits of the future Route 7 and Battlefield Parkway interchange for review by the Town of Leesburg and VDOT to set

the profile elevation of the new intersection at an elevation that would reduce rework during future interchange construction. Then we delayed construction in the area of the intersection until funding for these improvements could be approved through the Town of Leesburg and the scope added to our contract. We then re-sequenced the schedule so these additional improvements could be completed without delay to the original project completion date.

### **Work Breakdown Structure - Payment Consideration**

Shirley Contracting has developed the Work Breakdown Structure (WBS) outlined earlier in the schedule narrative to logically divide the schedule into smaller groups that can easily be filtered to summarize activities by responsibility, project phase, type of activity, and area of the Project. The first level of the WBS structure includes Schedule Milestones, Design Phase, Public Involvement, Permitting, Right-of-way Acquisition, Utility Relocations, and Construction. The WBS Structure is further segmented into second, third, and fourth level activity groups to provide detail that can be used for planning and tracking by the managers of each phase of the design-build process. On a monthly basis during the Project we will submit an updated CPM Schedule with our Payment Application. The Payment Application will be organized based on WBS Structure included in the CPM Schedule with payment values assigned to each Work Package (the deliverable at lowest level WBS Group), as further defined in our Schedule of Values submitted with our Price Proposal. Since the organization of the

Payment Application, the Schedule of Values and the CPM Schedule will be identical and will contain the same work packages, both Shirley and VDOT will easily be able to cross reference these documents to identify the work packages that have started and completed each month and the scheduled value of each work package. As described in Part 4, Article 6 of the General Conditions of Contract we will bill 20% of the scheduled value at the initiation of each Work Package and the remaining 80% after the Work Package has acceptably completed.”

### **Mitigation of Major Delay Risks**

#### *Timely Review and Approval of Submittals*

Upon Notice of Award, Shirley will prepare a submittal schedule identifying all submittals that will be required for the Project. This schedule will identify the individual responsible for preparing the submittal, the anticipated submittal date, the parties responsible for reviewing and approving, the anticipated review durations, and a list of the individuals that must receive a copy of the approved submittal. At a minimum, the following submittals will be included:

- Design Submissions
- Permits
- QA/QC Plan
- CPM Schedule and Updates
- MOT and TMP Plans
- Materials Documentation, including Source of Supply and Shop Drawings

Submittals deemed critical to the success of the Project, including design and permitting submissions and major materials submissions will be included in the Project CPM Schedule where the progress can be monitored concurrently with the affected construction activity.

Each submittal will include a transmittal cover sheet identifying the submittal's priority level. For submittals between the contractor and design firm, normal priority submittals will be returned within four weeks, high priority submittals within two weeks and urgent submittals within three days. This also allows the Team to prioritize multiple submittals that are turned in concurrently. For submittals to government agencies and utilities we will include adequate review timeframes in the CPM Schedule for approval of environmental permits and utility submissions as applicable.

We will also maintain a submittal log showing the status of all submittals. The log will be updated with the submission and return of each submittal and will show the submission date, anticipated response date, priority, and status. The submittal log will be reviewed at the weekly Design Coordination, Owner Progress, and Construction Progress meetings and can easily be sorted to distribute lists of active and overdue submittals. Issues affecting the timely completion of submittal reviews will be discussed with the responsible party and a plan for resolving them will be agreed to.

This process, along with diligent assessment of the CPM schedule, will ensure that timely review of submittals will be constantly monitored and managed to ensure that no construction activities are delayed by the submittal process.

### Utility Relocations

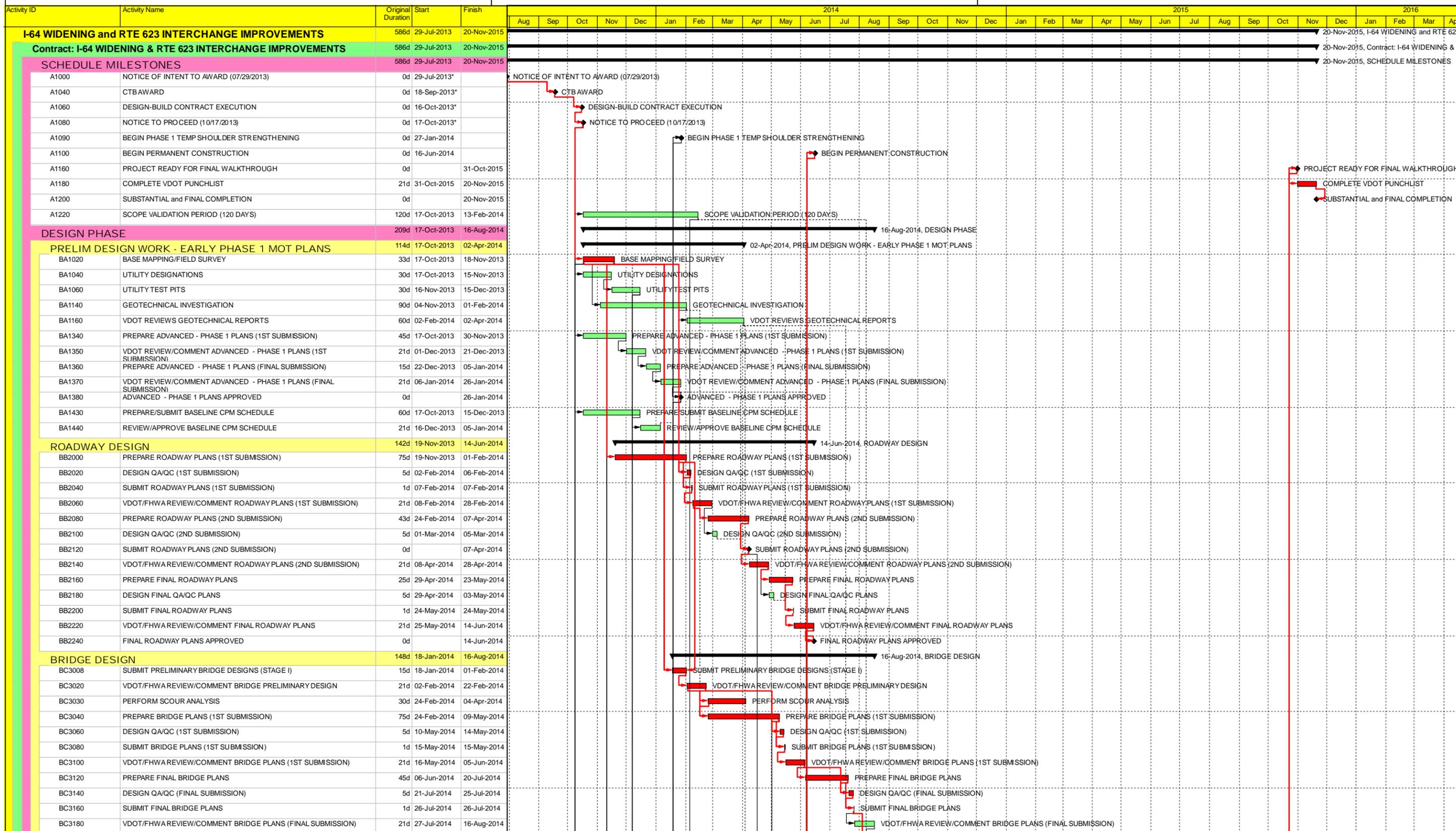
Some of the biggest risks to a design-build schedule involve public/private utility companies who do not have a vested interest in the Project and are not necessarily compelled to complete their work within the scheduled time constraints. To combat this risk, we have started our planning and coordination process for these utilities by meeting with each affected utility and discussing the Project, the utilities impacts, potential relocation options, and discussing ways to accelerate the utility relocations after award of the Project.

These discussions have been facilitated by the preexisting relationships that we have developed through other design-build projects in the area. Our utility coordinator, Mr. Todd Kief has coordinated the relocations of over \$50 million of utility relocations on our design-build projects over the last 11 years. This experience has enabled Mr. Kief to develop relationships with over 30 different utility owners in the area including all of the utilities that will be impacted on the I-64 Widening and Rte 623 Interchange Improvements Project.

This early coordination has enabled us to identify the following opportunities to advance the utility relocations and minimize the risk for utility delays after Notice to Proceed. The early personal contact with each utility enables us to manage their issues and concerns and allows us to build float into the utility relocation activities on the Project.

### Summary

The Shirley Team's comprehensive pre-proposal preparation, proven experience in all phases of design-build, and extensive project controls and schedule management and recovery techniques will serve to ensure that the I-64 Widening and Rte 623 Interchange Improvements Project will be completed on schedule. Over the years, we have built a solid professional reputation on meeting our commitments, completing projects ahead of schedule and under budget, performing quality work in a safe work environment, and establishing a problem-solving atmosphere and partnership with the Owner. This is a result of our extensive experience, quality people, and corporate commitment. The I-64 Widening and Rte 623 Interchange Improvements Project is a challenging and exciting Project for our Team and is one that we will bring this same level of commitment to for the benefit of VDOT, Henrico and Goochland Counties, and the public.



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





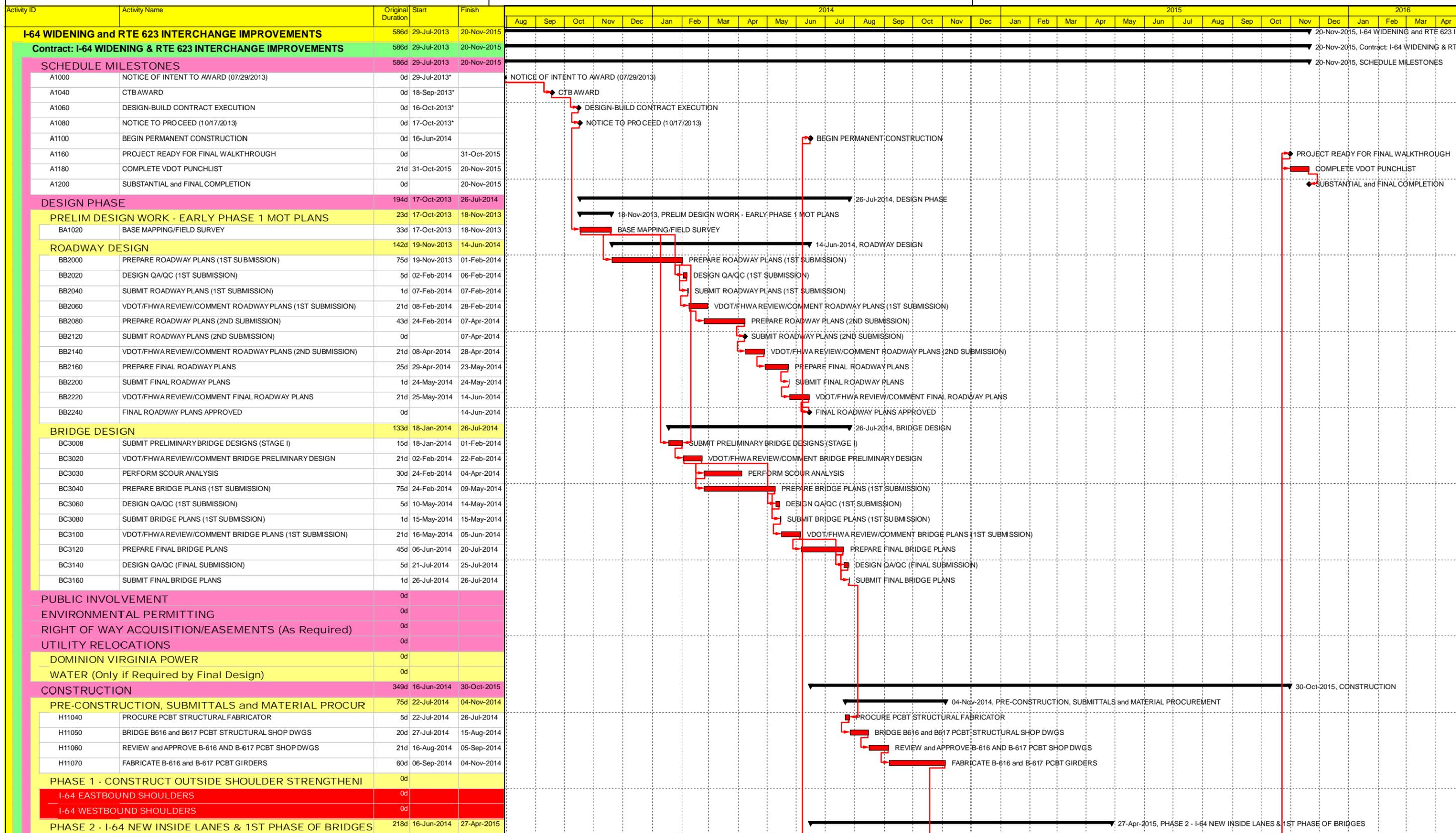












█ Actual Work   
 █ Critical Remaining Work   
  Summary  
 Remaining Work   
 ◆ Milestone









**ATTACHMENT 4.0.1.1**

**I-64 Widening and Route 623 Interchange Improvements**

**TECHNICAL PROPOSAL CHECKLIST AND CONTENTS**

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

| <b>Technical Proposal Component</b>                      | <b>Form (if any)</b>                         | <b>RFP Part 1 Cross Reference</b> | <b>Included within page limit?</b> | <b>Technical Proposal Page Reference</b> |
|--|--|-----------------------------------|------------------------------------|--|
| <b>Technical Proposal Checklist and Contents</b>         | Attachment 4.0.1.1                           | Section 4.0.1.1                   | no                                 | N/A                                      |
| <b>Acknowledgement of RFP, Revisions, and/or Addenda</b> | Attachment 3.6<br>(Form C-78-RFP)            | Sections 3.6, 4.0.1.1             | no                                 | N/A                                      |
|  |  |                                   |                                    |  |
| <b>Letter of Submittal</b>                               | NA   | Sections 4.1                      |                                    |  |
| Letter of Submittal on Offeror's letterhead              | NA   | Section 4.1.1                     | yes                                | 1  |
| Offeror's official representative information            | NA   | Section 4.1.1                     | yes                                | 1  |
| Authorized representative's original signature           | NA   | Section 4.1.1                     | yes                                | 2  |
| Declaration of intent                                    | NA   | Section 4.1.2                     | yes                                | 1  |
| 120 day declaration                                      | NA   | Section 4.1.3                     | yes                                | 1  |
| Point Of Contact   | NA   | Section 4.1.4                     | yes                                | 1  |
| Principal Officer information                            | NA   | Section 4.1.5                     | yes                                | 1  |
| Substantial and Final Completion Date(s)                 | NA   | Section 4.1.6                     | yes                                | 1  |
| Proposal Payment Agreement or Waiver of Proposal Payment | Attachment 9.3.1 or<br>9.3.2                 | Section 4.1.7                     | no                                 | 2  |
| Certification Regarding Debarment Forms                  | Attachment 11.8.6(a)<br>Attachment 11.8.6(b) | Section 4.1.8                     | no                                 | 2  |
| Design Compliance Statement                              | NA   | Section 4.1.9                     | yes                                | 2  |
|  |  |                                   |                                    |  |

**ATTACHMENT 4.0.1.1**

**I-64 Widening and Route 623 Interchange Improvements**

**TECHNICAL PROPOSAL CHECKLIST AND CONTENTS**

| <b>Technical Proposal Component</b>  | <b>Form (if any)</b> | <b>RFP Part 1 Cross Reference</b> | <b>Included within page limit?</b> | <b>Technical Proposal Page Reference</b> |
|--|----------------------|-----------------------------------|------------------------------------|--|
| <b>Offeror's Qualifications</b>  | NA                   | Section 4.2                       |                                    |  |
| Confirmation that the information provided in the SOQ submittal remains true and accurate or indicates that any requested changes were previously approved by VDOT | NA                   | Section 4.2.1                     | yes                                | 3  |
| Organizational chart with any updates since the SOQ submittal clearly identified   | NA                   | Section 4.2.2                     | yes                                | 3  |
| Revised narrative when organizational chart includes updates since the SOQ submittal   | NA                   | Section 4.2.2                     | yes                                | 3  |
|  |                      |                                   |                                    |  |
| <b>Design Concept</b>  | NA                   | Section 4.3                       |                                    |  |
| Conceptual Roadway Plans and description   | NA                   | Section 4.3.1.1                   | yes                                | 34-56, 4-9                               |
| Conceptual Structural Plans and description  | NA                   | Section 4.3.1.2                   | yes                                | 57-59, 4-9                               |
|  |                      |                                   |                                    |  |
| <b>Project Approach</b>  | NA                   | Section 4.4                       |                                    |  |
| Environmental Management   | NA                   | Section 4.4.1                     | yes                                | 10                                       |
| Utilities  | NA                   | Section 4.4.2                     | yes                                | 12                                       |
| Geotechnical   | NA                   | Section 4.4.3                     | yes                                | 14                                       |
| Quality Assurance/ Quality Control (QA/QC)   | NA                   | Section 4.4.4                     | yes                                | 15                                       |
|  |                      |                                   |                                    |  |
| <b>Construction of Project</b>   | NA                   | Section 4.5                       |                                    |  |
| Sequence of Construction   | NA                   | Section 4.5.1                     | yes                                | 27                                       |

**ATTACHMENT 4.0.1.1**

**I-64 Widening and Route 623 Interchange Improvements**

**TECHNICAL PROPOSAL CHECKLIST AND CONTENTS**

| <b>Technical Proposal Component</b>             | <b>Form (if any)</b> | <b>RFP Part 1<br/>Cross Reference</b> | <b>Included<br/>within page<br/>limit?</b> | <b>Technical<br/>Proposal<br/>Page<br/>Reference</b> |
|---|----------------------|---------------------------------------|--|--|
| Transportation Management Plan                  | NA                   | Section 4.5.2                         | yes  | 29   |
|   |                      |                                       |  |  |
| <b>Disadvantaged Business Enterprises (DBE)</b> | NA                   | Section 4.6                           |  |  |
| Written statement of percent DBE participation  | NA                   | Section 4.6                           | yes  | 32   |
| DBE subcontracting narrative                    | NA                   | Section 4.6                           | yes  | 32   |
|   |                      |                                       |  |  |
| <b>Proposal Schedule</b>                        | NA                   | Section 4.7                           |  |  |
| Proposal Schedule                               | NA                   | Section 4.7.1                         | no   | N/A  |
| Proposal Schedule Narrative                     | NA                   | Section 4.7.2                         | no   | N/A  |
| Proposal Schedule in electronic format (CD-ROM) | NA                   | Section 4.7                           | no   | N/A  |
|   |                      |                                       |  |  |



**ATTACHMENT 3.6**

**COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF TRANSPORTATION**

RFQ NO. C00070542DB55

PROJECT NO.: 0064-964-110, P101, RW201, C501

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

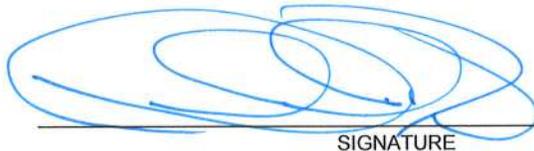
Acknowledgement shall be made of receipt of the Request for Proposals (RFP) and/or any and all revisions and/or addenda pertaining to the above designated project which are issued by the Department prior to the Letter of Submittal submission date shown herein. Failure to include this acknowledgement 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 March 7, 2013 – RFP  
(Date)

| 2. Cover letter of April 23, 2013 – Addendum No. 1  
(Date)

| 3. Cover letter of May 17, 2013 – Addendum No. 2  
(Date)

  
SIGNATURE

5/30/13  
DATE



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

**THIS PROPOSAL PAYMENT AGREEMENT** (this “Agreement”) is made and entered into as of this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by and between the Virginia Department of Transportation (“VDOT”), and Shirley Contracting Company (Offeror).

**WITNESSETH:**

**WHEREAS**, Offeror is one of the entities who submitted Statements of Qualifications (“SOQs”) pursuant to VDOT’s **August 14, 2012** Request for Qualifications (“RFQ”) and was invited to submit proposals in response to a Request for Proposals (“RFP”) for the **I-64 Widening and Route 623 Interchange Improvements, Project No. 0064-964-110** (“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 **thirty and 00/100 Dollars (\$30,000.00)** ("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:  \_\_\_\_\_

Name: Michael E. Post

Title: President/CEO/Manager



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

**Project No.: 0064-964-110**

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

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

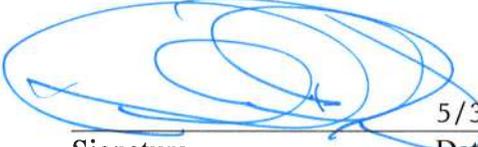
b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under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

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

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

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

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

  
\_\_\_\_\_  
Signature

5/30/13  
\_\_\_\_\_  
Date

President/CEO/Manager  
\_\_\_\_\_  
Title

Shirley Contracting Company, LLC  
\_\_\_\_\_  
Name of Firm

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

**Project No.: 0064-964-110**

- 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.

