ORIGINAL

Response to Request for Proposals

ROUTE 659 (BELMONT RIDGE ROAD) - RECONSTRUCT TO 4 LANES

Loudoun County, Virginia

State Project Nos.: 0659-053-262, R204, C504, B670, B671
Federal Project Nos.: STP-5A0-1(583)
Contract ID No.: C00076244DB76

VOLUME I: TECHNICAL PROPOSAL

Submitted By:

SHIRLEY CONTRACTING COMPANY, LLC

In Association With:

Dewberry®

4.1 - Letter of Submittal

SHIRLEY
CONTRACTING COMPANY, LLC

June 17, 2015

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

RE: Route 659 (Belmont Ridge Road) - Reconstruct to 4-Lanes Design-Build Project
Contract ID Number: C00076244DB76
Section 4.1 - Letter of Submittal

Dear Mr. Kindy:

Shirley Contracting Company, LLC (Shirley), as the Offeror, and Dewberry Consultants LLC (Dewberry), as the Lead Designer, are pleased to submit our Team's Technical Proposal for the Route 659 (Belmont Ridge Road) - Reconstruct to 4-Lanes Design-Build Project (the Project). Our Proposal accomplishes the RFP priorities of increased public safety, early completion, best project price, reduced long-term maintenance, and minimal impacts to the public. More importantly, our Team is unmatched in our experience performing both VDOT design-build projects (15 totaling over $850 million) and grade-separated crossings of the W&OD Trail. In fact, our Team having completed five W&OD Trail crossings in the last 10 years. Finally, our Team has the distinct advantage of being the Contractor and Designer for the adjacent Route 7/Belmont Ridge Road Interchange that will be constructed concurrent with this Project. All of these benefits result in the best Team for this Project - a Team that limits the risk to VDOT, the public and all other stakeholders. We are excited for this opportunity and look forward to continuing our partnership with VDOT.

4.1.2 - 4.1.3 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.

4.1.4 - Point of Contact: Garry A. Palleschi, Vice President, Shirley Contracting Company, LLC,
8435 Backlick Road, Lorton, VA 22079, 703.550.3579(P), 703.550.9346 (F)
gpalleschi@shirleycontracting.com

4.1.5 - Principal Officer: Michael E. Post, President/CEO/Manager, Shirley Contracting Company, LLC
8435 Backlick Road, Lorton, VA 22079, 703.550.8100(P)

4.1.6 - Interim Milestone Date: November 21, 2018 **Final Completion Date:** December 31, 2018

4.1.7 - Proposal Payment Agreement: An executed Proposal Payment Agreement, Attachment 9.3.1, is included in the Appendix.

4.1.8 - Certification of Debarment: Signed Certification of Debarment Forms are included as an attachment in the Appendix.

On behalf of the entire Shirley/Dewberry Team, we thank VDOT for the opportunity to submit this Technical Proposal and look forward to your favorable review.

