

RESPONSE TO REQUEST FOR PROPOSALS

Route 7 - Westbound Truck Climbing Lane

A DESIGN-BUILD PROJECT

FROM: ROUTE 9

TO: WEST MARKET STREET

LOUDOUN COUNTY, VIRGINIA

State Project No.: 6007-053-133, R201, C501

Federal Project No.: STP-5401(518)

Contract ID Number: C00058599DB54

Volume I: Technical Proposal



SUBMITTED TO:



SUBMITTED BY:



IN ASSOCIATION WITH:





June 20, 2013

Mr. Kevin C. Reichert, P.E.
Virginia Department of Transportation
1221 East Broad Street
Main Building, 4th Floor
Richmond, VA 23219

RE: Route 7-Westbound Truck Climbing Lane
From: Route 9
To: West Market Street
Contract ID Number: C00058599DB54
Section 4.1 - Letter of Submittal

Dear Mr. Reichert:

Shirley Contracting Company, LLC (Shirley), 8435 Backlick Road, Lorton, Virginia 22079, as the Offeror, is pleased to submit this Technical Proposal for the Route 7-Westbound Truck Climbing Lane Project (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.

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 Point of Contact 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 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:

Interim Milestone:

August 22, 2015

Substantial Completion:

October 22, 2015

Final Completion:

October 22, 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 Regarding 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 2.1 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 Exceptions 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

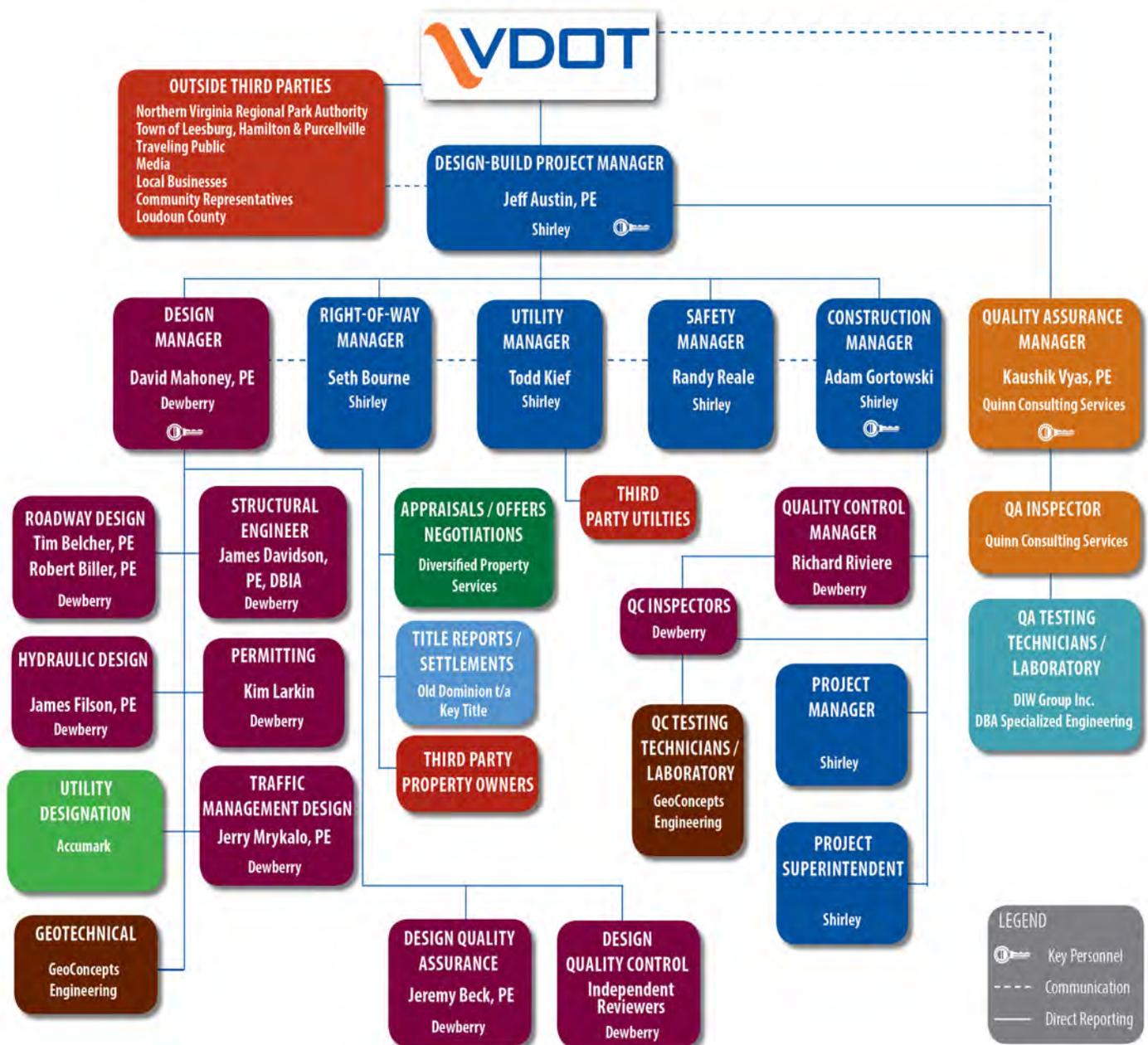
4.2 Offeror's Qualifications

4.2.1 TRUE, ACCURATE, AND UPDATED INFORMATION OF SOQ

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

4.2.2 ORGANIZATIONAL CHART

The Project Organizational Chart below identifies the “chain of command” and major functions to be performed and their reporting relationships in managing, designing and constructing the Project, including quality control/quality assurance. As there have been no changes to the organizational chart, an updated narrative is not applicable.



4.3 Design Concept

Serving as major access to points west and to the north of Leesburg, Route 7 and its interchange with Route 9 continue to experience increasingly severe congestion, particularly during the morning and evening rush hours. Coupled with substandard existing roadway conditions, including steep grades, unsafe ingress and egress points, substandard shoulders, and unforgiving roadside slopes, the resulting frequent traffic accidents only add to the delays. Fortunately, the Route 7 Westbound Truck Climbing Lane Project (The Project) should greatly improve the safety and operation of this corridor. The Shirley Team is very familiar with and has extensive experience working in the vicinity of the Project and the Route 7 corridor. We recently completed the design and are currently underway with the construction of the Sycolin Road Overpass Project just east of the Project limits, and have previously completed the Route 7 interchanges at Loudoun County Parkway, River Creek Parkway, Lansdowne Boulevard, and the Route 7/15 Bypass. We also completed road improvement projects to widen Route 7 to six lanes to the east of Leesburg, extend the Route 7/15 Bypass, construct the missing Plaza Street link to Route 7, and complete the extension of Battlefield Parkway over the W&OD Trail. Additionally, Dewberry is the engineer of record for the Dulles Greenway, the interchange at Route 7 and Belmont Ridge Road, Route 7 and Ashburn Village Parkway, and Route 7 and Route 690. This unparalleled experience and understanding of the Route 7 corridor will benefit VDOT and the traveling public in many ways. In fact, the concepts which our Team has already developed for this Project include several enhancements to the RFP plans which aim to reduce impacts to the travelling public, improve safety, reduce long-term maintenance requirements for VDOT, and reduce project costs.

Described below and shown in our Volume II submission is our Team's proposed concept for the Project, including detailed explanations of each of the modifications we have made. Our concept meets the requirements identified in the RFP documents and as identified on the Design Criteria Table, Attachment 2.1. Additionally, our proposed concept, including proposed stormwater management facilities, falls completely within the right-of-way limits shown in the RFP conceptual plans (with the exception of temporary and/or permanent easements as allowed by the RFP). Finally, our Team's proposed design does not include any sub-standard elements which would require approval of design exceptions or design waivers beyond those already identified in the RFP.

ROADWAY IMPROVEMENTS

Although the primary purpose of this Project is to add the westbound truck climbing lane improvement, there are a number of other roadway, safety, and operational improvements included in the scope. These include:

- Elimination and consolidation of cross-over intersections on Route 7;
- Increased connectivity of access roads parallel to Route 7;
- The addition of two roundabouts to improve circulation at the Route 9 Intersection;
- Realignment of the W&OD Trail to eliminate at-grade crossings;
- Reconfiguration of West Market Street over Route 7 to allow additional access to westbound Route 7;
- Provide full depth and full width shoulders and turn lanes along Route 7.

ROUTE 7

The Route 7 improvements consist of widening the westbound roadway to provide two-thru lanes and an additional truck climbing lane/auxiliary lane from just east of the West Market Street overpass to just west of the Route 9 overpass. All travel lanes will be 12' wide and will be adjacent to full width paved and graded shoulders per VDOT GS-1 criteria, incorporating an 8' paved width on the right side and a 4' paved width on the median side. Additional offsets will be provided to barriers and guardrail to ensure that the appropriate "usable" shoulder width is provided. In addition to the construction of a truck climbing lane along westbound Route 7, auxiliary lane improvements will be made to extend acceleration and deceleration lanes at the West Market Street entrance

ramp, exit ramp to Route 9, and at the intersections with Alysheba Drive/Farm Market Road and Hidden Gap Road. Median improvements will be incorporated to accommodate left turn movements from westbound Route 7 to Roxbury Hall Road and White Gate Road. Both of these left turn lanes will include construction of barrier separated travel lanes, including adequate shoulder widths adjacent to the barrier and raised concrete medians, and the turn lanes have been designed to accommodate storage and deceleration outside of the mainline travel lanes. Finally, an acceleration lane will be constructed in the median of Route 7 to accommodate left turn movements from Fort Johnston Road to eastbound Route 7.

In the eastbound direction, an extended deceleration lane will be constructed at the approach to Roxbury Hall Road, which will then extend to the exit ramp to the West Market Street Interchange. Similar to the westbound Route 7 improvements, a full width shoulder will be provided adjacent to this auxiliary lane widening. Also along Route 7, all shoulder restoration and guardrail work as identified in RFP Attachment 2.3 will be constructed.

As an enhancement to the RFP Plans, the Shirley Team has adjusted the RFP alignment of westbound Route 7 in order to maintain the location of the existing westbound travel lanes, and also to improve safety and reduce costs by minimizing the lengths of retaining walls in the median. By adjusting the baseline location of westbound Route 7, additional width has been generated in the median to provide more than just a 2' wide barrier or retaining wall between the left turn lanes and adjacent thru lanes. ***This enhancement has several benefits:***

- ***Improved Safety*** – By providing additional width between the thru lanes and the median turn lanes, we have been able to provide a 4' wide median between the westbound thru lane and the westbound left turn lanes. The construction of a 4' wide median represents an improvement from the RFP concept which called for construction of a median barrier and installation of an impact attenuator at the beginning of the turn lane. The impact attenuator required by the RFP concept would have introduced a roadside hazard at the exact location where traffic would need to enter the deceleration lane. Our concept will maintain a 4' wide concrete median between the thru lanes and the left turn lane until the cross slope on the concrete median is not traversable. At that point, an impact attenuator will be installed, and concrete barrier will be constructed to provide protection from the grade changes which are required to transition the left turn lanes to a grade consistent with the eastbound Route 7 thru lanes. ***By moving the impact attenuator out of the “decision area” of the left turn lane, roadside safety has been greatly improved and future maintenance has been minimized by greatly reducing the likelihood of impact by vehicles.***
- ***Elimination of Retaining Walls***—In several locations, the grade difference between eastbound and westbound Route 7 is significant. By shifting the baseline on westbound Route 7, our Team is able to provide additional width between the thru lanes and median turn lanes. This additional width will allow for construction of dual runs of single face barrier, and the area between the barriers will be capped with concrete. ***This modification significantly exceeds the RFP requirements by reducing the amount of retaining walls needed on the Project, thus providing long term maintenance savings to VDOT, and reduced initial construction costs.***

Route 9

Improvements to Route 9 proposed by our Team are consistent with the requirements of the RFP documents. However, after a thorough analysis of the RFP, we have made modifications to the roundabout and ramp layout as detailed in this section in order to match existing conditions and to provide the improvements identified in the RFP text but not depicted in the RFP conceptual plans. 12' wide travel lanes will be provided in both directions of travel on Route 9, and roundabouts will be constructed at each of the interchange ramp terminals to the north and south of the existing overpass. A 16' raised median will be maintained between the eastbound and westbound lanes, consistent with the existing condition. Our Team has made adjustments to the splitter islands at each of the roundabout approaches to ensure offsets to the island noses are consistent with current VDOT and FHWA

requirements and the *NCHRP Report 672 – Roundabouts: An Informational Guide, Second Edition*. As required by the RFP, two lanes will be provided for eastbound Route 9 traffic through both roundabouts and onto Ramp D. Roadway lighting will be incorporated on Route 9 at the roundabouts and as required by Section 2.10.2 of the RFP. In an effort to reduce impacts to the existing Route 9 bridge, lighting analysis will be completed so that proposed roadway lighting can be installed on the existing bridge “blisters” which were originally designed to accommodate offset lighting fixtures.

Interchange Ramps

Our Team has made further improvements above and beyond the RFP documents to the alignment and configuration of the interchange ramps at Route 9. Improvements on Ramps A and B will be consistent with the RFP documents, and will consist of minor adjustments to connect the ramp terminals to the proposed roundabouts.

At Ramp C, as a demonstration of our efforts to exceed the RFP requirements and improve long term traffic operations, our Team has furthered the design of the splitter island and auxiliary lane around the roundabout to provide a continuous flow of traffic from westbound Route 7 to westbound Route 9. We have modified this design by “flipping” the deceleration lane to the left side of the ramp and providing the deceleration lane with shorter storage area more representative of the lower volumes of traffic. While the RFP requirements identify a 300’ turn lane storage area and a 100’ taper for the bypass lane vehicles, our design will provide a continuous lane between the westbound Route 7 exit “gore” and the bypass lane. This will allow for the free-flow of traffic from westbound Route 7 to westbound Route 9, which is the highest volume movement in the afternoon peak hours, without the need for a lane change on the ramp. The 300’ storage area will be developed on the left side of the ramp for the traffic which will utilize the roundabout to continue towards East Colonial Highway, Dry Mill Road, or to the north on Route 9 destined for Simpson Circle. In addition, a 100’ taper will be provided in advance of that storage area.

This concept provides the public with significant benefits, including:

- *Safety and Operations* - Since the majority of traffic is destined for westbound Route 9 beyond Simpson Circle, providing a continuous deceleration lane from Route 7 to the bypass lane will greatly improve operations on the ramp and eliminate the need for a lane change for the majority of traffic. The lower traffic volumes destined for points to the south or Simpson Circle will be contained within the 300’ storage area and won’t cause impacts to the free flow operation of the interchange ramp or bypass lane.
- *Reduced Grading* – The interchange ramp from westbound Route 7 to westbound Route 9 is built on a deep fill. By shifting the ramp widening to the left side, grading impacts have been reduced. Widening to the right side of the ramp to provide the 300’ storage length would have impacted Ridgeview Court, a drainage outfall channel, and an existing culvert under Ridgeview Court. To avoid these impacts, a retaining wall would have been needed. ***Our concept of widening to the left side of the ramp avoids all of the impacts identified above, eliminates the need for a retaining wall, avoids temporary traffic control measures on Ridgeview Court which would have been required for grading and drainage adjustments, and reduces long-term maintenance for VDOT.***

In addition to the enhancements made to Ramp C, our Team has a creative concept to improve the alignment of Ramp D and lessen the impacts to the public. As shown in the RFP documents, one of the major Project construction elements is the introduction of an underpass at Ramp D to accommodate the W&OD Trail users. The RFP concept required first constructing a detour of the ramp in order to then build the arch structure underpass. Then the ramp could be permanently constructed over the arch and traffic shifted to its ultimate configuration.

Our concept eliminates the detour and avoids multiple traffic shifts at Ramp D. As shown in our Volume II conceptual plans, we have shifted the alignment of Ramp D to the inside of the existing ramp, which will allow several enhancements to the Project to be realized:

- ***Reduced Construction Impacts*** – The realignment of the ramp will allow the proposed W&OD Trail arch structure to be built adjacent to the existing interchange ramp. It will also allow for drainage improvements to be constructed at the same time using conventional installation methods instead of jack and bore operations. Following construction of the arch structure and drainage improvements, the new, re-aligned ramp can be constructed and opened to traffic. Based on the skew of the W&OD Trail crossing, it will be necessary to complete the arch structure in a second phase, which will be completed once traffic is switched to the new ramp alignment. ***This phasing is significantly improved from the RFP concept*** which would have required construction of a detour ramp and several traffic switches to construct the arch structure. Our concept will allow us to start work on the permanent arch and ramp improvements earlier in the construction sequence, allowing us to open the ramp to the ultimate configuration earlier in the construction timeline than the RFP concept could have been completed.
- ***Reduced Arch Length*** – By shifting the ramp to a new alignment, our Team has also been able to introduce a new alignment of the W&OD Trail and arch structure which ***will shorten the length of the underpass***. Since the arch structure does not meet the Elevation Open Area (EOA) requirements identified in the Northern Virginia Regional Park Authority (NVRPA) design guidelines for W&OD Trail bridge crossings, shortening the arch structure will aid in providing a more “open” feel to the culvert as opposed to a “tunnel” feeling which would have been associated with the longer crossing. Thus, ***this design enhancement should also expedite the review and approval process by the NVRPA***.
- ***Improved Ramp Geometry*** – The RFP concept consisted of reusing the existing ramp, which required construction of a tight radius at the entrance to the ramp to maintain adequate spacing to the roundabout entrance from Dry Mill Road. By shifting the ramp to the north, or to the left of the existing ramp, our Team has been able to provide a flatter curve at the entrance to Ramp D. This will allow for the design speed of the ramp to be achieved in the first curve, which now has a radius of 225’, as compared to the 120’ radius provided by the RFP concept. ***This will improve the operation of the ramp***, allowing motorists to accelerate out of the roundabout as opposed to a point further up the ramp.

Route 7 Parallel Road Improvements

As required by the RFP, our Team’s alignments for the Route 7 parallel road improvements will be completed within the right-of-way identified for construction. These parallel road improvements include an extension of Leeland Orchard Road to Fort Johnston Road and Alysheba Drive, and an improved connection of two segments of Beechnut Road. These connections will allow access points to be closed at several locations on Route 7, improving the operation and safety of the Route 7 corridor. In an effort to further enhance the alignments depicted in the RFP plans, our Team has made a couple of minor adjustments to the parallel road elements:

- Modification of the alignment of Fort Johnston Road to reduce the horizontal curve radius and reduce right-of-way impacts to Parcel 016, owned by Ft Johnston LLC. The reduced radius will meet 30mph design criteria as required by the RFP, and will also minimize grading impacts and temporary construction easements on Parcel 016.
- Adjustment of the location of the cul-de-sac at the west end of Beechnut Road. By shifting the cul-de-sac location slightly north and west, as discussed and agreed as part of our Proprietary Meeting, we have been able to eliminate all permanent right-of-way impacts to Parcel 003. Only temporary easements will be needed for slope grading for the roundabout.

All other entrances, such as those to Hidden Gap Road, Farm Market Road, White Gate Road, and Roxbury Hall Road will be consistent with the improvements identified in the RFP documents.

West Market Street

Our Team’s proposed improvements for West Market Street are consistent with those depicted in the RFP plans. Roadway improvements will include introduction of a 12’ wide left turn lane from the eastbound exit ramp to West Market Street to the westbound Route 7 entrance ramp. Thru lane widths will be maintained at 12’ and 4’ wide shoulders will be provided over the existing bridge. Approaching the intersection with Catoctin Circle and Fairview Avenue, curb and gutter will be introduced at the edges of the travel lanes to maintain the existing closed section roadway configuration.

ROADWAY PROFILES

The majority of the proposed improvements will incorporate vertical profiles which are based on the existing roadway facilities. The table below provides the maximum vertical grade information for each roadway segment and connections as required by the RFP:

| Roadway/Alignment | Maximum Vertical Grade |
|-----------------------|------------------------|
| Westbound Route 7 | 6.98% |
| Route 9 | 5.59% |
| West Market Street | 5.00% |
| W&OD Trail | 5.00% |
| Ramp A | 9.00% |
| Ramp B | 2.90% |
| Ramp C | 5.20% |
| Ramp D | 3.50% |
| Dry Mill Road | 3.70% |
| East Colonial Highway | 2.58% |
| Beechnut Road | 7.90% |
| Fort Johnston Road | 10.00% |

Washington & Old Dominion (W&OD) Trail

A significant element of this Project is the construction of improvements to the W&OD Trail at the Route 9 Interchange. These improvements are intended to increase bicyclist, pedestrian and vehicular safety, and to allow free-flow movements from Route 9 to the underpass at Dry Mill Road. Our Team has a long history and excellent working relationship with the NVRPA, having completed each of the new grade separations of the W&OD Trail at Battlefield Parkway, Pacific Boulevard, Atlantic Boulevard, and Church Road design/build projects. This unmatched experience has enabled us to develop the alternate concepts we are proposing for the W&OD Trail alignment. As shown in our Volume II documents, *we have adjusted the horizontal alignment of the proposed W&OD Trail to improve construction methods and the ultimate product for the NVRPA.* The main elements of the W&OD Trail improvements proposed by our Team include:

- Construction of a 10’ wide asphalt path from the existing Route 9 overpass of Route 7 to approximately 100’ north of Dry Mill Road;
- Additional widening of the W&OD Trail just west of Route 9, through the curves approaching the proposed underpass of the Route 9 bridge;
- Construction of a new arch structure to carry Ramp D over the W&OD Trail.

The adjustments our Team has made to the W&OD Trail concept have provided for the following enhancements as compared to the RFP plans:

- *Reduced horizontal alignment length* – Along Ramp A, we have shifted the tight horizontal curve slightly to the east as compared to the RFP concept and further away from eastbound Route 7. This modification has allowed us to reduce the retaining wall area and length along Route 7 while maintaining the vertical grade of the profile.
- *Adjusted horizontal alignment east of Route 9* – East of the Route 9 underpass, we have shifted the horizontal alignment closer to the existing drainage channel between Route 7 and Ramp D. By shifting the W&OD Trail to the east, we have eliminated several retaining walls adjacent to Route 7 and extending from the arch structure, thereby meeting the NVRPA goals of providing a more “open” concept along the trail. This adjusted alignment also has reduced the amount of excavation required to the left side of the trail where a large mound of earth currently exists. This, in turn, results in less clearing and a more natural and “old growth” feel along the W&OD Trail within the interchange.
- *Reduction in skew of Ramp D crossing* – The adjusted horizontal alignment identified above has allowed our Team to reduce the skew of the crossing below Ramp D. This reduces the length of the arch structure which will avoid the long “tunnel” effect of the crossing compared to the RFP concept. We understand from the RFP documents that meeting the Elevation Open Area (EOA) requirements typically required by the NVRPA is not a requirement of this project, but from our continued working relationship with the NVRPA, we understand the benefits – both for safety and operations/maintenance – that a shortened arch structure will provide. ***The reduced arch length represents a significant improvement to the RFP concept, and an area where our Team has exceeded the RFP requirements by providing a larger EOA as compared to the RFP concept.***

BRIDGES & STRUCTURES

Our Teams components are shown in our Volume II Conceptual Plans and briefly described below:

Ramp D Arch Structure over W&OD Trail

The main structural element of the Project is the construction of a new single span arch structure over the W&OD Trail to allow users to pass below Ramp D without crossing vehicular traffic. The arch structure will provide a minimum vertical clearance of 12’ above the trail as well as a total opening width of 22’. Architectural treatments will be incorporated on all exposed wall faces, and underpass lighting will be provided to mitigate the reduced opening area as compared with the normal Elevation Open Area (EOA) requirements of the NVRPA. Based on the horizontal alignment modifications proposed by our Team, the alignment of the arch structure will provide clear, unobstructed sight-lines from the north side of the Ramp D arch structure to the south side of the existing Dry Mill Road underpass. Our Team anticipates installation of pre-cast arch panels to create the finished arch structure on cast-in-place concrete foundations. Following construction and prior to opening of the new alignment of Ramp D, a load rating for the proposed arch will be completed in accordance with IIM-S&B-86.

Route 9 Overpass

The existing Route 9 overpass will be modified slightly to accommodate the proposed travel lanes between the proposed roundabouts. Roadway lighting will be installed on the existing parapet “blisters” to provide the necessary roadway illumination between the roundabouts and guardrail will be upgraded and connected to the terminal walls, consistent with the existing conditions. Below the bridge, the W&OD Trail will be constructed adjacent to the southern abutment, and the profile of the W&OD Trail will be established to provide both the required vertical clearance for trail users, and also to avoid impacts to the existing abutment piles during excavation. As required by the RFP, the existing load rating report will be updated to account for any under

bridge lighting that may be added to the superstructure and any modifications that may be required to install the W&OD Trail adjacent to the abutment. In addition, a written certification will be provided that the existing structure will support the proposed utilities.

West Market Street Overpass

The existing West Market Street overpass will be reconfigured to accommodate a new left turn lane allowing eastbound Route 7 motorists to access the westbound Route 7 travel lanes. To accommodate this reconfiguration of the travel lanes, the outside shoulders will be reduced. No structural repairs or modifications will be made to the bridge, but guardrail approaching the bridge will be replaced and connected to the terminal walls in order to meet current criteria.

Retaining Walls

Due to the substantial grade differences at various locations including between eastbound and westbound Route 7, along the outside of the proposed westbound Route 7 widening, and adjacent to the realigned W&OD Trail, there will be a need to construct several retaining walls. As required by Section 2.4 of the RFP, all retaining walls will receive architectural treatment in accordance with the Special Provisions and as described in Section 2.2. Based on the conceptual design developed by our Team, we anticipate retaining walls will be required in the following locations:

| Alignment | Side | Station Range |
|---------------------------------|-------|----------------------------|
| W&OD Trail / Route 9 Roundabout | Left | Sta. 315+75 to Sta. 316+95 |
| W&OD Trail / Route 9 Roundabout | Left | Sta. 317+60 to Sta. 318+90 |
| W&OD Trail | Right | Sta. 305+10 to Sta. 306+75 |
| W&OD Trail | Left | Sta. 305+45 to Sta. 306+75 |
| W&OD Trail | Right | Sta. 307+90 to Sta. 309+00 |
| WB Route 7 | Left | Sta. 220+25 to Sta. 224+00 |
| WB Route 7 | Left | Sta. 226+75 to Sta. 236+25 |
| WB Route 7 | Right | Sta. 227+25 to Sta. 232+75 |

The final design of each retaining wall will be based on additional geotechnical investigations to determine limits and type of rock or existing ground material. Design and construction will be completed to limit the amount of temporary and permanent easements required for construction and long-term maintenance of the structures.

DRAINAGE & SWM BASINS

Roadway Drainage

Drainage improvements for the Project will incorporate both closed and open section designs. Along Route 7 and the portion of West Market Street north/east of the interchange ramps, closed system designs will be utilized to convey water from areas where barrier or curb/curb and gutter is installed adjacent to the shoulder. Inlets will be selected based on the type of roadside barrier, and drainage will be conveyed to adequate outfalls through closed system storm sewers. On Route 9, the interchange ramps, the W&OD Trail, and the newly constructed portions of Route 7 parallel roads, a combination of storm sewer systems and open ditches will be utilized to convey water to adequate outfalls. In developing our preliminary concept for the Route 7 – Westbound Truck Climbing Lane Project, we have considered the following elements:

- *Cross Culverts* – As required by the RFP, we have anticipated that all existing cross culverts are non-serviceable and need to be replaced. Our preliminary concept identifies the expected new culvert crossing

locations and sizes to maintain drainage throughout the Project. In locations where cross culverts are located at excessive depths below the roadway, jack and bore installation methods will be utilized. Pipes which will be jacked and bored will have adequate cover above the pipe to avoid heaving of the roadway, and will avoid deep excavations and shoring required for open cut installation methods. The use of jack and bore installation will also reduce maintenance of traffic impacts to the travelling public, and avoid multiple shifts along the travel lanes to work around open cut installation. Replacement culverts which are located at shallow depths below the roadway will need to be installed via open cut methods to avoid the heaving concerns mentioned above.

- *Roadside Ditches* – Roadside ditches will be located to intercept all surface runoff in “open” shoulder areas. Flow will be directed to adequate outfalls, including stormwater management basins where needed for treatment purposes. As noted in our Volume II documents, several roadside ditches will be ***designed as grass swales to improve on the treatment of the Project***, eliminating the need for construction of several stormwater management basins while still meeting the phosphorus removal requirements.
- *Closed System Drainage* – As shown on our Volume II plans, significant lengths of Route 7 will need to incorporate closed system drainage designs based on the vertical grade changes adjacent to the road. Barriers and curb will be located adjacent to full width paved shoulders, and inlet types will be selected based on the type of barrier or curb required. In an effort to provide a low-maintenance Project, all curb within Project limits will be standard concrete curb, which represents a significant improvement to the corridor as opposed to the use of easily damaged asphalt curb. Closed system drainage associated with the curbed sections will be connected to new storm sewer pipes which will convey runoff to adequate outfalls. All pipes and culverts utilized on the Project will be in accordance with the VDOT PC-1 standards for the appropriate roadway classification.

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, Virginia Department of Transportation Drainage Manual (VDM) and VDOT’s BMP Design Manual of Practice to determine the methodology and requirements for stormwater management for this Project.

In accordance with the criteria noted above and the Public Hearing held May 9, 2012, this Project is subject to the criteria as described in SWPA 12-01 per Category 2 and is to be evaluated using the performance-based (simple) methodology for determination of the Project phosphorus removal rate. Stormwater management will need to provide water quality requirements to the maximum extent practical without impacting (increasing) the existing or current proposed right of way/easement footprint, and without impacting the construction schedule. The target rates have been defined per the Hydrologic Unit Code (HUC) watersheds. There are three HUC watershed which are within the Project limits - Catoctin Creek, Limestone Branch and Goose Creek. The RFP denoted the required phosphorus removal rates for the Project as 3.7 lb/yr for Goose Creek watershed, 1.8 lbs/yr for Catoctin Creek watershed and 1.02 lbs/yr for Limestone Branch watershed.