      5/29/2013      Executive V.P.  
Signature                      Date                      Title

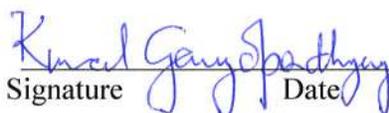
Deberry Consultants LLC  
Name of Firm

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

**Project No.: 0064-964-110**

- 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.

|   |         |                                |
|---|---------|--------------------------------|
|  | 5-28-13 | First Executive Vice President |
| Signature   | Date    | Title                          |

**EBA Engineering, Inc.**

Name of Firm

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

**Project No.: 0064-964-110**

- 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 5/28/2013 \_\_\_\_\_ Title President \_\_\_\_\_

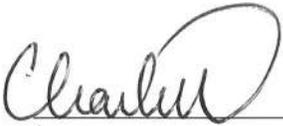
GeoConcepts Engineering, Inc. \_\_\_\_\_  
Name of Firm

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

**Project No.: 0064-964-110**

- 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>5/28/2013</u> | <u>Vice President</u> |
| Signature   | Date             | Title                 |

Engineering and Testing Services, Inc.  
Name of Firm

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

**Project No.: 0064-964-110**

- 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

5/23/13

President

Title

Diversified Property Services, Inc.

Name of Firm

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

**Project No.: 0064-964-110**

- 1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
  
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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

R. Pat Rourke                      5-23-13                      Settlement officer  
Signature                              Date                                      Title

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





**Critical Infrastructure Information (CII)  
Sensitive Security Information (SSI)  
Individual Non-Disclosure Agreement**



Code of Virginia §36-105.3 and §44-146.22 and 49 CFR Part 1520 stipulates instituting procedures to ensure the safe storage and secure handling of information that should be protected and not disclosed. VDOT CII/SSI includes such information and is not subject to disclosure under FOIA (reference Code of Virginia §2.2-3705.2).

**Disclosure of CII/SSI in any manner that permits interception by unauthorized persons is prohibited.** CII/SSI may not be released to persons without a need-to-know except with written permission from VDOT (see *Handling CII/SSI* on page 3). CII/SSI includes information marked as such or other information relating to VDOT security or protected systems (see *Guide to Identifying Possible CII* on page 4).

All documents and materials provided are the sole and exclusive property of VDOT. They may not be modified, reproduced, republished, redistributed or presented for sale, completely or in part, and doing so may result in severe civil and criminal penalties. All documents and materials provided are only to be used in conjunction with contract or project # 0064-964-110, P101, RW201, C501, etc.

As an employee of (or contractor to) Shirley Contracting Company, LLC I understand that:

1. Certain information which I will receive from Virginia Department of Transportation (VDOT) may contain CII/SSI.
2. I may learn of or have access to some or all of this information through a computer system or through my employment activities.
3. CII/SSI is valuable and sensitive and is protected by law and by strict VDOT policies. The intent of these laws and policies is to assure that CII/SSI will remain confidential - that is, it will be used only as necessary to accomplish VDOT's mission.
4. I have no right or ownership interest in any CII/SSI referred to in this Agreement.
5. Willful violation of this agreement may subject me to discipline which might include, but is not limited to, termination of employment or further VDOT related work and to legal liability.
6. I am obligated to protect this information from unauthorized disclosure in accordance with the terms of this agreement.
7. Unauthorized disclosure of CII/SSI could compromise safety and security of persons and is prohibited.
8. My execution of this agreement shall not nullify or affect in any manner any other agreement, non-disclosure or otherwise, which I have executed or may execute with VDOT or the Commonwealth of Virginia.
9. My obligations with respect to the confidentiality and security of all CII/SSI disclosed to me shall survive the termination of any agreement or relationship with VDOT.
10. I am required to conduct myself in a strict conformance to applicable laws and VDOT policies governing CII/SSI (see *Handling CII/SSI* on page 3).
11. VDOT may at any time revoke my authorization allowing access to CII/SSI.

Accordingly, as a condition of and in consideration of my access to CII/SSI, I agree that:

1. I will only access CII/SSI for which I have a need-to-know
2. I will use any CII/SSI that I obtain only as needed by me to perform my legitimate VDOT related duties.
3. I will not in any way divulge, copy, release, sell, loan, review, alter or destroy any CII/SSI except as properly authorized within the scope of my professional VDOT activities

Last Name, First name:



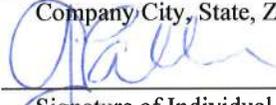
**Critical Infrastructure Information (CII)  
Sensitive Security Information (SSI)  
Individual Non-Disclosure Agreement**



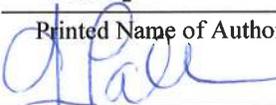
4. I will safeguard the confidentiality of all CII/SSI at all times.
5. I will safeguard and will not disclose my access code or any other authorization I have that allows me to access CII/SSI and I accept responsibility for all activities undertaken using my access code and other authorization.
6. I will be responsible for my misuse or my wrongful disclosure of CII/SSI and for my failure to safeguard my access code or other authorization access to CII/SSI.

Each provision of this agreement is severable. If any administrative or judicial tribunal should find any provision of this agreement to be unenforceable, all other provisions shall remain in full force and effect.

I make this agreement in good faith, without mental reservation or purpose of evasion.

|  |  |
|--|--|
| <u>Garry Palleschi</u><br>Printed name of Individual Staff Member  | <u>5/30/13</u><br>Date                                     |
| <u>Shirley Contracting Company, LLC</u><br>Company Name  | <u>703-550-8100</u><br>Phone Number                        |
| <u>8435 Backlick Road</u><br>Company Address   | <u>703-550-3558</u><br>Fax Number                          |
| <u>Lorton, VA. 22079</u><br>Company City, State, Zip   | <u>gpalleschi@shirleycontracting.com</u><br>E-mail Address |
| <u></u><br>Signature of Individual Staff Member |  |

Authorized Agent for Company (person who signed the Company Agreement):

|   |                                     |
|---|-------------------------------------|
| <u>Garry Palleschi</u><br>Printed Name of Authorized Agent  | <u>Vice President</u><br>Title      |
| <u></u><br>Signature of Authorized Agent | <u>703-550-8100</u><br>Phone Number |
| <u>Stephen D. Kindy, P.E.</u><br>VDOT Contact Name  |                                     |

Return copy of signed agreement to \_\_\_\_\_.



**Critical Infrastructure Information (CII)  
Sensitive Security Information (SSI)  
Individual Non-Disclosure Agreement**



*(Retain this page and the next for reference)*

**Handling CII/SSI**

You are responsible for safeguarding Critical Infrastructure Information/Sensitive Security Information (CII/SSI) in your custody or under your control.

The extent of protection afforded CII/SSI shall be sufficient to reasonably foreclose the possibility of its loss or compromise.

The terms of this clause (*Handling CII/SSI*), including this paragraph, must be included in any dissemination of any document, in whole or in part, that contains CII/SSI.

Protection - CII/SSI shall be protected at all times, either by appropriate storage or having it under the personal observation and control of a person authorized to receive it. Each person who works with protected CII/SSI is personally responsible for taking proper precautions to ensure that unauthorized persons do not gain access to it.

Use and Storage - During working hours, reasonable steps shall be taken to minimize the risks of access to CII/SSI by unauthorized personnel. After working hours, CII/SSI shall be secured in a secure container, such as a locked desk, file cabinet or facility where contract security is provided.

Reproduction - Documents or material containing CII/SSI may be reproduced to the minimum extent necessary consistent with the need to carry out official duties provided that the reproduced material is marked and protected in the same manner as the original material.

Disposal - Material containing CII/SSI shall be disposed of by any method that prevents unauthorized retrieval (e.g. shredding, burning, returning to original source, etc.).

Transmission - CII/SSI shall be transmitted only by VDOT courier, US first class, express, certified or registered mail, or through secure electronic means.



**Critical Infrastructure Information (CII)  
Sensitive Security Information (SSI)  
Individual Non-Disclosure Agreement**



**Things to consider regarding the need to protect CII/SSI...**

- What impact could the information have if it was inadvertently transferred to an unintended audience?
- Does the information provide details concerning security procedures and capabilities?
- Could someone use the information to target personnel, facilities or operations?
- How could someone intent on causing harm misuse the information?
- Could the use of this information be dangerous if combined with other publicly available information?

**Before looking at the Guide, answer the following:**

|  |   |
|--|---|
| Is the information customarily public knowledge? (Information that is accessible to the general public if there has been no deliberate attempt to keep it hidden or secret.)   |   |
| Does the general public have a need-to-know? (Access to, or knowledge or possession of, specific information required to carry out official duties ) (Note: Contractors should be considered employees, not general public.) |   |
| If "yes" to either, then it is <b>not</b> CII/SSI otherwise, continue to the guide.  | X |

| <b>Guide to Identifying Possible CII/SSI</b>   |   |            |
|--|---|------------|
| <b>If the item under consideration shows, describes or is listed below, it might be CII/SSI.</b> |   | <b>Y/N</b> |
| 1  | Information, the disclosure of which would jeopardize the safety or security of any person or structure, including engineering and construction drawings and plans that reveal: <ul style="list-style-type: none"> <li>• Critical structural components</li> <li>• Ventilation systems</li> <li>• Elevators</li> <li>• Mandatory building emergency equipment or systems</li> <li>• Security equipment and systems</li> <li>• Fire protection equipment</li> <li>• Telecommunications equipment and systems</li> <li>• Electrical systems</li> <li>• Other utility equipment and systems</li> </ul> (COV § 2.2-3705.2 (2))  |            |
| 2  | Documentation or other information that describes the design, function, operation or access control features of any security system, manual or automated, used to control access to or use of any automated data processing or telecommunications system.<br>(COV § 2.2-3705.2 (3))   |            |
| 3  | Plans and information to prevent or respond to terrorist activity, the disclosure of which would jeopardize the safety of any person, including: <ul style="list-style-type: none"> <li>• Critical infrastructure sector or structural components</li> <li>• Vulnerability assessments</li> <li>• Operational, procedural, transportation, and tactical planning or training manuals</li> <li>• Staff meeting minutes or other records</li> </ul> Engineering or architectural records or portions of, that reveals the location or operation of: <ul style="list-style-type: none"> <li>• Security equipment and systems</li> <li>• Ventilation equipment and systems</li> <li>• Emergency equipment and systems</li> <li>• Utility equipment and systems</li> <li>• Elevator equipment and systems</li> <li>• Fire protection equipment and systems</li> <li>• Electrical equipment and systems</li> <li>• Telecommunications equipment and systems</li> </ul> The same categories of records submitted to us for the purpose of antiterrorism response planning if accompanied, in writing, a statement that: <ul style="list-style-type: none"> <li>• Invokes the protection of §2.2-3705.2</li> <li>• Specifically identifies the records or portions thereof which are to be protected</li> <li>• States why the protection of such records from public disclosure is necessary</li> </ul> (COV § 2.2-3705.2 (4)) |            |
| 4  | Information including (drawings, manuals, or other records) which reveals: <ul style="list-style-type: none"> <li>• Surveillance techniques</li> <li>• Personnel deployments</li> <li>• Alarm or security systems or technologies</li> <li>• Operational and transportation plans or protocols</li> </ul> (COV § 2.2-3705.2 (6))  |            |
| 5  | Information concerning threats against transportation.<br>(USC 49 CFR 1520 (5))   |            |

RESPONSE TO REQUEST FOR PROPOSALS

# I-64 Widening and Route 623 Interchange Improvements

A DESIGN-BUILD PROJECT

GOOCHLAND COUNTY AND HENRICO COUNTY, VIRGINIA

**State Project No.:** 0064-964-110, P101, RW201, C501, B610-B614, B616, B617, D601-D606

**Federal Project No.:** NH-064-2(150)

**Contract ID Number:** C00070542DB55

*Volume II: Design Concept*



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COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF TRANSPORTATION  
**PLAN AND PROFILE OF PROPOSED  
STATE HIGHWAY**  
**DESIGN-BUILD PROJECT: RFP PLANS**

GOOCHLAND COUNTY AND HENRICO COUNTY  
INTERSTATE 64

FROM: 0.99 MI. W. OF RTE. 623 (WB-RTE. 622, EB-623)  
TO: 0.38 MI. W. OF RTE. 295 IN SHORT PUMP (POUNCEY TRACT RD.)

FHWA 534 Data 11103

| STATE | FEDERAL AID PROJECT                        | ROUTE | STATE PROJECT  | SHEET NO. |
|-------|--|-------|--|-----------|
| VA.   | (SEE TABULATION BELOW FOR SECTION NUMBERS) | 64    | (F0)0064-964-110<br>(SEE TABULATION BELOW FOR SECTION NUMBERS) | 1         |

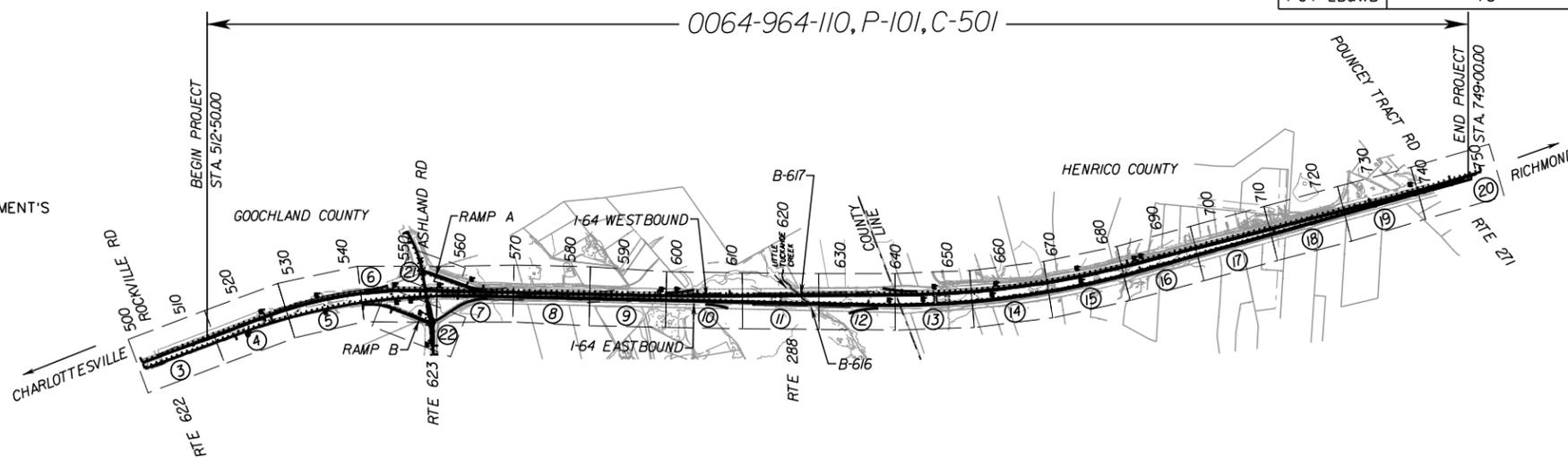
| FUNCTIONAL CLASSIFICATION AND TRAFFIC DATA                             |  |
|--|--|
| I-64 (GS1) RURAL INTERSTATE-DIVIDED-ROLLING<br>75 MPH DESIGN SPEED     |  |
|  | Fr: 0.99 MI. W. OF RTE. 623 (WB-ROUTE 622, EB RTE-623)<br>To: 0.38 MI. E. OF RTE. 295 IN SHORT PUMP (POUNCEY TRACT RD) |
| ADT (2012)   | 48,315   |
| ADT (2036)   | 73,900   |
| DHV  | 6,010  |
| D (%) (design hour)  | 60/40  |
| T (%) (design hour)  | 13%  |
| V (MPH)  | *  |
| RTE 623 (GS3) RURAL COLLECTOR-UNDIVIDED-ROLLING<br>50 MPH DESIGN SPEED |  |
| ADT (2012)   | 10,430   |
| ADT (2036)   | 17,450   |
| DHV  |  |
| D (%) (design hour)  |  |
| T (%) (design hour)  | 2%   |
| V (MPH)  | *  |

\* SEE PLAN AND PROFILE SHEETS FOR HORIZONTAL AND VERTICAL CURVE DESIGN SPEEDS

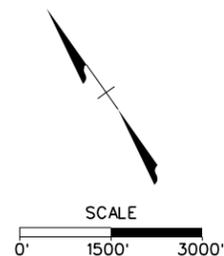
| EXCEPTIONS TO I-64 MAINLINE |                    |  |               |
|-----------------------------|--------------------|--|---------------|
| LOCATION                    | DESIGN SPEED (MPH) | REASON FOR EXCEPTION                               | APPROVAL DATE |
| I-64 EB&WB                  | 75                 | SUBSTANDARD SHLDR. WIDTH                           | MARCH 2013    |
| I-64 EB&WB                  | 75                 | SUBSTANDARD SUPERELEVATION                         | MARCH 2013    |
| I-64 EB&WB                  | 75                 | SUBSTANDARD SHLDR. WIDTH & VERT. CLRNCE. ON BRIDGE |               |

PROJECT MANAGER Shirley Contracting Company, LLC  
SURVEYED BY Dewberry (703) 849-0607  
DESIGN SUPERVISED BY Shirley Contracting Company, LLC  
DESIGNED BY Dewberry (703) 849-0607

THIS PROJECT WAS DEVELOPED UTILIZING THE DEPARTMENT'S  
ENGINEERING DESIGN PACKAGE (GEOPAK).  
GEOPAK Computer Identification No. 70542



| CONVENTIONAL SIGNS           |       |
|------------------------------|-------|
| STATE LINE                   | ----- |
| COUNTY LINE                  | ----- |
| CITY/TOWN OR VILLAGE         | ----- |
| RIGHT OF WAY LINE            | ----- |
| FENCE LINE                   | ----- |
| UNFENCED PROPERTY LINE       | ----- |
| FENCED PROPERTY LINE         | ----- |
| WATER LINE                   | ----- |
| SANITARY SEWER LINE          | ----- |
| GAS LINE                     | ----- |
| ELECTRIC UNDERGROUND CABLE   | ----- |
| TRAVELED WAY                 | ----- |
| GUARD RAIL                   | ----- |
| RETAINING WALL               | ----- |
| RAILROADS                    | ----- |
| BASE OR SURVEY LINE          | ----- |
|                              |       |
| LEVEE OR EMBANKMENT          | ----- |
| BRIDGES                      | ----- |
| CULVERTS                     | ----- |
| DROP INLET                   | ----- |
| POWER POLES                  | ----- |
| TELEPHONE OR TELEGRAPH POLES | ----- |
| TELEPHONE OR TELEGRAPH LINES | ----- |
| HEDGE                        | ----- |
| TREES                        | ----- |
| HEAVY WOODS                  | ----- |
| GROUND ELEVATION             | ----- |
| GRADE ELEVATION              | ----- |



HENRICO COUNTY POPULATION - 307,435 (2010 CENSUS)  
GOOCHLAND COUNTY POPULATION - 21,745 (2010 CENSUS)

| STATE PROJECT NO. | SECTION | FEDERAL AID PROJECT NO. | TYPE CODE | UPC NO. | EQUALITIES | LENGTH INCLUDING BRIDGE(S) (WIDTH) |       | LENGTH EXCLUDING BRIDGE(S) (WIDTH) |       | BRIDGE PROJECT NO. | TYPE PROJECT | DESCRIPTION   |
|-------------------|---------|-------------------------|-----------|---------|------------|------------------------------------|-------|------------------------------------|-------|--------------------|--------------|---|
|                   |         |                         |           |         |            | FEET                               | MILES | FEET                               | MILES |                    |              |   |
| 0064-964-110      | PE-101  | NH-064-2(150)           |           | 70542   |            | 23,650.00                          | 4.479 | 23,471.27                          | 4.445 |                    | Pre. Engr.   | FROM 0.99 MILES WEST OF ROUTE 623 (WB-ROUTE 622, EB-ROUTE 623) TO 0.38 MILES WEST OF ROUTE 295 IN SHORT PUMP (POUNCEY TRACT ROAD) |
|                   | RW-201  |                         |           | 70542   |            |                                    |       |                                    |       |                    | RW           | FROM 0.99 MILES WEST OF ROUTE 623 (WB-ROUTE 622, EB-ROUTE 623) TO 0.38 MILES WEST OF ROUTE 295 IN SHORT PUMP (POUNCEY TRACT ROAD) |
|                   | C-501   |                         |           | 1000    | 70542      | 23,650.00                          | 4.479 | 23,471.27                          | 4.445 |                    | Constr.      | FROM 0.99 MILES WEST OF ROUTE 623 (WB-ROUTE 622, EB-ROUTE 623) TO 0.38 MILES WEST OF ROUTE 295 IN SHORT PUMP (POUNCEY TRACT ROAD) |
|                   | B-616   |                         |           | X041    | 70542      | 178.73                             | 0.034 |                                    |       |                    | Bridge       | I-64 EB BRIDGE OVER LITTLE TUCKAHOE CREEK   |
|                   | B-617   |                         |           | X041    | 70542      | 176.86                             | 0.033 |                                    |       |                    | Bridge       | I-64 EB BRIDGE OVER LITTLE TUCKAHOE CREEK   |

Note: Project Length based on Rte I-64 WBL Centerline

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PROJECT 0064-964-110 SHEET NO. 1

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| REVISED | STATE | ROUTE | STATE PROJECT               | SHEET NO. |
|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 1A        |

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

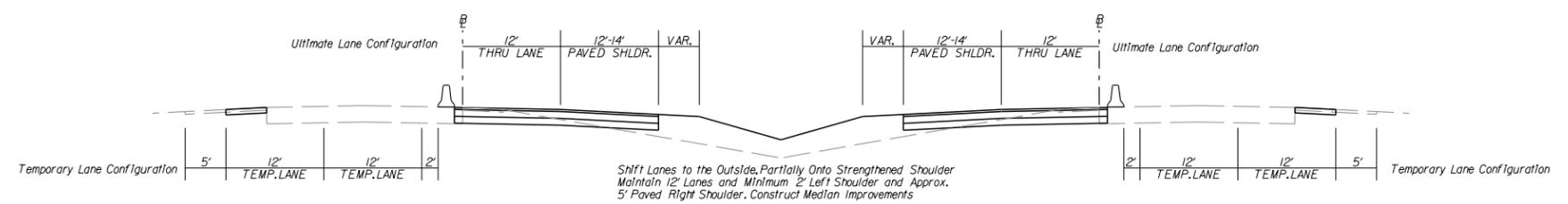
Dewberry  
 Fairfax, Virginia  
 ROADWAY ENGINEER