Sincerely,

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

4.2 - Offeror’s Qualifications

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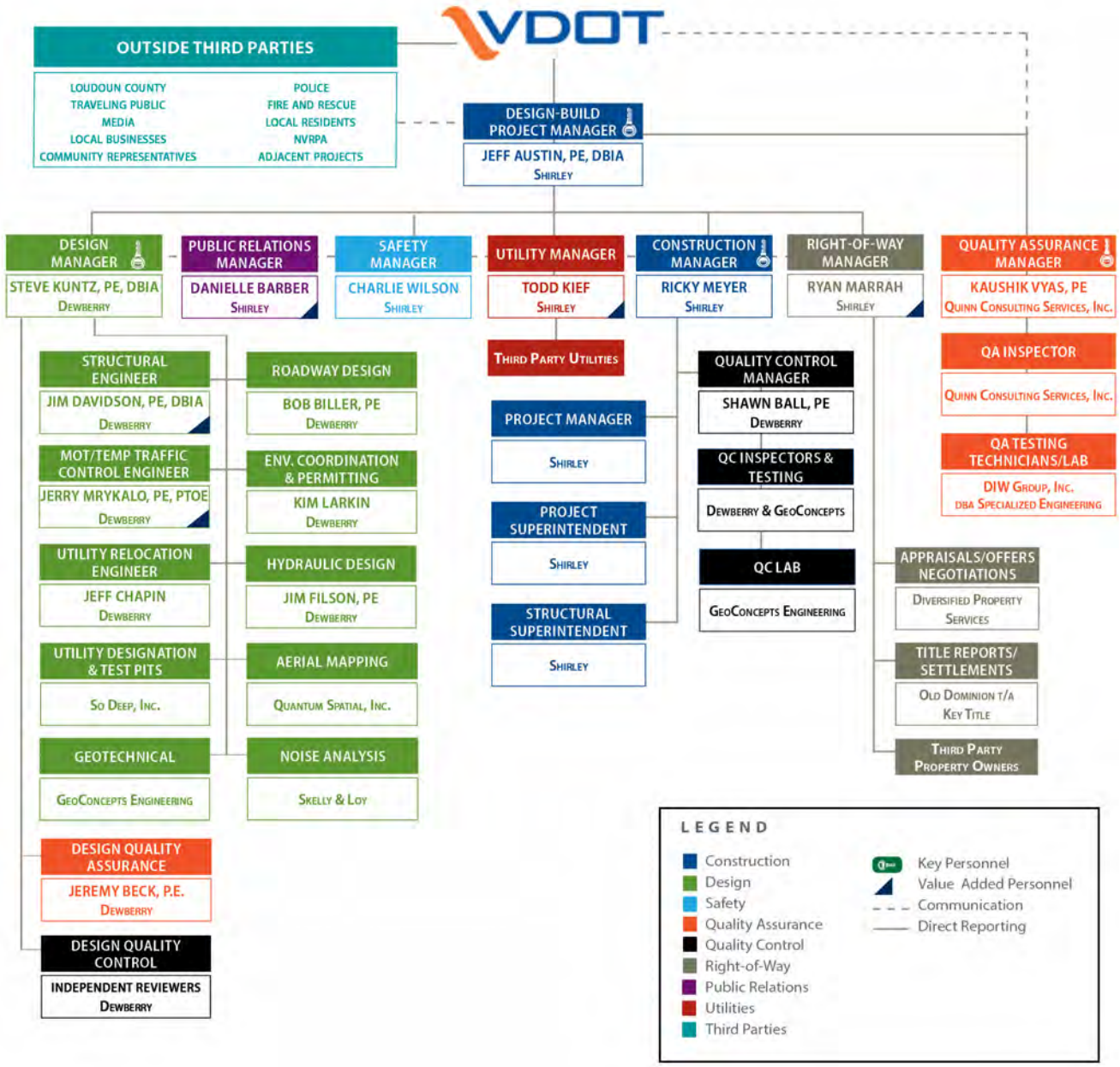
4.2.1 Confirmation

We confirm that the information contained in our Statement of Qualifications (SOQ) remains true and accurate in accordance with Section 11.4.

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 are no changes from our SOQ submittal, an updated narrative is not required.



4.3 - Design Concept

4.3 - Design Concept

4.3 Design Concept

Introduction

In order to develop our Team's concept and proposal for the Route 659 (Belmont Ridge Road) – Reconstruct to 4-Lanes Project (the "Project"), each of the lead discipline Team members, along with key design and construction staff, completed an extensive analysis of the site, the conceptual plans, and project commitments. That collaborative and exhaustive effort has driven our Team to focus on the following critical project objectives and key principles to ensure successful completion of the Project:

- Improving Public and Operational Safety;
- Minimizing Public Impacts and Maintaining Operational Capacity;
- Early Completion;
- Reducing Long-Term Maintenance and Inspection Costs;
- Limiting Risk;
- Creating a Cost-Effective Design; and
- Coordination with Adjacent Projects and Stakeholders.

In addition to the above considerations and objectives, our Team confirms that our Technical Proposal and Design Concept:

- ✓ Meets or exceeds all requirements listed in the Design Criteria Table;
- ✓ Contains limits of construction to include all stormwater management facilities that are within the existing/proposed right-of-way limits shown in the RFP Conceptual plans with the exception of permanent and temporary easements; and
- ✓ Does not include design elements that require Design Exceptions and/or Design Waivers unless they are identified or included in the RFP or Addendum.