The Route 9 Interchange is located in the Catoctin Creek watershed and stormwater management in this area was addressed in the RFP plans by six (6) BMP locations. In order to meet the 1.8 lbs/year for the Catoctin Creek watershed, our Team has utilized 2 of the 6 BMP locations and has added a vegetated water quality swale. For the middle portion of the Project, which is depicted on conceptual plan sheets 6, 7 and 8, our Team has addressed the required 1.02 lbs/year of phosphorous removal for the Limestone Branch watershed through construction of a BMP facility on the south side of Route 7 adjacent to the Beechnut Road extension completely within existing right-of-way. ***This represents an improvement to the RFP concept*** which did not identify any BMP facilities

in the Limestone Branch watershed. The remainder of the Project falls within the Goose Creek watershed. As shown on our Volume II plans, our Team intends to achieve the 3.7 lbs/year of phosphorous removal through construction of two (2) BMP facilities. One facility will be located adjacent to Leeland Orchard Road and the other is located within the West Market Street Interchange.

The ability of our Team to achieve the required phosphorous removal through a reduced number of BMP facilities represents an improvement to the Project through reduced maintenance requirements for VDOT, as well as reduced clearing within Project limits. Further, our Team has located these facilities such that no additional right-of-way or easements will be necessary, 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. Finally, ***our Team's concept has improved the phosphorous removal from 6.52 lbs/year identified in the RFP documents to 6.6 lbs/year***, providing a credit for future roadway improvements in the watershed.

4.4 Project Approach

4.4.1 ENVIRONMENTAL MANAGEMENT

The Shirley Team uses an fully integrated approach to environmental management that includes coordinated interaction between environmental, design, utility, right of way, and construction discipline managers from the earliest stages of proposal development until final completion of construction. This ensures that options and efforts for avoidance and minimization of environmental impacts are thoroughly incorporated into each discipline at every stage of the design/build process. The benefits of this collaborative approach also allows for the consideration of items not typically incorporated in a permitting process such as construction access, laydown areas, and utility needs. The end result is that this integrated approach minimizes the risks of Project delays, reduces Project cost, and protects sensitive environmental resources. Our Team recognizes the efforts already completed by VDOT to minimize impacts to recognized environmental conditions and areas of concern along the Project corridor. These range from the Northern Virginia Regional Park Authority's relocation of the W&OD Trail to the Clairvaux property Agricultural and Forestal District to the potential stream and wetland impacts. To further enhance these efforts and exceed the RFP requirements, our Team intends to improve the design in order to provide additional minimization and avoidance, some of which were described above, and others will be identified during preliminary and final design.

The first task of our environmental Team is to complete a thorough review of all databases to develop an environmental constraint map. An environmental MicroStation file will be developed to overlay the Project design and survey information to identify potentially sensitive areas which may include:

- historic properties,
- properties with constraints (such as habitat sanctuaries),
- limits of previous project surveys (such as cultural resources),
- agricultural and forestal districts,
- jurisdictional stream and wetland limits,
- potential hazardous material locations, and
- potential well and septic field locations.

Through proper identification of these constraints in the early stages, our Team can verify that no constraints or limitations are overlooked during design development, and that no "surprises" develop during construction. It also ensures that all project constraints are identified early enough so that they can be properly communicated with utility companies as utility relocations and easement needs are developed. Finally, it ensures that avoidance and minimization efforts are integrated with the design from the beginning, as opposed to late in design development when re-design could require changes to right-of-way, utility relocations, or construction activities, any one of which could result in schedule delays and additional cost.

We have found environmental constraints identification to be an essential tool for all team members and one which helps to document compliance with NEPA regulations and requirements. A critical element to the success of our Team on each of our projects is the involvement of the environmental staff during not only the design phase, but also throughout the construction phase. Consistent with all of our design-build projects, the environmental staff who developed the permit documents and coordinated directly with the permitting agencies will remain involved during construction to complete regular permit monitoring site visits, answer questions, and support the QC and QA staff during daily and weekly project inspections. Prior to construction of any improvements, our environmental staff will re-flag all critical areas on the Project site, including restricted construction areas, areas of avoidance, and all wetland and stream locations, to ensure that no impacts are introduced in non-permitted areas.

With respect to permit requirements for this project, we have noted the potential for impacts to jurisdictional streams and wetlands at the following locations:

- within the Route 9 Interchange in the vicinity of the proposed W&OD relocation;
- along eastbound Route 7 from the Roxbury Hall Road intersection to the West Market Street exit ramp;
- culvert replacements where outfall channel regrading will be required.

Since wetland and stream surveys will be completed as an initial activity, along with other field surveys, our Team will be able to identify wetland impact quantities early in project design. All wetland and stream impacts will be identified and permit applications developed and submitted when plans are approximately 60% complete. This early submission of environmental permit documents will ensure that mitigation is obtained well before the start of construction. Additionally, proper identification of wetlands and streams early in the design process will allow construction sequencing to be developed so that permit approvals are not on the critical path of project completion. The early identification of environmental impacts also allows our Team to investigate ways to complete on-site mitigation efforts. On-site mitigation allows for replacement ditches to be constructed as part of the Project, replacing wetland impacts immediately adjacent to the impact area. This provides a more environmentally sensitive design, and also helps to reduce the costs associated with purchasing mitigation credits.

Our Team recognizes that there are areas of historical significance and concern adjacent to the Project, especially to the south of Route 7 near the Route 9 Interchange. In recognition of the environmental coordination which has already taken place, our Team is committed to completing final design within the limits of the environmental studies already completed. Roadway profiles will be developed to ensure viewshed impacts are not introduced, and design elements such as landscaping and roadway lighting will be completed in a way to screen improvements and avoid impacts to adjacent properties. Environmental staff will be involved in all design activities to ensure that proper coordination and documentation is provided to the permit agencies during design, helping to ensure that no concerns are identified during construction.

4.4.2 UTILITIES

In preparation of this Proposal, 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, 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 alternatives, 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, our 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 relocation process, 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 updated 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 plans and acquired along with other right-of-way or easements needed for the Project.
3. The Utility Manager will hold UFI Meetings with all utility owners located within the limits of the Project. At the UFI meeting the Utility Manager will provide each utility owner a copy of the preliminary plan and all utility test pit information. The Utility Manager will identify 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 to ensure that the Utility sequence and schedule does not delay planned construction activities or milestones.
4. The Utility Manager will request that the utility provide copies of all existing easements and other prior rights information. Following receipt of this information, the Utility Manager will perform a thorough review of each private utility's prior rights to determine the utility and project prorates. UT-9 forms will be prepared and pro-rata share budgets and relocation schedules will be finalized.
5. For the public utility relocations such as water and sewer lines, 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 utility relocation plans will be prepared by the Design Team and submitted to the utility owner for review and approval before insertion into the Project Plans. Construction activities for the public utility relocations will be coordinated with the utility owners to schedule inspections and outages as needed.
6. Once the utility relocation plans are completed and estimates and schedules have been approved by the Utility Manager and VDOT, the Utility Manager will notify each utility in writing that the Plan and Estimate (P&E) is approved. For utility adjustment that will occur within existing Right-of-way and easements the relocations can begin immediately following approval of the P&E. However, for utilities that will be relocated into new easements, the relocation cannot begin until the easement are acquired through the right-of-way acquisition process. The status and schedule of the right-of-way acquisition is closely coordinated with the utility so that they are informed of the planned start date for the relocations and can schedule their crews.
7. 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, easement acquisition status, 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. These measures could include use of additional resources by the utility owner, adjustments to the Project schedule and phasing, and/or partial completion of relocation work by other construction staff (for example, placing conduit for cable relocations or drilling holes for placement of utility poles). If necessary, the

delay issue will be elevated within the utility company, VDOT, and others as appropriate until an acceptable resolution is reached.

Specific Project Utility Impacts

At this stage of design and preparation of the proposal, existing Public/Private utilities are expected to be encountered. The conflict analysis during the design and construction of the Project and the relocation and/or avoidance measures are included in our proposal. The Project utility impacts and potential conflicts are summarized and included herein as Exhibit 4.4.1 – Summary of Potential Utility Conflicts.

Exhibit 4.4.1

| SUMMARY OF POTENTIAL UTILITY CONFLICTS | | | | | |
|---|--|---|-------------|-------|--|
| UTILITY/OWNER | APPROXIMATE LOCATION | KNOWN OR POTENTIAL CONFLICT | APPROX QTY. | UOM | RELOCATION PLAN / AVOIDANCE STRATEGY |
| OVERHEAD UTILITIES | | | | | |
| Overhead Dominion Power, Verizon, Comcast Lines | Fort Johnson Road Station 10+00 to 43+00 | Poles and guy wires are in conflict with necessary cuts and fills | 28 | Poles | Realign Poles to minimize conflicts while creating slack in lines |
| Overhead Dominion Power, Verizon Lines | Beechnut Road Station 54+00 to 55+00 | Poles adjacent to Beechnut Road Realignment - No foreseen conflicts | 3 | Poles | Coordinate vertical and horizontal alignment to avoid conflict |
| Overhead Dominion Power, Verizon Lines | Beechnut Road Cul-de-sac | Pole in fill area adjacent to cul-de-sac | 1 | Poles | Coordinate fill around existing pole |
| Overhead Dominion Power, Verizon Lines | E. Colonial Highway, Dry Mill Road and Route 7 EB | Poles located along R/W Line - No foreseen conflicts | 20 | Poles | Coordinate during design, verify no-impact |
| UNDERGROUND TELECOMMUNICATIONS LINES | | | | | |
| Verizon T/Tg Line | Along West side of Route 9 crossing N of Route 7, along Bridgeview Ct., crossing Ramp C, Route 7, and Ramp D | No foreseen conflicts due to 8' depth under Route 7 | 1 | EA | Coordinate during design, verify no-impact |
| Verizon T/Tg Line | Along E. Colonial Highway, Dry Mill Road, and S. of Route 7 | No foreseen conflicts | 1 | EA | Test-pit during design, verify no-conflict with final storm design |
| Verizon T/Tg Lines | Crossing Route 7 at Station 129+25, 146+50, 185+00, 203+75, 204+25, 235+50 | No foreseen conflicts due to adequate depth under Route 7 | 1 | EA | Coordinate during design, verify no-impact |
| Verizon T/Tg Line | Crossing Route 7 at Station 204+50 | Shallow depth at N. Shoulder of Route 7 WB | 50 | LF | Expose and lower in place |

| SUMMARY OF POTENTIAL UTILITY CONFLICTS | | | | | |
|--|---|--|-------------|-----|--|
| UTILITY/OWNER | APPROXIMATE LOCATION | KNOWN OR POTENTIAL CONFLICT | APPROX QTY. | UOM | RELOCATION PLAN / AVOIDANCE STRATEGY |
| Verizon T/Tg Line | Fort Johnson Road Station 10+00 to 43+00 | In conflict with cuts and fills | 3300 | LF | Relocate ahead of Fort Johnson Road Construction |
| Verizon T/Tg Lines | N. of Route 7 WB Station 182+00 to 209+00 | No foreseen conflicts | 3 | EA | Test-pit during design, verify no-conflict with final storm design |
| Verizon T/Tg Lines | Along existing Leeland Orchard Road and continuing along N. Side of W. Market Street to Station 84+50 | No foreseen conflicts | 2 | EA | Test-pit during design, verify no-conflict with final storm design |
| Verizon T/Tg Line | Intersection of W. Market Street and Catoctin Circle | Junction box in slope widening | 1 | EA | Adjust JB |
| AT&T Underground Line | Crossing Route 7 @ Station 146+50 | No foreseen conflicts due to excessive depth | 1 | EA | Coordinate during design, verify no-impact |

WATER/SEWER LINES

| | | | | | |
|---------------------|--|-----------------------|---|----|--|
| 8" & 10" Waterlines | Intersection of W. Market Street and Fairview Avenue | No Foreseen Conflicts | 1 | EA | Coordinate during design, verify no-impact, adjust valve boxes |
| 8" Sanitary Sewer | Route 826, along North side of W. Market Street | No Foreseen Conflicts | 1 | EA | Coordinate during design, verify no-conflict |

GAS LINES

| | | | | | |
|------------------------|--|-----------------------|---|----|--|
| 6" Washington Gas Line | Intersection of W. Market Street and Catoctin Circle | No Foreseen Conflicts | 1 | EA | Coordinate during design, verify no-conflict |
|------------------------|--|-----------------------|---|----|--|

Utility Relocation Strategies and Avoidance

As we have prepared our Team’s proposal in response to the RFP, our Team has invested a significant amount of time and effort to determine where utilities are currently located, how they are affected by the design, the cost to relocate unavoidable conflicts, and the schedule for doing so. As part of this analysis, we have already identified several opportunities for minimizing the relocation of utilities by designing around them as well as planning relocations at strategic locations and stages of work to have the least impact to construction activities as well as the traveling public. While the feasibility of these will be finalized as the design is completed, the following demonstrate our commitment to a continued focus on this effort:

- Our Team will complete supplementary utility designations and test pits early in the design phase to identify any unknown utilities that were not identified by the RFP plans and to accurately locate, both elevation and horizontal location of all existing utilities. This information will minimize the risk that unknown utilities will be uncovered during construction and will provide additional information to our design Team to enable them to design around existing utilities.
- The pole on the corner of Beechnut Drive and Route 7 EB will be located in the fill needed to construct the Beechnut Drive Cul-de-sac. This fill will be constructed by hand to allow the pole to remain in place

during construction.

- When Jack & Bore methods are required for cross culverts, there will be a significant amount of detailed design coordination to ensure that there is no conflict with existing utilities located along the existing R/W Lines. Coordination of jacking pit locations with existing utilities will be key to minimizing these relocations while maintaining the Project schedule.
- The utility poles along the proposed alignment of Fort Johnson Road will be designed on a straighter alignment to minimize the need of down guys and to create slack in the telecommunications and cable TV lines. This will simplify the relocation by allowing these utilities to swing their existing cables to the new poles without cutting and splicing their lines, minimizing relocation cost and the time needed to relocate.

Mitigation of Utility Risks

Utilities have the potential to significantly impact the Project schedule and cost. On design-build projects this risk is even greater for several reasons. First, at this stage of the Project's development, the roadway plans are at a very preliminary level of completion and minimal utility test hole data is available. It is virtually impossible at this stage to determine the accurate location of the existing facilities or the full extent of the impact the design will have on them. Second, the majority of the utility companies have not begun their design and analysis of their prior rights, cost and schedule for their potential relocations. Finally, there is limited leverage available to the design builder to affect the utility companies to complete their work within the overall project schedule.

It is precisely our Team's experience managing these risks that has lead to the successful completion of every one of our design-build projects for VDOT. We have a proven strategy for mitigating these risks, one that VDOT can count on the Shirley Team implementing on the Route 7 - Westbound Truck Climbing Lane Project. These strategies include:

- A. Designating a full time Utility Manager whose primary focus is to manage the utility scope of the Project from concept to completion.*** Our in-house Utility Manager has served in this role on every one of our design-build projects to date and is already intimately involved in this Project. He has the relationships in place, a fundamental working knowledge of the individual utility companies, an indication of the existing utilities present in the Project corridor, and a thorough understanding of the interaction between the utilities and all other project disciplines. ***Having an in-house Utility Manager is a key strength that our Team brings to the Project*** given the significant utility impacts we have identified. Not having to utilize an outside third party consultant or subcontractor for this function allows our Team to exercise more control of the utility relocation process, provides quicker response and flexibility to adapt to project challenges, and facilitates the overall integration and constructability review functions.
- B. Completely integrating utilities with all other project disciplines including design, right of way, permitting, construction, and QA/QC.*** The primary method of accomplishing this task is by holding, at a minimum, weekly Design Meetings with the entire Project Team. Led by the D-B Project Manager, these meetings are an extremely important tool in ensuring that all design build disciplines have input into the design and each other's disciplines. All aspects of the design are reviewed and meeting minutes kept in order to track progress and define responsibility. Issues, and options for their resolution, are discussed and agreed to by all Team members. This interactive process among the various disciplines occurs continuously outside of the scheduled Design Meetings as well. VDOT can be assured that when plans are submitted, they have been created with input and review by all Project disciplines, including utilities.
- C. Creating a realistic Project Schedule with input from the utility and other disciplines.*** As shown in the schedule submitted under Section 4.6, we have already reviewed the known utility conflicts and incorporated

them into the overall sequence of work. Our Utility Manager has met with each individual utility company and discussed the Project scope and potential conflicts with them. Based on these discussions, our previous experience and the information provided by the utility companies at the Utility Scoping Meeting on April 11, 2013, we have anticipated the timeframes for their relocations and coordinated those with the other disciplines, such as right of way, permitting and construction to arrive at a proposed sequence of work. We have developed our sequence of construction and preliminary CPM schedule to allow as much time as possible to relocate the utilities. Our sequence of construction allows for the completion of all work on Route 7 including the outside widening and median construction concurrent with the utility relocations along Fort Johnson Road. This sequence allows all work on the Project, with the exception of Fort Johnson Road construct and the Route 7 cross-overs to be completed before the utilities are relocated leaving only 3 months of construction after the utility relocation work is complete. This schedule allows the Utility companies 18 months to design and construct their relocation minimizing the risk that the relocation work will impact the CPM Schedule. In addition to this sequence optimizing the utility relocation time-frames and meeting the RFP completion date, it highlights the need to remain focused on the management and coordination of the utility work. Throughout the Project, utility progress will be updated on a regular basis by the D-B PM and the Utility Manager in order to identify schedule slippages as early as possible so that corrective measures can be taken without impacting the construction milestones and completion dates.

- D. *Holding weekly (at a minimum) Construction Progress Meetings on the jobsite.*** Led by the Construction Manager, these meetings are used to facilitate coordination, during the construction phase, among the utility, construction and QA/QC disciplines. Open for attendance by the Owner’s representative(s), the detailed day-to-day schedule of work is reviewed specifically with the foremen and superintendents responsible. The Utility Manager will also attend, along with specific utility company representatives, so that utility work can be directly coordinated with the construction crews.
- E. *Supplementing and assisting the Utility companies with their work.*** Because of our close relationship with the individual utility companies, we have employed several techniques that have allowed us to expedite and maintain greater control over their cost and schedule. In many cases, we are able to complete the conceptual design for them. This allows us to not only directly integrate their relocation design with that of the overall project’s, but also complete this task more quickly. We are also able to perform portions of the relocation work ourselves or with our subcontractors, thus saving additional cost and time. Examples include constructing duct banks, drilling and setting of wood poles for aerial relocations, hiring a Utility Approved subcontractor to swing or splice cable, performing the “in-place” relocations where we excavate around a utility and lower or raise the line without damaging the existing conduit or cable, and setting up temporary traffic control requirements for the utilities use.

4.4.3 GEOTECHNICAL

Geotechnical considerations are an important element of any project to ensure the long-term stability, durability, and serviceability of infrastructure improvements. The Shirley Team recognizes this importance and invests a great deal of effort from the preliminary design phase through completion of construction to ensure that geotechnical challenges and considerations are identified early in the Project process and addressed proactively. For this Route 7 Truck Climbing Lane Project, we recognize that a significant amount of geotechnical investigation has already been completed by VDOT, including more than 200 field samples. Following preliminary development of the plans, our Team will develop a geotechnical program which will meet the requirements of the VDOT Manual of Instructions (MOI) and provide the information needed to design and construct improvements which will reduce the long-term maintenance needs for VDOT.

As noted above, significant investigation has been completed by VDOT for this project, but we recognize that additional testing will be required for successful design and construction. Some of the additional tests anticipated include:

- Laboratory testing and analysis to determine the properties of in situ soils,
- Consolidation tests on undisturbed samples collected in the fine grained soils (fat CLAY, elastic SILT, lean CLAY, SILT) of the upper zone Residuum and Residuum,
- In situ Dilatometer tests to determine the shear strength of soft soils as well as existing fill.

This additional laboratory and in situ testing will help our Team identify the actual shear strength, consolidation and elastic settlement characteristics of in situ soils and existing fill, which will be used to refine the soil parameters provided in the final geotechnical data report.

As part of our Team's proposal preparation process, we have investigated the geotechnical information provided with the RFP documents and identified several challenges for this Project. The identification of these challenges at the proposal preparation stage ensures that they can be properly accounted for and addressed during plan design and construction. The key geotechnical challenges we have identified are:

- Settlement and stability of fills at proposed wall locations,
- Proper support of the proposed W&OD Trail arch structure,
- Ability to incorporate trenchless pipe installation methods.

Each of these challenges can be addressed and mitigated through proper application and implementation of geotechnical testing and inspection processes. The testing, investigation, and geotechnical designs required to properly address each of these challenges has been utilized by our Team on past projects, and we are well versed with any design or construction technique which will be required on this Project.

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.

Settlement and Stability of Existing Fills

The challenge associated with the settlement and stability of retaining walls and large fills is due to large existing fill depths which may be encountered within the Project limits. As noted in some of the borings already completed, existing fill depths can be expected up to 44 ft, and portions of these fills are identified to contain soft material within the fill limits. During design, additional test borings will be completed to verify the horizontal and vertical extent of the existing fill at proposed retaining wall locations. Global stability analysis

will be completed for all proposed retaining wall locations, and mitigation of the soft material or removal and replacement options will be identified as necessary. Removal and replacement options at each location will be discussed between geotechnical, design, and construction staff during development of the geotechnical report and recommendations. Removal options and stabilization measures will be discussed to determine which option is feasible based on the anticipated depth of soft material, proximity to traffic and ability to safely undercut, and existence of other features such as utilities, drainage features, or environmental constraints. Soil stabilization/improvement methods such as aggregate piers may be considered as an alternate to the traditional removal and replacement option, and installation of geogrids or lowering of the wall footing will be considered in an effort to improve sliding resistance and address global stability concerns.

The benefit our Team brings to the Project is that our geotechnical engineer remains involved following completion of design and development of the GDR through construction. GeoConcepts Engineering will be on-site during construction to complete materials testing QC inspections, and changes in field conditions which were not identified during design can be immediately raised and addressed without delay to construction.

Proper Support of the Proposed W&OD Trail Arch Structure

Based on the preliminary concept for the proposed W&OD Trail arch structure, the bottom of the footing is anticipated to be at about elevation 590.0 and will require approximately 26 feet of excavation, requiring temporary support and shoring of existing Ramp D. The challenge associated with installation of this shoring and support structure has been identified through review of borings PA-1 and PA-2. These borings were drilled at the approximate location of the proposed arch and indicated between 8 and 26 feet of existing fill, including the presence of cobbles and boulders in boring PA-1. The presence of cobbles and boulders could present a challenge for installation of temporary shoring systems.

To address this concern, additional borings will be completed at the exact location where temporary shoring will be required. The modified alignment of Ramp D proposed by our Team has shifted the proposed improvements out of the deepest fill areas, and may eliminate conflicts with material encountered in the existing fill, ***an additional benefit of our Team's concept***. Based on the results of the additional borings, a shoring system will be designed to account for the material encountered. For example, H-piles used for a wood lagging shoring system can be fitted with driving points to protect the tips and improve penetration. Alternatively, pre-drilled holes can be completed to allow the H-pile to be placed into a hole with no obstructions. Either of these alternatives would address the challenge associated with encountering large, unexpected cobbles or boulders during installation of the shoring system.

Ability to Incorporate Trenchless Pipe Installation Methods

According to the preliminary geotechnical report provided with the RFP documents, trenchless installation of drainage pipes may be required at several locations below Route 7 and West Market Street. Test borings completed at several of the anticipated pipe crossing locations indicate that groundwater could be encountered at or above the invert of several of the drainage pipes, and that variable material properties could be encountered within the vertical limits of the installation area. Both of these situations present challenges for trenchless pipe operations. Groundwater within the area of the jack and bore operations could require continuous pumping and dewatering and could also result in collapse at the face of the excavation operation. Jacking and boring through an inconsistent material could cause the head of the boring machine to rise or fall as compared to the required pipe slope. Since the drainage facilities are gravity systems, alterations to the constructed slope of the pipe could introduce concerns with pipe capacity and function of the culvert or storm sewer system.

To address these concerns, borings will be completed at each culvert crossing location to identify the types of material encountered, depths to different soil and/or rock types, and depths to groundwater. This information will

be used by the design Team to determine the feasibility of jack and bore installation methods. At some locations, jack and bore operations will not be feasible since adequate cover above the pipe crossing is not available. In these cases, open cut installation will be identified, and temporary traffic control plans will be developed to allow for installation using conventional methods. Where pipes are to be installed at deeper depths, adjustments to the pipe profile, alignment, or location will be considered to avoid challenges associated with different material types or areas of high groundwater.

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. 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.

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. 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 David Mahoney, PE of Dewberry. Mr. Mahoney 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 Jeremy Beck, 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.

Interdisciplinary Coordination

This project includes a variety of work items—arch bridge structures, roadways, retaining walls, traffic circles, lighting, drainage, erosion and sediment controls, SWM facilities, permitting, right-of-way, and utilities. The interaction between the designers of these various disciplines and the Right-of-Way Manager, Utility Manager, Permitting Manager, and Construction Manager, is a vital part of our Design QA/QC Program to make the Project comprehensive and complete and to minimize inter-discipline conflicts. During the Design Phase of the Project, the Design Manager will hold weekly interdisciplinary coordination meetings to discuss the ongoing design work, identify potential conflict items or items that may be overlooked, schedule, and constructability challenges. Inter-discipline coordination shall be a major focus of the Design Manager and members of the Design Team before all milestone phases of development and document submission.

Design Quality Control (QC) Procedure

Formal QC checking of the plans, calculations, and other project documents (traffic reports, traffic analysis, hydraulic analysis, etc.) will be performed for each design submission. Qualified engineers not involved in the

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 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 4.4.2

Design Quality Assurance (QA) Procedure

The 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

FIGURE 4.4.3

expectations

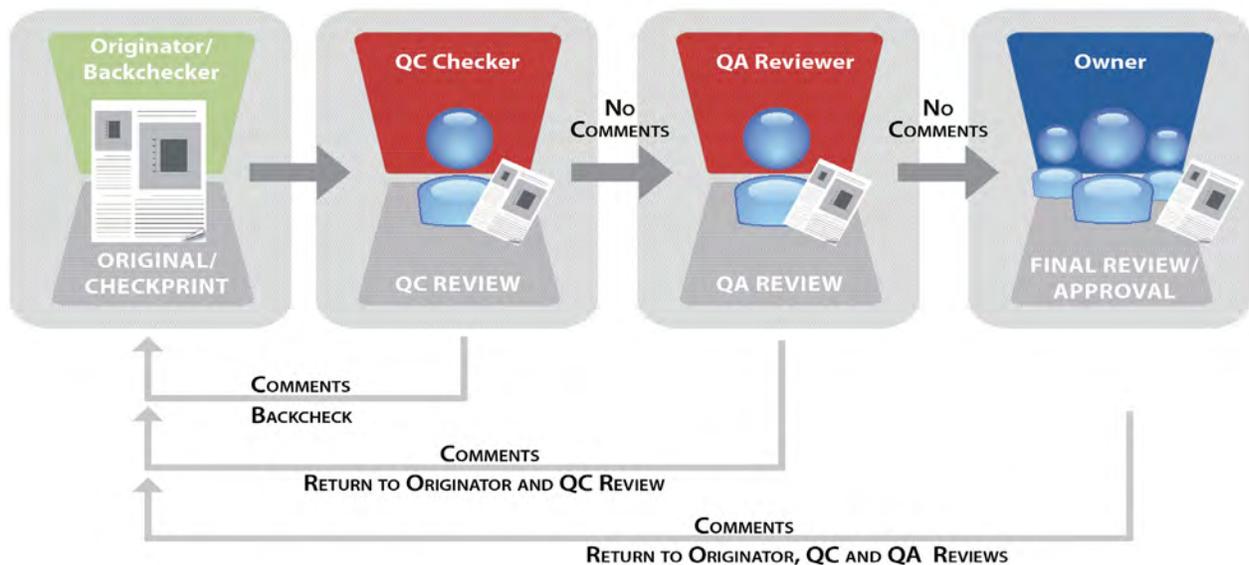
- Confirm materials used and elements in the work have been designed to perform for the purpose intended
- Verify overall appearance, organization and technical accuracy, and
- Verify application of the seal, signature and date of the responsible registered VA Professional Engineer

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 4.4.3.