# PROPOSED SEQUENCE OF CONSTRUCTION



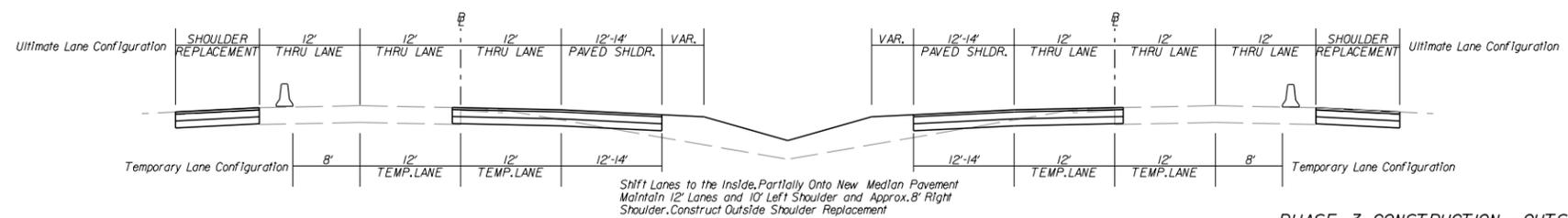
PHASE 1 CONSTRUCTION - I-64 OUTSIDE SHOULDER STRENGTHENING

NOT TO SCALE



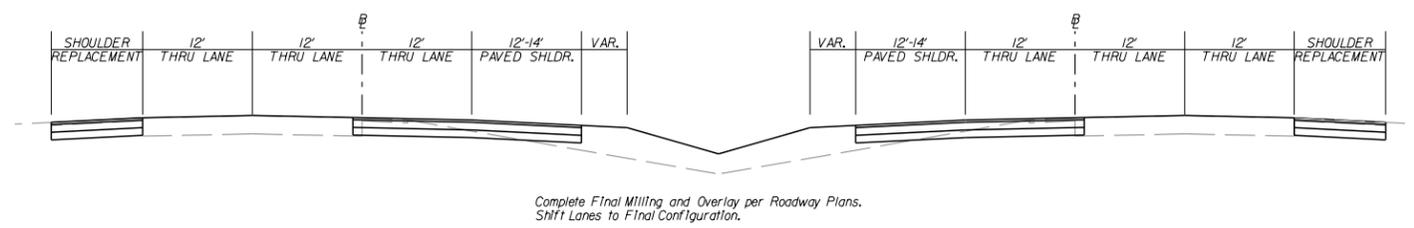
PHASE 2 CONSTRUCTION - ULTIMATE MEDIAN WIDENING

NOT TO SCALE



PHASE 3 CONSTRUCTION - OUTSIDE SHOULDER REPLACEMENT

NOT TO SCALE



PHASE 4 CONSTRUCTION - PLACE FINAL SURFACE COURSE AND ALL "FINISHING" ITEMS

NOT TO SCALE

**TYPICAL SECTIONS**

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| REVISED | STATE | ROUTE | STATE PROJECT       | SHEET NO. |
|---------|-------|-------|---------------------|-----------|
|         | VA.   | 64    | 0064-964-110, C-501 | 2         |

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

Dewberry  
 Fairfax, Virginia  
 ROADWAY ENGINEER

NOTE: CLEARZONE WIDTH AND LATERAL OFFSET DIMENSIONS TO BE PROVIDED/MAINTAINED AS REQUIRED BY THE AASHTO ROADSIDE DESIGN GUIDE AND VDOT ROAD DESIGN MANUAL.

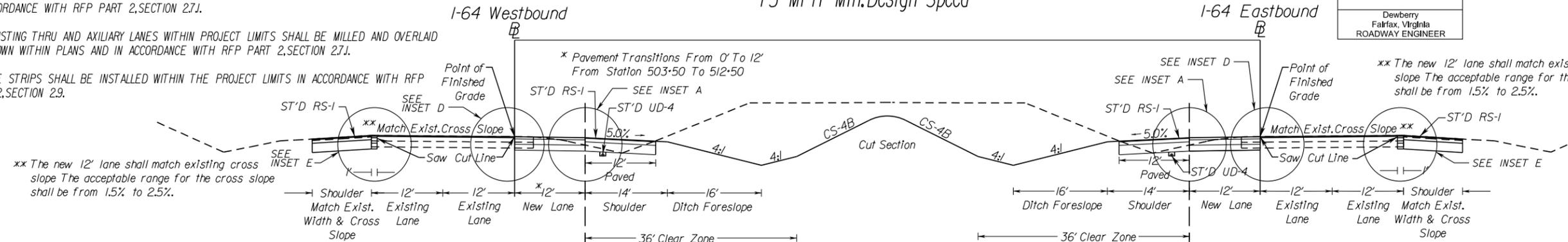
ALL PROPOSED PAVEMENT TO BE IN ACCORDANCE WITH RFP PART 2, SECTION 2.7J.

UNDERDRAINS TO BE INSTALLED ON ALL ROADWAYS PER VDOT ROAD AND BRIDGE STANDARDS AND IN ACCORDANCE WITH RFP PART 2, SECTION 2.7J.

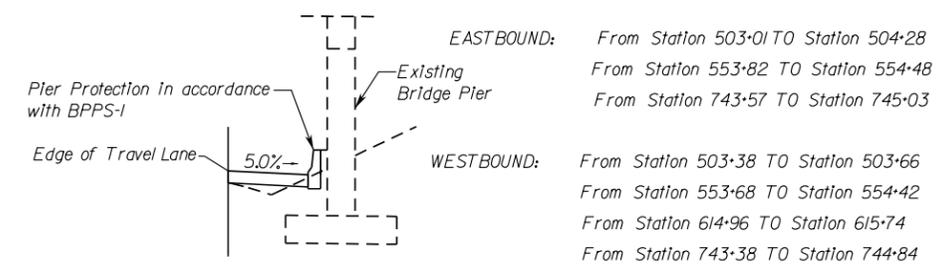
ALL EXISTING THRU AND AXILIARY LANES WITHIN PROJECT LIMITS SHALL BE MILLED AND OVERLAID AS SHOWN WITHIN PLANS AND IN ACCORDANCE WITH RFP PART 2, SECTION 2.7J.

RUMBLE STRIPS SHALL BE INSTALLED WITHIN THE PROJECT LIMITS IN ACCORDANCE WITH RFP PART 2, SECTION 2.9.

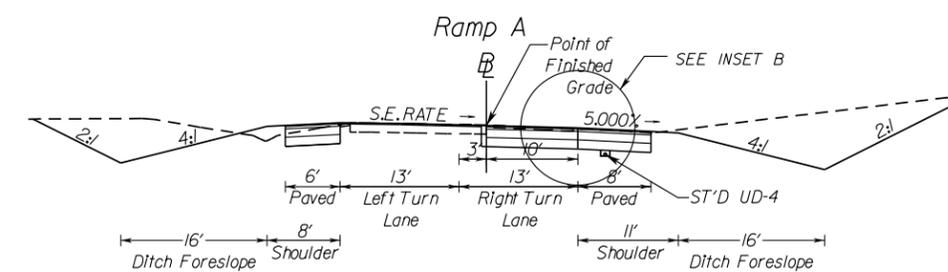
**Interstate 64 (GS-I Rural Principal Arterial)**  
**75 MPH Min. Design Speed**



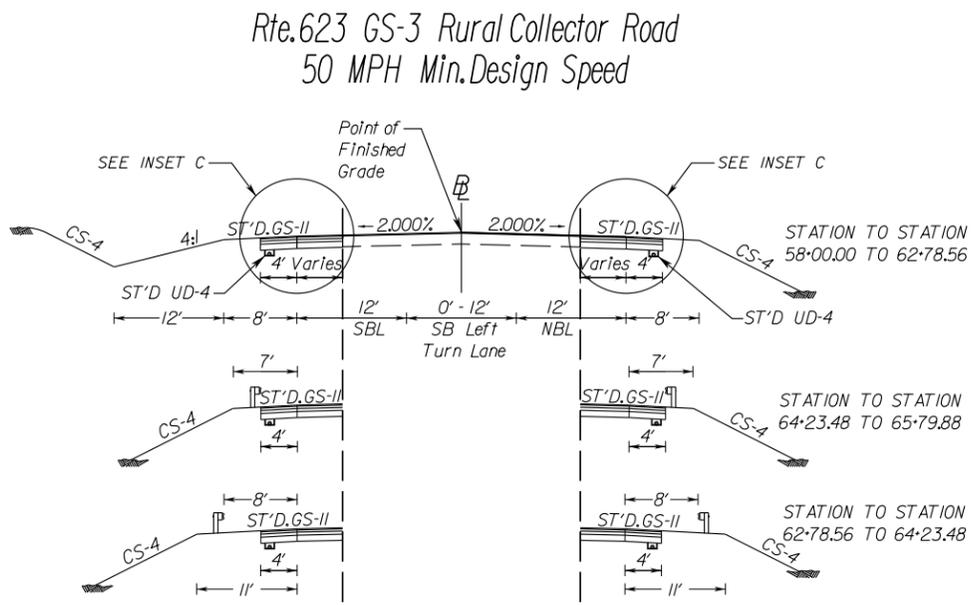
I-64 WB Exst. Shoulder Replacement Station 503+50 and 661+00  
 I-64 WB Prop. Widening Station 503+50 TO Station 749+00  
 I-64 EB Prop. Widening Station 554+72.58 TO Station 747+06.91  
 I-64 EB Exst. Shoulder Replacement Station 554+72.58 and 661+00



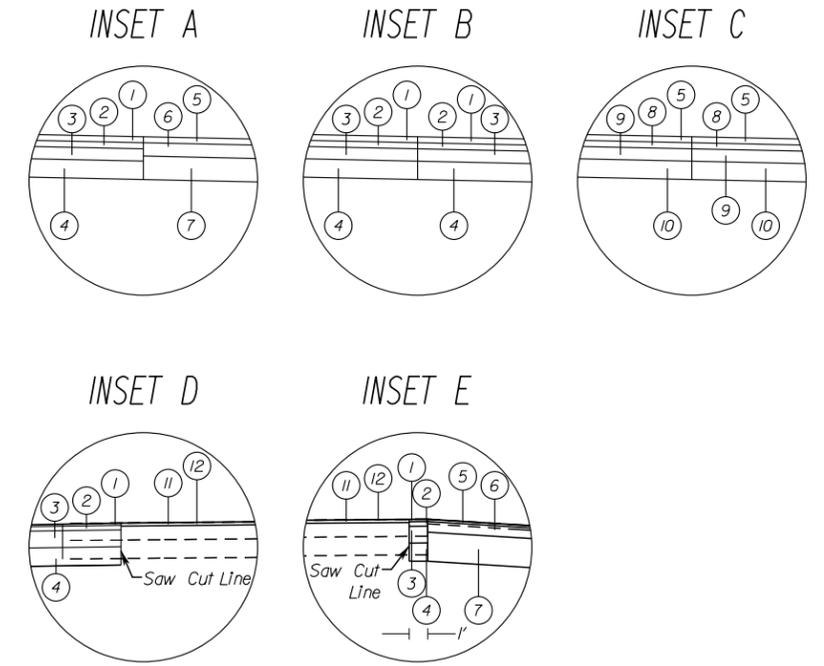
**Interstate 64 Ramp A**  
**GS-R Interchange Ramp**  
**40 MPH Min. Design Speed**



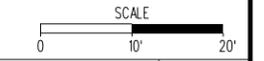
**Interstate 64 Ramp B**  
**GS-R Interchange Ramp**  
**35 MPH Min. Design Speed**



**Rte. 623 GS-3 Rural Collector Road**  
**50 MPH Min. Design Speed**



- ① SURFACE COURSE, ASPHALT CONCRETE, 1.5", TYPE SMA-12.5 (76-22) @ 165 LBS/SY
- ② INTERMEDIATE COURSE, ASPHALT CONCRETE, 3.0", TYPE SMA-19.0A (76-22) @ 330 LBS/SY
- ③ BASE COURSE, ASPHALT CONCRETE, 11.0", TYPE BM-25.0D
- ④ AGGREGATE COURSE, 12", AGGREGATE BASE MATERIAL TYPE I, SIZE NO. 21B
- ⑤ SURFACE COURSE, ASPHALT CONCRETE, 1.5", TYPE SM-9.5D @ 165 LBS/SY
- ⑥ BASE COURSE, ASPHALT CONCRETE, 7", TYPE BM-25.0
- ⑦ AGGREGATE COURSE, 19", AGGREGATE BASE MATERIAL TYPE I, SIZE NO. 21B
- ⑧ INTERMEDIATE COURSE, ASPHALT CONCRETE, 3.0", TYPE IM-19.0D @ 330 LBS/SY
- ⑨ BASE COURSE, ASPHALT CONCRETE, 4", TYPE BM-25.0D
- ⑩ AGGREGATE COURSE, 8", AGGREGATE BASE MATERIAL TYPE I, SIZE NO. 21B
- ⑪ MILL 2" OF EXISTING PAVEMENT
- ⑫ SURFACE COURSE, ASPHALT CONCRETE, 2.0", TYPE SMA-12.5 (76-22) @ 220 LBS/SY



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

| REVISED | STATE | ROUTE | STATE PROJECT               | SHEET NO. |
|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 3         |

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

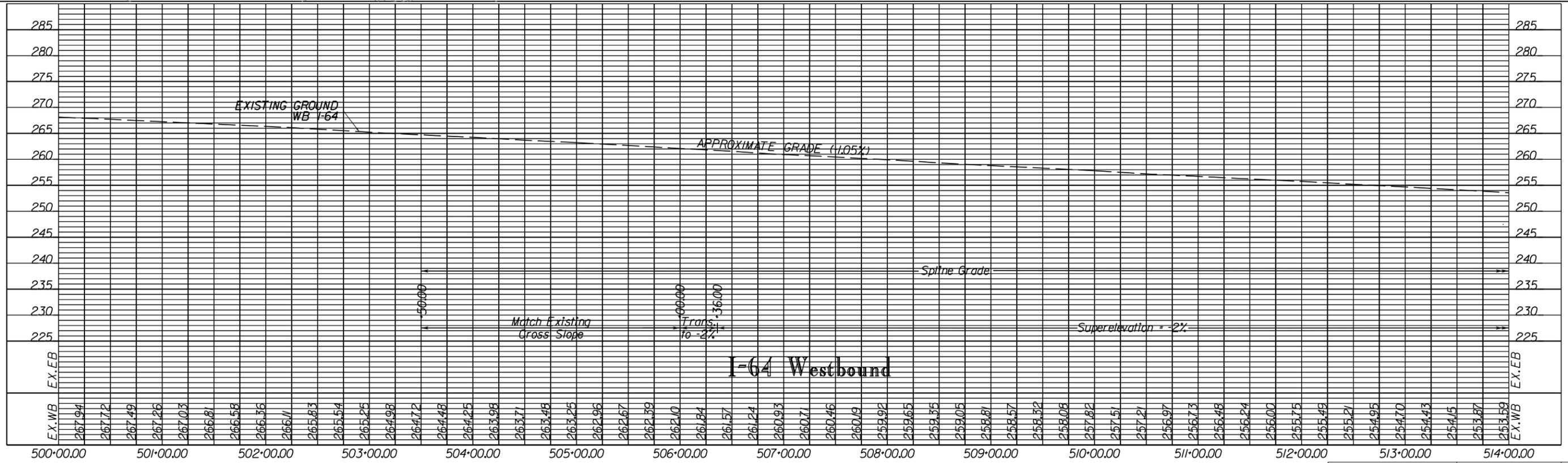
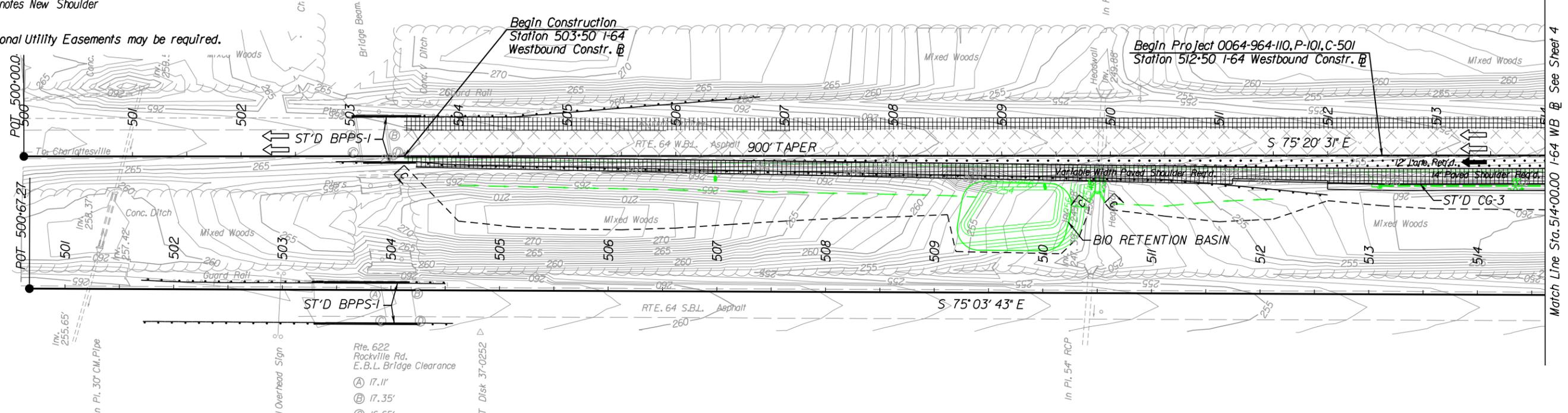
Dewberry Fairfax, Virginia  
 ROADWAY ENGINEER

Dewberry Fairfax, Virginia  
 HYDRAULICS ENGINEER

**LEGEND**

- Denotes Full Depth Pavement
- Denotes Demolition of Pavement
- Denotes Overlay Pavement
- Denotes Milling and Overlay
- Denotes New Shoulder
- dot-dot-dashed lines denote Temporary Easements
- dot-dashed lines denote Permanent Easements
- solid lines denote Right of Way
- Denotes Construction Limits In Cuts
- Denotes Construction Limits In Fills

Note: Additional Utility Easements may be required.