During this procurement phase, our Team established weekly project development meetings with representation from all disciplines to discuss each of the objectives above and identify and develop enhancements which benefit the end users. As a result of these comprehensive meetings, our Team identified the following enhancements over the RFP design which we will incorporate into the final design:

Location/Feature	Enhancement	Benefit
Northbound Lane Alignment North of Hay Road to Hearford Lane	Adjusted the northbound lane alignment to mimic the Route 659 centerline geometry	• Reduces right-of-way impacts by approximately 0.15 acres • Avoids impacts to existing landscaping and berms • Allows for noise barrier consolidation, eliminating two openings • Avoids 300' of existing water main relocation
Noise Barrier (south of Chesterton Street)	Adjusted alignment to follow revised northbound lane alignment	• Eliminates two openings in barrier, improving noise reduction effectiveness • Avoids relocation of 1050' of recently installed sanitary force main • Reduces wetland impacts • Reduces right-of-way and permanent easement impacts

Location/Feature	Enhancement	Benefit
Water Service Connector	Eliminated off-tracking pavement	• Maintains consistent shared use path alignment & width • Eliminates curb ramps and "appearance" of on-street parking, which would block the shared use path
Portsmouth Boulevard Intersection	Incorporate dual left turn lanes to southbound Route 659	• Improves signal operation and adds capacity, allowing extended green time to thru movements on Route 659 • Avoids future signal modifications • Eliminates "hatched" pavement markings and unused turn lane pavement, minimizing maintenance requirements
Route 659 Profile	Optimized and adjusted vertical profile to eliminate sag/sump locations	• Reduces rock excavation and risk • Eliminates 12 inlets, reducing future maintenance • Avoids combination low point/0% cross slope locations as a safety benefit to motorists
W&OD Trail	Profile adjustments	• Eliminates grade breaks at connection intersections • Lowered profile to increase vertical clearance to the bridge • Eliminated steep slopes between gravel and paved trails
W&OD Trail Parking Lot	Developed alternate layout which accommodates our Team's added Rest Area	• Provides 24 parking spaces vs the RFP required 20 • Promotes horse access via unpaved surfaces • Reduces wetland and stream impacts • Enables Team to provide W&OD Trail "rest area" at no cost (see Section I on page 13)

4.3.1 Conceptual Roadway Plans

Our Team's Conceptual Roadway Plans are included in the Volume II Design Concept document. Descriptions of these Design Concepts and details, including enhancements made to the RFP which exceed the Project requirements are described below.

A. General Geometry

The general geometry, including horizontal curvature, design speed, number and width of travel and turn lanes, shoulders, and shared use paths, have all been designed in accordance with the criteria established in Attachments 2.2 – Roadway Inventory and Major Design Criteria. Route 659 has been designed in accordance with VDOT geometric design standards for an Urban Minor Arterial (GS-6) as a four-lane, median divided facility (50 mph design speed). Superelevation is in accordance with TC-5.11U, and locates the point of rotation at the baseline, with transition lengths based on the widest section of roadway in the transition area. Minimum radius requirements, stopping sight distances, and intersection spacing requirements are all satisfied by our design. Our Team's Volume II Design Concept provides more specific information related to centerline geometry of Route 659 and the connecting roadways, lane, shoulder, and shared use path widths. Each intersection and turning movement has been analyzed with AutoTurn by our Team ensuring turning widths and curb and gutter locations accommodate the required design vehicle.

B. Horizontal Alignment

Our Team developed a horizontal alignment for Route 659 that is similar to the RFP concept and keeps all improvements within the right-of-way and easements identified in the RFP. The alignment of Route 659 is based on a 50 mph design speed utilizing 4% maximum superelevation in accordance with TC-5.11U criteria for a GS-6 facility. The horizontal alignment also takes advantage of existing right-of-way

dedication, and adjustments have been incorporated to avoid existing utilities, reduce overall right-of-way and easement impacts, and reduce wetland and environmental impacts. Since members of our Team designed and are constructing the Route 7/659 Interchange immediately north of this Project, we have adjusted the centerline stationing so that the interface between projects does not require a station equation or shift. This simplifies construction surveying and stakeout, and avoids the need to duplicate construction marks, ultimately reducing the risk of construction errors.

Alignment Enhancements

Our Design Concept shifts the northbound lanes of Route 659 between Hay Road and Hearford Lane to the west (a maximum of 15') by utilizing a horizontal curve consistent with the baseline radius, as opposed to an increased curve radius as shown in the RFP plans. As discussed in our Proprietary Meeting, the full developed length and the full opening taper length of the left turn lane onto Hearford Lane is provided outside of the adjacent northbound thru lanes. This adjustment is detailed on Sheet 3 of our Volume II Design Concept, and allows the following improvements to be realized:

- Reduces right-of-way acquisition from Belmont Ridge HOA by approx. 0.15 acres;
- Reduces easement acquisition through reduced grading impacts;
- Locates noise barrier within existing right-of-way from Station 41+00 to Station 46+00;
- Avoids relocation of approximately 300' of existing water main;
- Avoids impacts to and removal of established grading and landscaping between Route 659 and the single family homes in the Belmont Ridge community; and
- Improves alignment and function of noise barrier by eliminating two of the openings shown in the RFP concept.