The Design QC and QA processes described above are graphically illustrated by Figure 4.4.4. As indicated on figure 4.4.4, 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 4.4.4

QA/QC Approach to Unique Design Element/Work Activity

The unique design element on this project which requires close coordination between design disciplines and detailed QC and QA review is the design of the proposed roundabouts at Route 9. Roundabouts can provide a significant improvement to the flow of traffic, but several elements of the design must be closely coordinated to ensure the facilities are constructible, maintain traffic at all times, and provide a safe facility which is functional for all vehicle types following construction. For the roundabouts proposed for this project, the following QA/QC approach will be followed to ensure all design elements are coordinated and accounted for during design:

- *Design of Roadway Approaches* – As part of the QC and QA review of the roundabouts, the layouts will be verified to be in compliance with current FHWA and AASHTO guidelines. Approach end treatments, raised median offsets, and approach angles will be analyzed to ensure they effectively channelize and direct traffic without introducing hazards. AutoTurn analysis will be completed by design staff, and plots of all movements will be verified by the QC and QA reviewers to ensure off-tracking of vehicles is properly accounted for and that guardrail, curbs, and signs are installed in areas which will not preclude passage of large and design vehicles. Approaches to the roundabout will be checked to ensure they provide the proper redirection of vehicles to adequately slow motorists prior to entering the roundabout.
- *Proper Incorporation of Landscaping* – Once final layout of the roundabouts is completed, coordination between roadway, hydraulics, and traffic engineers will be expanded to include the landscape architect. Critical elements of each roundabout will be identified so that landscaping of the internal circle can be completed without impacting other critical elements. Sightline restrictions will be conveyed to the landscape architect so that proper plant materials and sizes are selected for the entirety of the roundabout to provide the necessary screening and aesthetic enhancements without impacting the safety of the roundabout.
- *Construction Phasing* - The main challenge with construction of roundabouts is the ability to maintain all traffic patterns throughout construction. This is even more critical on this project since all of the existing pavement must be demolished and replaced. During design, close coordination will be maintained between the roadway engineers, traffic engineers, and hydraulic engineers to ensure that all of the design details can be phased during construction. Closed system drainage will be designed to avoid phased installation, and profiles of the roundabout and intersecting roadways will be developed such that interim transitions between construction stages are easily maintained. Traffic control plans will be developed so that areas which are outside of existing traffic patterns can be constructed at the outset, and that subsequent phases of construction can be completed without significant detours or any roadway closures. Following development of the plans, QC and QA efforts will focus on the temporary traffic control plans to ensure all existing pavement can be demolished and replaced in accordance with the RFP requirements. Proposed grades of the roundabout will be compared to the existing grades of the approach roadways to ensure significant build-ups are not required, or if they are unavoidable, that temporary traffic control plans have been developed in a way to allow for un-impacted traffic flow at all times.
- *Maintenance of Drainage* – With the construction of the roundabouts to the outside of existing travel lanes anticipated as an initial stage of construction, maintenance of drainage from the existing travel lanes through the construction site will be critical. If build-up of material is required adjacent to the travel lanes to reach finished grades for the roundabouts, temporary drainage elements may be required. As part of the QC and QA review, cross sections, grading plans, and sequence of construction plans will be compared to ensure that any temporary drainage structures are adequately accounted for. Analysis of drainage adjacent to temporary traffic barriers will be investigated and checked to ensure ponding and spreads are within allowable limits, and any low spots on the existing travel lanes will be checked to ensure temporary pipes, culverts, or outfalls are provided to maintain drainage throughout construction. Computations for all temporary facilities will be checked and verified to ensure they used the correct intensities and runoff coefficients, and to ensure drainage areas properly accounted for the phased construction and partially adjusted grades during construction of the facility.

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), Kaushik Vyas, P.E. with Quinn Consulting Services, 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 A-3 and A-4 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 construction element on this project will be the installation and maintenance of traffic control devices so as to minimize public inconvenience while at all times providing a safe work zone for both the traveling public and our work force. To ensure our design is well coordinated with actual field conditions our designers, construction managers, and QA/QC staff will review each design element from a constructability review perspective and pay particular attention to the Projects sequence of construction and maintenance of traffic considerations. With the high volumes of traffic on both Route 7 and Route 9 and the connections required to both local neighborhoods and the W&OD trail, our QA/QC Team must verify that all contractor and subcontractor personnel on the Project closely follow the approved Traffic Management Plan (TMP) and that all traffic controls are set up in accordance the applicable contractual versions of the Manual of Uniform Traffic Devices (MUTCD) and the Virginia Work Area Protection Manual (VWAPM). As part of the approved project specific QA/QC plan, a Preparatory Inspection Meeting (PIM) will be held for the Maintenance of Traffic activity. This PIM will be classified as a hold point in the schedule and, in addition to SCC, our subcontractors, VDOT, and our QA/QC Team, we will invite representatives of both Loudoun County and the Town of Leesburg to discuss details of our MOT plan and our projected schedule of MOT activities. At this PIM we will discuss the key MOT elements as detailed in our TMP, Sections 512 (Maintenance of Traffic) and 105 (Control of Work) of the VDOT Road and Bridge Specifications, various Special Provisions, and the Project Plans.

Due to our past experience working on VDOT Design-Build projects in both Loudoun County and the Town of Leesburg, our Quality Management Team has a clear understanding of the traffic volumes to be expected and through these projects we have developed prior working relationships with the Project stakeholders in the area including Loudoun County and the Town of Leesburg that will ensure that efficient project lines of

communications are established early and maintained throughout the life of the Project. The QA/QC inspection Team will be certified as Intermediate Work Zone Safety Supervisors and will carefully monitor adherence to the Traffic Management Plan (TMP) by assigning a lead QC inspector to work with the Design-Build Contractor's designated Certified Work Zone Traffic Coordinator. The assigned Quality Assurance inspector working in concert with the QAM will monitor the Contractor and QC inspection staff for adherence to the requirements of the TMP. Elements of the TMP that will be monitored and inspected by the QA/QC staff include:

- Project Phasing
- Temporary Traffic Control Plans
- Bicycle Access
- Motorist and Pedestrian Considerations
- Daily Lane and Shoulder Closure Standards/Set Ups.
- Equipment and Materials Storage
- Temporary Signing, Marking, and Signals
- Public Communications
- Incident Management

The QA/QC monitoring and inspection of the elements included in the TMP will be guided by Section 512 (Maintenance of Traffic) and Section 105.14 (Maintenance During Construction) of the VDOT Road and Bridge Specifications and by the various MOT related Special Provisions included in the contract. On the Rt. 7 Truck Climbing Lanes project, QC inspectors will fill out the Work Zone Safety Checklist (Form #TE-97001) at least once a week and at a minimum every second weekly review will be performed at night. Additional inspections will be performed when there are traffic pattern changes or when severe weather could have impacted the MOT devices and markings. In addition to filling out Form #TE-97001 at least on a weekly basis, QC inspectors will review the condition of the Project at least twice daily. These daily inspections will be performed after any temporary MOT devices are set up for daily activities and at the end of each work day to make certain the work zone is in a safe condition and no unnecessary signage remains in place. In addition to reviewing the work zones for correct signage and devices, inspectors will also assure all devices are clean and have the proper retro-reflectivity characteristics.

Besides inspecting the set up and up-keep of traffic work zones, there are many maintenance of traffic consideration details that inspectors must closely monitor on the Project. Some of these MOT items include:

Concrete Barrier Service – The QC inspection Team will inspect all traffic barrier service prior to placing it in service and during the life of the Project. Impact attenuators shall be installed at the blunt ends of concrete barrier and will be installed and inspected per manufacturer's recommendations. The Project QA/QC Team must regularly inspect attenuators for damage and all damaged units must be replaced immediately.

Construction Pavement Markings – With the lane shifts required to construct portions of project and the associated ramps, roadways, and roundabouts, the proper installation of construction pavement markings will be critical to maintaining a safe flow of traffic through the Project workzone. A QC inspector certified through VDOT's certification school in Pavement Marking will be present for all temporary striping activities and will ensure that pre-approved materials are used and that the proper checklists and forms such as the C-85 are filled out and signed at the end of each day/night application.

Construction Signs, Channelization Devices, and Safety Devices – Each member of the Contractor's and QA/QC staff assigned to install and/or inspect these devices will have at the minimum a certification in Intermediate Work Zone Safety and Flagging procedures. Signs will be installed in accordance with the MUTCD and Virginia

Work Area Protection Manual and all parties including Design-Build Contractor, Quality Control, and Quality Assurance will monitor the work zones daily and document their inspections on daily reports and periodic checklists. Once work zones are set up they will be inspected for devices that have been displaced, damaged, defaced, or are in need of repositioning or cleaning. In addition, the placement of advanced warning signs will need to be checked regularly as traffic back-ups on Route 7 may extend beyond the workzone. QA/QC inspectors must also make sure all portable sign stands conform to the requirements of NCHRP Report 350, Test Level 3, and either come from the Department's preapproved list or come with a copy of the FHWA acceptance letter indicating compliance with NCHRP 350. Portable Changeable Message Signs will also be utilized to warn the public of upcoming work, traffic shifts, or emergency situations. QA/QC inspectors will make certain these message signs are used when necessary and are protected in accordance with the MUTCD and VWAPM. In all cases when working near live traffic, the QA/QC staff will monitor the clear zones of the roadway for obstructions and also check that equipment and materials are not stored within the deflection zones behind barriers and guardrail.

Lane Closure Notifications/Restrictions – The TMP will include the public notification process and tables outlining allowable lane closure times and holiday restrictions. The QA/QC inspection staff must make certain that all lane closures have been requested in accordance with the TMP by the Contractor and approved in advance by the Department. Another duty of the QC inspection staff will be to monitor and document the times, locations, and number of lanes that are closed on the Project and the times, locations, and number of lanes that are reopened at the end of a work shift. In conjunction with monitoring lane closures, the Design-Build Contractor and QA/QC staff must monitor the back-ups in lane closures and notify Design-Build Contractor and VDOT personnel of any unusual back-ups requiring removal of the work zone on additional notification measures.

The QA/QC Team will adhere to the Minimum Requirements for Quality Assurance and Quality Control on Design-Build and PPTA projects. This Manual dictates the minimum requirements for inspection, sampling, and testing for each definable feature of the work. For Maintenance of Traffic, the Manual requires among other things that the QAM schedule and conduct a preparatory meeting (hold point), assure that flaggers are certified and properly attired, weekly work zone inspections by QC utilizing the Work Zone Safety Checklist, weekly review of the workzone checklist by QA, and a review of the site to make sure signs are removed after the completion of an operation. In addition there are separate inspection, sampling, and testing requirements for pavement markings, traffic signs, and traffic signals. For each definable feature of the work, a checklist will be included in the Project QA/QC plan for QC inspector use and these checklists will be attached to the daily QC inspection reports and reviewed before the start of work at each preparatory meeting.

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 from Quinn Consulting Services, Inc. to complete on-site QA inspections/testing and manage the QA/QC documentation system. The QA Team will be supplemented by Specialized Engineering 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 the Quality Control Manager assisted by a senior and a junior roadway inspector from Dewberry to complete QC inspections. Additionally, GeoConcepts Engineering will provide a testing technician 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.

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 complete construction by the Interim Milestone date of August 22, 2015 and the Substantial and Final Completion date of October 22, 2015 as noted in the RFP documents. However, we have also sequenced the work to allow for advance completion of some of the critical work elements in an effort to provide immediate safety enhancement and relief to congestion of some of the critical movements within the Project limits. Our proposed sequence of construction is shown on Sheets 1J(1) and 1J(2) of Volume II of our Technical Proposal. Sheet 1J(1) details Route 7 truck climbing lane construction, while Sheet 1J(2) details segments of Route 7 requiring profile adjustment below the Route 9 and West Market Street overpasses. The sequence of construction proposed by our Team is summarized as follows:

- **Stage 1**
 - Construct temporary outside shoulder strengthening and shift traffic towards the outside
 - Construct Route 9 Roundabouts
 - Construct West Market Street Improvements
 - Construct Ramp C
 - Begin Ramp D and W&OD Trail construction
- **Stage 2**
 - Begin median Widening of Route 7
 - Reconstruct WB Route 7 left lane (where applicable)
 - Complete Route 9 Roundabouts
 - Construct Fort Johnston Road and Beechnut Road
 - Complete Ramp D and W&OD Trail construction
- **Stage 3**
 - Complete median Widening of Route 7
 - Reconstruct WB Route 7 right lane (where applicable)
- **Stage 4**
 - Remove temporary pavement in Route 7 median (where applicable)
 - Place Surface Asphalt and “Finishing” Items

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

Stage 1

During Stage 1 construction, the permanent outside widening along westbound and eastbound Route 7 will be constructed (see Sheet 1J(1)), including temporary right shoulder strengthening where existing westbound Route 7 is to be completely reconstructed below the Route 9 and West Market Street overpasses (see Sheet 1J(2)). Barrier will only be placed along the right shoulder, allowing for an un-restricted median to prevent a “cattle-shute” condition. Constructing this outside widening in Stage 1 will also allow for traffic to be shifted onto this widening in Stage 2, providing for a safe separation from the significant median work to be completed during Stages 2 and 3.

Also during Stage 1, Ramp C, West Market Street, and the Route 9 roundabouts will be constructed, in order to facilitate the local street access changes and closures to be implemented in Stage 3. Construction along Route 9 will consist of the “ring” of the roundabouts, while existing traffic is continually maintained in the existing configuration. Finally, Stage 1 will include the first phase of construction of Ramp D as well as construction of the re-aligned W&OD trail. Using our proposed improved alignment of Ramp D discussed in Section 4.3, we will be able to construct these improvements while maintaining the existing ramp and trail, **which has significant**

benefits to traveler safety and mobility. As Stage 1 construction is progressing, right-of-way acquisition required for Fort Johnston Road construction will be underway.

Stage 2

During Stage 2 construction, the permanent median widening along Route 7 will be constructed (see Sheet 1J(1)), including reconstruction of the existing left thru lane below the Route 9 and West Market Street overpasses (see Sheet 1J(2)). To accomplish this, traffic will first be shifted onto the outside widening constructed in Stage 1, providing a safe separation for traffic to the median work zone while also providing for a right shoulder area for vehicle refuge. ***All existing turn lanes and median crossings of Route 7 will remain in their current configuration during Stage 2, while ensuring that intersection sight distance is preserved.***

Upon completion of the acquisition of right-of-way, Stage 2 will also consist of the construction of Fort Johnston Road and Beechnut Road to provide local access connectivity. The interior of the Route 9 roundabouts will also be completed by shifting traffic onto the “ring” of the roundabouts constructed in Stage 1. The completion of the roundabouts, Fort Johnston Road, Beechnut Road, as well as the West Market Street improvements constructed in Stage 1 will allow for the permanent local street access changes and closures to be implemented in Stage 3.

Finally, Stage 2 will include the completion of Ramp D as well as completion of construction of the re-aligned W&OD trail. At the beginning of Stage 2, traffic will be switched onto the portion of Ramp D constructed in Stage 1. This switch will allow for the demolition of the existing ramp and the completion of Ramp D and the W&OD Trail arch structure. At the conclusion of Stage 2, the W&OD Trail will be switched onto the newly constructed trail without disruption to trail operations.

Stage 3

During Stage 3 construction, the permanent median widening along Route 7 will be completed (see Sheet 1J(1)) while the existing right thru lane is reconstructed below the Route 9 and West Market Street overpasses (see Sheet 1J(2)). In order to complete the median reconstruction, permanent local street access changes and closures will be implemented at the commencement of Stage 3 using the Route 9, West Market Street, Fort Johnston Road, and Beechnut Road improvements constructed in the previous Stages. Route 7 travel lanes will remain in their Stage 2 configuration, including the right shoulder area for vehicle refuge.

Stage 4

Stage 4 represents the completion stage of work. During this stage, all surface pavement will be placed to provide a consistent, clean and smooth finished product. Surface pavement placement will be placed while maintaining two thru lanes on Route 7 to avoid impacts to the travelling public by eliminating temporary lane closures wherever possible. All remaining temporary pavement required for pavement reconstruction below the Route 9 and West Market Street overpasses will also be removed during Stage 4. Permanent pavement markings and markers will be installed in this stage, and the ultimate travel lanes, including the truck climbing lane, will be opened to traffic.

Sequence of Construction Benefits

Many of the benefits of our proposed construction sequence have already been identified and explained:

- By shifting the construction of Fort Johnston Road and Beechnut Road to Stage 2 of construction, we can eliminate all of the risks associated with possible delays in right-of-way acquisition.
- The realignment of Ramp D will allow the proposed W&OD Trail arch structure to be built adjacent to the existing interchange ramp, allowing for the continual maintenance of Ramp D and the W&OD Trail. This phasing is significantly improved from the RFP concept which would have required construction of a detour ramp and several traffic switches to construct the arch structure in phases. Our concept will

also allow us to start work on the permanent arch and ramp improvements earlier in the construction sequence, allowing us to open the ramp to the ultimate configuration earlier in the construction timeline than the RFP concept could have been completed.

- By shifting the closure of the Route 7 turn lanes and median closures to after the completion of the Route 9, West Market Street, Fort Johnston Road, and Beechnut Road improvements, we can minimize impacts to property access and driver mobility during construction.
- Staging Route 7 outside and median improvements in separate stages allows for a pull-off areas throughout construction, which is a tremendous safety and mobility benefit in the event of incident management or vehicle breakdown as well as for police enforcement.
- Our proposed staging allows for all materials and equipment to be safely stored behind temporary barrier or beyond the clear zone, providing a significant public safety benefit.
- These benefits are significant improvements to the RFP plans. They provide significant 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

The Shirley 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) sets 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 2.11 of the RFP, our Team will prepare a Type B Category IV 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, 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.

In order to achieve the goals of maximizing safety and minimizing travel delays, as an initial design activity, we will collect updated 24-hour volume information for Route 7 within Project limits and Route 9 immediately north of the existing Route 7 interchange. This updated traffic volume information will be utilized in development of the TMP to verify that the lane closure restriction times identified in Section 2.11.1.1 of the RFP are appropriate for the current volumes in the Project area and will not result in unanticipated travel delays. We recognize that the lane closure restriction times are in accordance with the VDOT Northern Virginia Traffic Engineering Division requirements. However, we also recognize that this Project is located well west of the major employment centers of Northern Virginia and that commuters on these sections of roadway commute from locations as far away as West Virginia. Accordingly, the peak hour traffic volumes may occur at earlier or later times in both the morning and afternoon than are normally expected. The intent of the updated traffic counts will be to verify appropriate lane closure restriction times, and help to ensure that traffic impacts to the public are minimized to the fullest extent possible.

An additional component of a successful TMP is a significant public outreach campaign. Our Team will endeavor to contact all local citizens, community groups, public officials, police, fire & rescue personnel, and school systems who could be impacted during construction and as part of the changed access to adjacent communities. Advance notification will be provided prior to any significant work activity (such as residential street access changes) or temporary lane closures to help reduce congestion and maximize driver comprehension through the

Project site. This will be communicated through our comprehensive public outreach campaign which will include Citizen Information meetings, Pardon Our Dust meetings, significant use of Portable Changeable Message Signs, website updates, press releases, direct mailings, and special meetings for specific groups / concerns. As with any significant construction project, minor impacts to traffic are anticipated, but our Team's goal will be to minimize these impacts for all major stakeholders. Provided below is a list of the major Project stakeholders adjacent to the Project and how they may be impacted during construction:

Local Residents and HOA Groups – We are aware of the significant amount of public outreach and involvement which was undertaken by VDOT prior to development of the RFP documents. Throughout final design and construction, our Team will continue these coordination and communication efforts with the adjacent landowners and community groups who will be impacted directly and indirectly by the Project. Communities and residents along the south side of Route 7 will experience the greatest impacts, as direct access to westbound Route 7 will be eliminated. These homeowners and visitors will access the westbound lanes via either the West Market Street or Route 9 interchanges upon project implementation. Communities and residents on the north side of Route 7 will also experience access changes impacts, and access routes will be lengthened through construction of the parallel Fort Johnston Road improvements. During final design, additional public outreach meetings will be held to discuss the elements of the final design. We understand that access to Route 7 can't be modified until after the parallel road connections of Fort Johnston Road and Beechnut Road are completed. These facilities will be constructed as early as possible, following right-of-way acquisition, so that the more significant median improvements can be completed. Until the median acceleration and deceleration lanes are completed, the existing intersections on Route 7 will be safely maintained while ensuring that intersection sight distance is preserved. As these changes in access will result in significant changes to driver route choice behavior, our Team will maintain open and honest lines of communication with all impacted property owners through the Project process to mitigate the impacts.

Police, Fire & Rescue – One of the greatest concerns with any change in property access is the coordination with police, fire and rescue personnel to ensure they are constantly aware of access patterns and upcoming changes to those patterns. As part of our public outreach efforts, we will communicate directly with police, fire and rescue staff throughout design and construction to ensure they are constantly up-to-date with planned access modifications and the timelines for those changes. All turning movements which are implemented will be analyzed to ensure large fire equipment can negotiate the new road configurations. Prior to opening of the new roadway segments, we will identify the new patterns to police, fire and rescue staff, and invite them to pre-switch meetings to ensure they understand how the access modifications will be implemented and affect their response routes and travel patterns. We likely will also look to them for traffic control assistance during major traffic shifts or traffic pattern changes.

W&OD Trail Users – With our adjusted alignment of the W&OD Trail, we have substantially reduced impacts to trail users. As an initial stage of construction, work will begin on the trail with the construction of the underpass below Route 9 and the connecting trail segments. With the realignment of Ramp D, construction on the arch structure can commence immediately, and following construction of these improvements, trail traffic will be switched to the new alignment. No temporary closures or detours will be required for trail users for this work. Once trail traffic is routed to the ultimate W&OD Trail location, work will continue with construction of the roundabouts and roadway improvements while continuously maintaining the W&OD Trail during operating hours. As our Team is accustomed to, throughout design and construction we will coordinate with NVRPA staff on all plan submittals and design details which impact the W&OD Trail. As construction of the new improvements near completion, and prior to the switch of trail traffic onto the ultimate alignment, advance signing will be installed to alert users to the anticipated "traffic switch" date. Maps of the new Trail alignment will be shared

with NVRPA staff so they can be distributed on their website, as well as through clubs and groups who frequently use the trail. Once construction is complete and the public coordination has been successfully undertaken, trail traffic will be switched to the ultimate alignment. All project elements, including lighting, pavement markings, and signing will be installed and operational along the W&OD Trail before trail traffic is switched to the new alignment.

Travelling Public – As with any construction project, placement of barrier adjacent to travel lanes, and construction activities behind those barriers, may introduce “rubber-necking” reactions from drivers who are interested in the progress of the work, and new elements of the Project which are visible to traffic. Keeping all work behind barriers and limiting work to off-peak hours will help reduce delays associated with work during peak hours. Temporary lane closures will only occur in off-peak hours in accordance with the lane closure restriction times identified in the RFP, or as additionally necessary based on updated traffic volume counts. Impacts such as temporary lane closures and access changes will be thoroughly communicated to the public via various methods, including the significant use of Portable Changeable Message Signs (PCMS) signs and the VDOT 511 travel information system.

In addition to these specific stakeholders, constant communication will be maintained with all other applicable stakeholders and public agencies such as VDOT public relations staff, Loudoun County staff, Loudoun County Schools, and the Towns of Leesburg, Hamilton and Purcellville.

To safely maintain traffic through all phases of construction while also maximizing traveler mobility, our Team will develop a site-specific Temporary Traffic Control (TTC) plan for this Project. Our TTC plans will be developed to include the design elements described below, and will account for the temporary lane restrictions described below:

On Route 7

- Two (2) Minimum 11’ wide travel lanes will be maintained in each direction of travel during all stages of construction, as shown on Sheets 1J(1) and 1J(2);
- Work will be limited to only one side of the roadway at any time, avoiding the “cattle chute” effect;
- All temporary traffic shifts will be designed to meet the full design speed of the roadway (No speed reductions will be proposed);
- No temporary detours or ramp closures for Route 7 traffic will be proposed;
- Temporary lane closures will be in accordance with the lane closure restriction times identified in the RFP documents, or as further identified based on updated traffic counts our Team will complete. Temporary lane closures are anticipated for night time paving, placement of traffic barriers, and delivery of materials.

On the Interchange Ramps

- All existing ramp lane will be maintained with minimum 11’ wide travel lane(s) throughout construction;
- No speed reductions or detours will be proposed for temporary ramp configurations;
- Temporary lane closures will be in accordance with the lane closure restriction times identified in the RFP documents, or as further identified based on updated traffic counts our Team will complete.

Route 9

- All existing lane will be maintained with minimum 11’ wide travel lanes throughout construction;
- Roundabouts will be constructed outside of the existing travel lanes. Traffic will then be shifted onto the roundabouts, allowing for completion of the construction of the center of the roundabout;

- No speed reductions or detours will be proposed or implemented;
- Temporary lane closures will be in accordance with the lane closure restriction times identified in the RFP documents or as further identified based on updated traffic counts our Team will complete.

West Market Street

- All existing lane will be maintained with minimum 11' wide travel lanes throughout construction;
- No speed reductions or detours will be proposed or implemented;
- Flagging operations will be in accordance with the lane closure restriction times identified in the RFP documents;
- Construction of the left turn lane from the eastbound exit ramp to access westbound Route 7 will be completed prior to closure of the median access points on Route 7;
- Pedestrian movements at the Catocin Circle intersection will be maintained throughout all stages of construction.

W&OD Trail

- The existing Trail alignment will be maintained without impact until completion of the new Trail alignment;
- No material storage or day-time work is anticipated within the limits of the existing W&OD Trail alignment;
- Temporary stoppages of the W&OD Trail will not be implemented or required.

Parallel Road Network

- New segments of Fort Johnston Road and Beechnut Road will be completed and opened to traffic prior to the closure of access points on Route 7;
- Minimum 11' lane widths will be maintained on the existing parallel roadways;
- Flagging operations will be in accordance with the lane closure restriction times identified in the RFP documents.

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, and 11'-12' lane widths will be maintained throughout construction. 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. 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 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.

Our 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 a recent design-build project which included improvements along 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.

4.6 Disadvantaged Business Enterprises (DBE)

COMMITMENT TO ACHIEVING THE DBE GOAL

Shirley Contracting Company, LLC (Shirley) is committed to achieving the 15% DBE participation goal for the Route 7-Westbound Truck Climbing Lane Project for the entire value of the contract.

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 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 Route 7-Westbound Truck Climbing Lane 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

4.7 Proposal Schedule

PROJECT MILESTONES

The Route 7 - Westbound Truck Climbing Lane Project Preliminary Schedule details our plan for all phases of the design/build process based on the following project Milestones (Additional Milestones can be found in the detailed proposal schedule Exhibit 4.7.1a):

Table 4.6.1a - Proposal Schedule A Dates of Project Milestone

| MILESTONE | DATE |
|---|-------------------|
| Notice of Intent to Award: | August 30, 2013 |
| Notice to Proceed (Date of Commencement): | November 15, 2013 |
| NTP for Construction: | May 27, 2014 |
| Interim Milestone | August 22, 2015 |
| Substantial Completion Date: | October 22, 2015 |
| Final Completion Date: | October 22, 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:

- A. *Project Milestones:* Area reserved for easy review of the project status.
- B. *Design:* Includes preliminary engineering services, plan development, QA/QC reviews, reviews by VDOT, FHWA and other regulatory agencies 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 right-of-way and roadway design.
- C. *Environmental Permitting:* Includes wetland and stream delineations and assessments, permit management and preparation, mitigation, and permit submissions, reviews and approvals by regulatory agencies. This section of the schedule includes a second level WBS structure to group permit activities by type of Permit (Joint Wetland and Waters Permit and VSMP Permit).
- D. *Right-of-way Acquisition:* This section of the schedule is used to monitor the acquisition of right-of-way and easements for the project including title searches, appraisals and appraisal reviews, offers, negotiations, and settlements.
- E. *Utility Relocations:* The utility relocation section of the schedule includes activities for UFI meetings, preparation of utility plans and estimates (P&E), approval of P&E and utility relocation construction. The utility relocations are separated into second level WBS groups by utility owner.
- F. *Public Involvement:* This section of the schedule includes activities for planned pardon our dust meetings and updates to the Office of Public Affairs for major traffic shifts and the VDOT website.
- G. *Construction:* Includes all components of roadway and structures construction as well as MOT, lighting, and drainage. The Construction section of the schedule is segmented by two 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

- 01 Schedule Milestones
- 02 Design
 - 02.01 Right of Way Plans
 - 02.02 Roadway and Structural Plans
- 03 Environmental Permits
 - 03.01 Joint Wetlands and Waters Permit
 - 03.02 VSMP Permit
- 04 Right of Way Acquisition
- 05 Utility Relocations
 - 05.01 Dominion Virginia Power
 - 05.02 Verizon
 - 05.03 Comcast
- 06 Public Involvement
- 07 Construction
 - 07.01 Mobilization
 - 07.02 Route 7 WB Widening / Outside Shoulder
 - 07.02.01 WB Sta. 267+00 to 257+00
 - 07.02.02 WB Sta. 255+50 to 239+25
 - 07.02.03 WB Sta. 239+25 to 217+10
 - 07.02.04 WB Sta. 217+10 to 205+00
 - 07.02.05 WB Sta. 205+00 to 165+50
 - 07.02.06 WB Sta. 165+50 to 149+50
 - 07.02.07 WB Sta. 148+00 to 131+00
 - 07.03 Route 7 Median
 - 07.03.01 Median Sta. 267+00 to 239+50
 - 07.03.02 Median Sta. 238+75 to 217+50

- 07.03.03 Median Sta. 216+90 to 205+40
- 07.03.04 Median Sta. 204+80 to 165+90
- 07.03.05 Median Sta. 165+10 to 131+00
- 07.04 Route 7 EB Outside Widening
 - 07.04.01 EB Sta. 163+50 to 166+60
 - 07.04.02 EB Sta. 228+10 to 238+60
 - 07.04.03 EB Sta. 239+50 to 238+60
- 07.05 Route 7 and Route 9 Interchange
 - 07.05.01 Route 9 NB Station 10 to 21 (Incl. Part Circles)
 - 07.05.02 Route 9 SB Station 21 to 10 (Incl. Part Circles)
 - 07.05.03 Ramp D
 - 07.05.04 Ramp C
 - 07.05.05 Complete Circles
- 07.06 Parallel Roads
 - 07.06.01 Leeland Orchard to Ft. Johnson
 - 07.06.02 Fort Johnson to Alysheba
 - 07.06.03 Beechnut Road
- 07.07 W. Market Street
 - 07.07.01 W. Market St. WB 72+00 to 84+50
 - 07.07.02 W. Market St. EB 72+00 to 84+50
 - 07.07.03 W. Market Street Finishes
- 07.08 W&OD Trail
 - 07.08.01 Sta. 315+75 to 319+50
 - 07.08.02 Sta. 312+00 to 300+85
- 07.09 Project Completion Activities
 - 07.09.01 Complete Median Cross-overs
 - 07.09.02 Finishes

Calendars

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

Global Calendar – Global Calendar – All calendars are based on 8 hour work days and include the following holidays:

New Year Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
The Friday following Thanksgiving Day
Christmas Day

- Calendar 1** - “5-Day Work Week” – this calendar is based on five working days per week and is used for all design and administrative activities and construction activities that are not significantly affected 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 15. It is assigned to activities that are anticipated to have reduced productivity during the winter months.
- Calendar 4** – “5-Day Winter SD” – Assigned to activities that are anticipated to be shut down during the winter, such as asphalt paving and painting. This calendar contains no working days from December 25 of one year to March 10 of the next year.