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|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 4         |

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

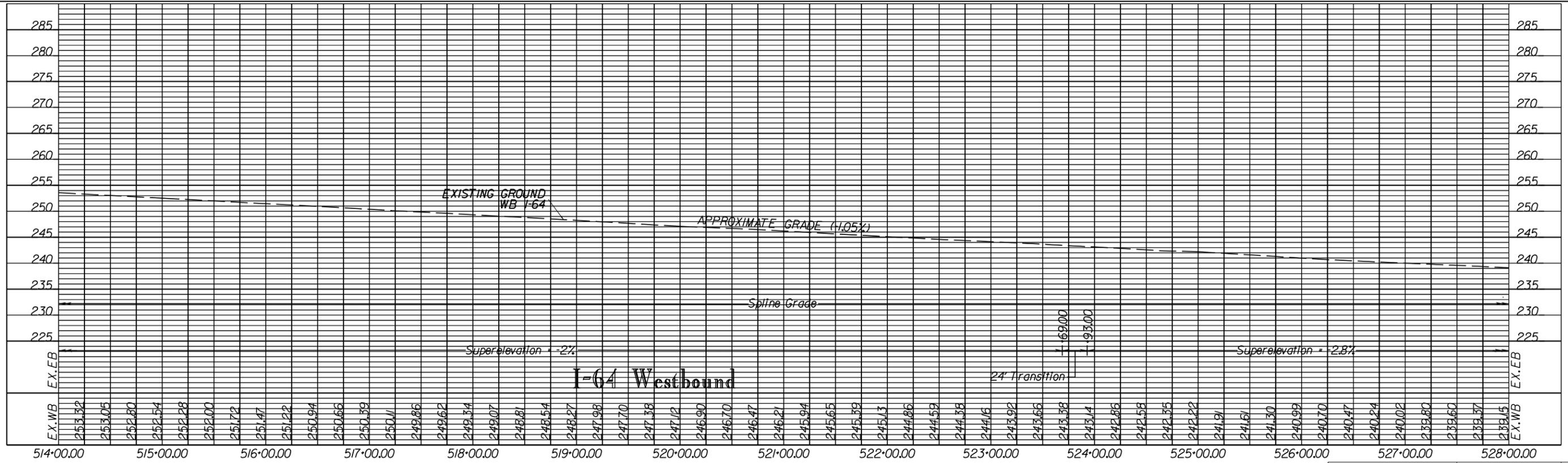
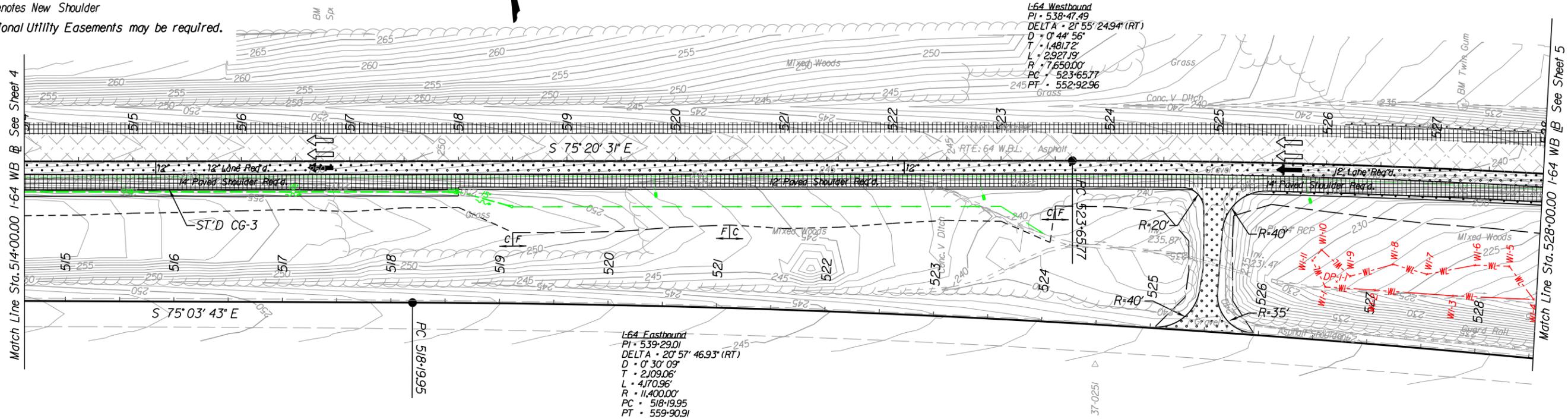
Dewberry  
 Fairfax, Virginia  
 ROADWAY ENGINEER

Dewberry  
 Fairfax, Virginia  
 HYDRAULICS ENGINEER

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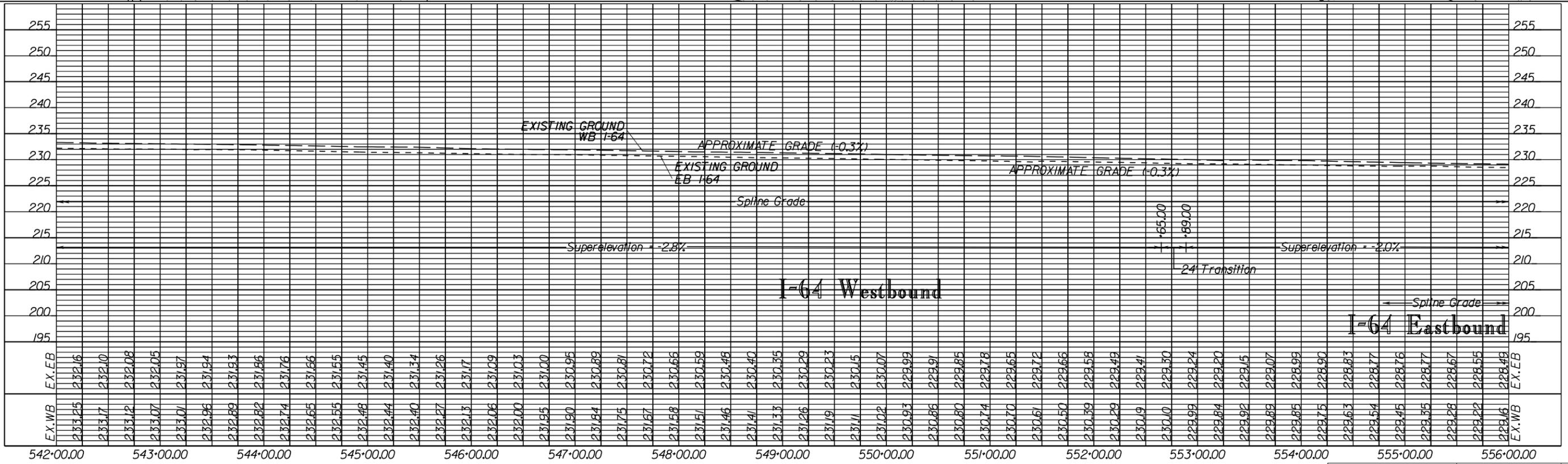
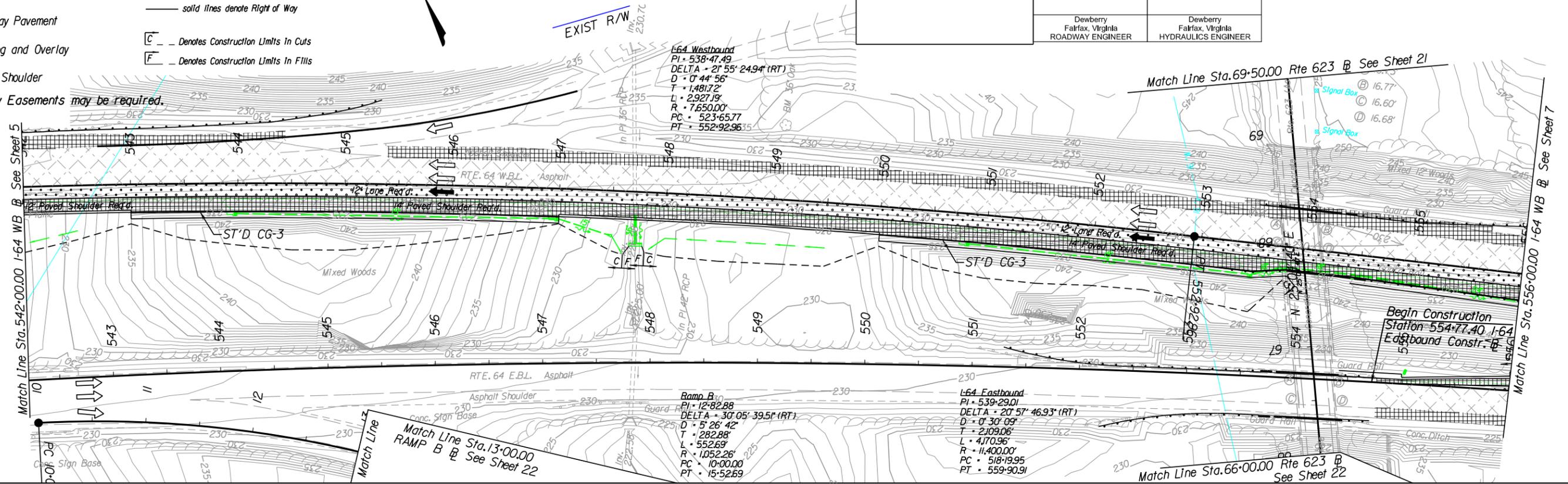
REFERENCES (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

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|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 6         |

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

- LEGEND**
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Note: Additional Utility Easements may be required.



| EX.WB  | EX.EB  | STATION   | EX.WB  | EX.EB  |
|--------|--------|-----------|--------|--------|
| 233.25 | 232.16 | 542+00.00 | 233.25 | 232.16 |
| 233.17 | 232.10 | 543+00.00 | 233.17 | 232.10 |
| 233.12 | 232.08 | 544+00.00 | 233.12 | 232.08 |
| 233.07 | 232.05 | 545+00.00 | 233.07 | 232.05 |
| 233.01 | 231.97 | 546+00.00 | 233.01 | 231.97 |
| 232.96 | 231.94 | 547+00.00 | 232.96 | 231.94 |
| 232.89 | 231.93 | 548+00.00 | 232.89 | 231.93 |
| 232.82 | 231.86 | 549+00.00 | 232.82 | 231.86 |
| 232.74 | 231.76 | 550+00.00 | 232.74 | 231.76 |
| 232.65 | 231.66 | 551+00.00 | 232.65 | 231.66 |
| 232.55 | 231.55 | 552+00.00 | 232.55 | 231.55 |
| 232.48 | 231.45 | 553+00.00 | 232.48 | 231.45 |
| 232.44 | 231.40 | 554+00.00 | 232.44 | 231.40 |
| 232.40 | 231.34 | 555+00.00 | 232.40 | 231.34 |
| 232.27 | 231.26 | 556+00.00 | 232.27 | 231.26 |
| 232.13 | 231.17 |           | 232.13 | 231.17 |
| 232.06 | 231.09 |           | 232.06 | 231.09 |
| 232.00 | 231.03 |           | 232.00 | 231.03 |
| 231.95 | 231.00 |           | 231.95 | 231.00 |
| 231.90 | 230.95 |           | 231.90 | 230.95 |
| 231.84 | 230.89 |           | 231.84 | 230.89 |
| 231.75 | 230.81 |           | 231.75 | 230.81 |
| 231.67 | 230.72 |           | 231.67 | 230.72 |
| 231.58 | 230.65 |           | 231.58 | 230.65 |
| 231.51 | 230.59 |           | 231.51 | 230.59 |
| 231.46 | 230.48 |           | 231.46 | 230.48 |
| 231.41 | 230.40 |           | 231.41 | 230.40 |
| 231.33 | 230.35 |           | 231.33 | 230.35 |
| 231.26 | 230.29 |           | 231.26 | 230.29 |
| 231.19 | 230.23 |           | 231.19 | 230.23 |
| 231.11 | 230.15 |           | 231.11 | 230.15 |
| 231.02 | 230.07 |           | 231.02 | 230.07 |
| 230.93 | 229.99 |           | 230.93 | 229.99 |
| 230.86 | 229.91 |           | 230.86 | 229.91 |
| 230.80 | 229.85 |           | 230.80 | 229.85 |
| 230.74 | 229.78 |           | 230.74 | 229.78 |
| 230.70 | 229.65 |           | 230.70 | 229.65 |
| 230.61 | 229.72 |           | 230.61 | 229.72 |
| 230.50 | 229.66 |           | 230.50 | 229.66 |
| 230.39 | 229.58 |           | 230.39 | 229.58 |
| 230.29 | 229.49 |           | 230.29 | 229.49 |
| 230.19 | 229.41 |           | 230.19 | 229.41 |
| 230.10 | 229.30 |           | 230.10 | 229.30 |
| 229.99 | 229.24 |           | 229.99 | 229.24 |
| 229.84 | 229.20 |           | 229.84 | 229.20 |
| 229.92 | 229.15 |           | 229.92 | 229.15 |
| 229.89 | 229.07 |           | 229.89 | 229.07 |
| 229.85 | 228.99 |           | 229.85 | 228.99 |
| 229.75 | 228.90 |           | 229.75 | 228.90 |
| 229.63 | 228.83 |           | 229.63 | 228.83 |
| 229.54 | 228.77 |           | 229.54 | 228.77 |
| 229.45 | 228.76 |           | 229.45 | 228.76 |
| 229.35 | 228.77 |           | 229.35 | 228.77 |
| 229.28 | 228.67 |           | 229.28 | 228.67 |
| 229.22 | 228.55 |           | 229.22 | 228.55 |
| 229.16 | 228.49 |           | 229.16 | 228.49 |



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|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 8         |

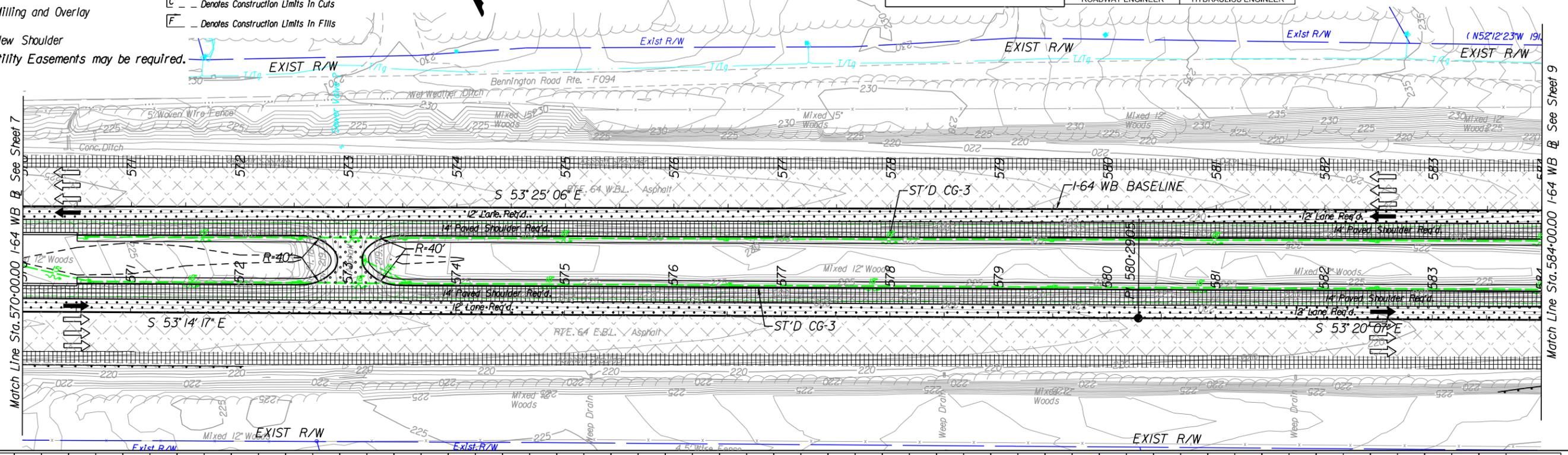
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Dewberry Fairfax, Virginia  
 ROADWAY ENGINEER

Dewberry Fairfax, Virginia  
 HYDRAULICS ENGINEER

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|           |                           |        |
|-----------|---------------------------|--------|
| 250       |                           | 250    |
| 245       |                           | 245    |
| 240       |                           | 240    |
| 235       |                           | 235    |
| 230       |                           | 230    |
| 225       | APPROXIMATE GRADE (-0.3%) | 225    |
| 220       |                           | 220    |
| 215       |                           | 215    |
| 210       |                           | 210    |
| 205       |                           | 205    |
| 200       |                           | 200    |
| 195       |                           | 195    |
| 190       |                           | 190    |
| EX.WB     |                           | EX.EB  |
| 570+00.00 | 223.69                    | 223.69 |
|           | 224.98                    | 223.59 |
|           | 224.95                    | 223.50 |
|           | 224.88                    | 223.43 |
|           | 224.76                    | 223.37 |
|           | 224.65                    | 223.30 |
|           | 224.56                    | 223.23 |
|           | 224.48                    | 223.19 |
|           | 224.39                    | 223.13 |
|           | 224.31                    | 223.05 |
|           | 224.19                    | 222.93 |
|           | 223.92                    | 222.90 |
|           | 223.64                    | 222.80 |
|           | 224.02                    | 222.77 |
|           | 224.00                    | 222.71 |
|           | 223.97                    | 222.64 |
|           | 223.89                    | 222.56 |
|           | 223.82                    | 222.51 |
|           | 223.75                    | 222.46 |
|           | 223.69                    | 222.36 |
|           | 223.58                    | 222.25 |
|           | 223.46                    | 222.16 |
|           | 223.38                    | 222.08 |
|           | 223.30                    | 221.99 |
|           | 223.21                    | 221.90 |
|           | 223.10                    | 221.80 |
|           | 223.01                    | 221.72 |
|           | 223.01                    | 221.67 |
|           | 222.93                    | 221.62 |
|           | 222.85                    | 221.55 |
|           | 222.75                    | 221.47 |
|           | 222.63                    | 221.41 |
|           | 222.51                    | 221.35 |
|           | 222.38                    | 221.28 |
|           | 222.26                    | 221.22 |
|           | 222.16                    | 221.15 |
|           | 222.04                    | 221.08 |
|           | 221.88                    | 220.99 |
|           | 221.71                    | 220.90 |
|           | 221.55                    | 220.83 |
|           | 221.40                    | 220.76 |
|           | 221.25                    | 220.67 |
|           | 220.92                    | 220.60 |
|           | 220.37                    | 220.54 |
|           | 220.20                    | 220.48 |
|           | 220.36                    | 220.40 |
|           | 220.40                    | 220.31 |
|           | 220.24                    | 220.23 |
|           | 220.07                    | 220.10 |
|           | 219.89                    | 219.96 |
|           | 219.68                    | 219.77 |
|           | 219.44                    | 219.65 |
|           | 219.21                    | 219.54 |
|           | 218.98                    | 219.39 |
|           | 218.76                    | 219.26 |
|           | 218.55                    | 219.14 |
| EX.WB     |                           | EX.EB  |

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

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

| REVISED | STATE | ROUTE | STATE PROJECT               | SHEET NO. |
|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 9         |

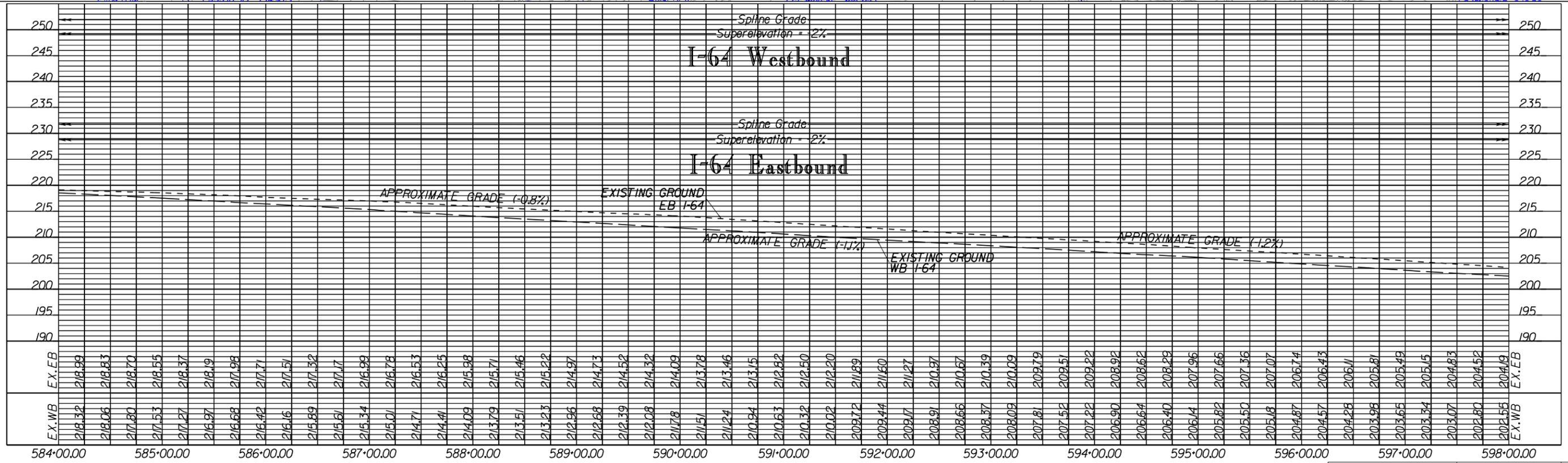
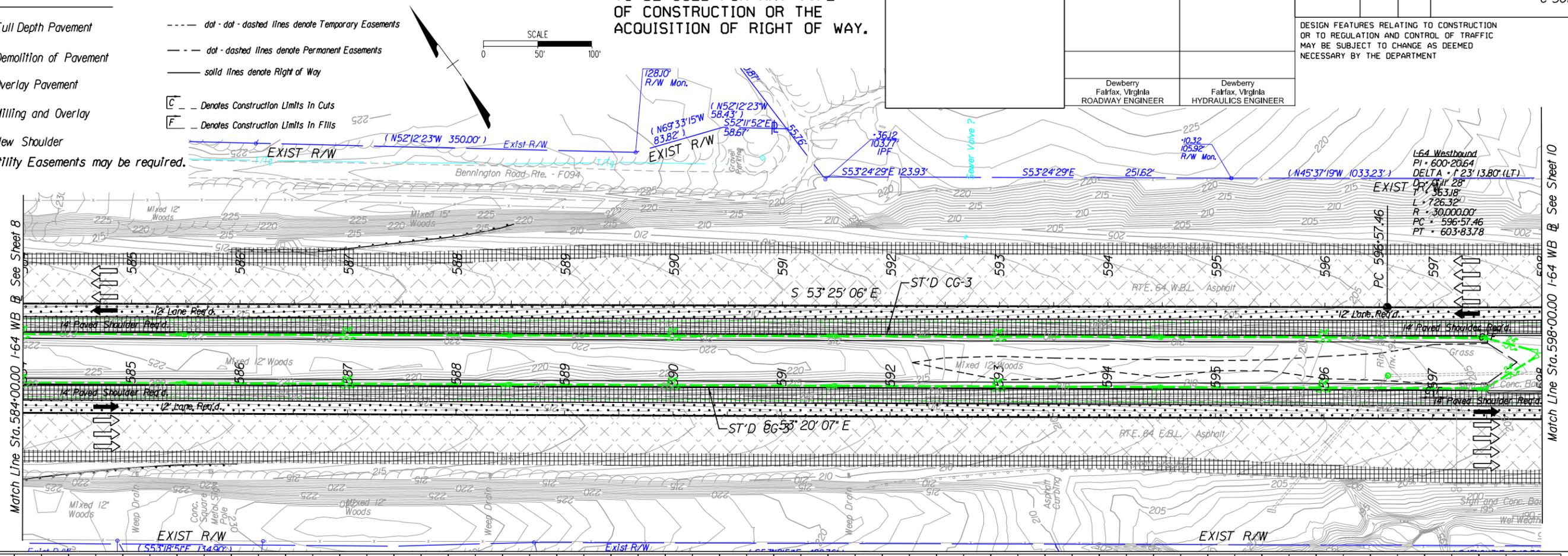
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Dewberry Fairfax, Virginia  
 ROADWAY ENGINEER

Dewberry Fairfax, Virginia  
 HYDRAULICS ENGINEER

- LEGEND**
- Denotes Full Depth Pavement
  - Denotes Demolition of Pavement
  - Denotes Overlay Pavement
  - Denotes Milling and Overlay
  - Denotes New Shoulder
  - dot - dot - dashed lines denote Temporary Easements
  - dot - dashed lines denote Permanent Easements
  - solid lines denote Right of Way
  - Denotes Construction Limits In Cuts
  - Denotes Construction Limits In Fills

Note: Additional Utility Easements may be required.