The most significant benefit for the adjacent community is the revised noise barrier alignment. As discussed in our Proprietary Meeting, we are locating the southern portion of the noise barrier completely on the roadway side of the existing shared use path. This avoids regrading of existing berms and removal of existing trees and landscaping adjacent to six single family homes and the HOA property adjacent to Churchill Downs Drive, Breeders Run Court, and Hollywood Park Place. This results in a visual benefit to the adjacent homeowners and reduced construction impacts near their homes. ***The elimination of two noise barrier openings reduces the noise barrier area by approximately 1100 SF, which not only lowers the initial construction cost, but reduces easement acquisition and future maintenance costs.***

Our alignment enhancement locates the noise barrier to the left of the existing trail, avoiding impacts to the trail and existing landscaping, and providing between 15' to 35' of additional separation to adjacent homes.

C. Maximum Grade for All Segments and Connectors

Our Team has refined all roadway connection profiles to improve drainage configurations, provide adequate intersection sight distances, and avoid break-overs at entrances and intersections. All profiles have been designed to adhere to the minimum and maximum vertical grades outlined in the Roadway Inventory and

Minimum Design Criteria document contained in Part 2 of the RFP. The following maximum vertical grades are anticipated for the roadway segments being constructed:

Alignment	Maximum Vertical Grade Allowed (%)	Maximum Vertical Grade Proposed (%)
Route 659	7	6.79
Hearford Lane	10	2.49
Water Service Entrance	10	4.81
Chesterton Street	8	2.00
Luck Lane	8	3.82
Portsmouth Boulevard	8	1.64
Belmont Station Drive	8	4.63
Builders Lane	8	6.30
Jackpit Connector/Jackpit Lane	8	4.27
W&OD Trail	3 (paved) / 5 (gravel)	1.97 (paved) / 5.00 (gravel)
Trail Connector Paths	5	5.00

Profile Enhancements

A beneficial adjustment our Team has made relates to the vertical profile of Route 659. During our study of the RFP Conceptual Plans, we explored several adjustments to improve the operation of the corridor. These adjustments focus on improving drainage patterns on Route 659, improving the clearances around and above the W&OD Trail, and maximizing safety for trail users. The profile adjustments reduces reconstruction limits on connecting roadways and minimizes maintenance of traffic impacts.

Trail connections have been adjusted to provide smooth crossing profiles between the W&OD Trail and gravel trail, similar to this connection completed by our Team on the VDOT Pacific Boulevard D-B Project.

Our concept eliminates three intermittent low points on Route 659 proposed within the RFP Conceptual Plan. This eliminates:

- A minimum of 12 inlets (flanking inlets associated with sump conditions);
- Reduces the potential for ponding along Route 659;
- Minimizes depths of the roadway storm sewer systems;
- Reduces overall cut, removal and replacement of unsuitable materials; and
- Minimizes rock excavation from Stations 70+00 to 80+00 and Stations 108+00 to 112+00 where geotechnical borings indicate the presence of rock between 4’ to 6’ below the existing surface.

The most important profile enhancements incorporated by our Team are located in the vicinity of the W&OD Trail crossing, and include adjustments to the gravel and paved trails. Drawing on our experience completing design-build crossings of the W&OD Trail at Church Road, Atlantic Boulevard, Pacific Boulevard, Battlefield Parkway, and Route 7 Truck Climbing Lane, our Team has incorporated the following profile adjustments, all of which improve public safety:

- Lowered Route 659 profile to maximize vertical clearance to the overhead power lines;
- Reduced bridge structure depth and lowered W&OD Trail profiles to provide approximately 15' vertical clearance over the W&OD Trail;
- Refined the trail connection profiles to avoid excessive profile breaks at the connections to the gravel and paved W&OD Trails; and
- Refined the gravel and paved W&OD Trail profiles to eliminate steep slopes between alignments and excessive breaks at the "intersections" with the trail connectors leading up to Route 659.

Enhancements to the bridge opening, Trail profiles, and drainage layouts improves the safety and maintains the open appearance of the overpass, similar to the Pacific Boulevard overpass completed by our Team.

Additional details of the bridge modifications made to improve the profiles and clearances at the W&OD Trail is included in Section 4.3.2 of this Proposal.