Schedule Timing and Critical Path

The following narrative describes key activities in the sequence of design, planning, permitting, pre-construction, and construction phase of the Project. Each of these activities can be found in the attached proposal schedule and schedule summary found in Exhibit 4.7.1a.

Design Phase - The design phase includes preparation, Quality Assurance/Quality Control reviews, and submission of right-of-way and roadway plans at multiple stages of the design process with a 21 calendar day activity for VDOT and FHWA reviews after each submission. The design phase also includes non-critical activities for the completion of surveys, utility designations, test pits, the scope validation period and geotechnical investigations, including a 90 calendar day activity for VDOT’s review of the geotechnical report prior to submission of the final roadway plans. Our team will begin the design phase of the project immediately upon Notice of Intent to Award to get an early jump on right-of-way, maintenance of traffic, and roadway design. The right-of-way plans will be the 1st plan submission to VDOT on January 9, 2014 to get an early start to the right-of-way acquisition process. Our Team will address ROW Plan comments and request 300/301 approval and ROW Plan approval ahead of final roadway design as we have done on other D/B projects to get an early start to the ROW acquisition process. The proposal schedule shows Right-of-way plan approval on March 20, 2014. Then the next formal plan submission following ROW will be the Roadway plans including any structural details for retaining walls and the Arch. The 1st roadway plan submission will be on January 23, 2014. We anticipate an additional two rounds of submissions and reviews to address all comments with the Preliminary Schedule showing final Roadway Plan approval on May 22, 2014.

Environmental Permitting - Environmental Permitting will begin following Notice to Proceed and completion of the 15-Day period following notification to adjacent landowners. Environmental permitting will start with field activities to delineate the jurisdictional areas. Following permit preparation and acquisition of environmental mitigation the Joint Permit Application will be submitted to the agencies on February 12, 2014. Submission and approval of the VSMP Permit will occur concurrent with the JPA review allowing all permits to be acquired by May 23, 2014 ahead of the planned start of construction and the utility relocations.

Right-of-Way Acquisition - The administration of the right-of-way or easement acquisitions will start upon receipt of the comments from VDOT on the 1st submission ROW plans. The work will start with 60 year title exams and allows for approval of the ROW Plans before finalizing the appraisal and appraisal reviews. Following ROW Plan approval, appraisals will be reviewed and approved by VDOT before making offers to the property owners. Following offers, negotiations, settlements, and certificates, if necessary, the acquisition of all ROW and Easements will be completed by December 4, 2014.

Utility Relocations - To simplify and track the utility relocations on the project, we have created a work breakdown structure that groups the utility relocation activities by utility owner. Within each utility owner group, we have included activities for holding the Utility Field Investigation (UFI) meeting, followed by preparation of the utility plans and estimates (P&E), approval of the P&E, and construction of the relocation by area. Although we have already met with each individual utility company to discuss the proposed relocations and prior rights, the utility relocation schedule starts with formal UFI meetings in January and February 2014. P&E preparation by the utilities and approval by the Design-Builder and VDOT will be completed by August 2014 well in advance of the anticipated easement acquisition in December 2014. Following approval of the P&E and acquisition of easement the utilities will relocate their facilities. All Utility relocation will be completed by May 12, 2015.

Public Outreach - The public outreach schedule includes holding “Pardon our Dust” meetings prior to the start of construction and in March of 2015 prior to the start of the 2nd construction season. However, there are many other public involvement activities that our team will perform, including meeting with local businesses and affected property owners, attending meetings with home owners associations, local government representatives, and community groups, and providing information for regular updates at progress meetings and weekly lane closure plans.

Construction Sequence

The sequence of construction is addressed in Section 4.5.1 of the technical proposal and shown on Sheets 1J(1) and 1J(2) of the Technical Proposal Plans. Below are some of the dates from the preliminary schedule relative to the planned sequence:

- Completion of Route 7 Widening Stage 1 (Outside Widening): December 17, 2014
- Completion of Route 7 Inside Widening Stage 2 & 3: August 22, 2015
- Completion of Ramp C: March 18, 2015
- Completion of Ramp D: April 13, 2015
- Completion of Traffic Circles: September 16, 2015
- Completion of Fort Johnson Road: August 10, 2015
- Completion of Beechnut Road: July 10, 2015

- Completion of W. Market Street Improvements April 15, 2015
- Completion of W&OD Trail Re-alignment March 27, 2015
- Complete Interim Milestone August 22, 2015
- Substantial Completion (entire Project) October 22, 2015

Critical Path

The project critical path is shown on the attached Exhibit 4.7.1b and is summarized below:

The Critical Path of the project starts with preparation and submission of the Right of Way Plans on January 9, 2014. Follow VDOT review and the D/B Team's review of VDOT's comments we will release our right-of-way consultants to start title searches and appraisals. The critical path then follows the right-of-way acquisition process from January 31, 2014 through the acquisition of utility easements on December 4, 2014. Following easement acquisition, the utilities (Dominion Power, Verizon, and Comcast) will relocate their aerial utilities along the alignment of Fort Johnson Road. Once the aerial utility relocations are complete in May 2015, we will complete the construction of Fort Johnson Road by August 10, 2015. The opening of the Fort Johnson Road connections to traffic will allow for the closure of the cross-overs to complete construction of the median improvements by August 22, 2015. At this time all traffic will be in its final alignment on intermediate asphalt. Finally, we will complete surface paving and pavement markings by the Substantial and Final Completion Date of October 22, 2015.

Project Controls

Through our 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 as Exhibit 4.7.1a, that includes a Work Breakdown Structure (WBS) to clearly delineate the tasks of each discipline manager, including Design, Permitting, Right-of-Way, Utilities, and Construction.

Each discipline manager was responsible for producing a schedule to govern their own work and provide insight into how their schedule activities affect and are affected by activities in other disciplines. Once each manager prepared their individual schedule, schedule development meetings were held by the Design-Build Project Manager. These meetings were attended by all discipline managers to review each individual schedule and integrate them into the overall project 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 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 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, our 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, Superintendent, Designer of Record, 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 Superintendent 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 our team 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.

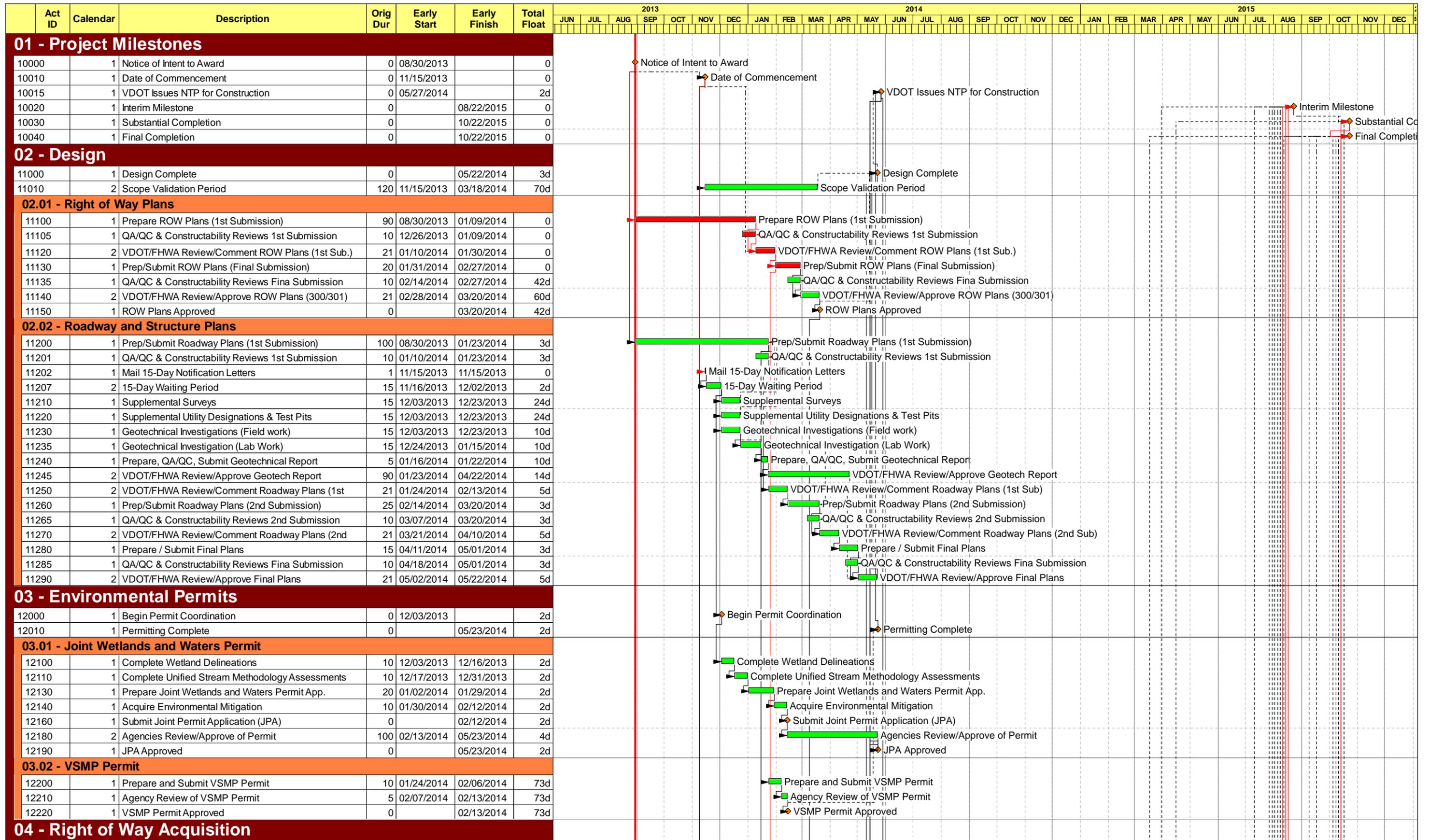
In addition to weekly schedule meetings with the VDOT, our Team will also prepare and submit monthly schedule updates for review and approval by VDOT, including a narrative of the schedule modifications, updated activities, project issues affecting the schedule, and a description of the critical path 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.

Baseline CPM Development

Our team will prepare and submit a cost and resource loaded, detailed Baseline CPM Schedule for VDOT’s review and approval in accordance with the Contract Documents, Part 3, Section 11.1.2. Our team will update the proposal schedule monthly until the Baseline Schedule is approved by VDOT.

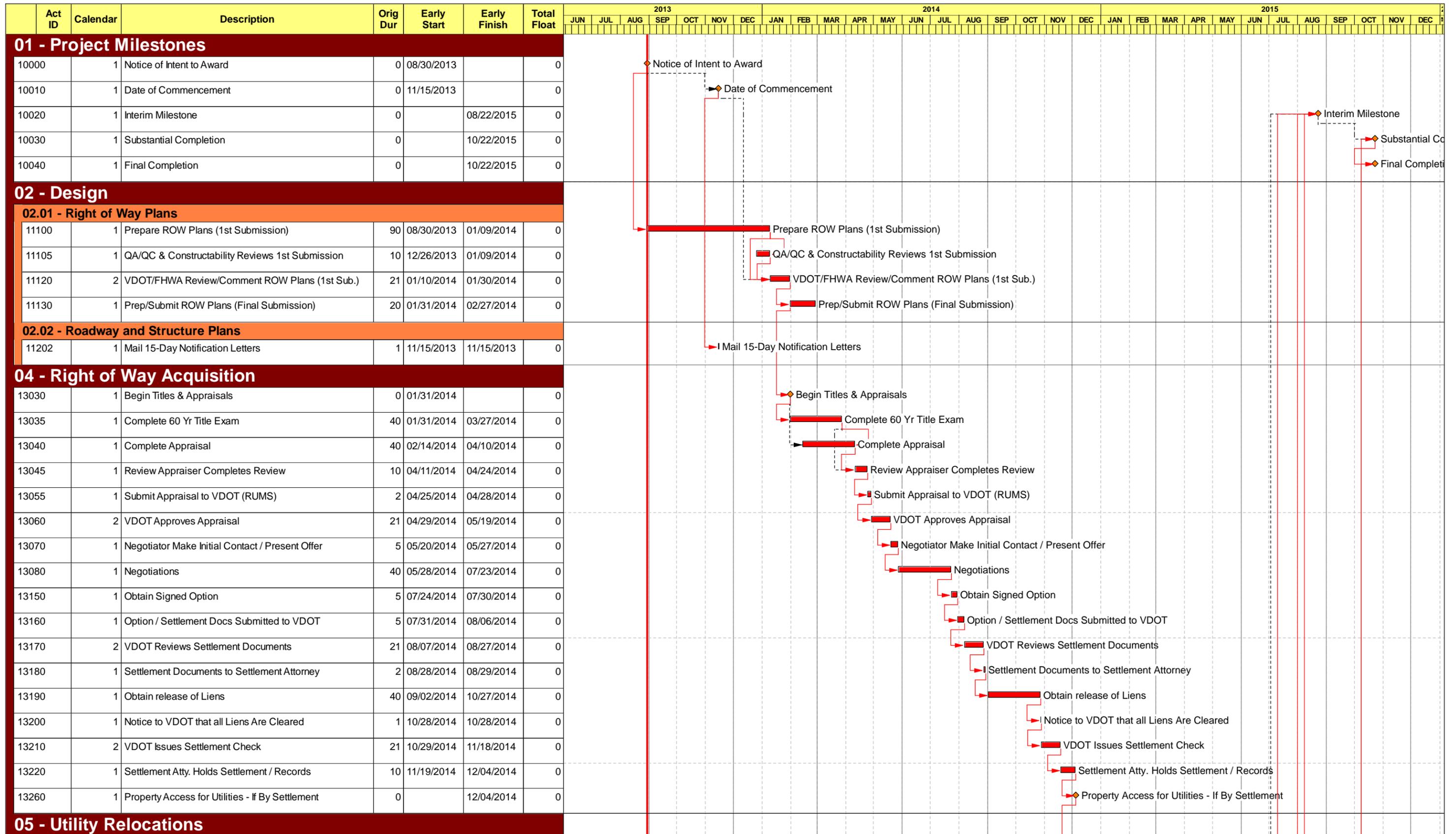


█ Early bar
█ Progress bar
█ Critical bar
█ Summary bar
◆ Start milestone point
◇ Finish milestone point

Shirley Contracting Company, LLC
 8435 Backlick Road
 Lorton, Virginia 22079

Exhibit 4.7.1a - Preliminary Schedule
 Route 7 - WB Truck Climbing Lane Project,
 6007-053-133, R201, C501

Run date 06/18/2013
 Data date 08/30/2013
 Start date 08/30/2013
 Finish date 10/22/2015
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■ Early bar
■ Progress bar
■ Critical bar
■ Summary bar
◆ Start milestone point
◆ Finish milestone point

Shirley Contracting Company, LLC
 8435 Backlick Road
 Lorton, Virginia 22079

Exhibit 4.7.1b - Critical Path
 Route 7 - WB Truck Climbing Lane Project,
 6007-053-133, R201, C501

Run date 06/18/2013
 Data date 08/30/2013
 Start date 08/30/2013
 Finish date 10/22/2015
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ATTACHMENT 4.0.1.1
ROUTE 7 – WESTBOUND TRUCK CLIMBING LANE
TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

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

| Technical Proposal Component | Form (if any) | RFP Part 1 Cross Reference | Included within page limit? | Technical Proposal Page Reference |
|---|--|-------------------------------|-----------------------------------|--|
| Technical Proposal Checklist and Contents | Attachment 4.0.1.1 | Section 4.0.1.1 | no | N/A |
| Acknowledgement of RFP, Revisions, and/or Addenda | Attachment 3.6 (Form C-78-RFP) | Sections 3.6, 4.0.1.1 | no | N/A |
| | | | | |
| Letter of Submittal | NA | Sections 4.1 | | |
| Letter of Submittal on Offeror's letterhead | NA | Section 4.1.1 | yes | 1-2 |
| 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 |
| Principal Officer information | NA | Section 4.1.4 | yes | 1 |
| Substantial and Final Completion Date(s) | NA | Section 4.1.5 | yes | 1 |
| Proposal Payment Agreement or Waiver of Proposal Payment | Attachment 9.3.1 or 9.3.2 | Section 4.1.6 | no | 1 |
| Certification Regarding Debarment Forms | Attachment 11.8.6(a) Attachment 11.8.6(b) | Section 4.1.7 | no | 1 |
| | | | | |
| Offeror's Qualifications | NA | Section 4.2 | | |
| Confirmation that the information provided in the SOQ submittal remains true and accurate or indicates that any | NA | Section 4.2.1 | yes | 3 |

ATTACHMENT 4.0.1.1
ROUTE 7 – WESTBOUND TRUCK CLIMBING LANE
TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

| Technical Proposal Component | Form (if any) | RFP Part 1 Cross Reference | Included within page limit? | Technical Proposal Page Reference |
|--|---------------|-------------------------------|-----------------------------------|--|
| requested changes were previously approved by VDOT | | | | |
| 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 |
| | | | | |
| Design Concept | NA | Section 4.3 | | |
| Conceptual Roadway Plans and description | NA | Section 4.3.1.1 | yes | 4-9, 40-59 |
| Conceptual Structural Plans and description | NA | Section 4.3.1.2 | yes | 9-12, 60 |
| | | | | |
| Project Approach | NA | Section 4.4 | | |
| Environmental Management | NA | Section 4.4.1 | yes | 13-14 |
| Utilities | NA | Section 4.4.2 | yes | 14-19 |
| Geotechnical | NA | Section 4.4.3 | yes | 19-22 |
| Quality Assurance/ Quality Control (QA/QC) | NA | Section 4.4.4 | yes | 22-30 |
| | | | | |
| Construction of Project | NA | Section 4.5 | | |
| Sequence of Construction | NA | Section 4.5.1 | yes | 31-32 |
| Transportation Management Plan | NA | Section 4.5.2 | yes | 33-37 |
| | | | | |

ATTACHMENT 4.0.1.1
ROUTE 7 – WESTBOUND TRUCK CLIMBING LANE
TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

| Technical Proposal Component | Form (if any) | RFP Part 1 Cross Reference | Included within page limit? | Technical Proposal Page Reference |
|---|---------------|-------------------------------|-----------------------------------|--|
| Disadvantaged Business Enterprises (DBE) | NA | Section 4.6 | | |
| Written statement of percent DBE participation | NA | Section 4.6 | yes | 38-39 |
| DBE subcontracting narrative | NA | Section 4.6 | yes | 38-39 |
| | | | | |
| Proposal Schedule | NA | Section 4.7 | | |
| Proposal Schedule | NA | Section 4.7 | no | N/A |
| Proposal Schedule Narrative | NA | Section 4.7 | 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**

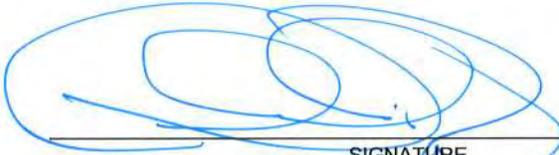
RFP NO. C00058599DB54
PROJECT NO.: 6007-053-133, R201, C501

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 27, 2013 – RFP
(Date)
2. Cover letter of May 14, 2013 – Addendum #1
(Date)
3. Cover letter of June 4, 2013 – Addendum #2
(Date)



SIGNATURE

June 20, 2013
DATE

ATTACHMENT 9.3.1
PROPOSAL PAYMENT AGREEMENT

THIS PROPOSAL PAYMENT AGREEMENT (this “Agreement”) is made and entered into as of this 20th day of June, 2013, by and between the Virginia Department of Transportation (“VDOT”), and Shirley Contracting Company, LLC (“Offeror”).

WITNESSETH:

WHEREAS, Offeror is one of the entities who submitted Statements of Qualifications (“SOQs”) pursuant to VDOT’s **October 31, 2012** Request for Qualifications (“RFQ”) and was invited to submit proposals in response to a Request for Proposals (“RFP”) for the **Route 7 Westbound Truck Climbing Lane, Project No. 6007-053-133, R201, C501** (“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 Thousand**] 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

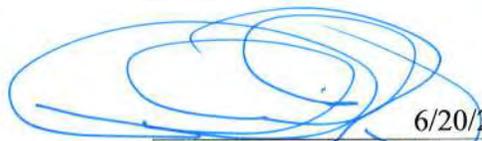
ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project No.: 6007-053-133, R201, C501

- 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

6/20/2013
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.: 6007-053-133, R201, C501

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

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

Dave Mahoney 6/17/13 Executive Vice President
Signature Date Title

Dewberry Consultants, LLC
Name of Firm

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

Project No.: 6007-053-133, R201, C501

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

| | | |
|---|---------|-----------|
|  | 6-17-13 | President |
| Signature | Date | Title |

GeoConcepts Engineering, Inc.

Name of Firm

ATTACHMENT NO. 3.2.7(b)

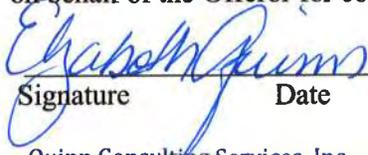
**CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS**

Project No.: 6007-053-133, R201, C501

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- 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 form.

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.

| | | |
|---|---------------|-----------|
|  | June 17, 2013 | President |
| Signature | Date | Title |
| Quinn Consulting Services, Inc. | | |
| Name of Firm | | |

ATTACHMENT NO. 3.2.7(b)

**CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS**

Project No.: 6007-053-133, R201, C501

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- 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 form.

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.

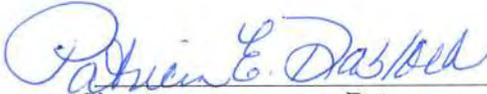
| | | |
|--------------------------------|----------------|------------------|
| <u>Dan S. S. S. S.</u> | <u>6-17-13</u> | <u>Principal</u> |
| Signature | Date | Title |
| <u>Specialized Engineering</u> | | |
| Name of Firm | | |

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

Project No.: 6007-053-133, R201, C501

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- 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.

| | | |
|---|-----------|-----------|
|  | 6/13/2013 | President |
| Signature | Date | Title |

Diversified Property Services, Inc.
Name of Firm

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

Project No.: 6007-053-133, R201, C501

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- 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.

RP [Signature] 6-13-13 Settlement officer
Signature Date Title

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

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

Project No.: 6007-053-133, R201, C501

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

S. Craig Martin 6/13/13 President
Signature Date Title

Accumark, Inc.
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 # 6007-053-133, R201, C501.

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.

Michael E. Post
Printed name of Individual Staff Member

6/20/13
Date

Shirley Contracting Company, LLC
Company Name

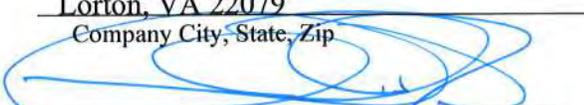
703-550-8100
Phone Number

8435 Backlick Road
Company Address

703-550-7897
Fax Number

Lorton, VA 22079
Company City, State, Zip

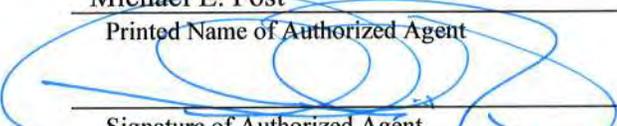
mpost@shirleycontracting.com
E-mail Address


Signature of Individual Staff Member

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

Michael E. Post
Printed Name of Authorized Agent

President/CEO/Manager
Title


Signature of Authorized Agent

703-550-8100
Phone Number

Kevin C. Reichert, P.E.
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 not CII/SSI otherwise, continue to the guide. | X |

| Guide to Identifying Possible CII/SSI | | Y/N |
|--|--|------------|
| If the item under consideration shows, describes or is listed below, it might be CII/SSI. | | |
| 1 | <p>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:</p> <ul style="list-style-type: none"> <li style="width: 50%;">• Critical structural components <li style="width: 50%;">• Security equipment and systems <li style="width: 50%;">• Ventilation systems <li style="width: 50%;">• Fire protection equipment <li style="width: 50%;">• Elevators <li style="width: 50%;">• Telecommunications equipment and systems <li style="width: 50%;">• Mandatory building emergency equipment or systems <li style="width: 50%;">• Electrical systems <li style="width: 50%;">• Other utility equipment and systems <p><i>(COV § 2.2-3705.2 (2))</i></p> | |
| 2 | <p>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.</p> <p><i>(COV § 2.2-3705.2 (3))</i></p> | |
| 3 | <p>Plans and information to prevent or respond to terrorist activity, the disclosure of which would jeopardize the safety of any person, including:</p> <ul style="list-style-type: none"> <li style="width: 50%;">• Critical infrastructure sector or structural components <li style="width: 50%;">• Operational, procedural, transportation, and tactical planning or training manuals <li style="width: 50%;">• Vulnerability assessments <li style="width: 50%;">• Staff meeting minutes or other records <p>Engineering or architectural records or portions of, that reveals the location or operation of:</p> <ul style="list-style-type: none"> <li style="width: 50%;">• Security equipment and systems <li style="width: 50%;">• Elevator equipment and systems <li style="width: 50%;">• Ventilation equipment and systems <li style="width: 50%;">• Fire protection equipment and systems <li style="width: 50%;">• Emergency equipment and systems <li style="width: 50%;">• Electrical equipment and systems <li style="width: 50%;">• Utility equipment and systems <li style="width: 50%;">• Telecommunications equipment and systems <p>The same categories of records submitted to us for the purpose of antiterrorism response planning if accompanied, in writing, a statement that:</p> <ul style="list-style-type: none"> • Invokes the protection of §2.2-3705.2 • Specifically identifies the records or portions thereof which are to be protected • States why the protection of such records from public disclosure is necessary <p><i>(COV § 2.2-3705.2 (4))</i></p> | |
| 4 | <p>Information including (drawings, manuals, or other records) which reveals:</p> <ul style="list-style-type: none"> <li style="width: 50%;">• Surveillance techniques <li style="width: 50%;">• Alarm or security systems or technologies <li style="width: 50%;">• Personnel deployments <li style="width: 50%;">• Operational and transportation plans or protocols <p><i>(COV § 2.2-3705.2 (6))</i></p> | |
| 5 | <p>Information concerning threats against transportation.</p> <p><i>(USC 49 CFR 1520 (5))</i></p> | |

RESPONSE TO REQUEST FOR PROPOSALS

Route 7 - Westbound Truck Climbing Lane

A DESIGN-BUILD PROJECT

FROM: ROUTE 9

TO: WEST MARKET STREET

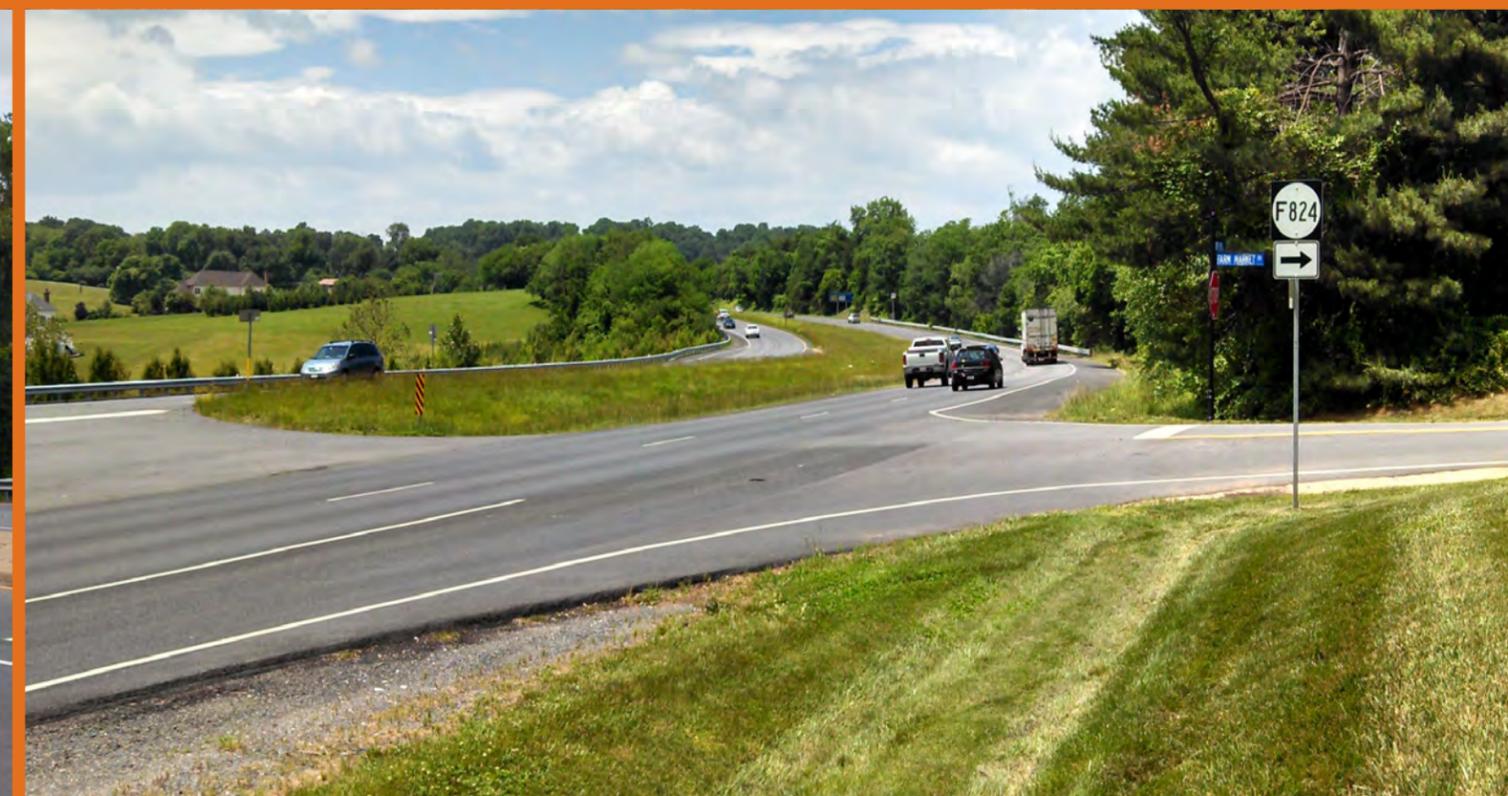
LOUDOUN COUNTY, VIRGINIA

State Project No.: 6007-053-133, R201, C501

Federal Project No.: STP-5401(518)