THESE PLANS ARE UNFINISHED  
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REFERENCES  
 (PROFILES, DETAIL & DRAINAGE  
 DESCRIPTION SHEETS, ETC.)

| REVISED | STATE | ROUTE | STATE PROJECT               | SHEET NO. |
|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 10        |

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

Dewberry Fairfax, Virginia  
 ROADWAY ENGINEER

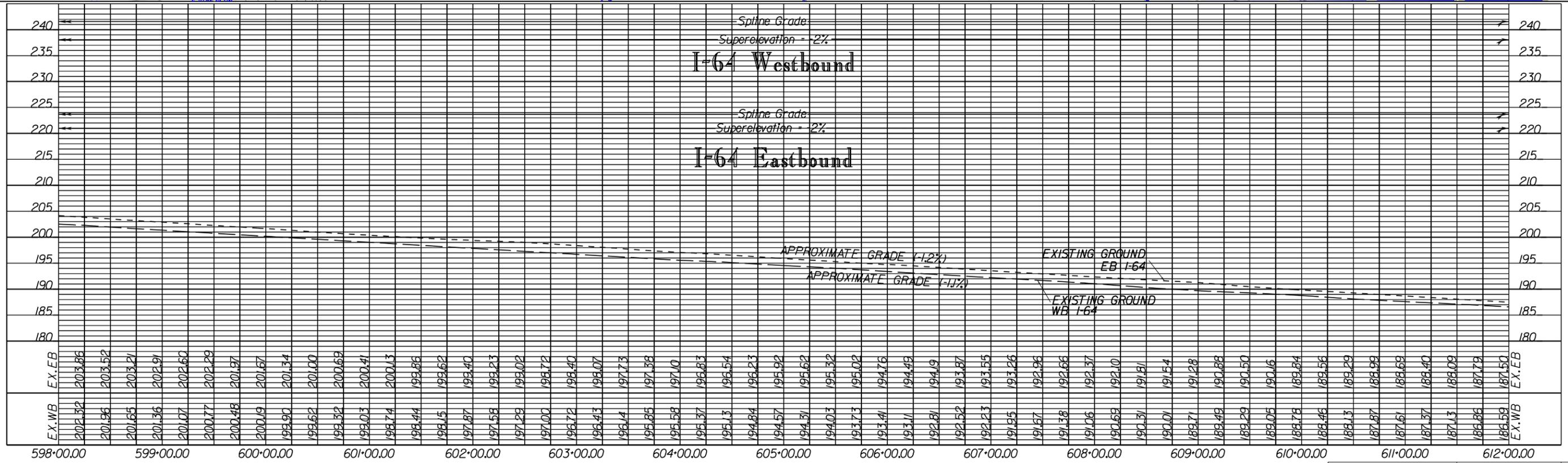
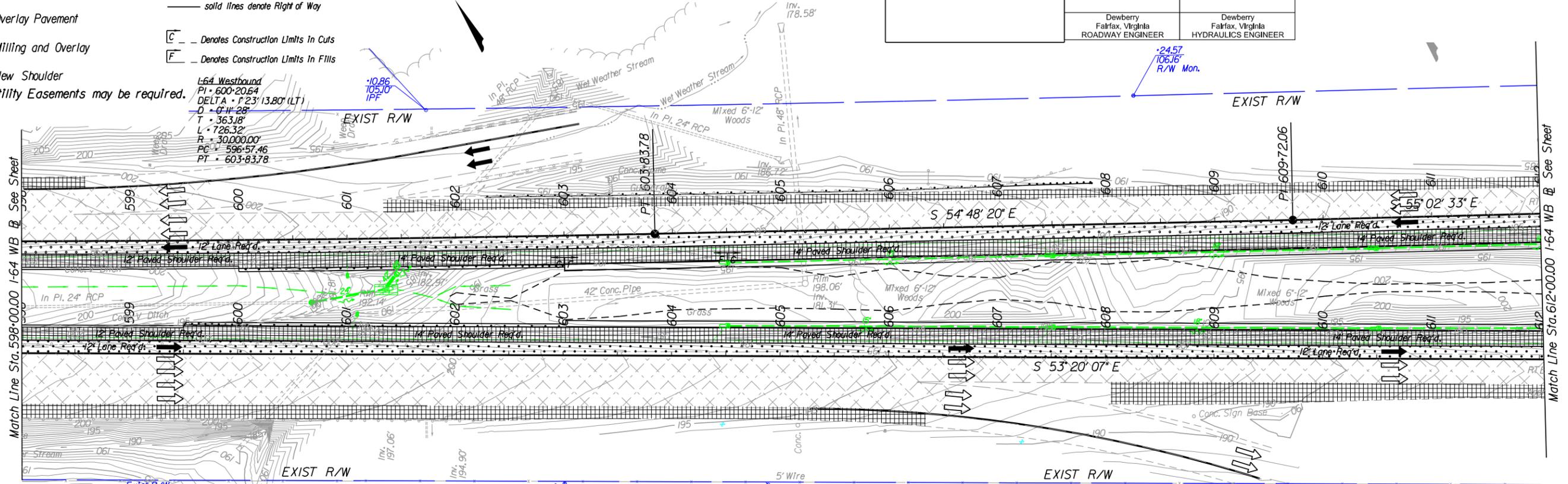
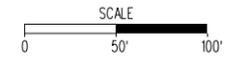
Dewberry Fairfax, Virginia  
 HYDRAULICS ENGINEER

**LEGEND**

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Note: Additional Utility Easements may be required.

L64 Westbound  
 PI = 600+20.64  
 DELTA = 123°13.80' (LT)  
 D = 0°11'28"  
 T = 363.18'  
 L = 726.32'  
 R = 30,000.00'  
 PC = 596+57.46  
 PT = 603+83.78



|       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| EX.WB | 202.32 | 203.86 | 201.96 | 203.52 | 201.65 | 203.21 | 201.36 | 202.91 | 201.07 | 202.60 | 200.77 | 202.29 | 200.48 | 201.87 | 200.19 | 201.67 | 199.90 | 201.34 | 199.62 | 201.00 | 198.32 | 200.69 | 198.03 | 200.41 | 198.74 | 200.13 | 198.44 | 199.86 | 198.15 | 199.62 | 197.87 | 199.40 | 197.58 | 199.23 | 197.29 | 199.02 | 197.00 | 198.72 | 196.72 | 198.40 | 196.43 | 198.07 | 196.14 | 197.73 | 195.85 | 197.38 | 195.58 | 197.10 | 195.37 | 196.83 | 195.13 | 196.54 | 194.84 | 196.23 | 194.57 | 195.92 | 194.31 | 195.62 | 194.03 | 195.32 | 193.73 | 195.02 | 193.41 | 194.76 | 193.11 | 194.48 | 192.81 | 194.19 | 192.52 | 193.87 | 192.23 | 193.55 | 191.85 | 193.26 | 191.67 | 192.96 | 191.38 | 192.66 | 191.06 | 192.37 | 190.69 | 192.10 | 190.31 | 191.81 | 190.01 | 191.54 | 188.71 | 191.28 | 188.49 | 190.88 | 188.29 | 190.50 | 188.05 | 190.16 | 188.78 | 189.84 | 188.46 | 189.56 | 188.13 | 189.29 | 187.87 | 188.99 | 187.61 | 188.69 | 187.37 | 188.40 | 187.13 | 188.08 | 186.86 | 187.79 | 186.59 | 187.50 | EX.WB |
| EX.EB | 203.86 | 203.52 | 203.21 | 202.91 | 202.60 | 202.29 | 201.87 | 201.67 | 201.34 | 201.00 | 200.69 | 200.41 | 200.13 | 199.86 | 199.62 | 199.40 | 199.23 | 199.02 | 198.72 | 198.40 | 198.07 | 197.73 | 197.38 | 197.10 | 196.83 | 196.54 | 196.23 | 195.92 | 195.62 | 195.32 | 195.02 | 194.76 | 194.48 | 194.19 | 193.87 | 193.55 | 193.26 | 192.96 | 192.66 | 192.37 | 192.10 | 191.81 | 191.54 | 191.28 | 190.88 | 190.50 | 190.16 | 189.84 | 189.56 | 189.29 | 188.99 | 188.69 | 188.40 | 188.08 | 187.79 | 187.50 | EX.EB  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |

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 ACQUISITION OF RIGHT OF WAY.

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

25-26 BRIDGE PLANS

| REVISED | STATE | ROUTE | STATE PROJECT               | SHEET NO. |
|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 11        |

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

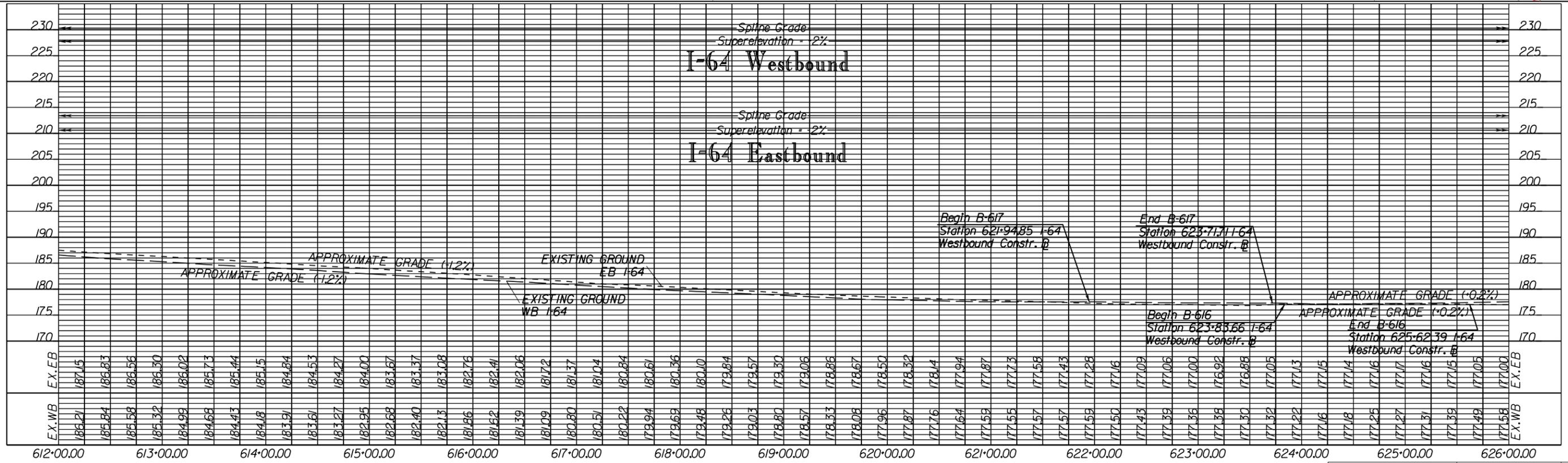
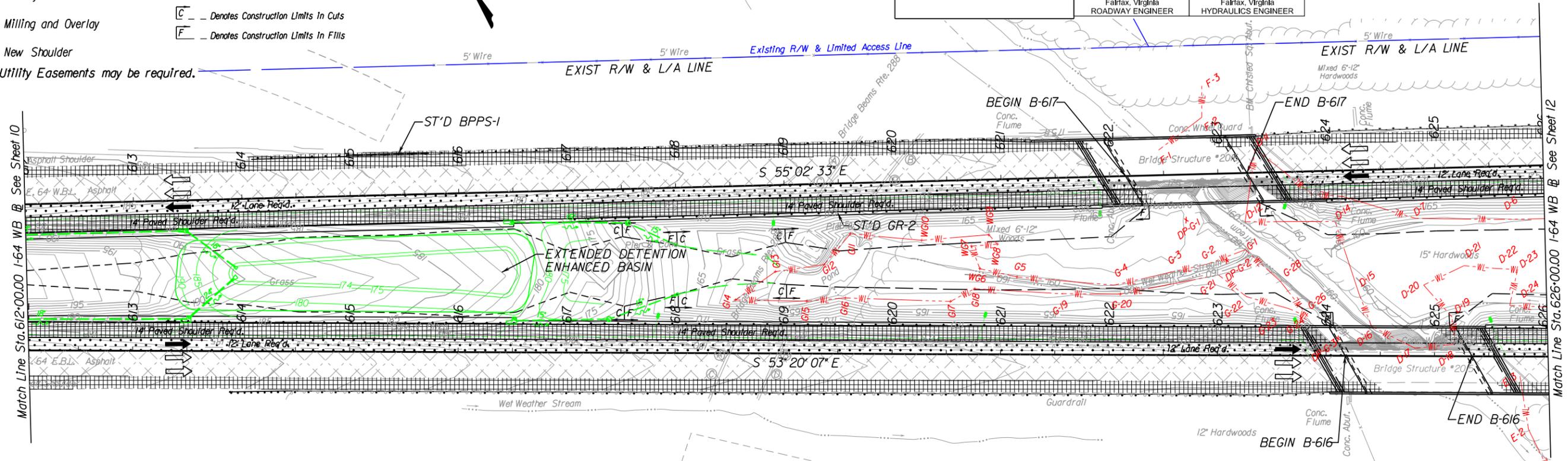
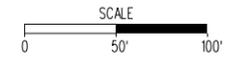
Dewberry Fairfax, Virginia  
 ROADWAY ENGINEER

Dewberry Fairfax, Virginia  
 HYDRAULICS ENGINEER

**LEGEND**

- Denotes Full Depth Pavement
- Denotes Demolition of Pavement
- Denotes Overlay Pavement
- Denotes Milling and Overlay
- Denotes New Shoulder
- dot - dot - dashed lines denote Temporary Easements
- dot - dashed lines denote Permanent Easements
- solid lines denote Right of Way
- Denotes Construction Limits In Cuts
- Denotes Construction Limits In Fills

Note: Additional Utility Easements may be required.



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

| REVISED | STATE | ROUTE | STATE PROJECT               | SHEET NO. |
|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 12        |

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

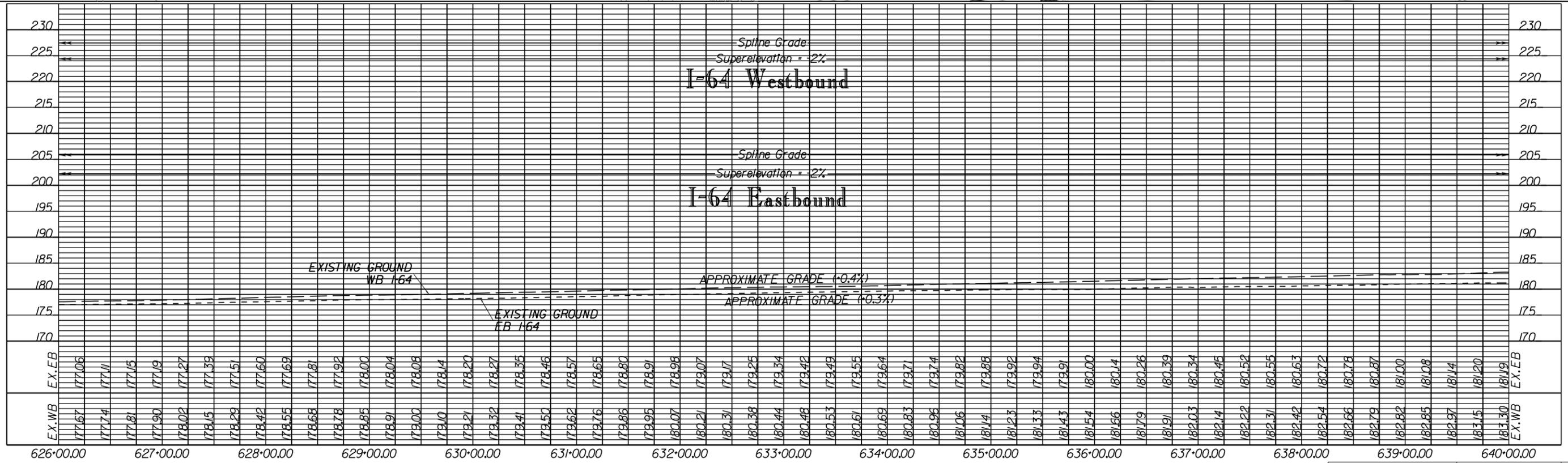
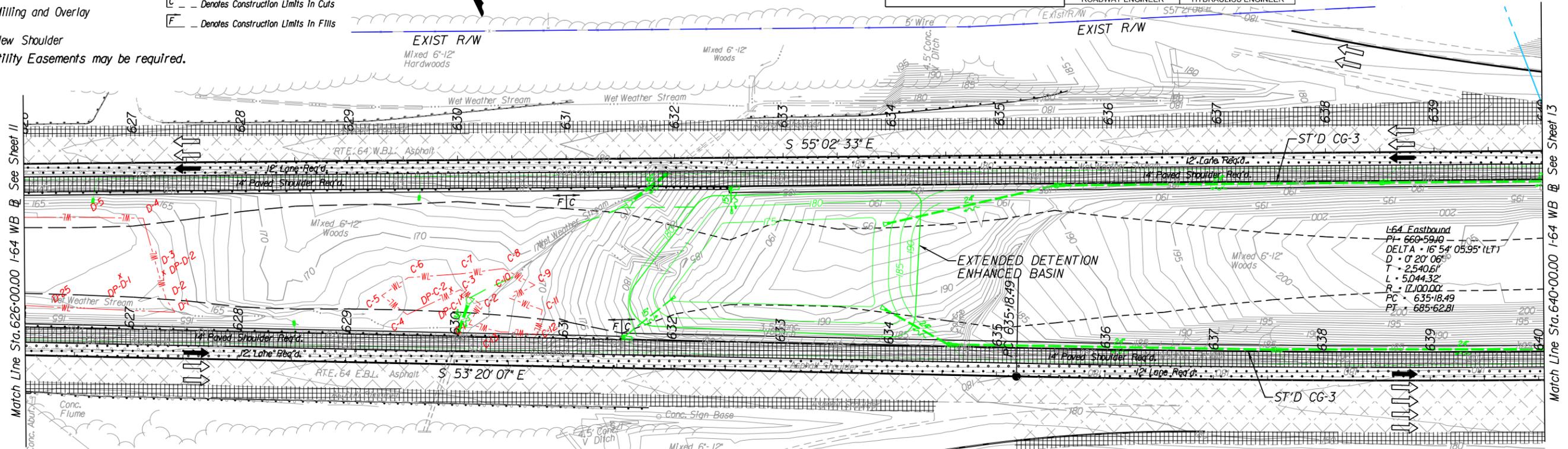
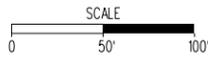
Dewberry Fairfax, Virginia  
 ROADWAY ENGINEER

Dewberry Fairfax, Virginia  
 HYDRAULICS ENGINEER

**LEGEND**

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

23 BOX CULVERT EXT. DETAILS

| REVISED | STATE | ROUTE | STATE PROJECT               | SHEET NO. |
|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 13        |