D. Typical Sections of Roadway Segments

Roadway Sections

Route 659 has been designed as a 4-lane median divided roadway incorporating curb and gutter (CG-7) adjacent to raised buffer strips and shared use paths along both the northbound and southbound lanes. The 42' depressed median has been maintained by our Team's concept, consistent with the RFP requirements. Typical sections of each roadway segment are included in our Team's Volume II Design Concept. Shared use path facilities will be located adjacent to a full width buffer (10' from edge of travel lane) in accordance with standards, and a 5' bench to the outside of the shared use path will be provided to avoid steep or excessive drop-offs adjacent to the facility. Connections to existing sidewalks on intersecting roadways will be maintained consistent with RFP requirements.

Pavement sections for all new roadways will be consistent with the RFP requirements, and includes complete removal and replacement of the existing pavement except at tie-in locations at the northern and southern limits of the Project, and at tie-in points on intersecting roadways.

Retaining Walls and Bridge Structures

Retaining walls are detailed in our Volume II Design Concept and include extended wing walls in all four corners of the bridge and a stand-alone retaining wall along southbound Route 659 between approximate Station 135+00 and Station 136+75. All vertical faces of the retaining wall and wing walls will incorporate architectural treatment and coloring. Since our Team is completing the adjacent Route 7/659 Interchange, we will ensure that coloring and finishes are consistent along the entire corridor.

Our Team completed both the Sycolin Road Overpass Design-Build Project and the Route 7/River Creek Interchange Project which have the same style and color architectural treatments.

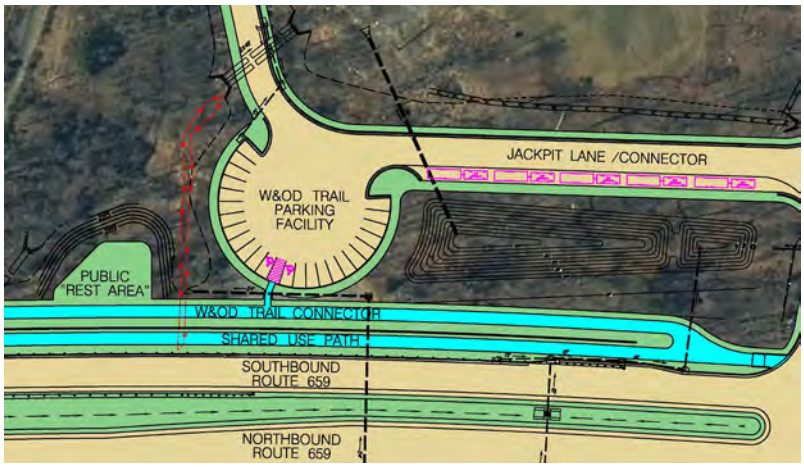
Typical Section Enhancements

In an effort to improve operations of the Route 659 corridor and pedestrian safety on the shared use path, our Team incorporated the following enhancements to the typical sections:

dc ki t Connector/dc ki t Lane/W&OD Trail Park ng Lot

Our design reconfigures the Jackpit Connector/Jackpit Lane/W&OD Trail Parking Area to maximize safety, enhance public access to the W&OD Trail, and improve vehicle operations and parking. We achieve this by replacing the Jackpit Connector intersection with Jackpit Lane (including the parking area) with a through movement/cul-de-sac type design of the roadway and parking area. This reconfiguration results in the following improvements:

- Increases number of parking spaces to 24, including two ADA van accessible spaces;
- Improves access and operation for larger maintenance and horse trailer towed vehicles by eliminating need for the backing movement shown on original RFP concept; and
- Provides space for up to five horse trailer towed vehicles to park on the shoulder of Jackpit Connector. A gravel connection adjacent to the paved Trail will eliminate the need for horses to walk on the road, in the parking lot, or on the asphalt paved trail. This connection was not depicted in the RFP plans, but is a considerable improvement given the number of equestrian users.



Our Team's concept for the W&OD Trail Parking facility and connecting roadways improves access and circulation, minimizes environmental impacts and provides more parking spaces than required by the RFP. The public "rest area" will be provided at NO COST as part of a community service project.

AutoTurn analysis was completed on the reconfigured parking lot and shows that horse trailer/truck combination vehicles and single unit trucks (snow plows) are accommodated within the limits of the 70' radius proposed by our Team.