Contract ID Number: C00058599DB54

Volume II: Design Concept



THIS PROJECT WAS DEVELOPED UTILIZING THE DEPARTMENT'S ENGINEERING DESIGN PACKAGE (GEOPAK).
 GEOPAK Computer Identification No. 58599

FHWA 534 DATA 42121

| STATE | FEDERAL AID PROJECT | ROUTE | STATE PROJECT | SHEET NO. |
|-------|--|-------|--|-----------|
| VA. | STP-540(I) See Tabulation Below For Section Numbers | 7 | (NFO) 6007-053-133 P101, R201, C501 | 1 |

SHEET INDEX

| | |
|-------------|---|
| 1 | TITLE SHEET |
| 1J(1)-1J(2) | CONCEPTUAL ROUTE 7 SEQUENCE OF CONSTRUCTION |
| 2A(1)-2A(3) | TYPICAL SECTIONS |
| 3-13 | CONCEPTUAL ROADWAY PLANS |
| 14 | RAMP D OVER W&OD TRAIL - PLAN, ELEVATION, AND TYPICAL SECTION |

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

COMMONWEALTH OF VIRGINIA
 DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE OF PROPOSED
 STATE HIGHWAY

VOLUME II PLANS

LOUDOUN COUNTY

ROUTE 7 - WESTBOUND TRUCK CLIMBING LANES
 FROM: ROUTE 9
 TO: WEST MARKET STREET

| ROUTE 7 FUNCTIONAL CLASSIFICATION AND TRAFFIC DATA | | |
|---|--------------------------|---------------|
| RURAL PRINCIPAL DIVIDED ARTERIAL ROLLING - 60 MPH DESIGN SPEED | | |
| Fr: ROUTE 9 To: WEST MARKET STREET | | |
| ADT (2011) | 60,500 | |
| ADT (2036) | 84,750 | |
| DHV | 6,800 | |
| D (%) (design hour) | 76/23 | |
| T (%) (design hour) | 3% | |
| V (MPH) | 60 (DESIGN), 55 (POSTED) | |
| DESIGN EXCEPTIONS APPROVED PER RFP PLANS | | |
| Location | Reason for Exception | Approval Date |
| 72+37.30 to 74+11.95 | Bridge Shoulder Width | 4/24/2012 |
| 227+70.48 to 233+70.48 | Vertical Curve & SSD | 7/26/2012 |

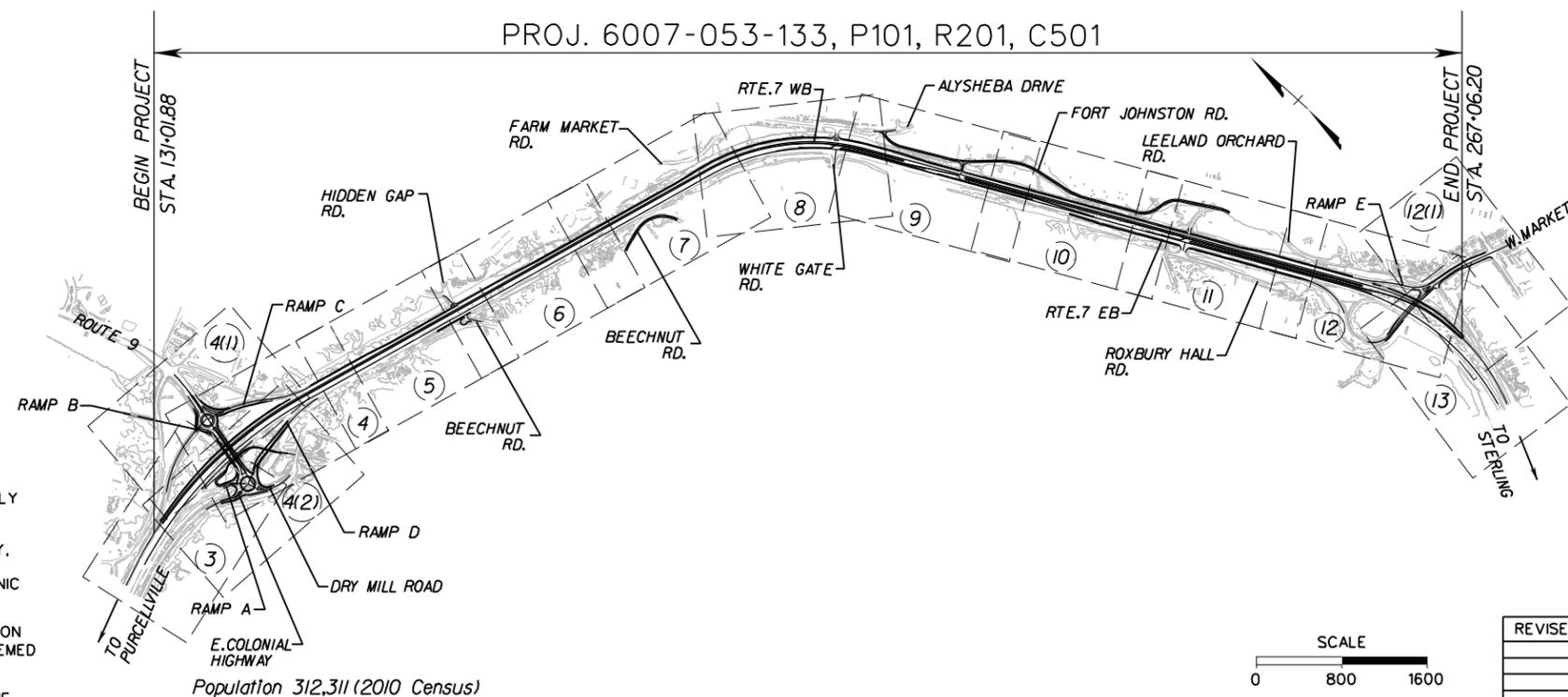


PROJECT MANAGER Mark Gibney, P.E., VDOT, NOVA District - (703) 259-2734
 SURVEYED BY NOVA District Survey
 DESIGN SUPERVISED BY David J. Mahoney, PE - Dewberry Consultants, LLC - (703) 849-0607
 DESIGNED BY Dewberry Consultants, LLC

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 | ----- |



THE COMPLETE ELECTRONIC PDF VERSION OF THE PLAN ASSEMBLY AS AWARDED, HAS BEEN SEALED AND SIGNED USING DIGITAL SIGNATURES AND THE OFFICIAL PLAN ASSEMBLY IN ELECTRONIC FORMAT IS STORED IN THE VDOT CENTRAL OFFICE PLAN LIBRARY, INCLUDING ALL SUBSEQUENT REVISIONS, WILL BE THE OFFICIAL CONSTRUCTION PLANS. FOR INFORMATION RELATIVE TO ELECTRONIC FILES AND LAYERED PLANS, SEE THE GENERAL NOTES.

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

THIS PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT'S 2007 ROAD AND BRIDGE SPECIFICATIONS, 2008 ROAD AND BRIDGE STANDARDS, 2009 MUTCD, 2011 VIRGINIA SUPPLEMENT TO THE MUTCD, 2011 VIRGINIA WORK AREA PROTECTION MANUAL AND AS AMENDED BY CONTRACT PROVISIONS AND THE COMPLETE ELECTRONIC PDF VERSION OF THE PLAN ASSEMBLY.

ALL CURVES ARE TO BE SUPERELEVATED, TRANSITIONED AND WIDENED IN ACCORDANCE WITH STANDARD TC-5.11, EXCEPT WHERE OTHERWISE NOTED.

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| STATE PROJECT NO. | SECTION | FEDERAL AID PROJECT NO. | TYPE CODE | UPC NO. | EQUALITIES | LENGTH INCLUDING BRIDGE(S) | | LENGTH EXCLUDING BRIDGE(S) | | TYPE PROJECT | DESCRIPTION |
|-------------------|---------|-------------------------|-----------|---------|------------|----------------------------|-------|----------------------------|-------|--------------|---|
| | | | | | FEET | FEET | MILES | FEET | MILES | | |
| 6007-053-133 | P101 | STP-540(1518) | 1000 | 58599 | | | | 13,604 | 2.57 | PRELIM. ENG. | FROM: WEST MARKET STREET INTERCHANGE TO: ROUTE 9 INTERCHANGE |
| | R201 | | 1000 | 58599 | | | | 13,604 | 2.57 | RIGHT OF WAY | FROM: WEST MARKET STREET INTERCHANGE TO: ROUTE 9 INTERCHANGE |
| | C501 | | 1000 | 58599 | | | | 13,604 | 2.57 | CONSTRUCTION | FROM: WEST MARKET STREET INTERCHANGE TO: ROUTE 9 INTERCHANGE |

Project Lengths are based on Route 7 WB Construction Baseline.

TIER 2 PROJECT

| RECOMMENDED FOR APPROVAL FOR RIGHT OF WAY ACQUISITION | |
|---|------------------------------------|
| DATE | PROGRAMMING DIVISION DIRECTOR |
| DATE | STATE LOCATION AND DESIGN ENGINEER |
| DATE | CHEF OF PLANNING AND PROGRAMMING |
| DATE | CHEF ENGINEER |

| APPROVED FOR RIGHT OF WAY ACQUISITION | |
|---------------------------------------|--------------------------------|
| DATE | CHEF OF POLICY AND ENVIRONMENT |

REVISIED

| RECOMMENDED FOR APPROVAL FOR CONSTRUCTION | |
|---|-------------------------------------|
| DATE | PROGRAMMING DIVISION DIRECTOR |
| DATE | STATE LOCATION AND DESIGN ENGINEER |
| DATE | STATE STRUCTURE AND BRIDGE ENGINEER |
| DATE | CHEF OF PLANNING AND PROGRAMMING |

| APPROVED FOR CONSTRUCTION | |
|---------------------------|---------------|
| DATE | CHEF ENGINEER |

| APPROVED | |
|----------|---|
| DATE | DIVISION ADMINISTRATOR FEDERAL HIGHWAY ADMINISTRATION U.S. DEPARTMENT OF TRANSPORTATION |

Copyright 2013, Commonwealth of Virginia

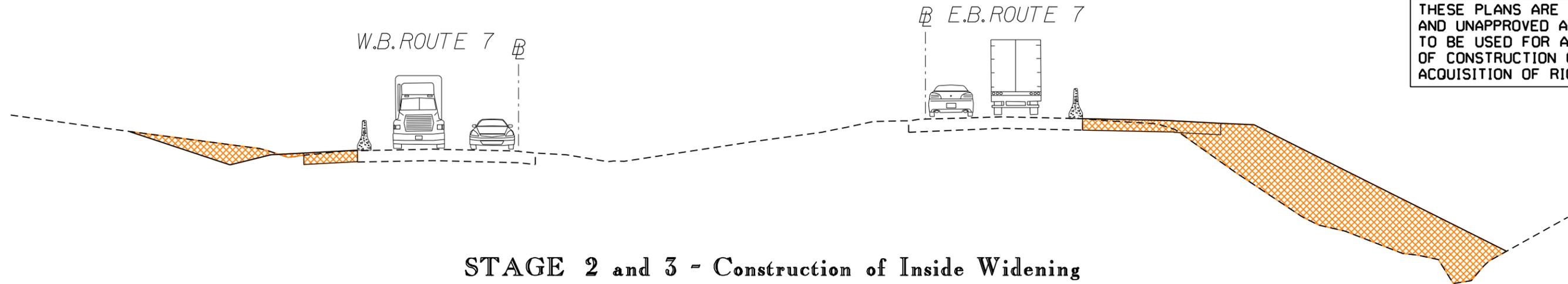
PROPOSED SEQUENCE OF CONSTRUCTION ROUTE 7 WIDENING

| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|--|-----------|
| | VA | 7 | (NFO) 6007-053-133 PI01, R201, C501 | 1J(1) |

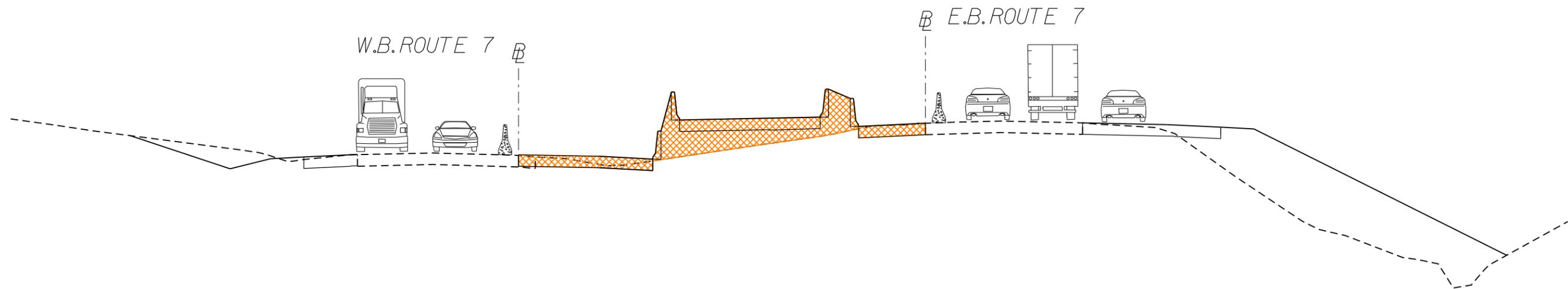
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

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

STAGE 1 - Construction of Outside Widening



STAGE 2 and 3 - Construction of Inside Widening



LEGEND:

 WORK AREA

 TEMPORARY BARRIER WHERE REQ'D. PER PLANS



N.T.S.

| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 1J(1) |

PROPOSED SEQUENCE OF CONSTRUCTION

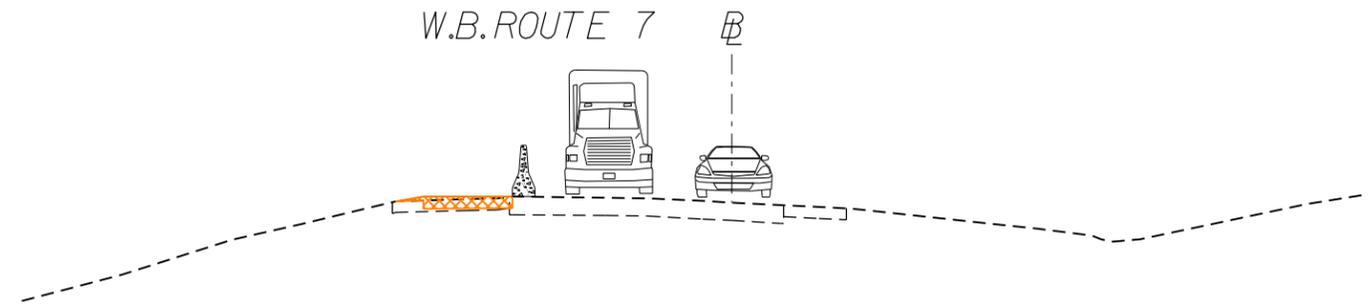
WB ROUTE 7 PAVEMENT RECONSTRUCTION AREAS

| REVISED | STATE | STATE | | SHEET NO. |
|---------|-------|-------|--|-----------|
| | | ROUTE | PROJECT | |
| | VA | 7 | (NFO) 6007-053-133 P101, R201, C501 | IJK(2) |

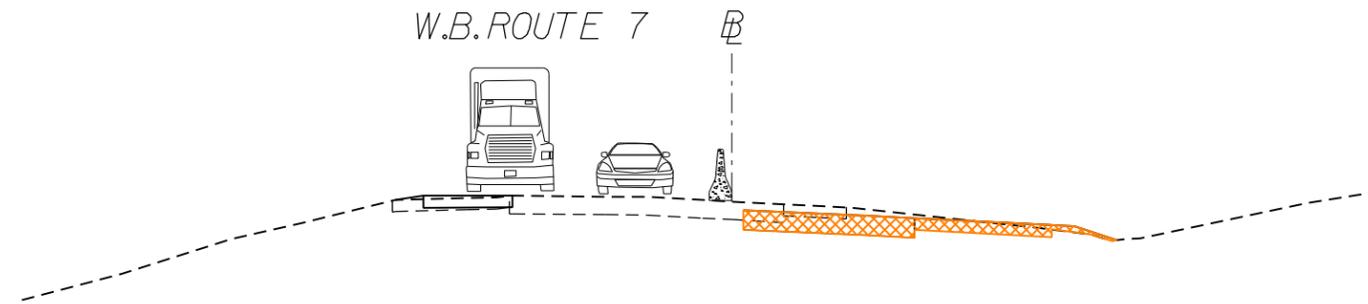
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

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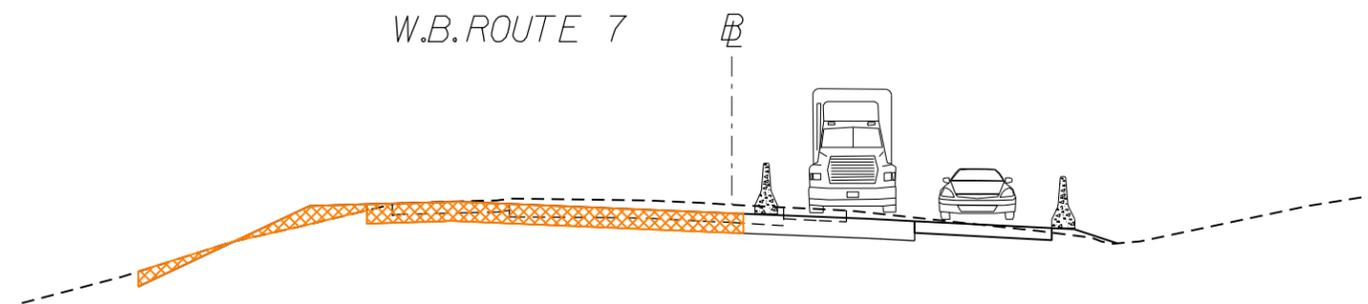
STAGE 1 - Construction of Temporary Pavement



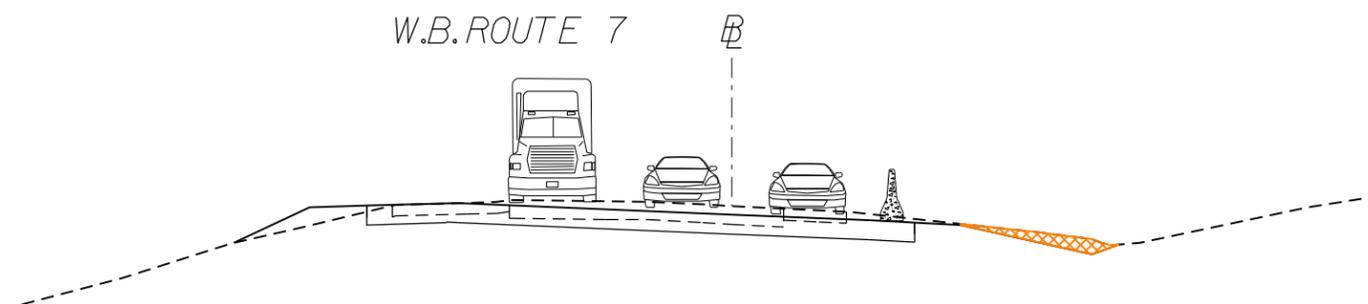
STAGE 2 - Construction of Inside Widening and Reconstruction



STAGE 3 - Construction of Outside Widening and Reconstruction



STAGE 4 - Removal of Temporary Pavement in Median



LEGEND:

 WORK AREA

 TEMPORARY BARRIER WHERE REQ'D. PER PLANS



N.T.S.

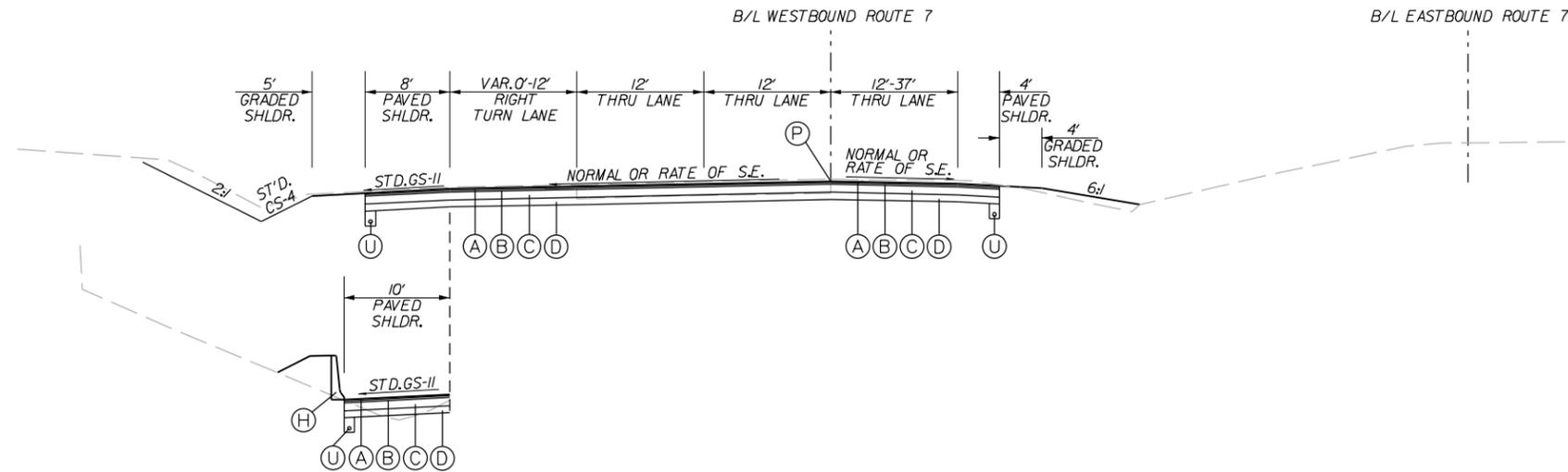
| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | IJK(2) |

TYPICAL SECTIONS

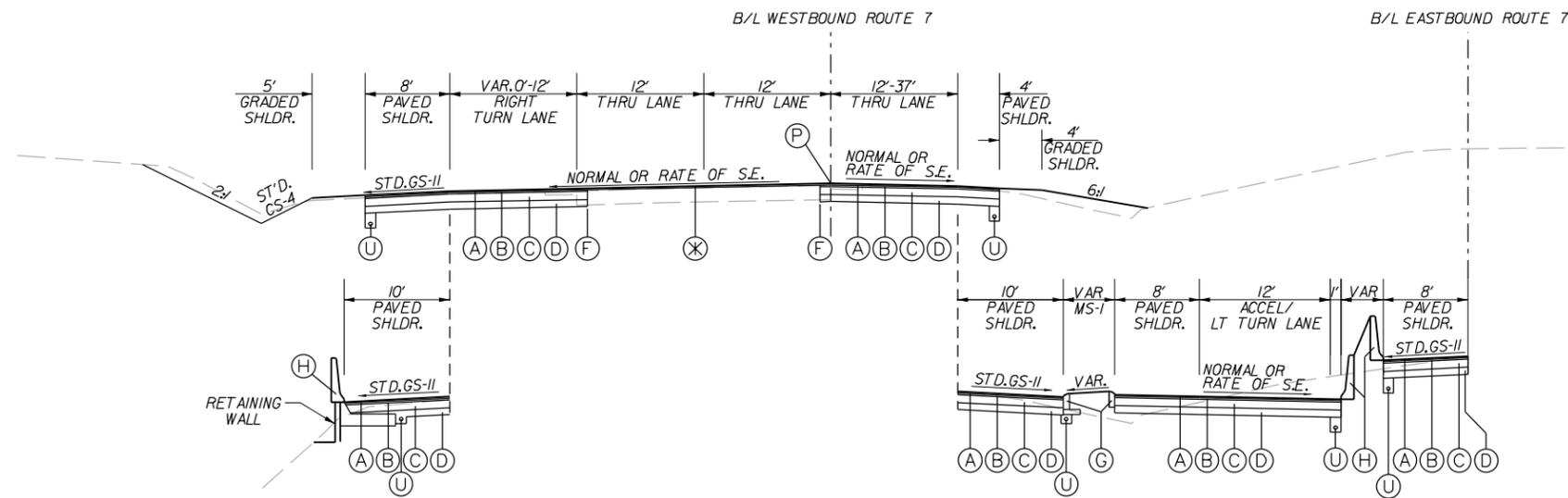
| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|--|-----------|
| | VA | 7 | (NFO) 6007-053-133 PIOI, R20I, C50I | 2A(1) |

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

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ROUTE 7 WB - TRUCK CLIMBING LANE WITH FULL PAVEMENT RECONSTRUCTION



ROUTE 7 WB - TRUCK CLIMBING LANE WITH MEDIAN LEFT TURN/ACCELERATION LANE

LEGEND

- (A) 1.5" Asphalt Concrete, Type SM-9.5D (181.5 lbs/sy)
- (A₁) 2.0" Asphalt Concrete, Type SM-9.5D (242.0 lbs/sy)
- (A₂) 1.5" Asphalt Concrete, Type SM-9.5A (181.5 lbs/sy)
- (B) 2.0" Asphalt Concrete, Type IM-19.0A (242.8 lbs/sy)
- (C) 9.0" Asphalt Concrete, Type BM-25.0A
- (C₁) 8.0" Asphalt Concrete, Type BM-25.0A
- (C₂) 6.0" Asphalt Concrete, Type BM-25.0A
- (C₃) 4.0" Asphalt Concrete, Type BM-25.0A
- (C₄) 3.0" Asphalt Concrete, Type BM-25.0A
- (D) Minimum 8.0" Aggregate Base Material, Type I, Size No. 21B extended 1 foot beyond the edge of pavement, or behind curb and gutter, VDOT Standard UD-4 or modified UD-1 shall be provided below shoulder or curb and gutter.

- (D₁) Minimum 10.0" Aggregate Base Material, Type I, Size No. 21B extended 1 foot beyond the edge of pavement, or behind curb and gutter, VDOT Standard UD-4 or modified UD-1 shall be provided below shoulder or curb and gutter.
- (D₂) Minimum 16.0" Aggregate Base Material, Type I, Size No. 21B extended 1 foot beyond the edge of shoulder.
- (D₃) 6.0" Aggregate Base Material, Type I, Size No. 21A extended 6" beyond the edge of pavement surface.
- (F) Full Depth Saw Cut
- (G) Curb, S'd. CG-3
- (H) Barrier, S'd. MB-12C
- (M) Mill existing pavement 2"
- (P) Profile Grade Line, Point of Rotation
- (U) Underdrain, S'd. UD-4

- (X) Minimum Overlay of 1.5" SM-9.5D Req'd. The following additional requirements apply Sta. 131+01.88 to Sta. 168+75.00
 1.5" SM-9.5D Build-Up, No Milling Req'd.
 Sta. 168+75.00 to Sta. 267+06.20
 Mill 2.0" Prior to Overlay with
 1.5" Asphalt Concrete Type SM-9.5D
 2.0" Asphalt Concrete Type IM-19.0A
 Variable Thickness Asphalt Concrete Type IM-19.0A (2"-3") and Type BM-25.0A (2.5"-4") Req'd. where regrading is proposed.

NOTES:

Route 7 Paved Shoulders
 When widening on the high side of an existing cross slope or super-elevated pavement, aggregate base material, Type I, size no. 21A pugmill mixed with 4% cement by weight (CTA) shall be substituted for aggregate base material, Type I, Size No. 21B for pavement widening and shoulders.