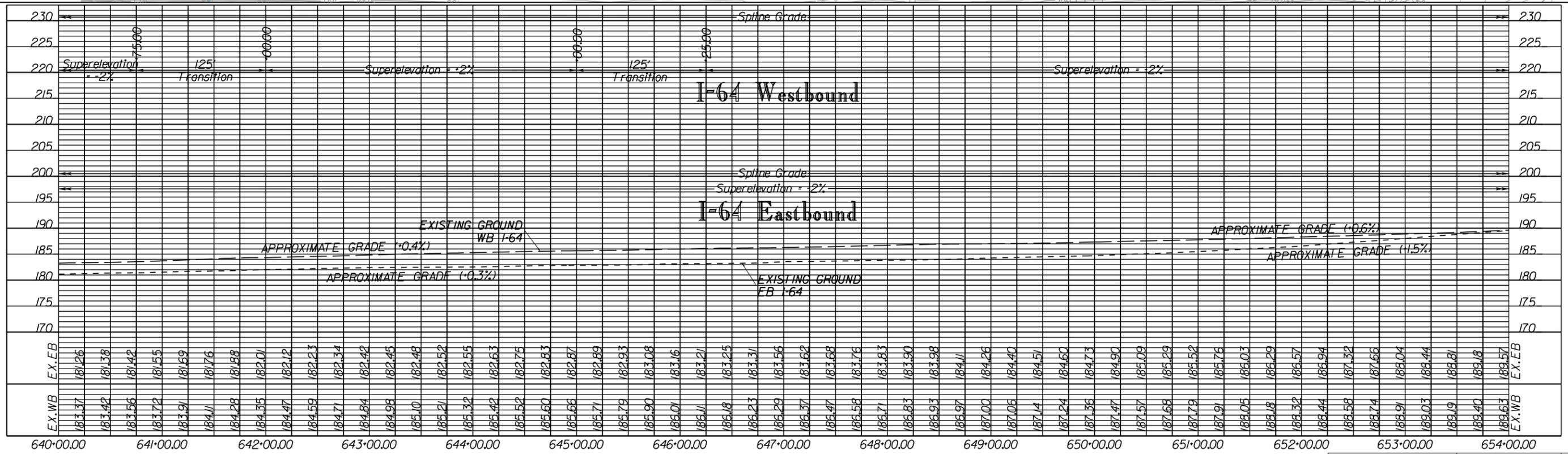
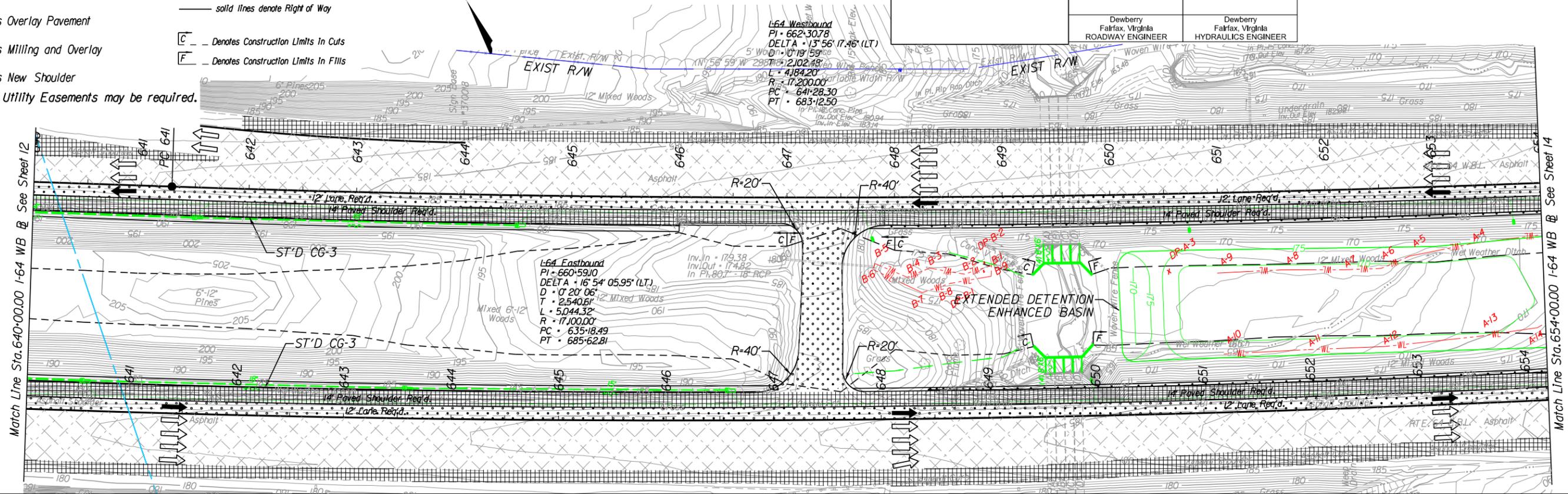
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Dewberry Fairfax, Virginia  
 ROADWAY ENGINEER

Dewberry Fairfax, Virginia  
 HYDRAULICS ENGINEER

- LEGEND**
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  - Denotes Milling and Overlay
  - Denotes New Shoulder
  - dot - dot - dashed lines denote Temporary Easements
  - dot - dashed lines denote Permanent Easements
  - solid lines denote Right of Way
  - C - Denotes Construction Limits In Cuts
  - F - Denotes Construction Limits In Fills

Note: Additional Utility Easements may be required.





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

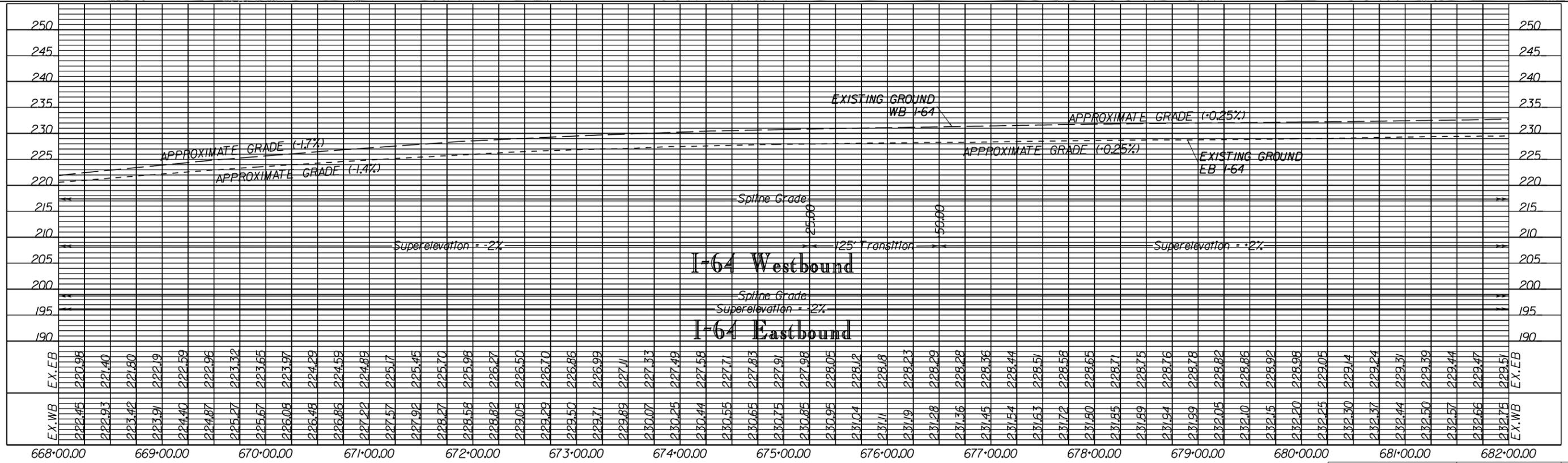
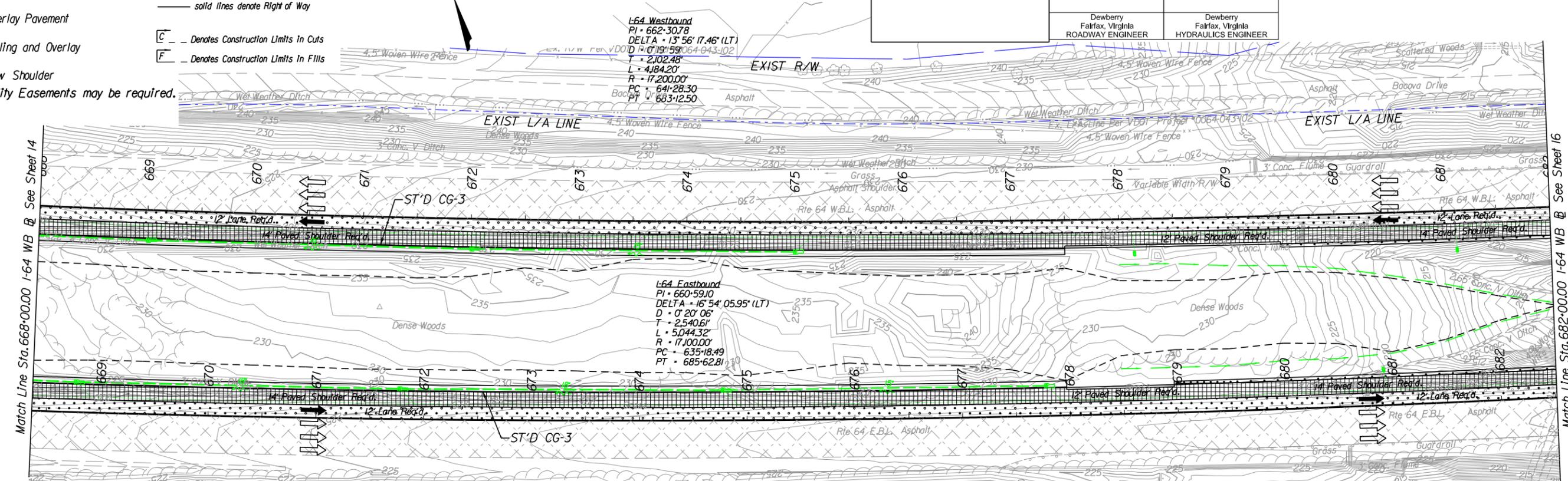
| REVISED | STATE | ROUTE | STATE PROJECT               | SHEET NO. |
|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 15        |

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

Dewberry Fairfax, Virginia  
 ROADWAY ENGINEER

Dewberry Fairfax, Virginia  
 HYDRAULICS ENGINEER

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  - Denotes New Shoulder
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  - dot-dashed lines denote Permanent Easements
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  - Denotes Construction Limits In Cuts
  - Denotes Construction Limits In Fills
- Note: Additional Utility Easements may be required.



|       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| EX.WB | 222.45 | 222.93 | 223.42 | 223.91 | 224.40 | 224.87 | 225.27 | 225.32 | 225.67 | 226.08 | 226.48 | 226.86 | 227.22 | 227.57 | 227.92 | 228.27 | 228.58 | 228.82 | 229.05 | 229.29 | 229.50 | 229.71 | 229.89 | 230.07 | 230.25 | 230.44 | 230.55 | 230.65 | 230.75 | 230.85 | 230.95 | 231.04 | 231.11 | 231.19 | 231.28 | 231.36 | 231.45 | 231.54 | 231.63 | 231.72 | 231.80 | 231.85 | 231.89 | 231.94 | 231.99 | 232.05 | 232.10 | 232.15 | 232.20 | 232.25 | 232.30 | 232.37 | 232.44 | 232.50 | 232.57 | 232.66 | 232.75 | EX.EB |
|       | 220.98 | 221.40 | 221.80 | 222.19 | 222.59 | 222.96 | 223.32 | 223.65 | 223.97 | 224.29 | 224.59 | 224.89 | 225.17 | 225.45 | 225.70 | 225.98 | 226.27 | 226.50 | 226.70 | 226.86 | 226.99 | 227.11 | 227.33 | 227.49 | 227.58 | 227.71 | 227.83 | 227.91 | 227.98 | 228.05 | 228.12 | 228.18 | 228.23 | 228.29 | 228.28 | 228.36 | 228.44 | 228.51 | 228.58 | 228.65 | 228.71 | 228.75 | 228.76 | 228.78 | 228.82 | 228.86 | 228.92 | 228.98 | 229.05 | 229.14 | 229.24 | 229.31 | 229.39 | 229.44 | 229.47 | 229.51 | EX.EB  |       |



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

| REVISED | STATE | ROUTE | STATE PROJECT               | SHEET NO. |
|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 17        |

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

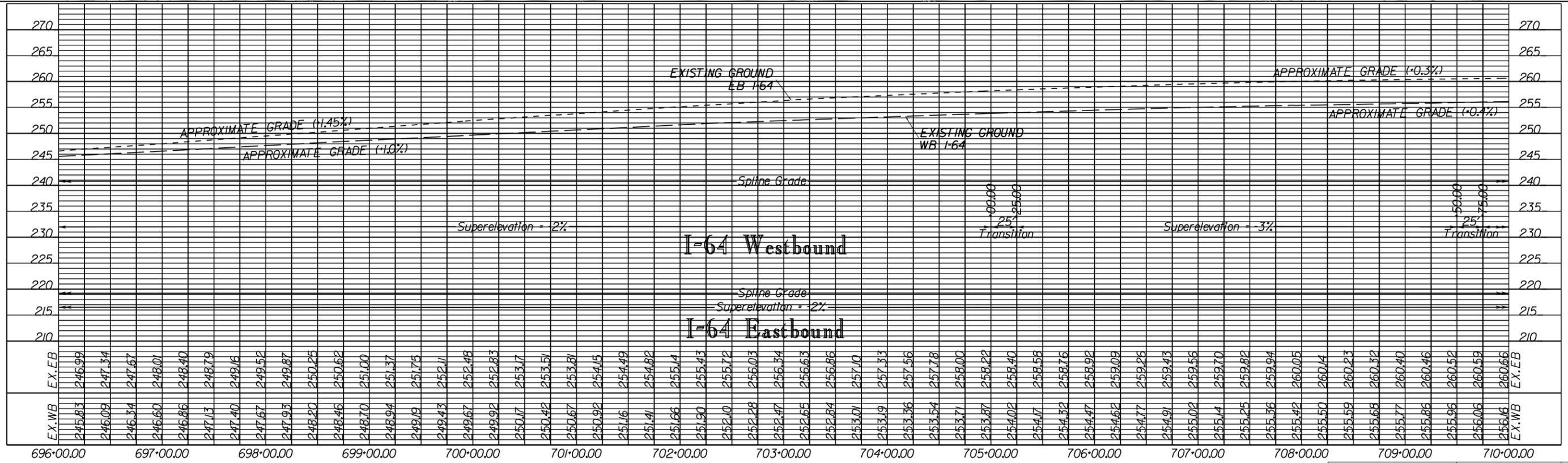
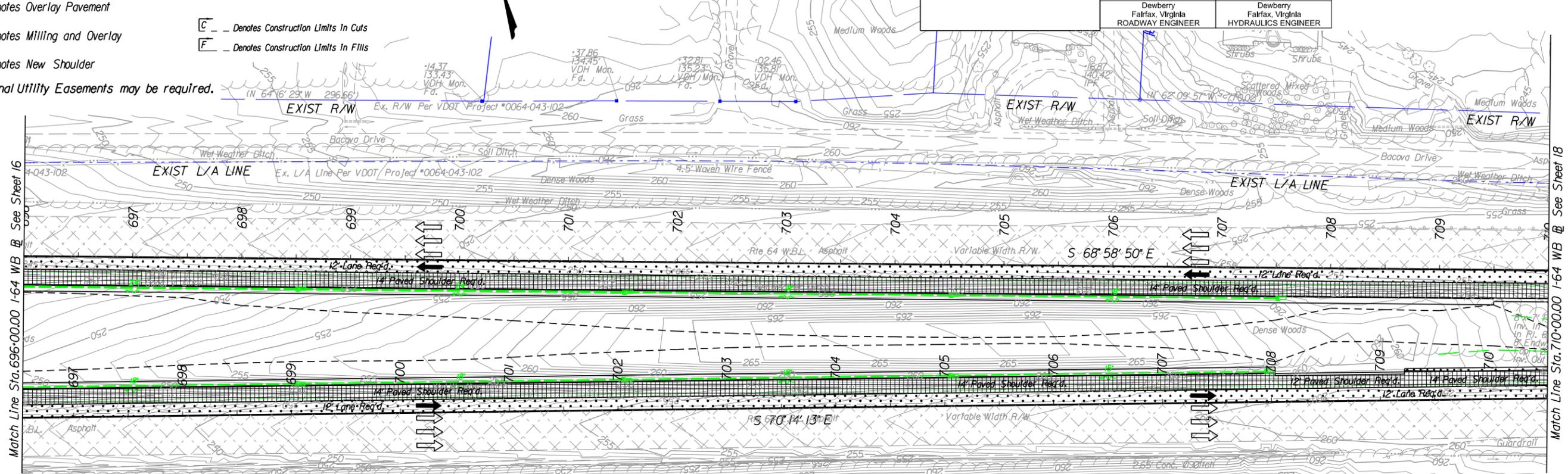
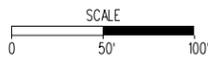
Dewberry Fairfax, Virginia  
ROADWAY ENGINEER

Dewberry Fairfax, Virginia  
HYDRAULICS ENGINEER

**LEGEND**

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|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 18        |

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

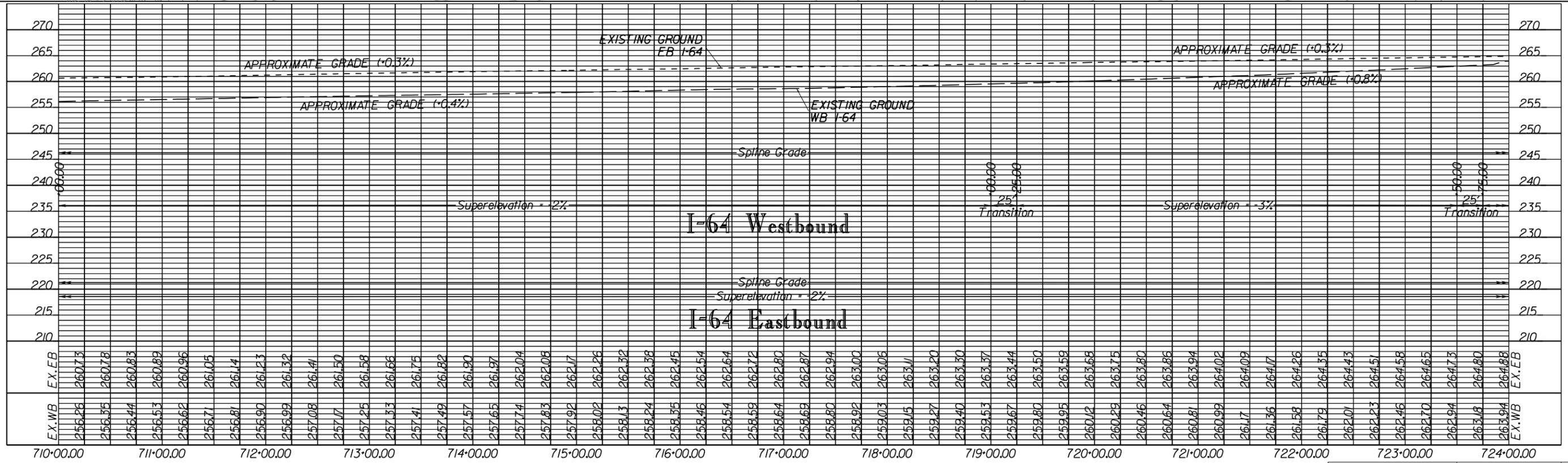
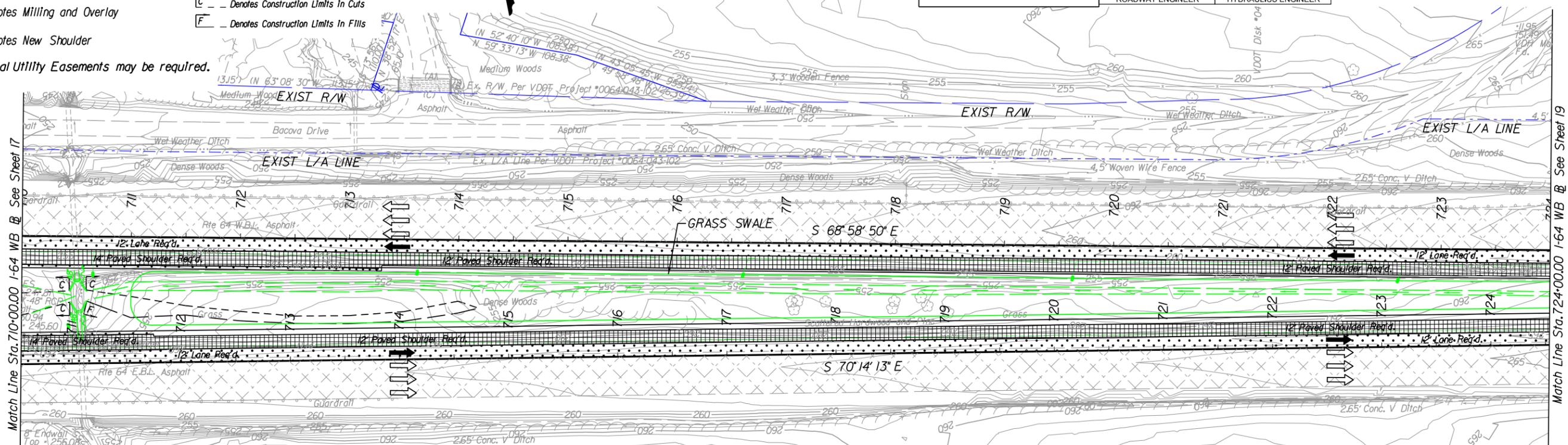
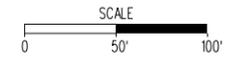
Dewberry Fairfax, Virginia  
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|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 19        |

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

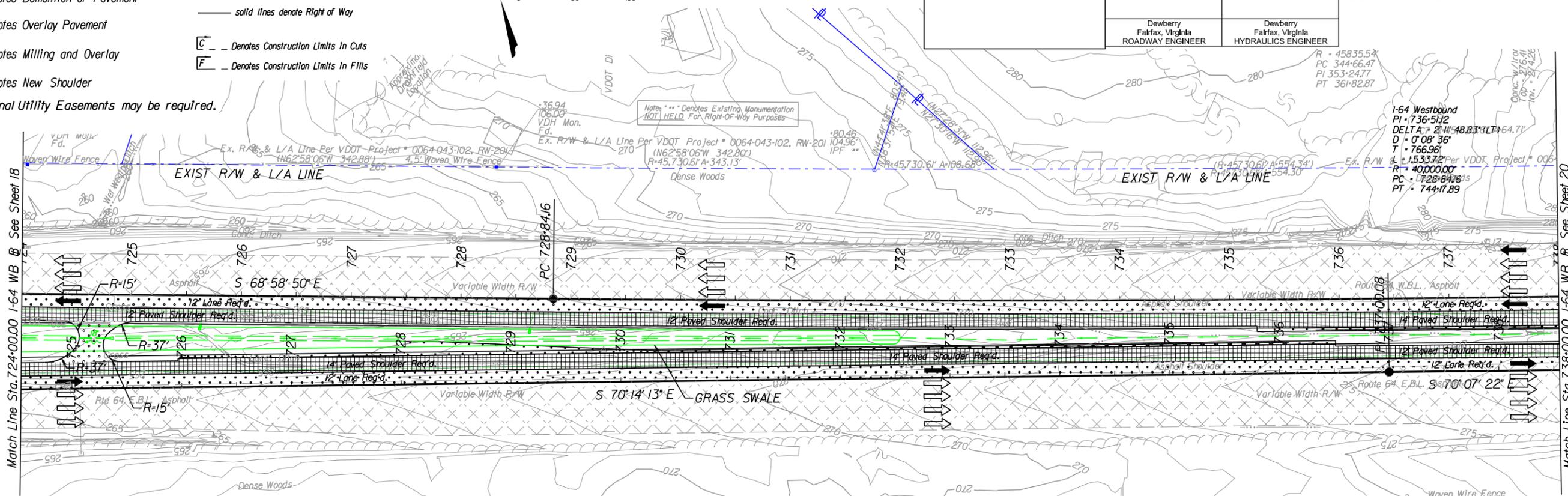
Dewberry Fairfax, Virginia  
 ROADWAY ENGINEER