Portsmouth Boulevard Intersection

Our design along southbound Route 659 has been revised to provide the 30' receiving width for the dual left turn lanes from Portsmouth Boulevard and a raised median to accommodate pedestrian crossings. In addition, our Team proposes to install the permanent signal and all pavement markings to accommodate the dual left turn operation. This commitment provides the following enhancements:

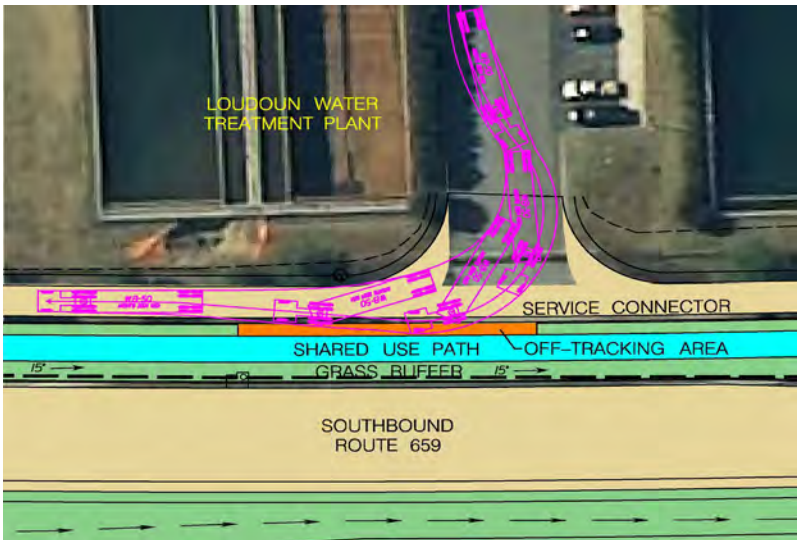
- Improved operation of signal by reducing turning movement queue lengths and optimizing signal timings to provide additional green time to the thru movements on Route 659;
- Eliminates expense of future signal modifications;

- Eliminates need for placement of "hatched" pavement markings, minimizing maintenance; and
- Eliminates pavement milling and repaving in the future to open the dual left turn movement.

We incorporated a raised median consistent with VDOT Central Office requirements for the same pedestrian crossing configuration at the Route 659/Gloucester Parkway intersection.

Shared Use Path Adjacent to Loudoun Water Service Entrance

As discussed at our Proprietary Meeting, our Team developed an improved concept for the Water Service Road. This improvement accommodates the required WB-50 design vehicle (clarified during the RFP process) while eliminating the curb ramps and crossings of the shared use path between the Water Service Road and the southbound lanes of Route 659. The off-tracking area between the curb and shared use path directly across from the water service entrance will be concrete capped, similar to concrete aprons at roundabouts, to avoid damage to the buffer strip. The concrete cap provides a colored delineation to define the edge of the shared use path. This modification avoids the perception that the off-tracking area can be used for parking.



Potential conflicts between shared use path users and motorists have been eliminated based on our Team's improved design concept. Off-tracking of larger vehicles will be accommodated on a concrete apron (shown in orange) while eliminating the appearance of on-street parking.

E. Conceptual Hydraulic and Stormwater Management Design

When developing our Design Concept, our Team thoroughly investigated and evaluated the hydrologic and hydraulic requirements, recognizing existing deficiencies and utilizing the roadway design improvements previously discussed. Functionality, long term maintenance, inspection access, and safety of individual elements guided many of our hydraulic decisions.

Roadway Drainage

Roadway drainage associated with our Design Concept includes open channels, culverts, curb inlets, yard inlets, storm sewer systems, and underdrains. The following hydraulic systems are configured to satisfy:

- Efficient removal of runoff from the roadway and surrounding area;
- Eliminate flooding and ponding hazards to the public;
- Convey runoff to collection points and/or adequate outfalls, and
- Ensuring positive drainage within the pavement structure.

Design of all drainage improvements are completed in accordance with the VDOT Drainage Manual, and conceptual drainage layouts anticipated by our Team are shown on our Volume II Design Concept.

Runoff from the Project corridor is expected to be collected in ditches and/or storm sewer systems along the edge of roadway, within the median, or directly behind the bench. By implementing the roadway adjustments (vertical profile, horizontal alignment, and others) previously discussed and efficiently locating drainage infrastructure, our Team has limited the amount of water flowing on the roadway and avoided ponding at sag points to enhance driver safety during rain events. We kept roadside ditch footprints to a minimum due to our profile adjustments, resulting in reduced easement acquisition needs. As required by the RFP, all existing systems have been assumed to be unserviceable and are shown to be removed and replaced or abandoned as part of the Project.