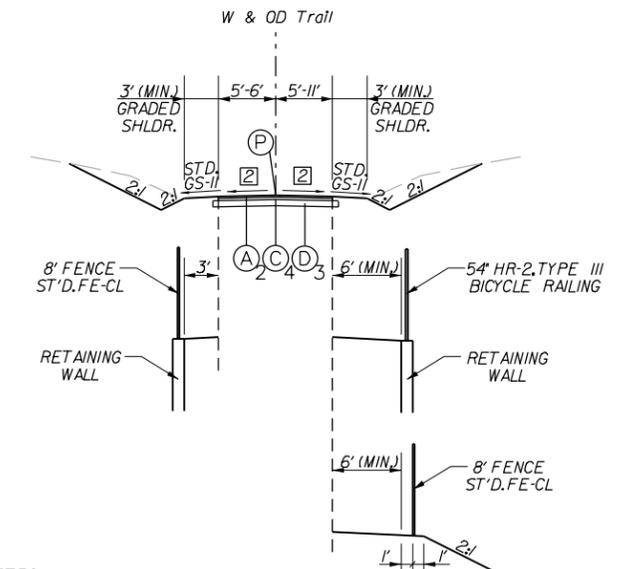
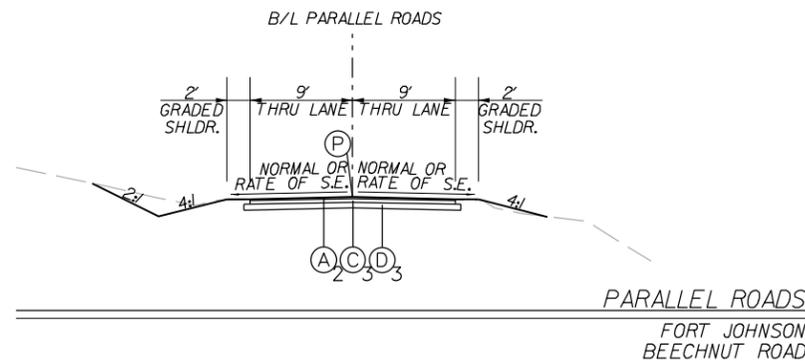
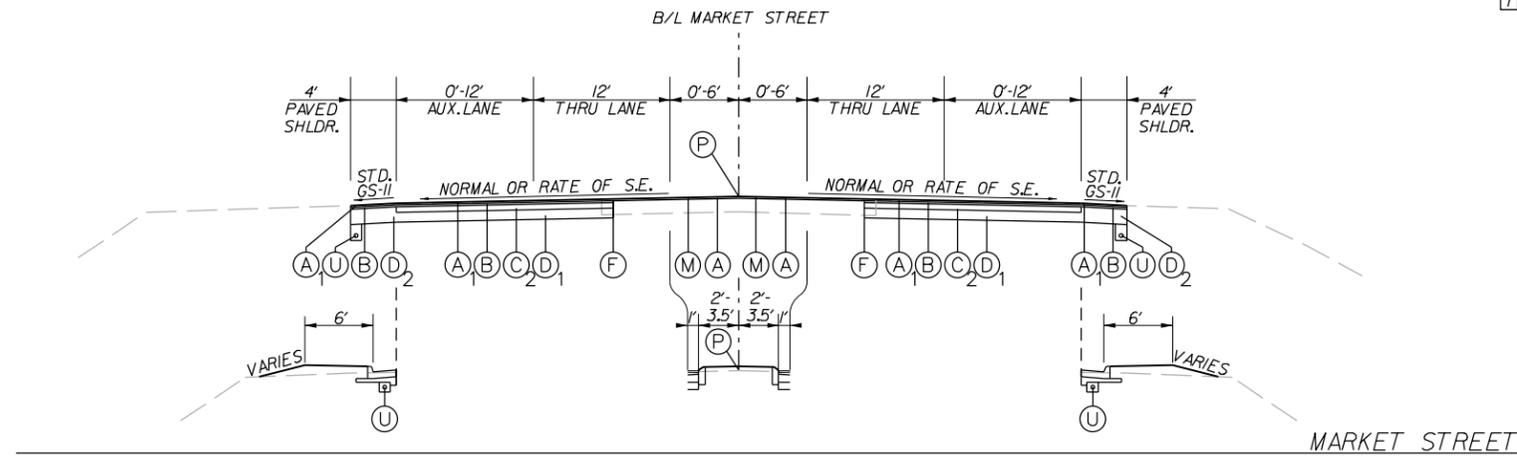
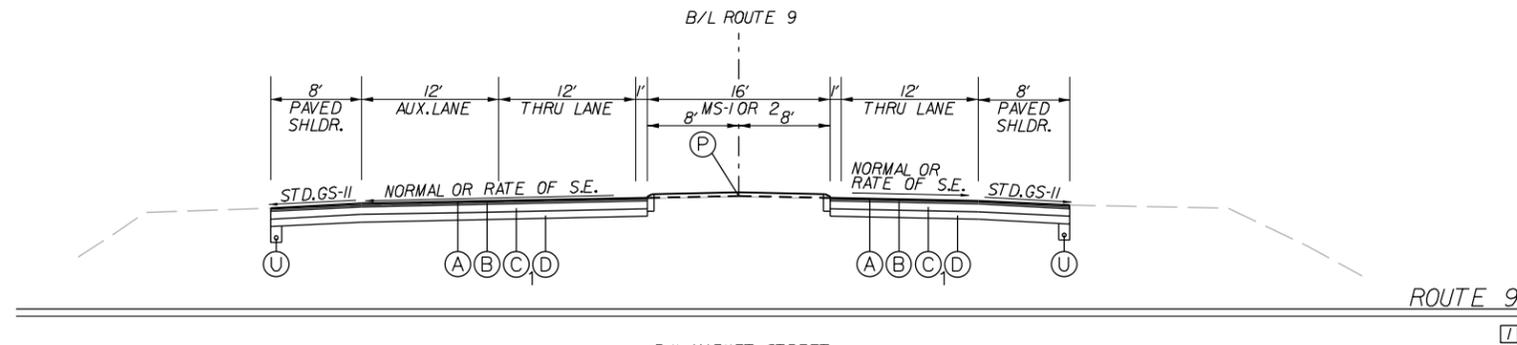
| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 2A(1) |

TYPICAL SECTIONS

| REVISION | STATE | ROUTE | PROJECT | SHEET NO. |
|----------|-------|-------|---------------------------------------|-----------|
| | VA | 7 | (NFO) 6007-053-133 PIO, R201, C501 | 2A(2) |

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

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



NOTES:
 1. SEE PLANS FOR WALL LOCATIONS/LENGTHS.
 2. SEE VOLUME 2, SHEET 60 FOR RAMP D CONSPAN TYPICAL SECTION.

LEGEND

- | | |
|---|--|
| (A) 1.5" Asphalt Concrete, Type SM-9.5D (181.5 lbs/sy) | (D ₁) Minimum 10.0" Aggregate Base Material, Type I, Size No. 21B extended 1 foot beyond the edge of pavement, or behind curb and gutter. VDOT Standard UD-4 or modified UD-1 shall be provided below shoulder or curb and gutter. |
| (A ₁) 2.0" Asphalt Concrete, Type SM-9.5D (242.0 lbs/sy) | (D ₂) Minimum 16.0" Aggregate Base Material, Type I, Size No. 21B extended 1 foot beyond the edge of shoulder. |
| (A ₂) 1.5" Asphalt Concrete, Type SM-9.5A (181.5 lbs/sy) | (D ₃) 6.0" Aggregate Base Material, Type I, Size No. 21A extended 6" beyond the edge of pavement surface. |
| (B) 2.0" Asphalt Concrete, Type IM-19.0A (242.8 lbs/sy) | (F) Full Depth Saw Cut |
| (C) 9.0" Asphalt Concrete, Type BM-25.0A | (G) Curb, S'd. CG-3 |
| (C ₁) 8.0" Asphalt Concrete, Type BM-25.0A | (H) Barrier, S'd. MB-12C |
| (C ₂) 6.0" Asphalt Concrete, Type BM-25.0A | (M) Mill existing pavement 2" |
| (C ₃) 4.0" Asphalt Concrete, Type BM-25.0A | (P) Profile Grade Line, Point of Rotation |
| (C ₄) 3.0" Asphalt Concrete, Type BM-25.0A | (U) Underdrain, S'd. UD-4 |
| (D) Minimum 8.0" Aggregate Base Material, Type I, Size No. 21B extended 1 foot beyond the edge of pavement, or behind curb and gutter. VDOT Standard UD-4 or modified UD-1 shall be provided below shoulder or curb and gutter. | |

NOTES:

- Paved Shoulders for Route 9 and Roundabouts/
 Resurfacing of West Market Street Existing Pavement
 When widening on the high side of an existing cross slope or super-elevated pavement, aggregate base material, Ty. I, size no. 21A pugmill mixed with 4% cement by weight (CTA) shall be substituted for aggregate base material, Type I, Size No. 21B for pavement widening and shoulders.
- [1] For Roundabouts, East Colonial Hwy and Drymill Mill Road, use same pavement section as for Route 9.
- [2] NORMAL OR RATE OF S.E.



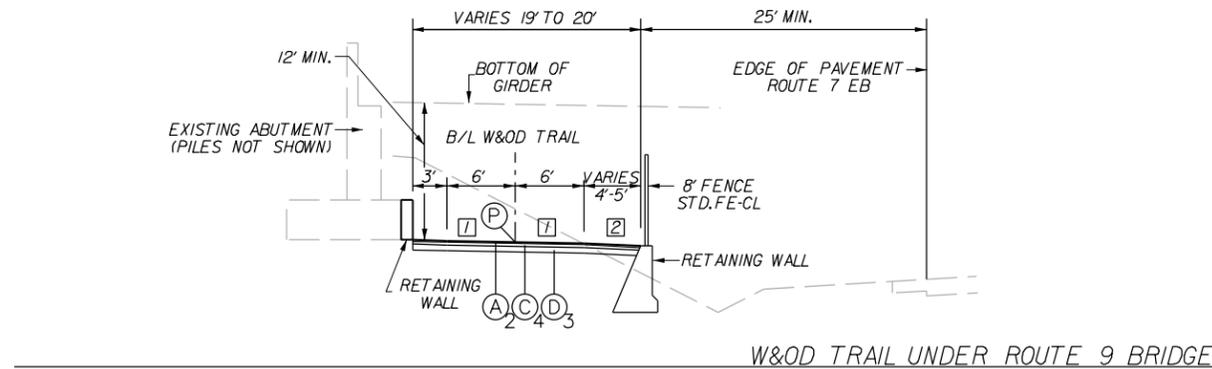
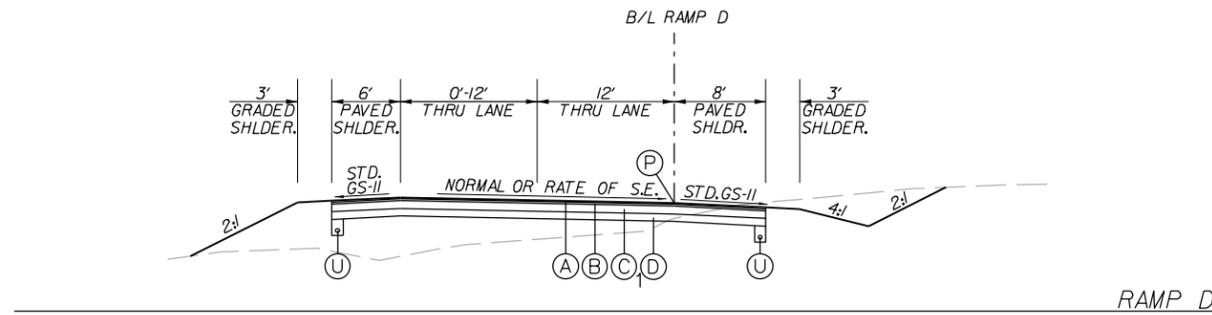
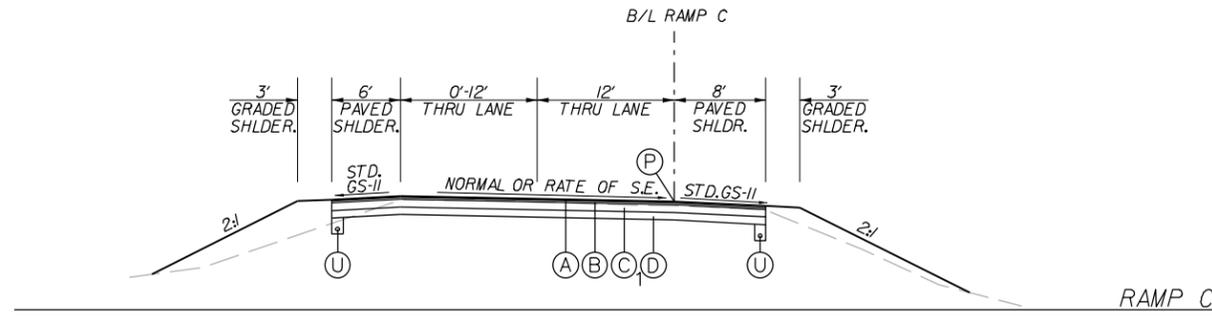
| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 2A(2) |

TYPICAL SECTIONS

| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PIOI, R20I, C50I | 2A(3) |

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

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LEGEND

- | | | | |
|-------------------|---|-------------------|--|
| (A) | 1.5" Asphalt Concrete, Type SM-9.5D (181.5 lbs/sy) | (D ₁) | Minimum 10.0" Aggregate Base Material, Type I, Size No. 21B extended 1 foot beyond the edge of pavement, or behind curb and gutter. VDOT Standard UD-4 or modified UD-1 shall be provided below shoulder or curb and gutter. |
| (A ₁) | 2.0" Asphalt Concrete, Type SM-9.5D (242.0 lbs/sy) | (D ₂) | Minimum 16.0" Aggregate Base Material, Type I, Size No. 21B extended 1 foot beyond the edge of shoulder. |
| (A ₂) | 1.5" Asphalt Concrete, Type SM-9.5A (181.5 lbs/sy) | (D ₃) | 6.0" Aggregate Base Material, Type I, Size No. 21A extended 6" beyond the edge of pavement surface. |
| (B) | 2.0" Asphalt Concrete, Type IM-19.0A (242.8 lbs/sy) | (F) | Full Depth Saw Cut |
| (C) | 9.0" Asphalt Concrete, Type BM-25.0A | (G) | Curb, S'd. CG-3 |
| (C ₁) | 8.0" Asphalt Concrete, Type BM-25.0A | (H) | Barrier, S'd. MB-12C |
| (C ₂) | 6.0" Asphalt Concrete, Type BM-25.0A | (M) | Mill existing pavement 2" |
| (C ₃) | 4.0" Asphalt Concrete, Type BM-25.0A | (P) | Profile Grade Line, Point of Rotation |
| (C ₄) | 3.0" Asphalt Concrete, Type BM-25.0A | (U) | Underdrain, S'd. UD-4 |
| (D) | Minimum 8.0" Aggregate Base Material, Type I, Size No. 21B extended 1 foot beyond the edge of pavement, or behind curb and gutter. VDOT Standard UD-4 or modified UD-1 shall be provided below shoulder or curb and gutter. | | |

NOTES:

Paved Shoulders for Route 9 Ramps
 When widening on the high side of an existing cross slope or super-elevated pavement, aggregate base material, Type I, size no. 21A pugmill mixed with 4% cement by weight (CTA) shall be substituted for aggregate base material, Type I, Size No. 21B for pavement widening and shoulders.

- (1) NORMAL OR RATE OF S.E.
 (2) STD. GS-II

| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 2A(3) |

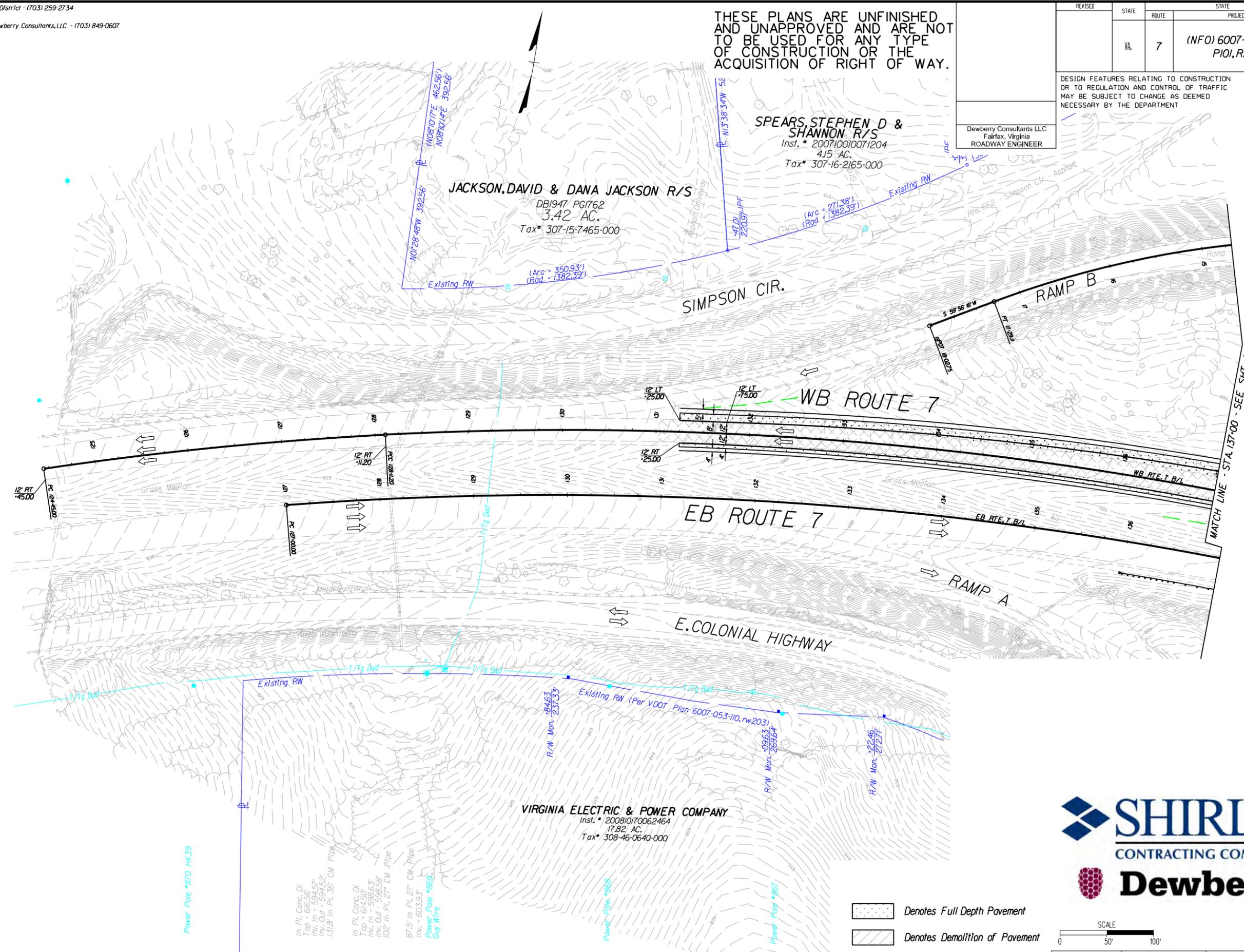
PROJECT MANAGER *Mark Gidney, P.E.* - VDOT NOVA District - (703) 259-2734
 SURVEYED BY *NOVA District Survey*
 DESIGN SUPERVISED BY *David J. Mahoney, P.E.* - Dewberry Consultants, LLC - (703) 849-0607
 DESIGNED BY *Dewberry Consultants, LLC*

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| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PI01, R201, C501 | 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 Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER



MATCH LINE - STA. 137+00 - SEE SHT. 4

Power Pole #870 HK39

In Pl. Conc. DI
 Top = 616.56'
 Inv. In = 594.57'
 Inv. Out = 594.52'
 13.18" In Pl. 36" CM Pipe

In Pl. Conc. DI
 Top = 614.50'
 Inv. In = 596.63'
 Inv. Out = 598.58'
 10.2" In Pl. 27" CM Pipe

87.5" In Pl. 27" CM Pipe
 Inv. = 603.93'
Power Pole #869
Guy Wire

Power Pole #868

Power Pole #867

- Denotes Full Depth Pavement
- Denotes Demolition of Pavement
- Denotes Milling and Build up



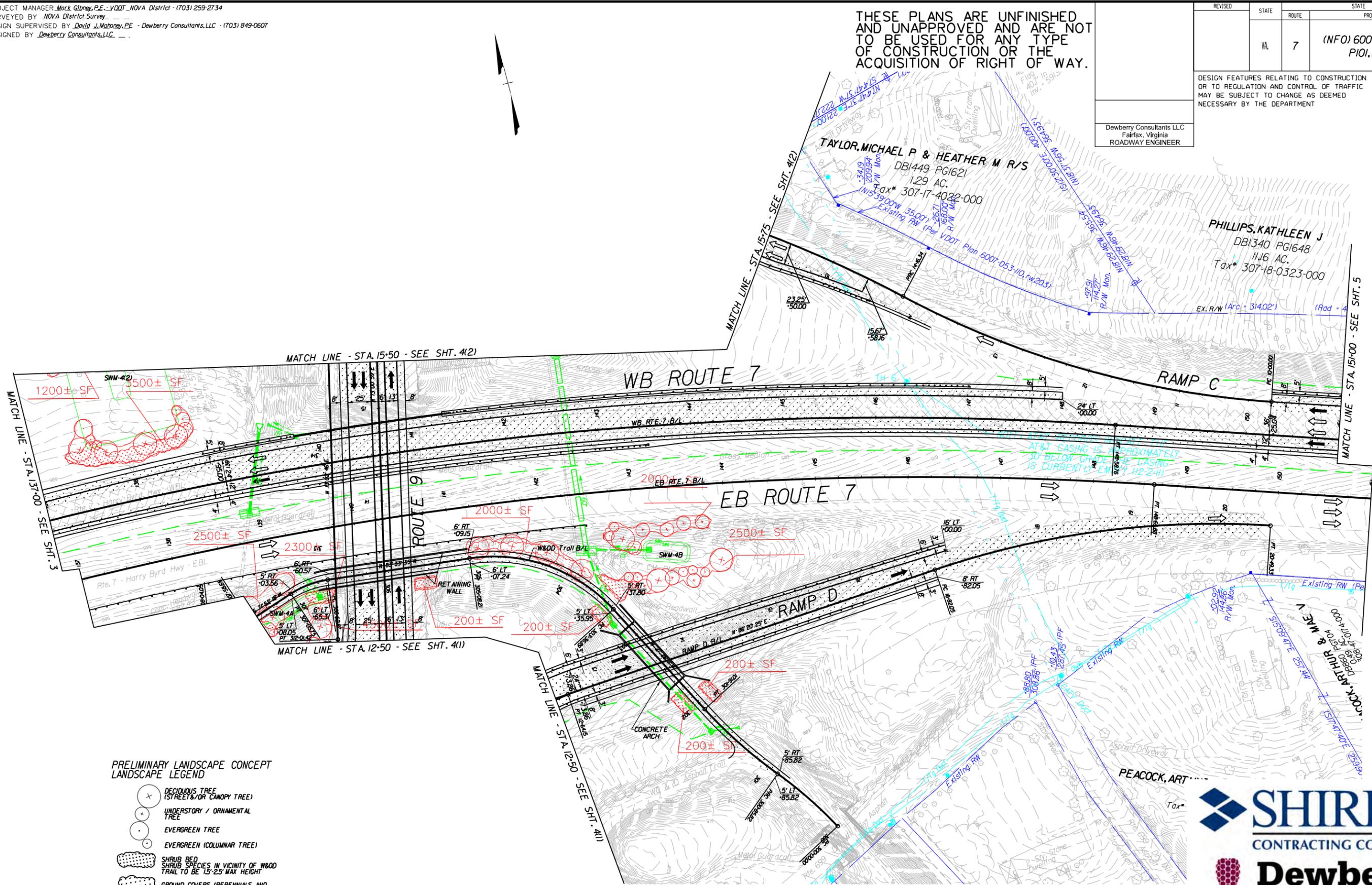
| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 3 |

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| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PIOI, R201, C501 | 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 Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER



PRELIMINARY LANDSCAPE CONCEPT LANDSCAPE LEGEND

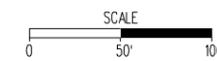
- DECIDUOUS TREE (STREET &/OR CANOPY TREE)
- UNDERSTORY / ORNAMENTAL TREE
- EVERGREEN TREE
- EVERGREEN (COLUMNAR TREE)
- SHRUB BED (SHRUB SPECIES IN VICINITY OF W800 TRAIL TO BE 15'-25' MAX HEIGHT)
- GROUND COVERS (PERENNIALS AND ORNAMENTAL GRASSES) MAX HEIGHT 18"

NOTE: THE MAJORITY OF PLANT MATERIAL SHALL BE NATIVE OR INDIGENOUS TO THE AREA. FINE LANDSCAPE PLANS (INCLUDING SPECIES SELECTION, PLANT COUNT AND PLACEMENT) SHALL BE DEVELOPED AT TIME OF FINAL ENGINEERING.

- Denotes Full Depth Pavement
- Denotes Demolition of Pavement
- Denotes Milling and Build up

SHIRLEY
 CONTRACTING COMPANY, LLC

Dewberry



| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 4 |

PROJECT MANAGER *Mark Gibney, P.E.* - VDOT NOVA District - (703) 259-2734
 SURVEYED BY *NOVA District Survey*
 DESIGN SUPERVISED BY *David J. Mahoney, P.E.* - Dewberry Consultants, LLC - (703) 849-0607
 DESIGNED BY *Dewberry Consultants, LLC*

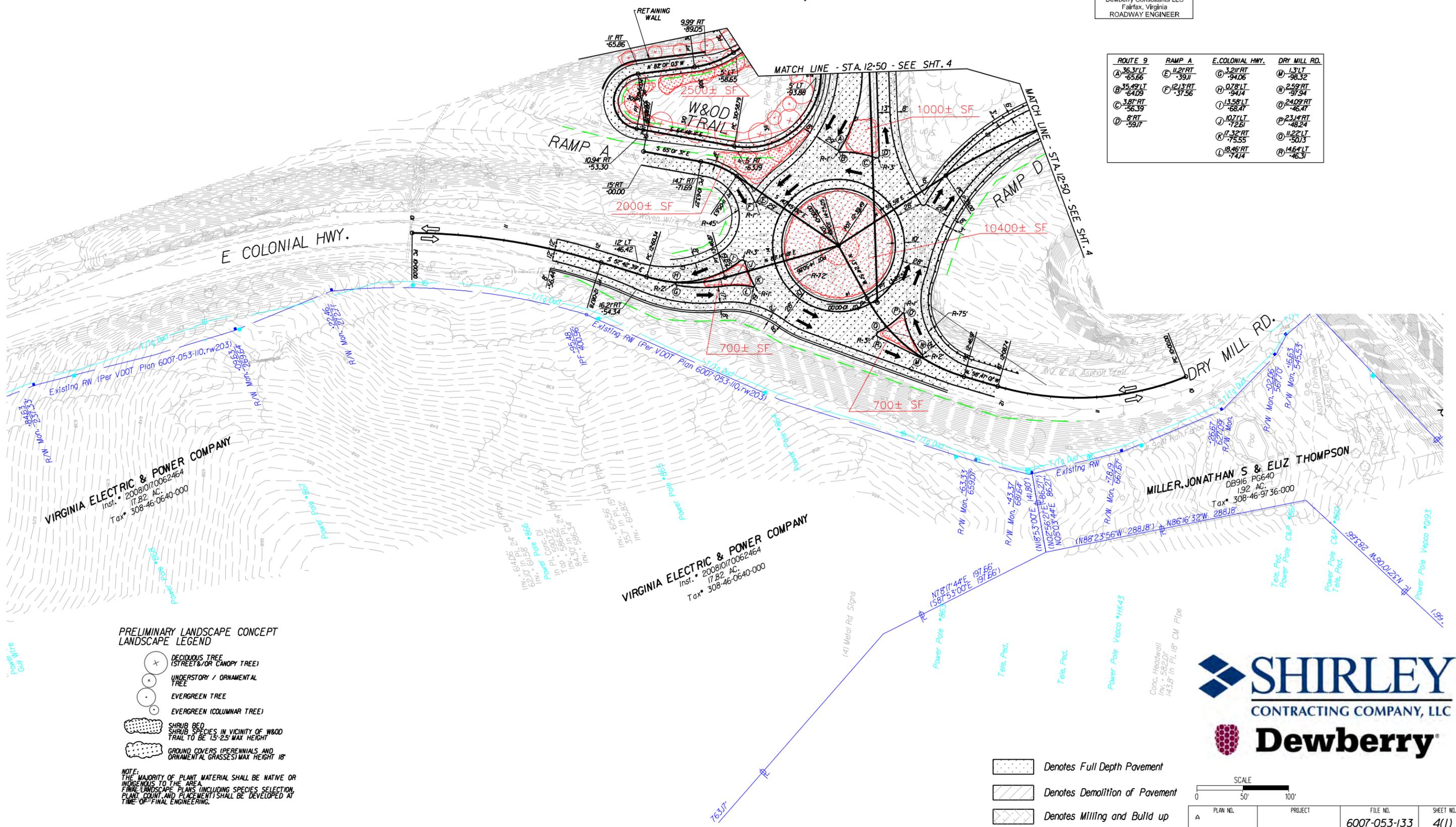
THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PIOI, R20I, C50I | 4(1) |

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

Dewberry Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER

| ROUTE 9 | RAMP A | E. COLONIAL HWY. | DRY MILL RD. |
|-----------------------|-----------------------|-----------------------|-----------------------|
| A 36.31' LT -65.66 | E 11.21' RT -39.11 | G 3.21' RT -94.06 | M 1.31' LT -98.32 |
| B 35.49' LT -64.09 | F 12.13' RT -37.56 | H 0.78' LT -94.14 | N 2.59' RT -97.94 |
| C 3.87' RT -56.39 | | I 13.58' LT -68.47 | O 24.09' RT -46.47 |
| D 8' RT -59.17 | | J 10.71' LT -72.61 | P 23.14' RT -48.24 |
| | | K 17.32' RT -75.55 | Q 11.22' LT -50.73 |
| | | L 18.46' RT -74.14 | R 14.64' LT -46.31 |



PRELIMINARY LANDSCAPE CONCEPT
 LANDSCAPE LEGEND

- DECIDUOUS TREE (STREET &/OR CANOPY TREE)
- UNDERSTORY / ORNAMENTAL TREE
- EVERGREEN TREE
- EVERGREEN (COLUMNAR TREE)
- SHRUB BED
SHRUB SPECIES IN VICINITY OF W&O TRAIL TO BE 15'-25' MAX HEIGHT
- GROUND COVERS (PERENNIALS AND ORNAMENTAL GRASSES) MAX HEIGHT 18"

NOTE: THE MAJORITY OF PLANT MATERIAL SHALL BE NATIVE OR INDIGENOUS TO THE AREA. FINE LANDSCAPE PLANS (INCLUDING SPECIES SELECTION, PLANT COUNT AND PLACEMENT) SHALL BE DEVELOPED AT TIME OF FINAL ENGINEERING.