Dewberry Fairfax, Virginia  
 HYDRAULICS ENGINEER

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|        |        |
|--------|--------|
| 290    | 290    |
| 285    | 285    |
| 280    | 280    |
| 275    | 275    |
| 270    | 270    |
| 265    | 265    |
| 260    | 260    |
| 255    | 255    |
| 250    | 250    |
| 245    | 245    |
| 240    | 240    |
| 235    | 235    |
| 230    | 230    |
| EX.WB  | EX.EB  |
| 264.14 | 265.23 |
| 264.33 | 265.31 |
| 264.53 | 265.39 |
| 264.73 | 265.47 |
| 264.83 | 265.58 |
| 264.89 | 265.69 |
| 265.14 | 265.83 |
| 265.52 | 266.02 |
| 265.76 | 266.20 |
| 265.95 | 266.34 |
| 266.15 | 266.46 |
| 266.35 | 266.58 |
| 266.66 | 266.70 |
| 266.93 | 266.81 |
| 267.19 | 266.97 |
| 267.44 | 267.19 |
| 267.65 | 267.42 |
| 267.86 | 267.60 |
| 268.07 | 267.79 |
| 268.32 | 267.99 |
| 268.55 | 268.22 |
| 268.72 | 268.45 |
| 268.86 | 268.68 |
| 269.10 | 268.92 |
| 269.36 | 269.14 |
| 269.59 | 269.36 |
| 269.87 | 269.53 |
| 270.14 | 269.68 |
| 270.35 | 269.93 |
| 270.49 | 270.22 |
| 270.70 | 270.36 |
| 271.01 | 270.53 |
| 271.21 | 270.78 |
| 271.57 | 271.03 |
| 271.88 | 271.28 |
| 272.17 | 271.55 |
| 272.01 | 271.81 |
| 272.25 | 272.00 |
| 272.47 | 272.17 |
| 272.68 | 272.41 |
| 272.88 | 272.64 |
| 273.07 | 272.85 |
| 273.29 | 273.09 |
| 273.51 | 273.41 |
| 273.70 | 273.70 |
| 273.89 | 273.87 |
| 274.12 | 274.03 |
| 274.41 | 274.19 |
| 274.70 | 274.35 |
| 274.98 | 274.59 |
| 275.27 | 274.97 |
| 275.52 | 275.30 |
| 275.75 | 275.57 |
| 275.98 | 275.79 |
| 276.21 | 276.01 |
| 276.44 | 276.22 |
| EX.WB  | EX.EB  |



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

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

| REVISED | STATE | ROUTE | STATE PROJECT               | SHEET NO. |
|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 21        |

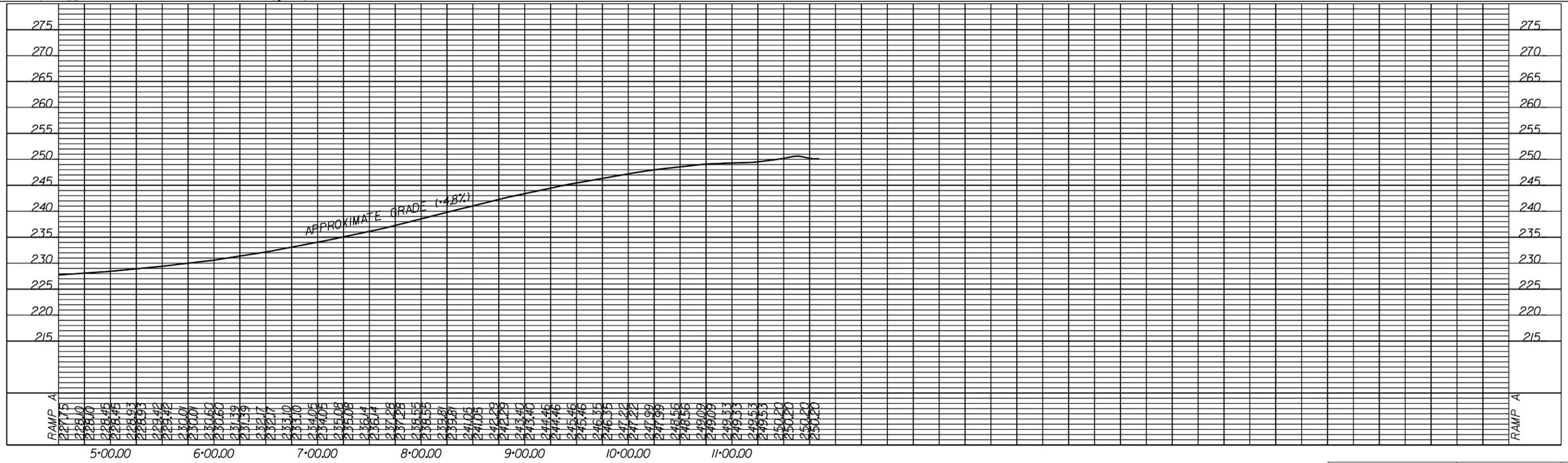
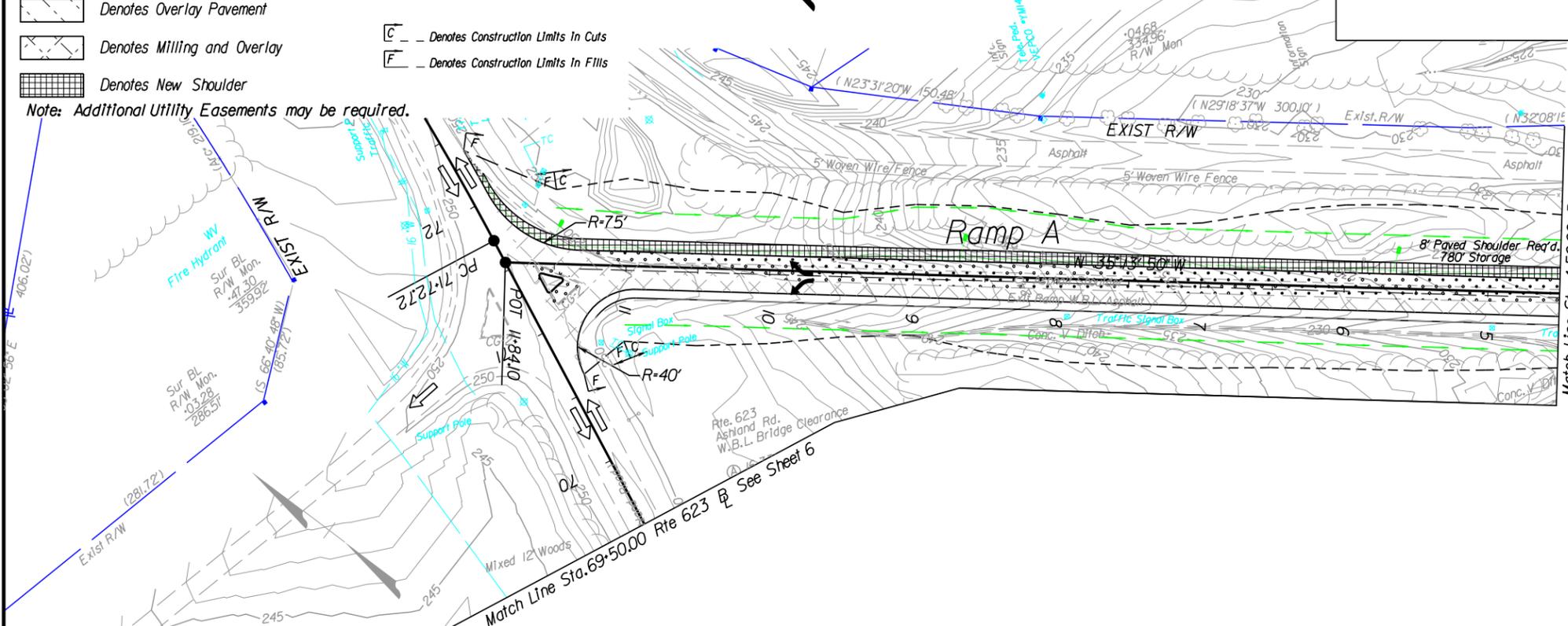
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Dewberry Fairfax, Virginia  
 ROADWAY ENGINEER

Dewberry Fairfax, Virginia  
 HYDRAULICS ENGINEER

- LEGEND**
- Denotes Full Depth Pavement
  - Denotes Demolition of Pavement
  - Denotes Overlay Pavement
  - Denotes Milling and Overlay
  - Denotes New Shoulder
  - dot - dot - dashed lines denote Temporary Easements
  - dot - dashed lines denote Permanent Easements
  - solid lines denote Right of Way
  - Denotes Construction Limits In Cuts
  - Denotes Construction Limits In Fills

Note: Additional Utility Easements may be required.



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

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

| REVISED | STATE | ROUTE | STATE PROJECT               | SHEET NO. |
|---------|-------|-------|-----------------------------|-----------|
|         | VA.   | 64    | 0064-964-110, RW-201, C-501 | 22        |

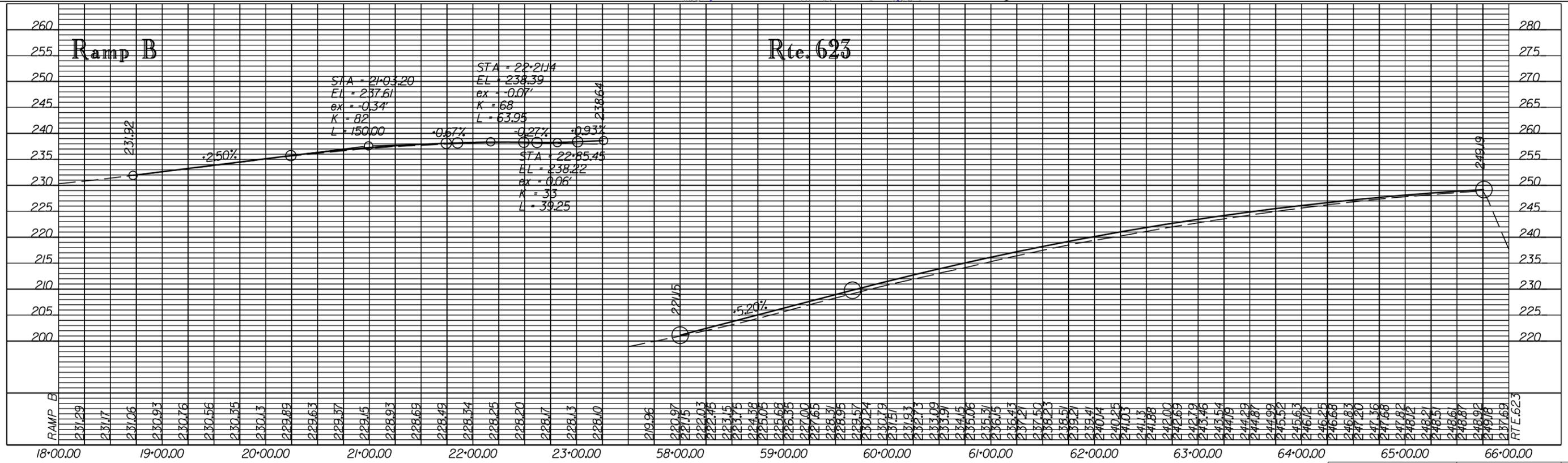
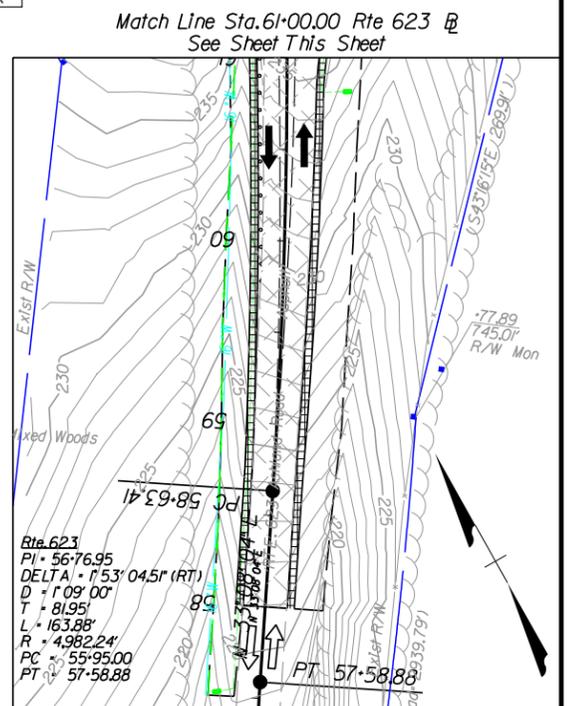
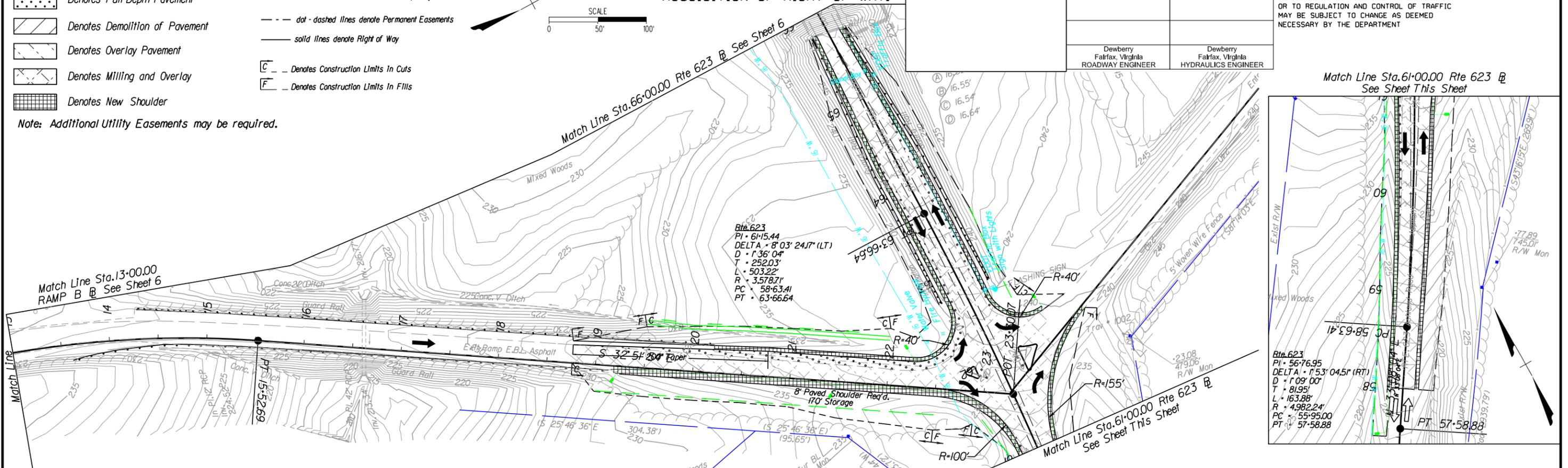
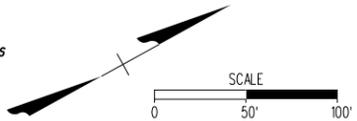
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Dewberry Fairfax, Virginia  
 ROADWAY ENGINEER

Dewberry Fairfax, Virginia  
 HYDRAULICS ENGINEER

- LEGEND**
- Denotes Full Depth Pavement
  - Denotes Demolition of Pavement
  - Denotes Overlay Pavement
  - Denotes Milling and Overlay
  - Denotes New Shoulder
  - dot - dot - dashed lines denote Temporary Easements
  - dot - dashed lines denote Permanent Easements
  - solid lines denote Right of Way
  - C - Denotes Construction Limits In Cuts
  - F - Denotes Construction Limits In Fills

Note: Additional Utility Easements may be required.



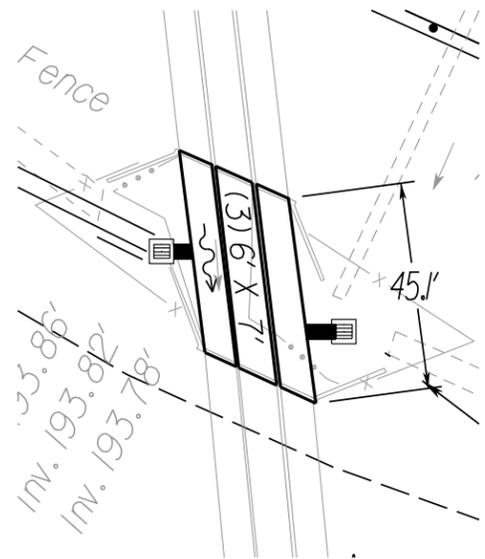
THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

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

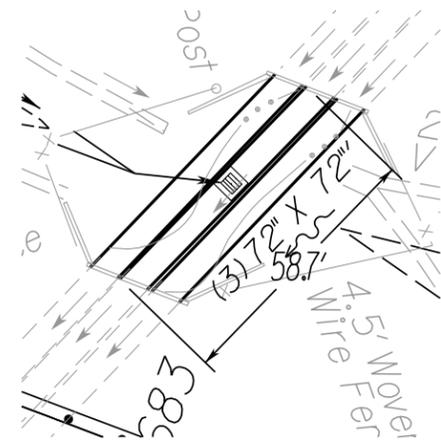
| REVISED | STATE | STATE PROJECT |                             | SHEET NO. |
|---------|-------|---------------|-----------------------------|-----------|
|         |       | ROUTE         | PROJECT                     |           |
|         | VA.   | 64            | 0064-964-110, RW-201, C-501 | 23        |

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

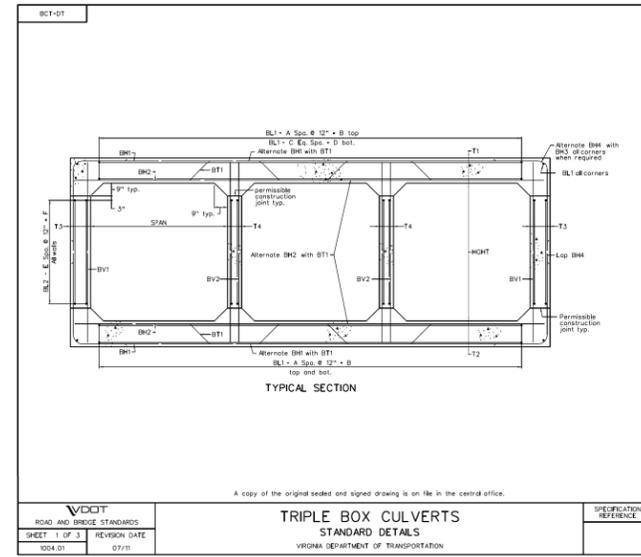
Triple 6'H x 7'W Box Culvert Extension  
 Approx. Sta. 536+15 I-64 WB



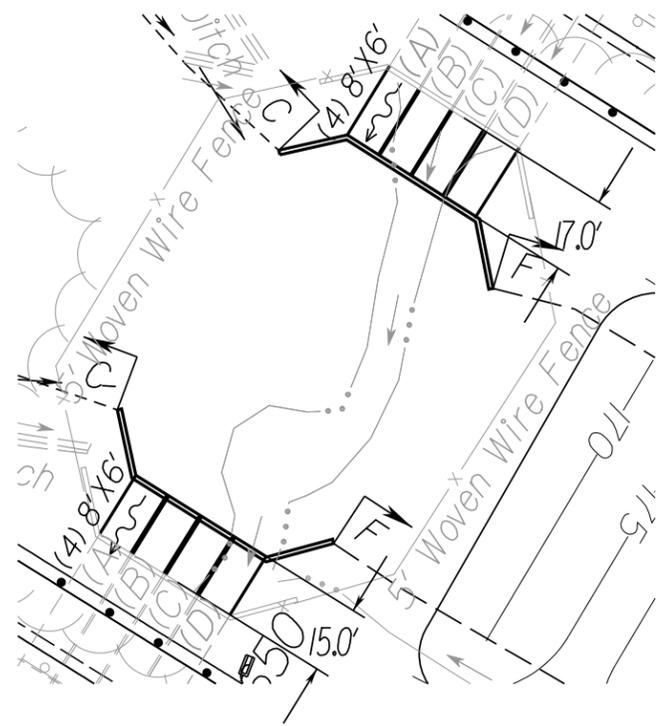
Triple 72" x 72" Box Culvert Extension  
 Approx. Sta. 682+45 I-64 WB