Stormwater Management

As noted in the RFP, this Project is grandfathered in the Virginia Department of Environmental Quality (VDEQ) II-C criteria (9VAC25-870-93) and therefore, stormwater management (SWM) follows the Performance Based Methodology and MS-19 adequate outfall criteria associated with VDOT I&IM 195.8 (Post-Development Stormwater Management). In addition to VDOT criteria, we recognize that due to the location of the Project and adjacent existing features, there are unique criteria which need to be met including:

- ***Loudoun County Facility Standard Manual (FSM) -*** The FSM has stricter water quality requirements within the Goose Creek Reservoir Protection Area. This requires the post-development nonpoint source pollutant load to not exceed the pre-development pollutant load based on an average land cover condition of 10% impervious. This is more stringent than the typical Virginia requirements, which assumes an average existing land cover impervious amount of 16%;
- ***The Chase at Belmont Country Club ek sting dry pond -*** Drainage concepts need to be developed which maintains existing flow patterns and volumes to this existing pond northeast of the proposed bridge to avoid adverse impacts to the privately maintained facility; and
- ***Coordination with Ashburn Overlook LLC development -*** We have developed a SWM approach which is fully compliant with the RFP, but have already met with the Ashburn Overlook, LLC developer to discuss their desires and concept for their property based on their proffer commitments to Loudoun County and the Project.

Our Team proposes to locate stormwater management basins in the same locations identified in the RFP conceptual plans. However, where the RFP concept identified extended detention basins, our Team proposes to utilize extended detention enhanced basins to take advance of higher removal efficiencies of this type of facility and is able to eliminate **ALL** of the Filterra structures identified in the RFP concept. The elimination of these 14 structures results in the following benefits to the Project:

- Improved safety by eliminating trees within the clearzone at each structure;
- Reduced initial construction costs; and
- Reduced long-term maintenance costs associated with the routine replacement of the filter media.

In addition to the construction of the three extended detention enhanced basins, our Team will utilize the purchase of 14.3 pounds of nutrient credit which has been obtained by VDOT for use on the Project.

To address the unique project elements identified above, our Team has developed our stormwater management concept to include the following details:

- ***Loudoun County FSM -*** While the RFP requires stormwater management to be developed to the "largest extent practical" in compliance with the Loudoun County FSM, the combination of three extended detention enhanced basins and nutrient credits proposed by our Team is fully compliant with the FSM requirements. By achieving full SWM compliance as opposed to the "largest extent practical", review by Loudoun County of the stormwater management approach will be streamlined, ensuring the design can be approved quickly;
- ***The Chase at Belmont Country Club -*** Our concept considers the existing conditions associated with the pond and ensures these conditions (such as the drainage area) remain unchanged. This safeguards the functionality of the facility and eliminates the possibility that an agency other than the HOA would need to take over maintenance responsibilities. In addition, our design does not "double count" existing treatment provided by the dry pond or the upstream stormfilter. Finally, our concept reduces impacts to the W&OD Trail by constructing the adjusted outfall beneath Route 659 as opposed to directing flow towards and across NVRPA property; and
- ***Ashburn Overlook LLC Development -*** As required by the RFP documents, our Team's concept is contained within the limits of the proposed permanent drainage easement while also directing the full 13 acres of Project runoff towards the facility as outlined in the developer's proffer with Loudoun County. As noted above, our Team has already met with the developer to understand their approach to stormwater management on their site, and discuss options for developing a combined stormwater management basin which would be acceptable to the developer, VDOT, and Loudoun County. Based on our conversations with the developer, we have also investigated alternate SWM layouts which will be discussed with VDOT at the outset of design to ensure a design is completed which allows for streamlined acquisition and dedication of easements and right-of-way required from the property. Developing a concept which is acceptable to the developer will result in a long term benefit to the department, since it is possible that the developer will take on maintenance responsibilities for the entire pond, further reducing long-term costs to VDOT associated with maintenance and inspection.

Drainage Enhancements

To improve upon the RFP drainage concept, our design limits increases in flow directed onto the NVRPA property, as this has been a NVRPA concern on prior projects. To accomplish this, our Team proposes to route the existing storm sewer system coming from the east (near Station 124+00) beneath Route 659 in lieu of directing it towards the W&OD Trail (see Sheet 9 in Volume II Design Concept). This flow will then discharge into the existing wetland to maintain hydrology.

In order to improve safety for W&OD Trail users, our Team will convey all offsite stormwater runoff through the W&OD Trail property via closed system storm sewers, as opposed to open channels as shown in the RFP concept. This avoids the potentially dangerous deep channels immediately adjacent to the Trail. Outfall flow from the existing stormwater management basin will be directed away from the W&OD Trail property and conveyed to the west side of the road to an adequate outfall location.