- Denotes Full Depth Pavement
- Denotes Demolition of Pavement
- Denotes Milling and Build up

SHIRLEY
 CONTRACTING COMPANY, LLC

SCALE 0 50' 100'

| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 4(1) |

PROJECT MANAGER *Mark Gilroy, P.E. - VDOT NOVA District - (703) 259-2734*
 SURVEYED BY *NOVA District Survey*
 DESIGN SUPERVISED BY *David J. Mahoney, P.E. - Dewberry Consultants, LLC - (703) 849-0607*
 DESIGNED BY *Dewberry Consultants, LLC*

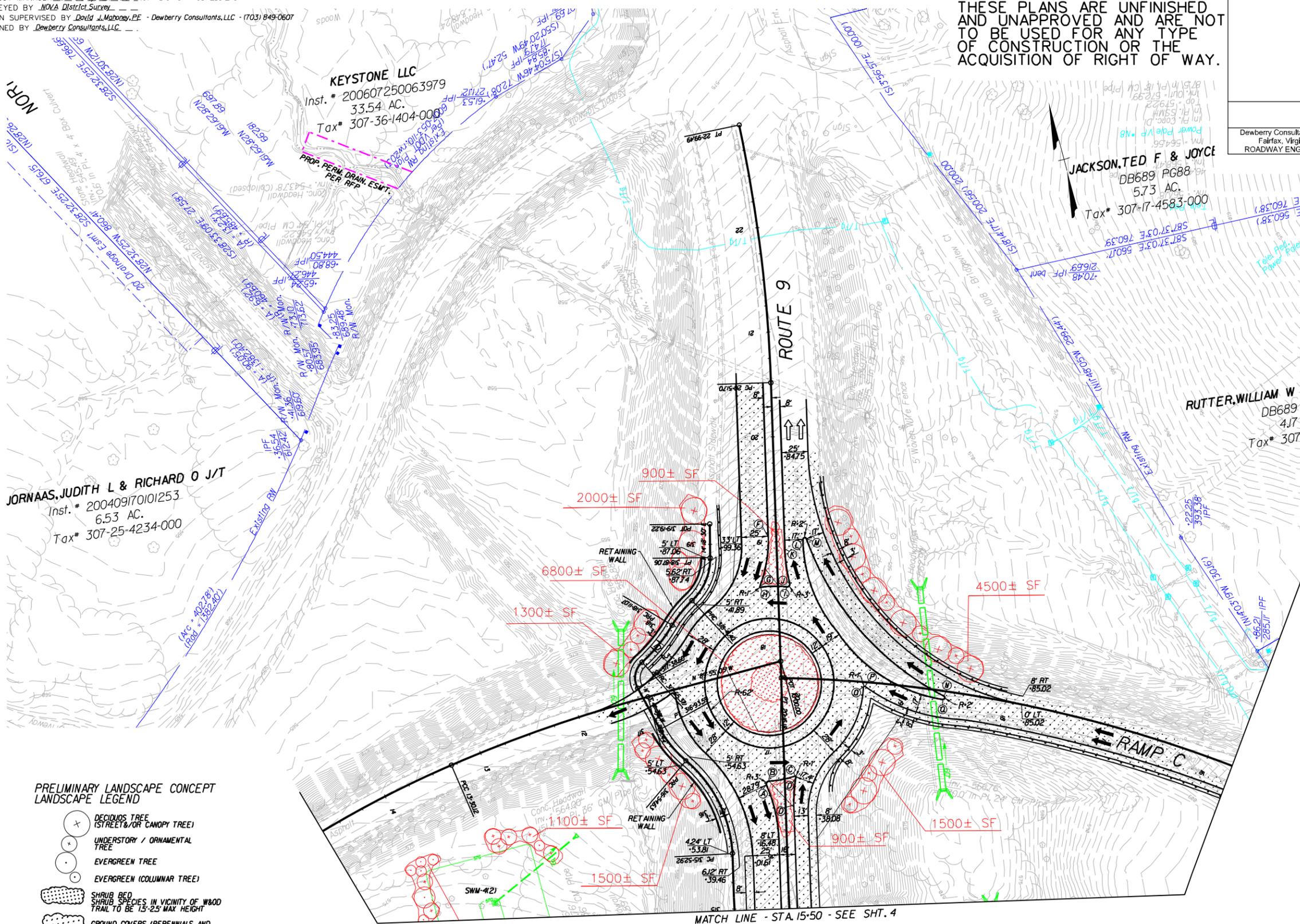
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| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---------------------------------------|-----------|
| | VA | 7 | (INFO) 6007-053-133 PI01,R201,C501 | 4(2) |

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

Dewberry Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER

| ROUTE 9 | | RAMP C | |
|--------------------|-------------------|------------------|--|
| Ⓐ 18' LT -68.41 | Ⓗ 16.6' LT -56.82 | Ⓜ 4.5' LT -59.48 | |
| Ⓑ 15.25' LT -72.53 | Ⓘ 8.2' RT -56.33 | Ⓝ 8.4' LT -60.17 | |
| Ⓒ 9.7' RT -76.47 | Ⓚ 11.6' RT -59.95 | Ⓓ 4.4' RT -35.63 | |
| Ⓓ 10.99' RT -75.29 | Ⓛ 8' RT -92.67 | Ⓔ 5.0' LT -37.16 | |
| Ⓔ 8' RT -48.67 | Ⓜ 25' RT -01.36 | | |
| Ⓛ 8' LT -05.36 | Ⓝ 28.9' RT -01.97 | | |
| Ⓝ 17.65' LT -58.21 | | | |



PRELIMINARY LANDSCAPE CONCEPT
 LANDSCAPE LEGEND

- DECIDUOUS TREE (STREET/OR CANOPY TREE)
- UNDERSTORY / ORNAMENTAL TREE
- EVERGREEN TREE
- EVERGREEN (COLUMNAR TREE)
- SHRUB BED (SHRUB SPECIES IN VICINITY OF WOOD TRAIL TO BE 15'-25' MAX HEIGHT)
- GROUND COVERS (PERENNIALS AND ORNAMENTAL GRASSES) MAX HEIGHT 18"

NOTE:
 THE MAJORITY OF PLANT MATERIAL SHALL BE NATIVE OR INDIGENOUS TO THE AREA.
 FINAL LANDSCAPE PLANS (INCLUDING SPECIES SELECTION, PLANT COUNT AND PLACEMENT) SHALL BE DEVELOPED AT TIME OF FINAL ENGINEERING.

- Denotes Full Depth Pavement
- Denotes Demolition of Pavement
- Denotes Milling and Build up



| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 4(2) |

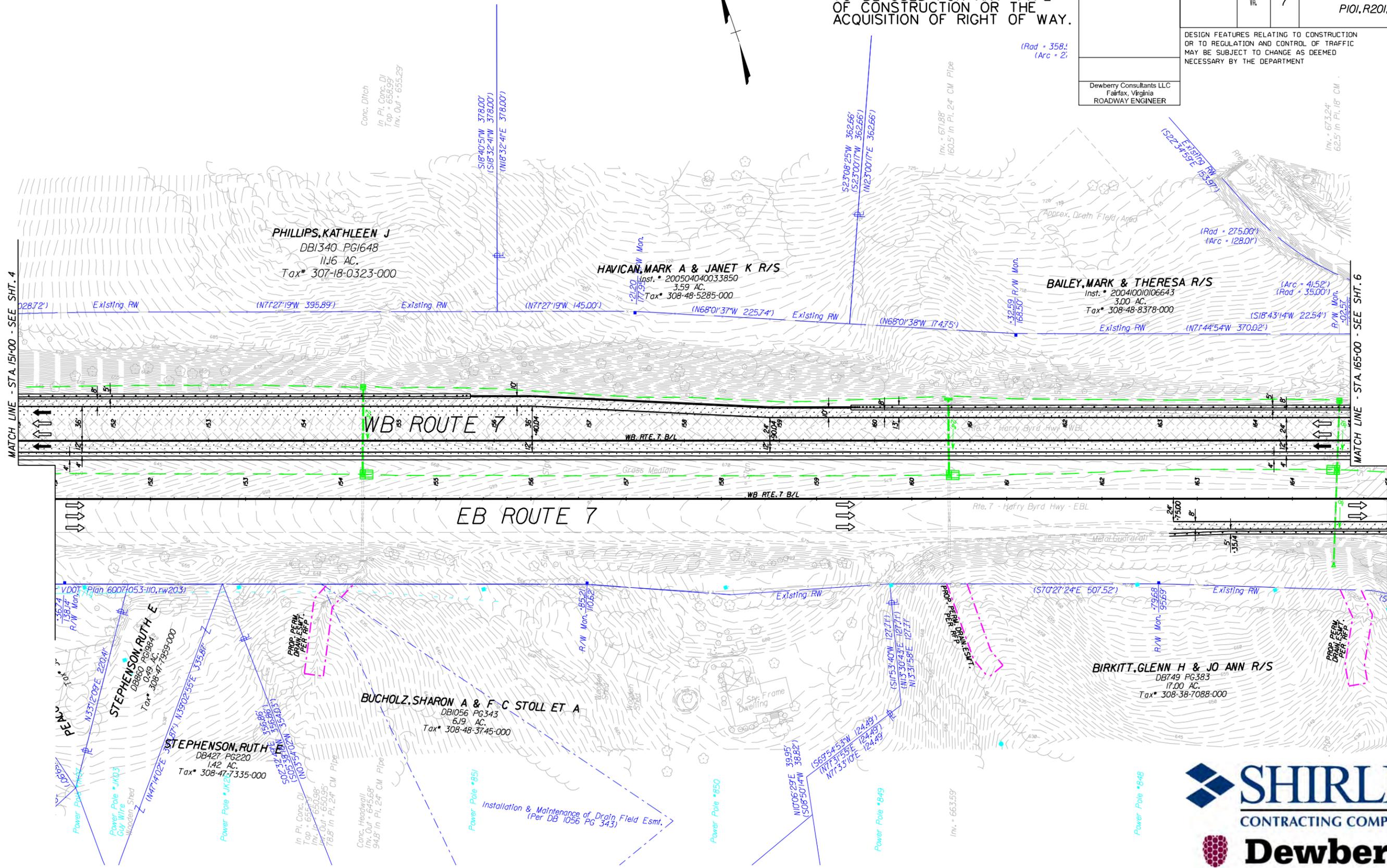
PROJECT MANAGER *Mark Gidney, P.E. - VDOT NOVA District - (703) 259-2734*
 SURVEYED BY *NOVA District Survey*
 DESIGN SUPERVISED BY *David J. Mahoney, P.E. - Dewberry Consultants, LLC - (703) 849-0607*
 DESIGNED BY *Dewberry Consultants, LLC*

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| | | | | |
|---------|-------|-------|---|-----------|
| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
| | VA | 7 | (INFO) 6007-053-133 PI01, R201, C501 | 5 |

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

Dewberry Consultants LLC
Fairfax, Virginia
ROADWAY ENGINEER



- Denotes Full Depth Pavement
- Denotes Demolition of Pavement
- Denotes Milling and Build up



SCALE: 0 50' 100'

| | | | |
|----------|---------|--------------|-----------|
| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
| A | | 6007-053-133 | 5 |

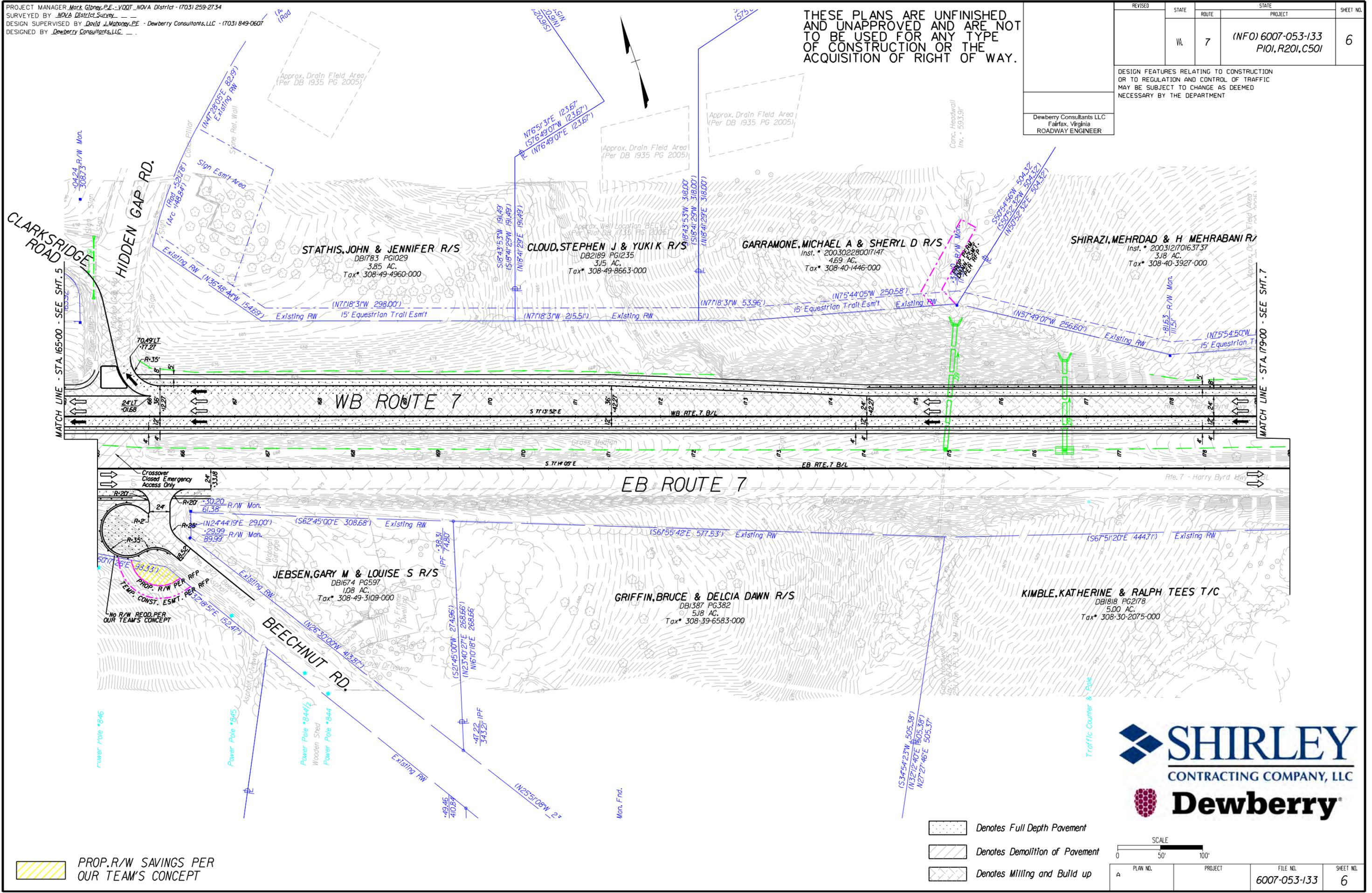
PROJECT MANAGER *Mark Gidney, P.E. - VDOT NOVA District - (703) 259-2734*
 SURVEYED BY *NOVA District Survey*
 DESIGN SUPERVISED BY *David J. Mahoney, P.E. - Dewberry Consultants, LLC - (703) 849-0607*
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| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PIOI, R20I, C50I | 6 |

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

Dewberry Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER



PROP. R/W SAVINGS PER OUR TEAM'S CONCEPT

- Denotes Full Depth Pavement
- Denotes Demolition of Pavement
- Denotes Milling and Build up



| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 6 |

PROJECT MANAGER *Mark Gibney, P.E.* - VDOT NOVA District - (703) 259-2734
 SURVEYED BY *NOVA District Survey*
 DESIGN SUPERVISED BY *David J. Mahoney, P.E.* - Dewberry Consultants, LLC - (703) 849-0607
 DESIGNED BY *Dewberry Consultants, LLC*

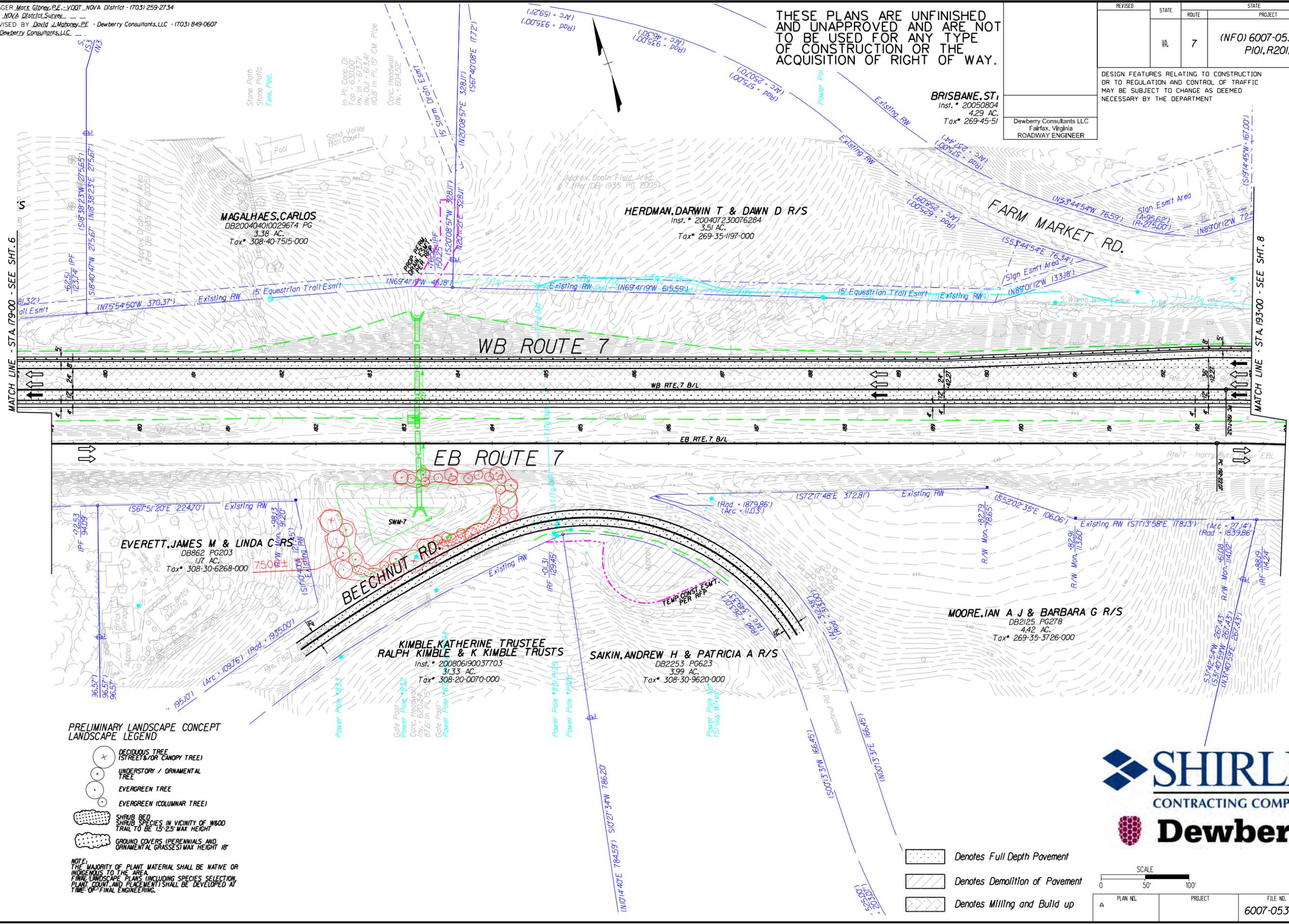
THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PIOI, R20I, C50I | 7 |

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

BRISBANE, ST.
 Inst. # 20050804
 4.29 AC.
 Tax # 269-45-51

Dewberry Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER



PRELIMINARY LANDSCAPE CONCEPT
LANDSCAPE LEGEND

- DECIDUOUS TREE (STREET &/OR CANOPY TREE)
- UNDERSTORY / ORNAMENTAL TREE
- EVERGREEN TREE
- EVERGREEN (COLUMNAR TREE)
- SHRUB BED
SHRUB SPECIES IN VICINITY OF W800 TRAIL TO BE 15'-25' MAX HEIGHT
- GROUND COVERS (PERENNIALS AND ORNAMENTAL GRASSES) MAX HEIGHT 18"

NOTE: THE MAJORITY OF PLANT MATERIAL SHALL BE NATIVE OR INDIGENOUS TO THE AREA. FINE LANDSCAPE PLANS (INCLUDING SPECIES SELECTION, PLANT COUNT AND PLACEMENT) SHALL BE DEVELOPED AT TIME OF FINAL ENGINEERING.

- Denotes Full Depth Pavement
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- Denotes Milling and Build up



| SCALE | | FILE NO. | | SHEET NO. | |
|-------|----------|--------------|----------|-----------|--|
| 0 | 50' | 6007-053-133 | | 7 | |
| A | PLAN NO. | PROJECT | FILE NO. | SHEET NO. | |

PROJECT MANAGER *Mark Gibney, P.E. - VDOT NOVA District - (703) 259-2734*
 SURVEYED BY *NOVA District Survey*
 DESIGN SUPERVISED BY *David J. Mahoney, P.E. - Dewberry Consultants, LLC - (703) 849-0607*
 DESIGNED BY *Dewberry Consultants, LLC*

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| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PI01, R201, C501 | 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 Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER

PETER J & WANDA K R/S
 DB1823 PG897
 5.49 AC.
 Tax* 269-46-0411-000

CLAIRVAUX LLC
 Inst. * 200506270068752
 13.13 AC.
 Tax* 269-36-9502-000

CLAIRVAUX LLC
 Inst. * 200506270068752
 2.92 AC.
 Tax* 269-36-1546-000

MORENO, JAIME M & LOUISE D R/S
 Inst. * 200310170138749
 3.58 AC.
 Tax* 269-26-3168-000

ORTIZ, ELIEZER & PATTY R/S
 DB2164 PG1548
 3.66 AC.
 Tax* 269-35-5703-000

**FELLOWS, BLAKE E TRUSTEE
 BLAKE E FELLOWS LIVING TRUST**
 Inst. * 200703300024373
 3.93 AC.
 Tax* 269-25-9669-000

FUCHS, KARL
 Inst. * 200709040065003
 3.28 AC.
 Tax* 269-25-7589-000

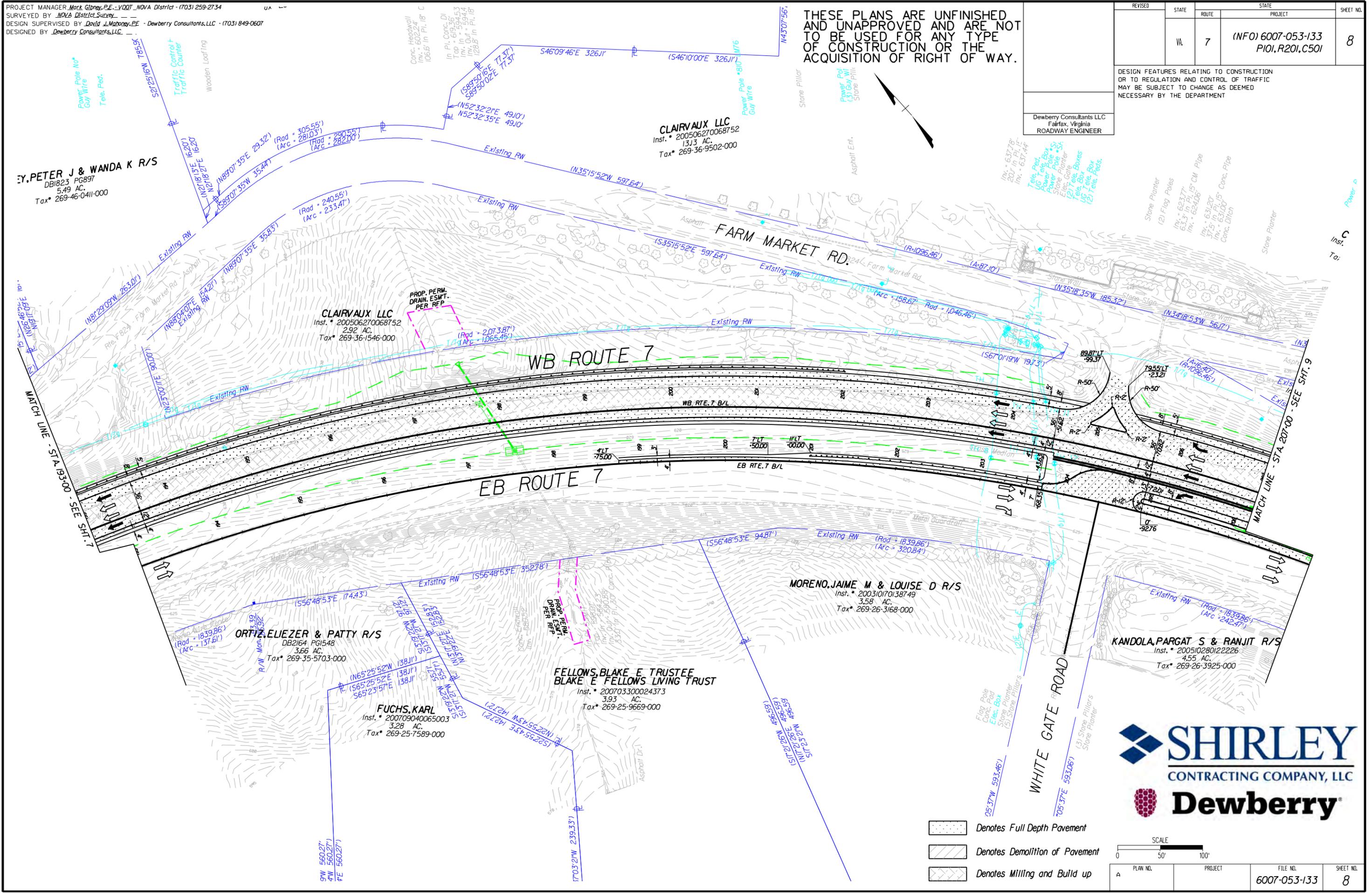
KANDOLA, PARGAT S & RANJIT R/S
 Inst. * 200510280122226
 4.55 AC.
 Tax* 269-26-3925-000



- Denotes Full Depth Pavement
- Denotes Demolition of Pavement
- Denotes Milling and Build up



| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 8 |



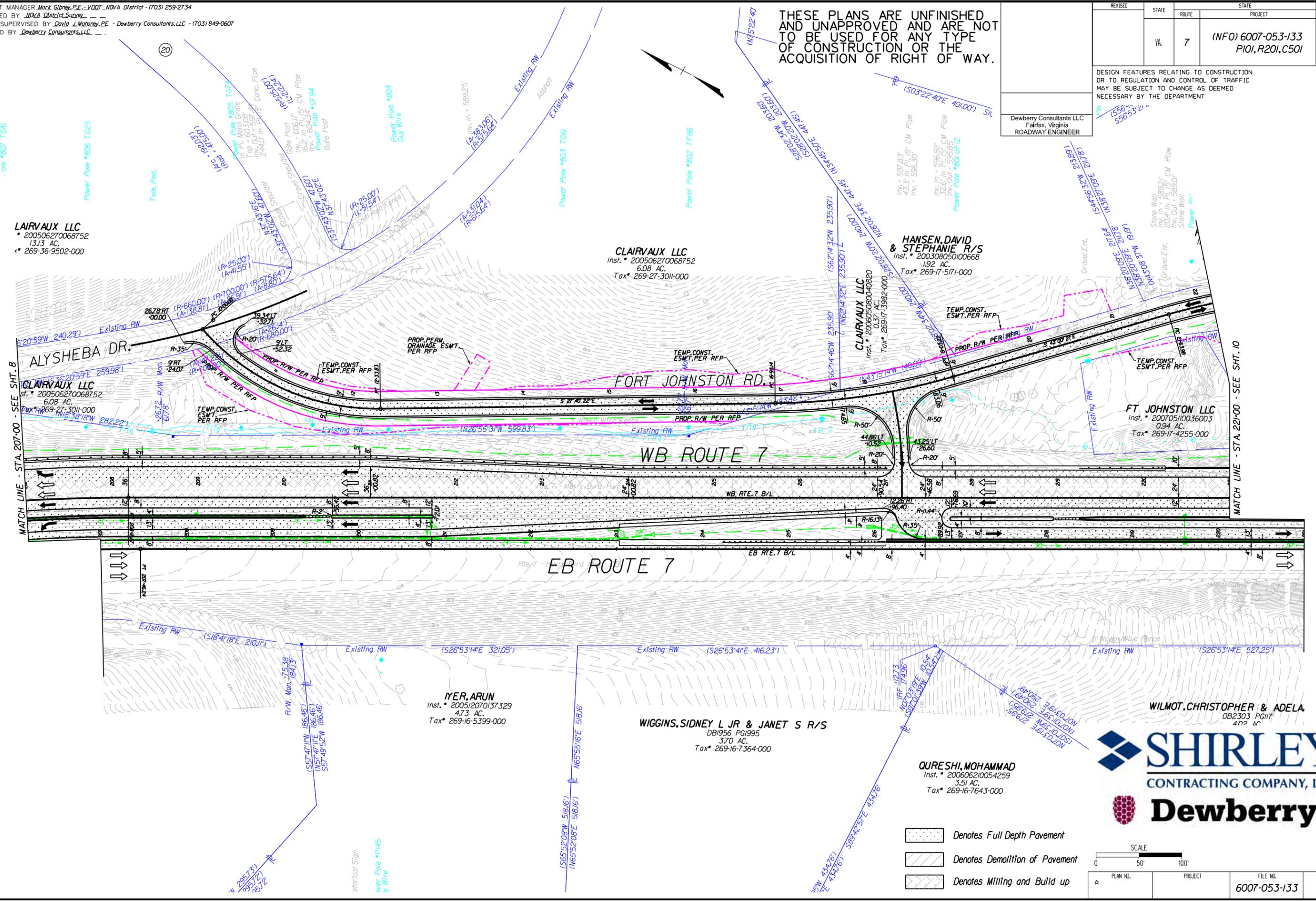
PROJECT MANAGER *Mark Gibney, P.E.* - VDOT NOVA District - (703) 259-2734
 SURVEYED BY *NOVA District Survey*
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 DESIGNED BY *Dewberry Consultants, LLC*

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| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PIOI, R20I, C50I | 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 Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER