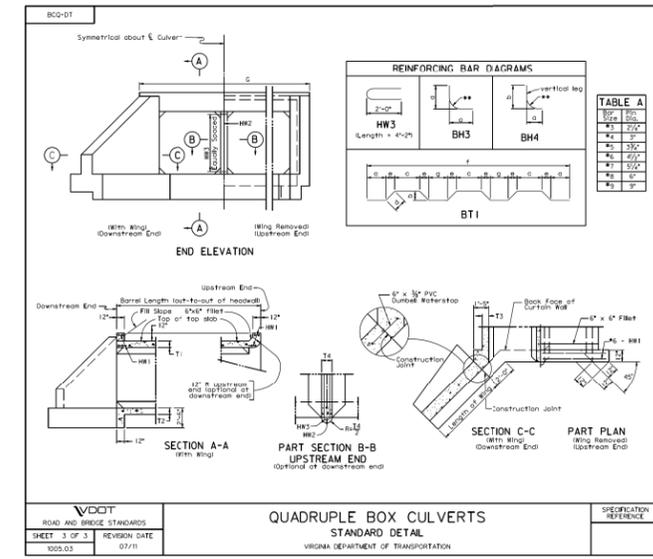
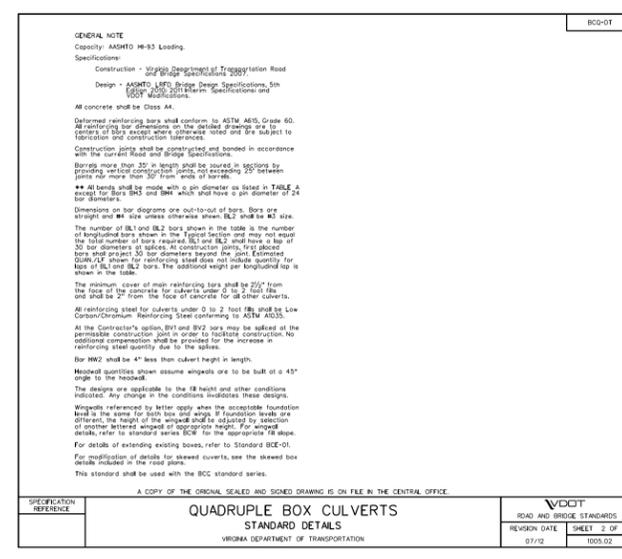
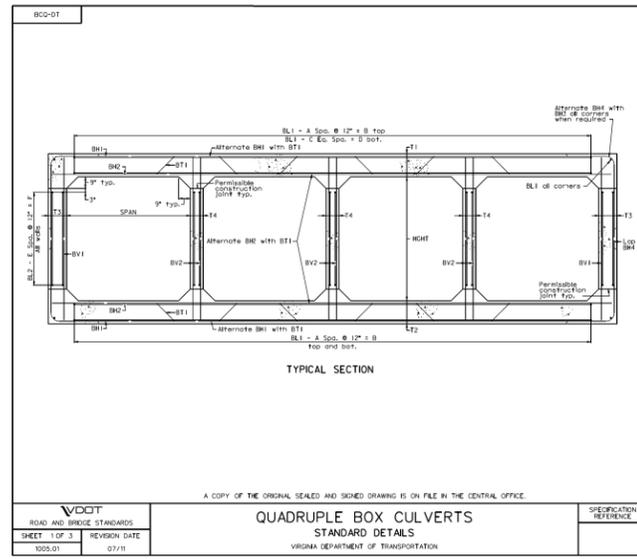
Triple Box Culvert Extension Details



Quadruple 8' x 6' Box Culvert Extension  
 Approx. Sta. 649+55 I-64 WB



Quadruple Box Culvert Extension Details



|                         |             |         |                                      |         |       |
|-------------------------|-------------|---------|--------------------------------------|---------|-------|
| STATE                   | FEDERAL AID |         | STATE                                |         | SHEET |
| VA.                     | ROUTE       | PROJECT | ROUTE                                | PROJECT | NO.   |
|                         |             |         | 0064-964-110, P101, C501, B616, B617 |         | 24    |
| NBIS Number:            |             |         | UPC No.                              | 70542   |       |
| Federal Oversight Code: |             |         | FHWA Construction and Scour Code:    | X031-S8 |       |
| FO                      |             |         |                                      |         |       |

**DESIGN EXCEPTION(S):**  
 Use of reduced width for shoulder: 9'-4" instead of 14'-0".

**GENERAL NOTES:**

Width: 59'-4" face-to-face of rails EBL.  
 59'-4" face-to-face of rails WBL.

Span layout: 117'-0" prestressed concrete bulb-T EBL.  
 112'-0" prestressed concrete bulb-T WBL.

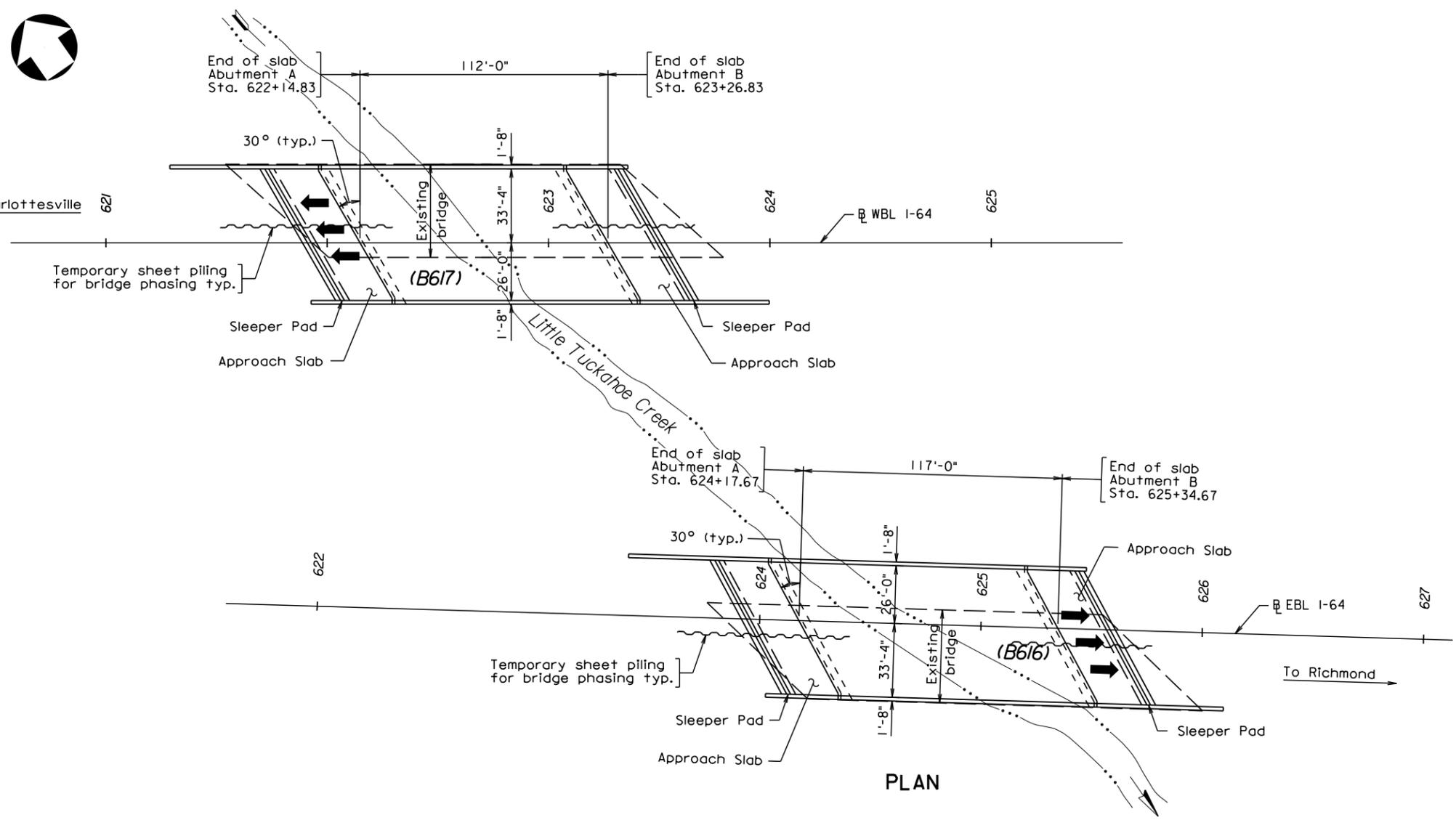
Capacity: HL-93 loading.  
 Drainage area: 5.10 sq. mi.  
 Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2007.  
 Design: AASHTO Standard Specifications for Highway Bridges, 16th Edition, 1996; 1997 and 1998 Interim Specifications; and VDOT Modifications.  
 Standards: Virginia Department of Transportation Road and Bridge Standards, 2008.

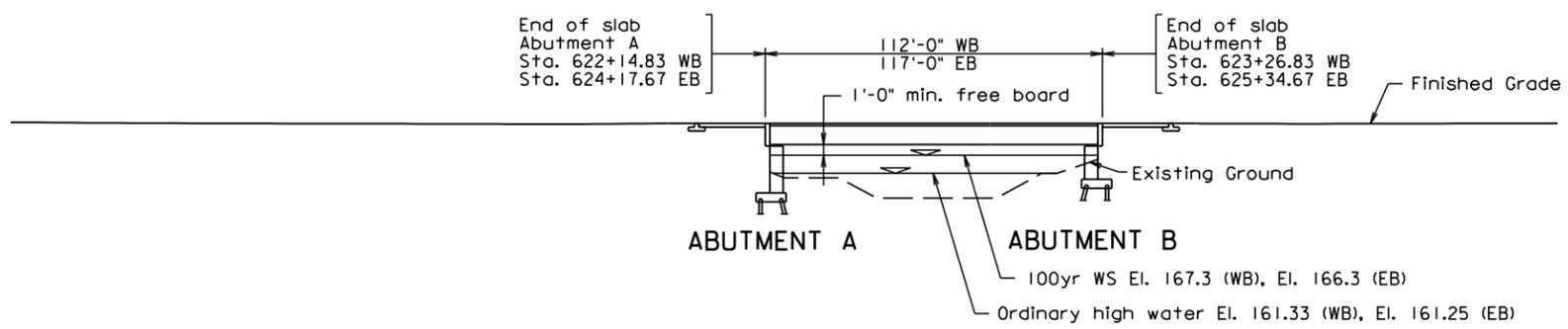
These plans are incomplete unless accompanied by the Supplemental Specifications and Special Provisions included in the contract documents.

Bridge No. of existing EB bridge is 2015. Plan No. is CLXVIII - 7.  
 Bridge No. of existing WB bridge is 2016. Plan No. is CLXVIII - 7.

The existing structures are designated Type B structures in accordance with Sec. 411.



PLAN



SECTION ALONG EBL & WBL BRIDGE



CONCEPTUAL PLANS  
 THESE PLANS NOT TO BE USED  
 FOR CONSTRUCTION

**VDOT**  
 COMMONWEALTH OF VIRGINIA  
 DEPARTMENT OF TRANSPORTATION  
 PROPOSED BRIDGE ON  
 RTE. 64 EBL & WBL OVER LITTLE TUCKAHOE CREEK,  
 GOOCHLAND COUNTY  
 2.9 MI. NW SHORT PUMP  
 PROJ. 0064-964-110, P101, C501, B616, B617

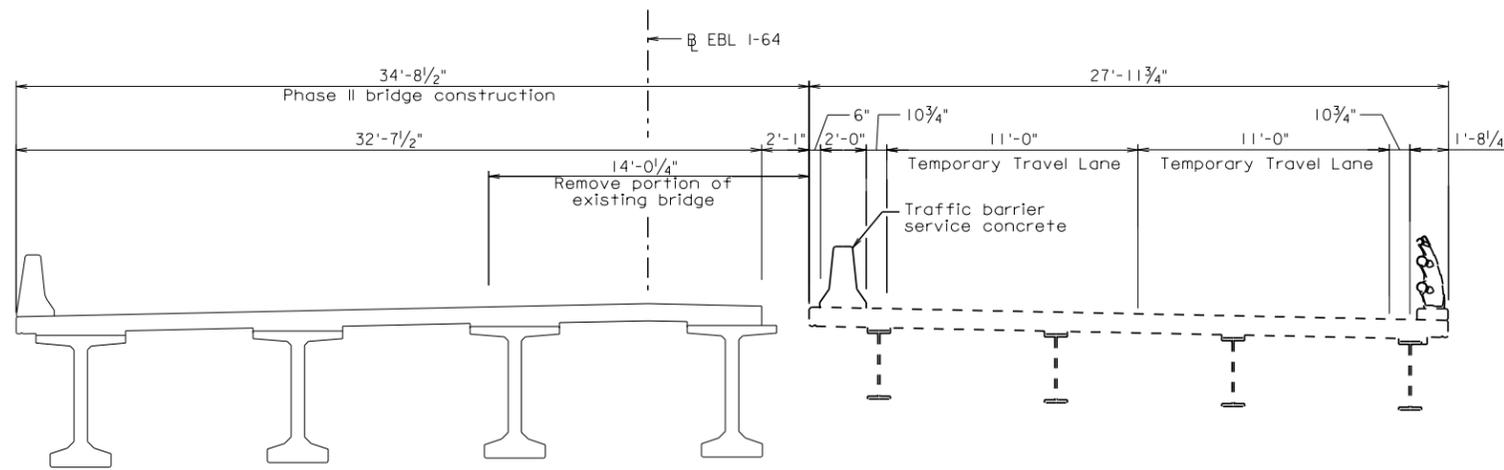
| No.                                  | Description | Date |
|--------------------------------------|-------------|------|
| REVISIONS                            |             |      |
| For Table of Revisions, see Sheet 2. |             |      |

Recommended for Approval: \_\_\_\_\_ Date \_\_\_\_\_  
 State Structure and Bridge Engineer

Approved: \_\_\_\_\_ Date \_\_\_\_\_  
 Chief Engineer

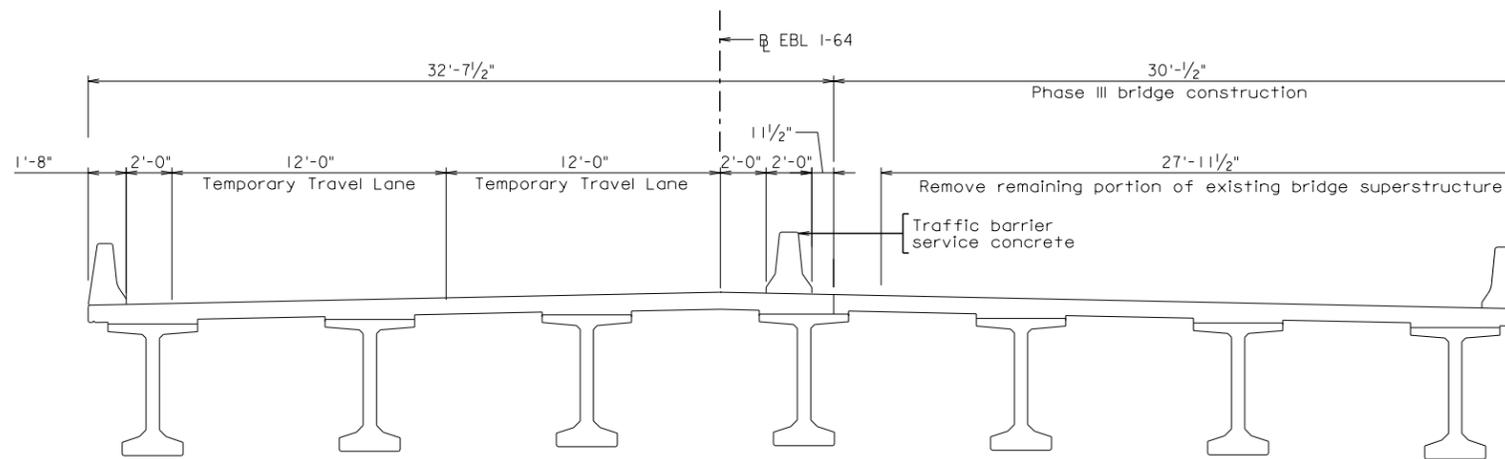
Date: \_\_\_\_\_ © 2013, Commonwealth of Virginia Sheet 24

| FHWA REGION | STATE | FEDERAL AID |         | STATE |                             | SHEET NO. |
|-------------|-------|-------------|---------|-------|-----------------------------|-----------|
|             |       | ROUTE       | PROJECT | ROUTE | PROJECT                     |           |
| 3           | VA.   | —           |         | 64    | 0064-964-110,C501,B616,B617 | 25        |

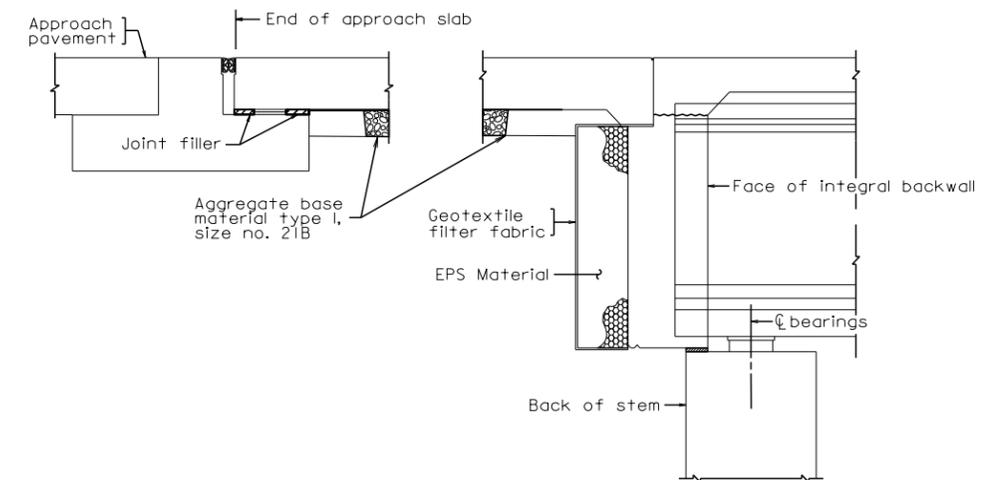


TYPICAL SECTION - PHASE II  
(EBL shown. WBL is opposite hand.)

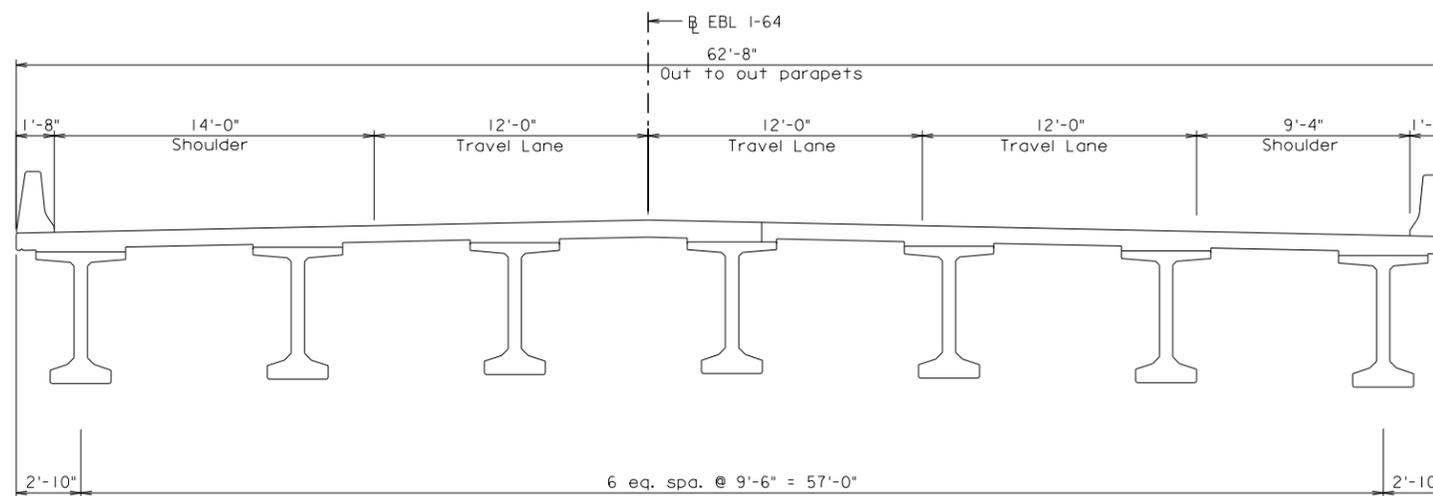
Note:  
Phase I construction consists of lane shift and removal of portion of existing bridge superstructure.



TYPICAL SECTION - PHASE III  
(EBL shown. WBL is opposite hand.)



TYPICAL ABUTMENT SECTION  
Scale: 1/2" = 1'-0"



TYPICAL SECTION  
(EBL shown. WBL is opposite hand.)



CONCEPTUAL PLANS  
THESE PLANS NOT TO BE USED FOR CONSTRUCTION

|  |             |      |  |
|--|-------------|------|--|
| COMMONWEALTH OF VIRGINIA<br>DEPARTMENT OF TRANSPORTATION |             |      |  |
| STRUCTURE AND BRIDGE DIVISION                            |             |      |  |
| RTE. 64 EBL & WBL OVER<br>LITTLE TUCKAHOE CREEK          |             |      |  |
| No.  | Description | Date | Designed: NHL<br>Drawn: CC<br>Checked: ..... |
|  | Revisions   |      | Date<br>Plan No.<br>Sheet No.<br>25          |

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

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