LAIRVAUX LLC
 Inst. # 200506270068752
 13.13 AC.
 Tax # 269-36-9502-000

CLAIRVAUX LLC
 Inst. # 200506270068752
 6.08 AC.
 Tax # 269-27-3011-000

HANSEN, DAVID & STEPHANIE R/S
 Inst. # 200308050100668
 1.92 AC.
 Tax # 269-17-5171-000

CLAIRVAUX LLC
 Inst. # 200506270068752
 6.08 AC.
 Tax # 269-27-3011-000

FT JOHNSTON LLC
 Inst. # 200705110036003
 0.94 AC.
 Tax # 269-17-4255-000

MYER, ARUN
 Inst. # 200512070137329
 4.73 AC.
 Tax # 269-16-5399-000

WIGGINS, SIDNEY L JR & JANET S R/S
 DB1956 PG1995
 3.70 AC.
 Tax # 269-16-7364-000

QURESHI, MOHAMMAD
 Inst. # 200606210054259
 3.51 AC.
 Tax # 269-16-7643-000

WILMOT, CHRISTOPHER & ADELA
 DB2303 PG117
 4.02 AC

SHIRLEY CONTRACTING COMPANY, LLC

Dewberry

-  Denotes Full Depth Pavement
-  Denotes Demolition of Pavement
-  Denotes Milling and Build up



| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 9 |

PROJECT MANAGER *Mark Gibney, P.E.* - VDOT NOVA District - (703) 259-2734
 SURVEYED BY *NOVA District Survey*
 DESIGN SUPERVISED BY *David J. Mahoney, P.E.* - Dewberry Consultants, LLC - (703) 849-0607
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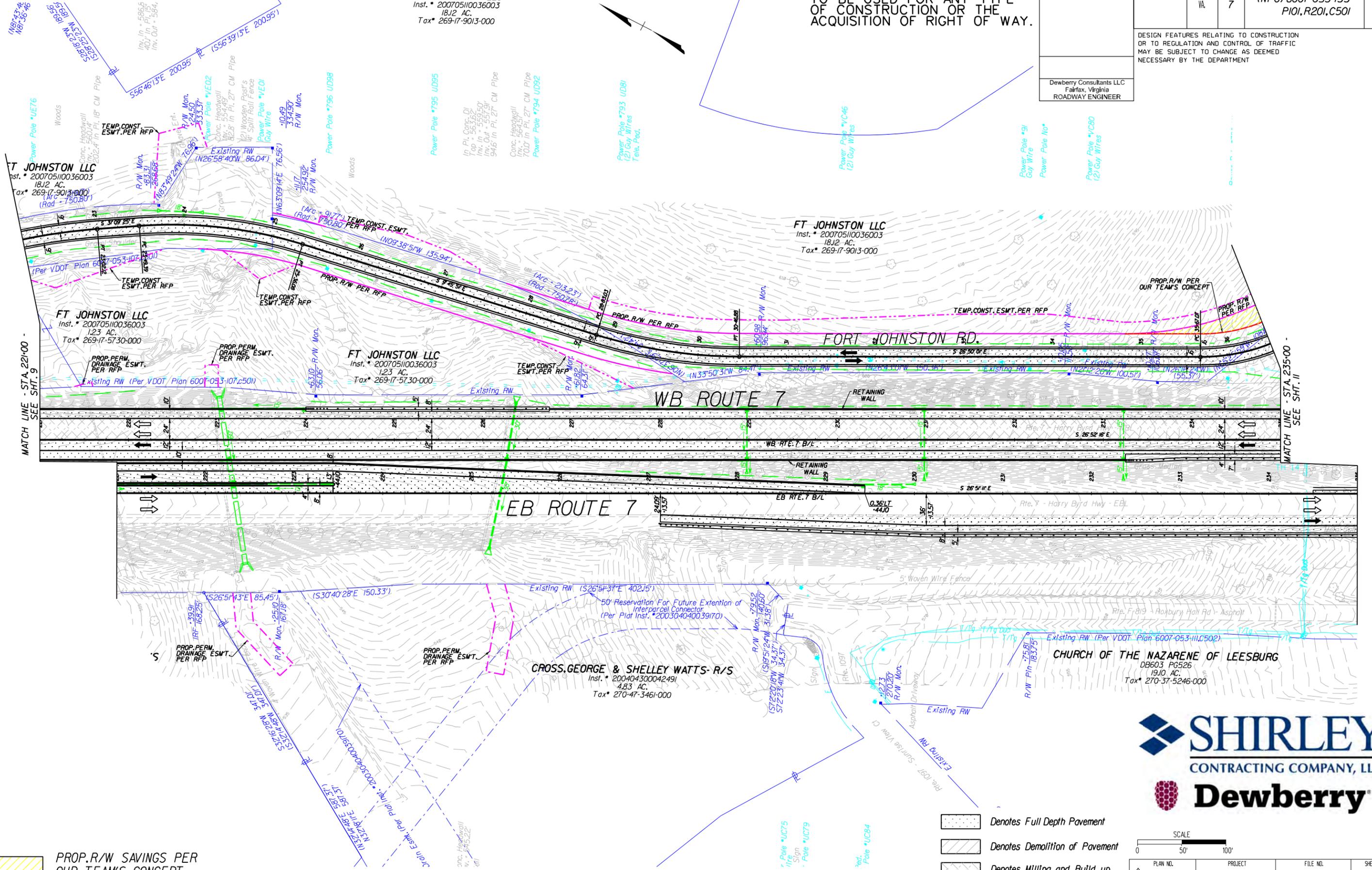
FT JOHNSTON LLC
 Inst. # 20070510036003
 18.12 AC.
 Tax # 269-17-9013-000

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| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PIOI, R201, C501 | 10 |

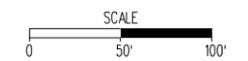
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Dewberry Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER



PROP. R/W SAVINGS PER OUR TEAM'S CONCEPT

- Denotes Full Depth Pavement
- Denotes Demolition of Pavement
- Denotes Milling and Build up



| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 10 |

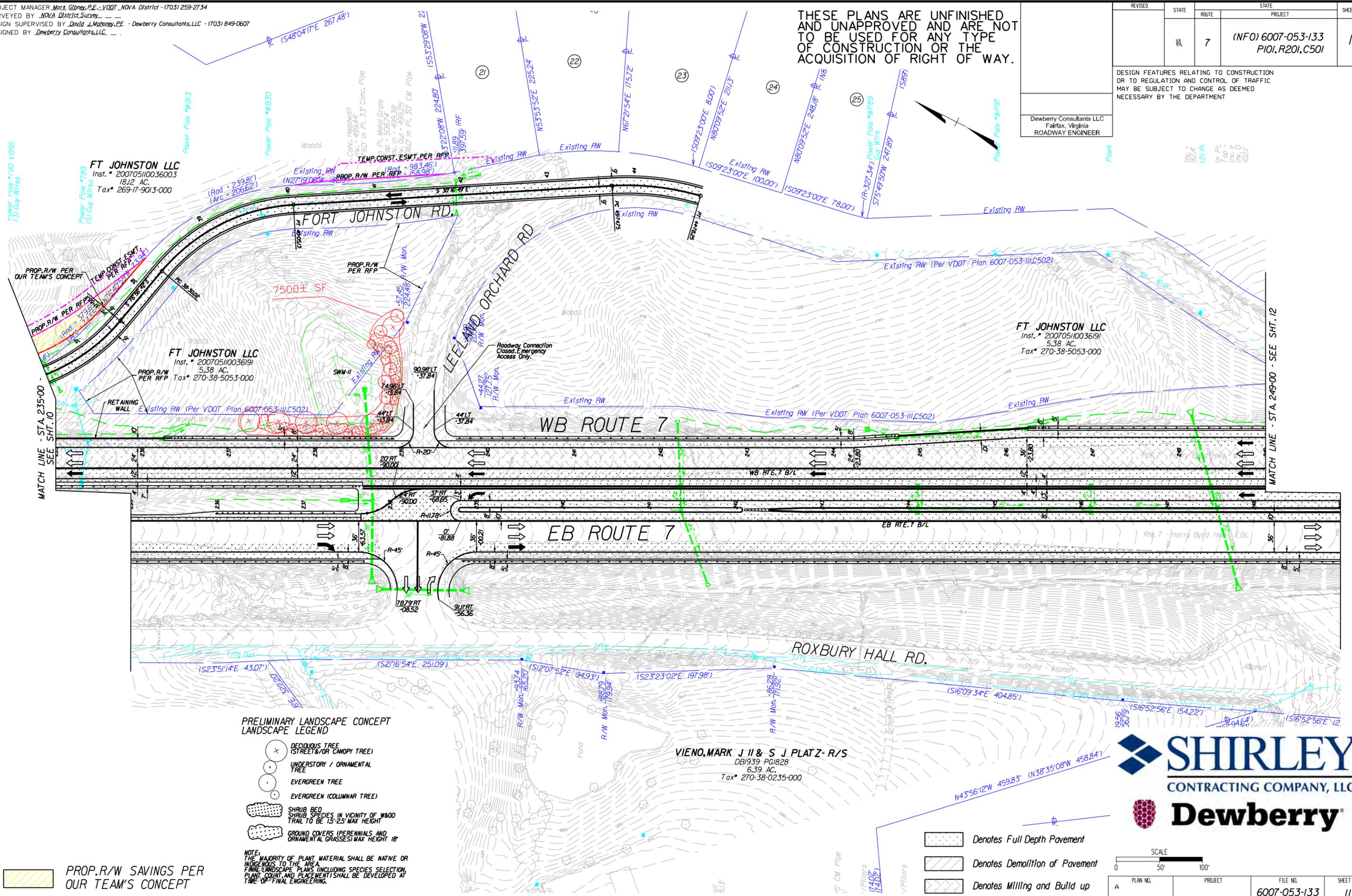
PROJECT MANAGER *Mark Gibney, P.E.* - VDOT NOVA District - (703) 259-2734
 SURVEYED BY *NOVA District Survey*
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|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PIOI, R20I, C50I | 11 |

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

Dewberry Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER

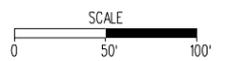


- PRELIMINARY LANDSCAPE CONCEPT LANDSCAPE LEGEND**
- DECIDUOUS TREE (STREET &/OR CANOPY TREE)
 - UNDERSTORY / ORNAMENTAL TREE
 - EVERGREEN TREE
 - EVERGREEN (COLUMNAR TREE)
 - SHRUB BED
SHRUB SPECIES IN VICINITY OF WB00 TRAIL TO BE 15-25' MAX HEIGHT
 - GROUND COVERS (PERENNIALS AND ORNAMENTAL GRASSES) MAX HEIGHT 18"

NOTE: THE MAJORITY OF PLANT MATERIAL SHALL BE NATIVE OR INDIGENOUS TO THE AREA. FINAL LANDSCAPE PLANS INCLUDING SPECIES SELECTION, PLANT COUNT, AND PLACEMENT SHALL BE DEVELOPED AT TIME OF FINAL ENGINEERING.

PROP. R/W SAVINGS PER OUR TEAM'S CONCEPT

- Denotes Full Depth Pavement
- Denotes Demolition of Pavement
- Denotes Milling and Build up



| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 11 |

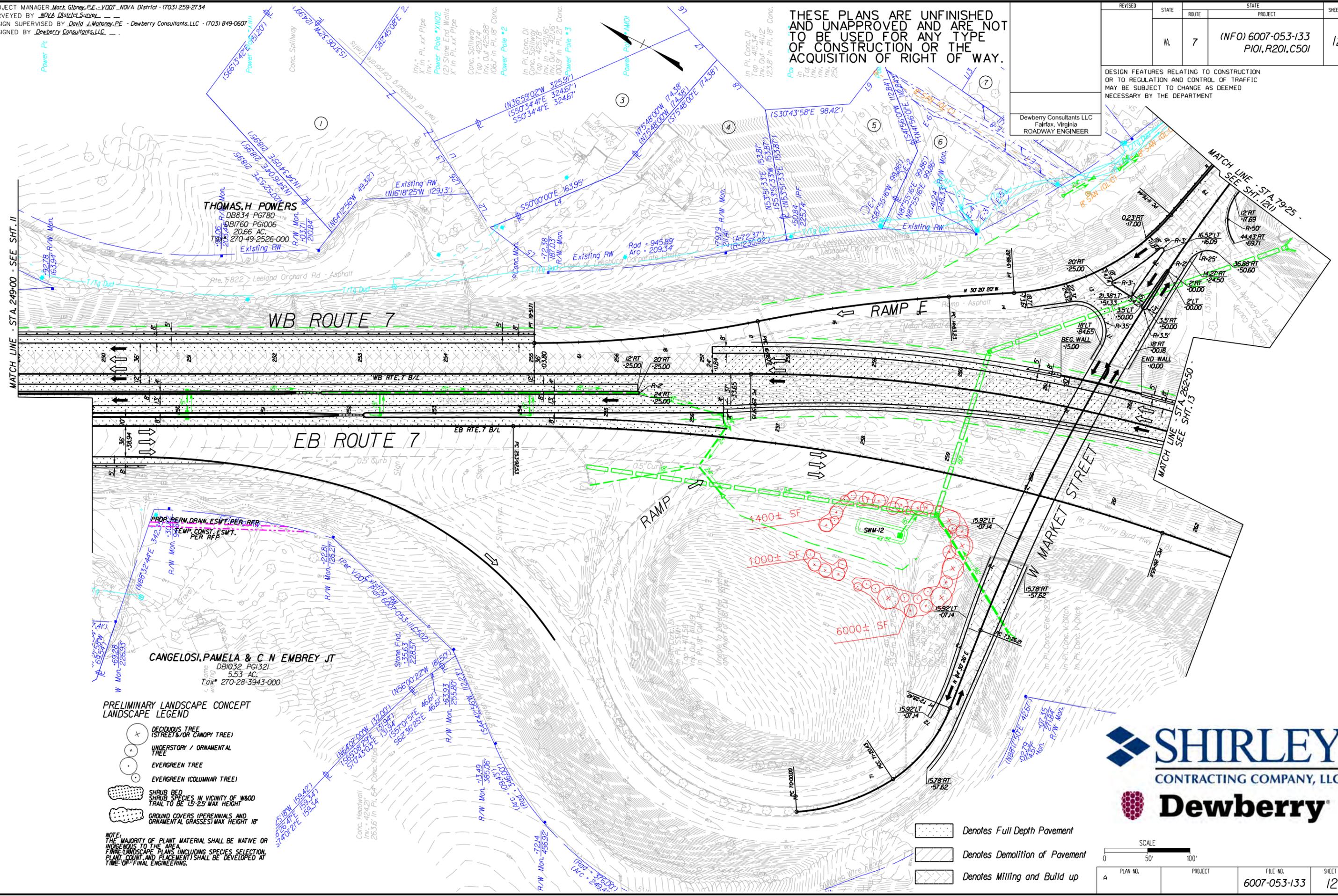
PROJECT MANAGER: Mark Gidney, P.E. - VDOT NOVA District - (703) 259-2734
 SURVEYED BY: NOVA District Survey
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|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PIOI, R20I, C50I | 12 |

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

Dewberry Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER



PRELIMINARY LANDSCAPE CONCEPT
LANDSCAPE LEGEND

- DECIDUOUS TREE (STREET/OR CANOPY TREE)
- UNDERSTORY / ORNAMENTAL TREE
- EVERGREEN TREE
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SCALE: 0 50' 100'

| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 12 |

PROJECT MANAGER *Mark Gibney, P.E. - VDOT NOVA District - (703) 259-2734*
 SURVEYED BY *NOVA District Survey*
 DESIGN SUPERVISED BY *David J. Mahoney, P.E. - Dewberry Consultants, LLC - (703) 849-0607*
 DESIGNED BY *Dewberry Consultants, LLC*

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| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---|-----------|
| | VA | 7 | (INFO) 6007-053-133 PI01, R201, C501 | 12(1) |

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

Dewberry Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER



-  Denotes Full Depth Pavement
-  Denotes Demolition of Pavement
-  Denotes Milling and Build up



SCALE
 0 50' 100'

| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 12(1) |

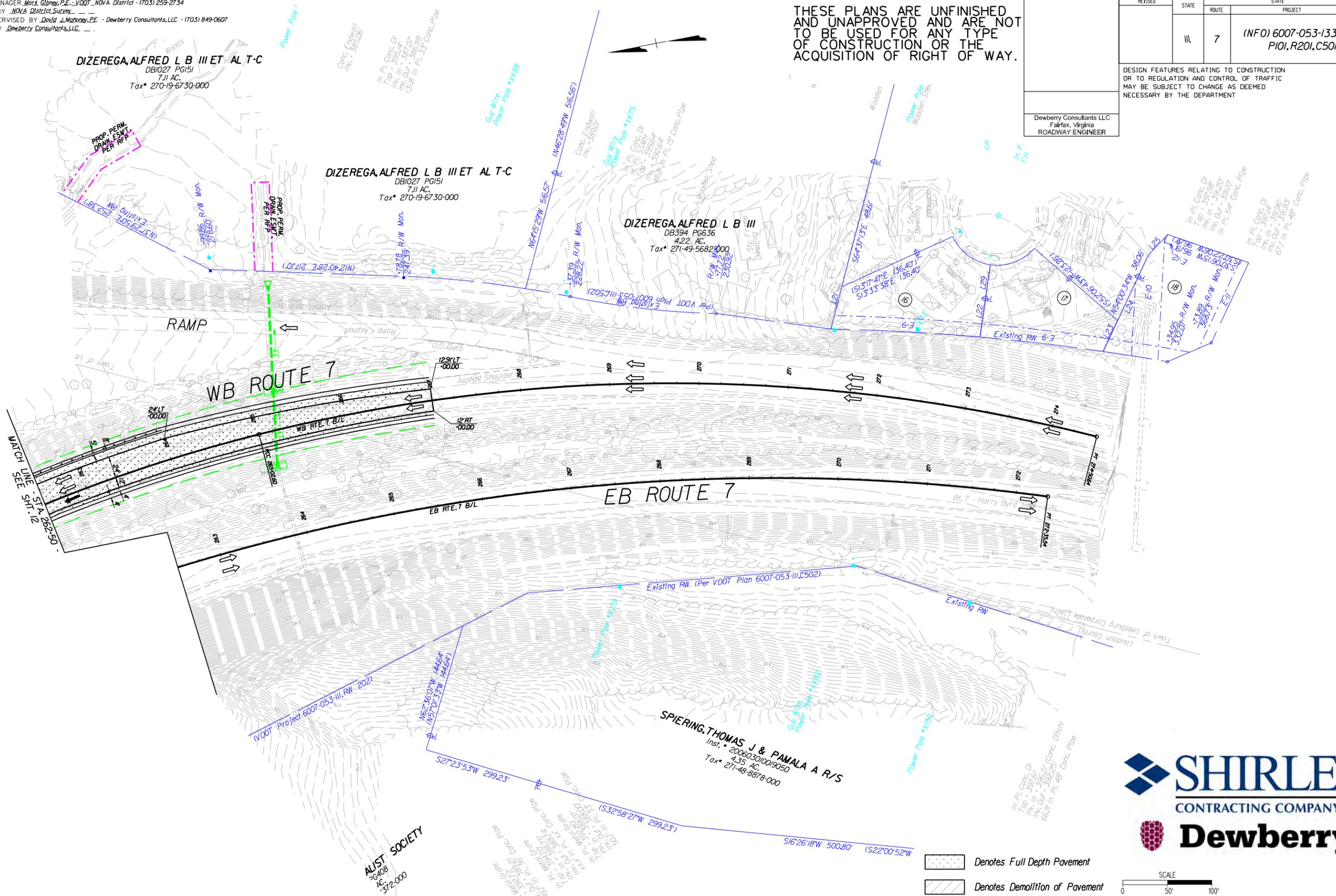
PROJECT MANAGER *Mark Gibney, P.E. - VDOT NOVA District - (703) 259-2734*
 SURVEYED BY *NOVA District Survey*
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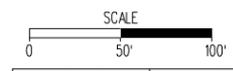
| REVISED | STATE | ROUTE | STATE PROJECT | SHEET NO. |
|---------|-------|-------|---------------------------------------|-----------|
| | VA | 7 | (INFO) 6007-053-133 PI01,R201,C501 | 13 |

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

Dewberry Consultants LLC
 Fairfax, Virginia
 ROADWAY ENGINEER



-  Denotes Full Depth Pavement
-  Denotes Demolition of Pavement
-  Denotes Milling and Build up



| PLAN NO. | PROJECT | FILE NO. | SHEET NO. |
|----------|---------|--------------|-----------|
| A | | 6007-053-133 | 13 |



| | | | |
|-----------------------------|-------------|-----------------------------------|-----------|
| STATE | FEDERAL AID | STATE | SHEET NO. |
| ROUTE | PROJECT | ROUTE | PROJECT |
| VA. | | | 14 |
| NBIS Number: | | UPC No. | |
| Federal Oversight Code: N/A | | FHWA Construction and Scour Code: | |

DESIGN EXCEPTION(S):

GENERAL NOTES:

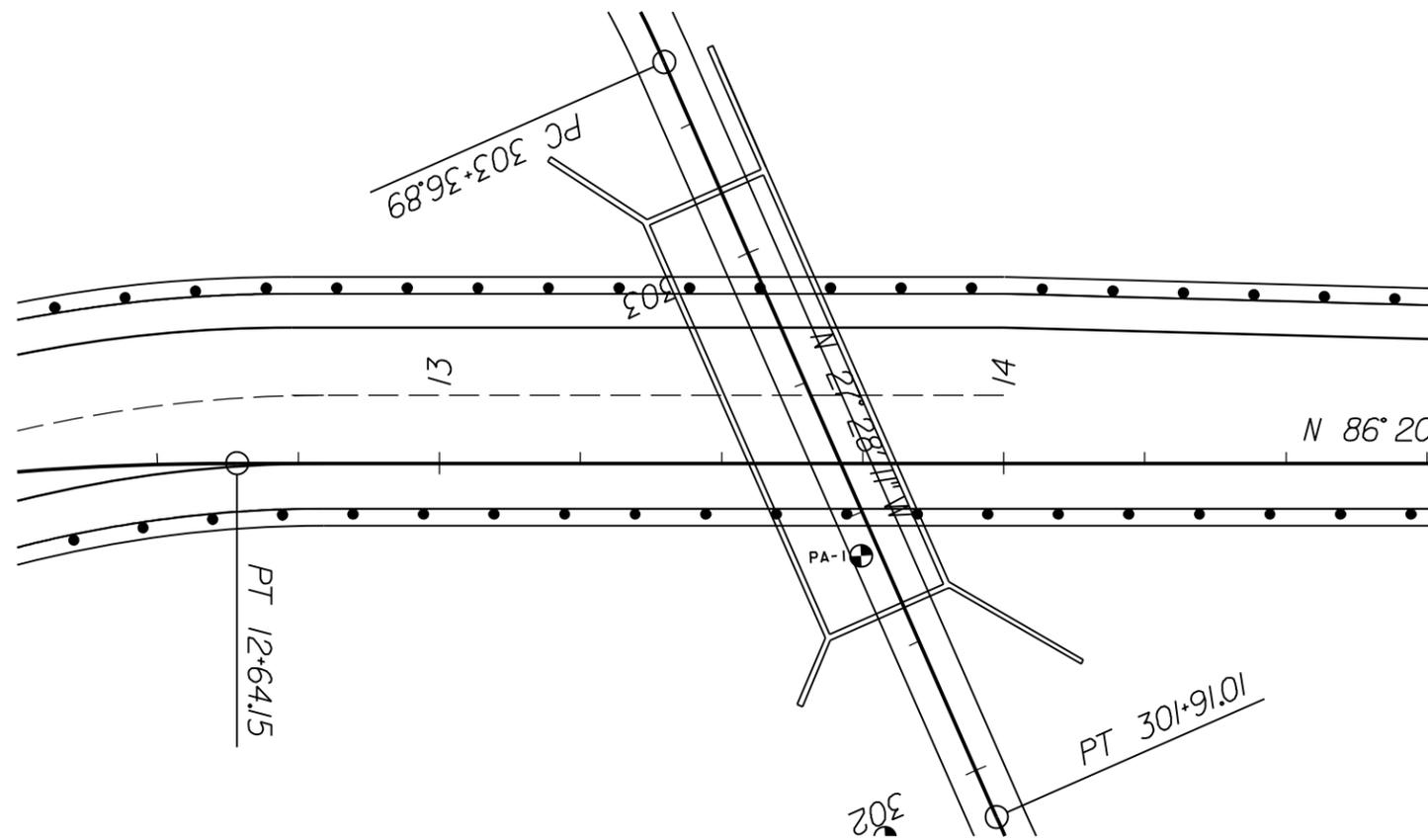
Capacity: HL-93 loading.

Specifications:

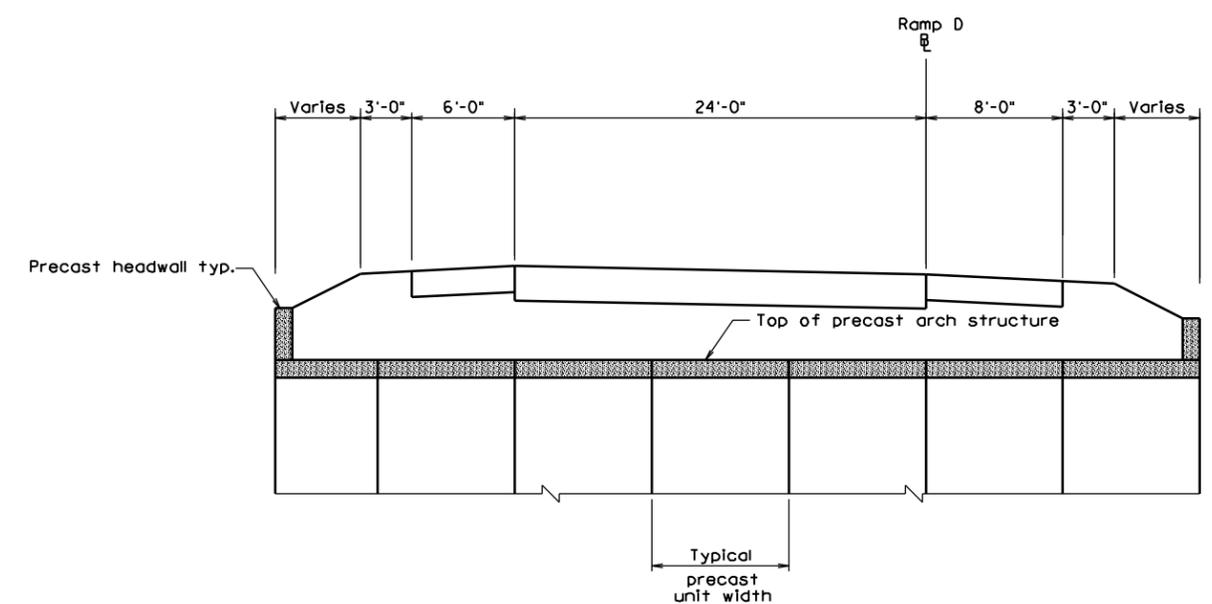
Construction: Virginia Department of Transportation Road and Bridge Specifications, 2007.

Design: AASHTO LRFD Bridge Design Specifications, 6th Edition, 2012; and VDOT Modifications.

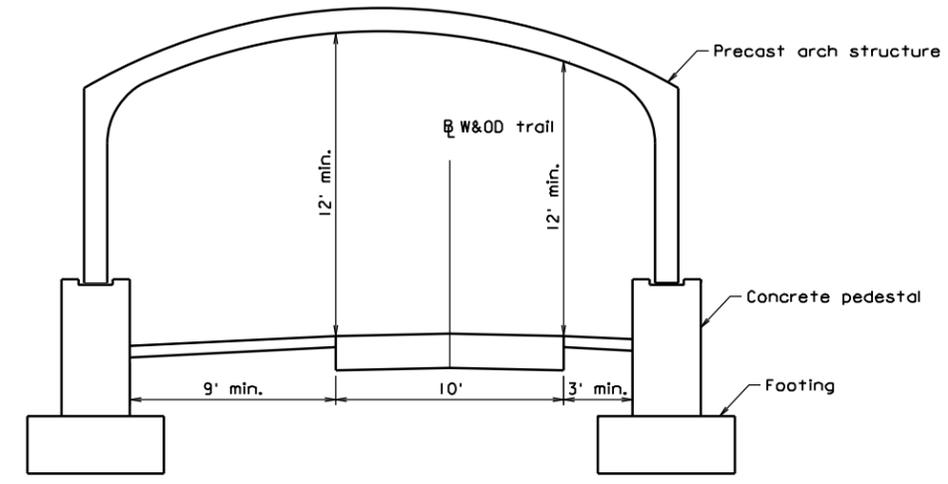
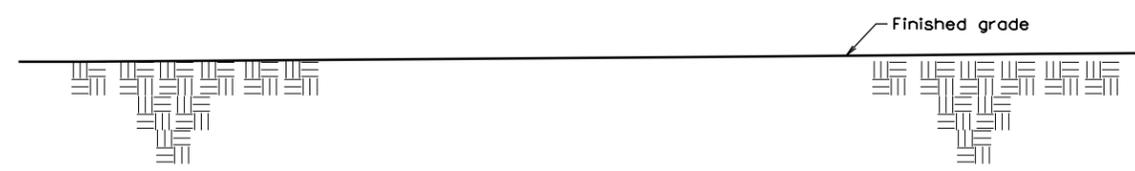
Standard: Virginia Department of Transportation Road and Bridge Standards, 2008.



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



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



SECTION - PERPENDICULAR TO BASELINE OF W&OD TRAIL
 Scale: 1/4" = 1'-0"



COMMONWEALTH OF VIRGINIA
 DEPARTMENT OF TRANSPORTATION
 PROPOSED BRIDGE ON
 Ramp D over W&OD Trail
 Arch Structure

Recommended for Approval: _____
 State Structure and Bridge Engineer Date

Approved: _____
 Chief Engineer Date

Date: _____ © 2013, Commonwealth of Virginia Sheet 14 of 14

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

| |
|--|
| VDOT S&B DIVISION RICHMOND, VA STRUCTURAL ENGINEER |
| PLANS BY: |
| COORDINATED: |
| SUPERVISED: |
| DESIGNED: |
| DRAWN: |
| CHECKED: |