F. Proposed Right-of-Way Limits

Our Team's conceptual design is wholly contained within the right-of-way and easements identified by the RFP plans. Our proposed right-of-way limits are shown on our Volume II Design Concept along with shading to identify the reduction/savings in right-of-way impacts as compared to the RFP.

Right-of-Way Enhancements

As a result of our enhancements described above, ***our Team has reduced the total project right-of-way impact by approx mately 0.6 acres and eliminated impacts to two properties.*** This reduction in right-of-way acquisition is possible due to the following improvements:

- Improved horizontal alignment and noise barrier alignment north of Hay Road;
- Avoidance of 1050' of newly constructed sanitary sewer force main south of Chesterton Street;
- Improved profiles and grading along Portsmouth Boulevard; and
- Alternate W&OD Trail parking lot layout and Jackpit Lane alignment.

In addition to the reduction of right-of-way acquisition, our profile and alignment adjustments, and resulting avoidance of utility impacts, has allowed our Team to reduce easement acquisition impacts in the areas shown in Table 4.3.1.

Additional discussion related to right-of-way acquisition and the sequencing of acquisitions can be found in Section 4.5.1.

Table 4.3.1 - Right-of-Way Savings

Parcel	Reduction
Parcel 016	Reduced noise barrier easements through improved noise barrier alignment
Parcel 018	Reduction of sanitary sewer easement thru avoidance of impacts to force main currently being installed
Parcels 022 & 052	Improved profile of Chesterton Street eliminates property impacts
Parcels 051 & 055	Improved profile of Portsmouth Boulevard avoids slope easement impacts
Parcel 039	Coordinated profile with Route 7/659 Interchange avoids additional impacts to the northern 039 parcel

G. Proposed Utility Impacts

Our Team's focus with respect to utilities is always to avoid impacts, then minimize impacts where avoidance is not possible, and only as a last resort complete a relocation of the utility. Specific details related to utility avoidance, minimization of impacts, and necessary relocations can be found in Section 4.4.2. Utility relocations which are unavoidable include water mains, gas main, overhead power, and communication facilities, and are shown and labeled in our Volume II Design Concept.

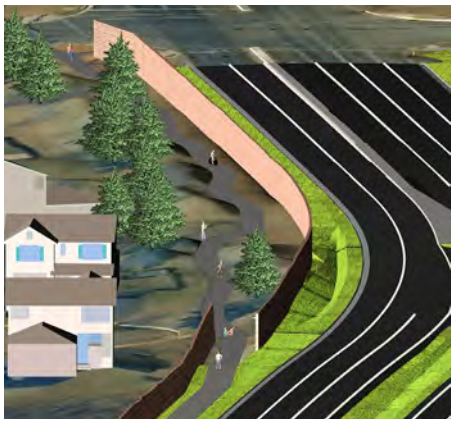
H. Noise Wall Locations

As identified in the RFP requirements and based on the completed noise analysis, two noise barriers are required and will be constructed by our Team. Noise barriers will incorporate architectural finish and coloring in accordance with the RFP requirements.

LOCATION	HEIGHT
Barrier System 1 – NB Sta. 40+55 to Sta. 68+25	13'
Barrier System 2 – NB Sta. 69+00 to Sta. 73+00	11' - 14'

Previous sections have identified the enhancements our Team has made to Barrier System 1 between Hay Road and Hearford Lane. However, our Team's enhancements to this barrier alignment continue for an additional 1,000' and were incorporated in an effort to avoid relocation of the sanitary sewer force main currently being installed. As discussed at our Proprietary Meeting, and as coordinated and agreed to by Loudoun Water, the noise barrier has been shifted to the back (east side) of the sanitary sewer force main.

The proposed right-of-way line will be established to the west of the sewer, and overlapping noise barrier and sanitary sewer easements will be utilized to facilitate operation, maintenance, and access for both the sanitary sewer force main and noise barrier. While the amount of shift in the noise barrier varies, a minimum sanitary sewer easement width of 15' will be provided, consistent with Loudoun Water requirements and their recently obtained sanitary sewer force main easement.



This rendering of the proposed noise barrier shows our Team's adjusted alignment and it's relationship to the existing trail, landscaping, and adjacent houses.

The adjustments to the noise barrier alignments proposed by our Team has been coordinated and analyzed by our noise analysis sub-consultant who confirmed that no adverse impacts will result from the changes. In fact, the elimination of openings in the barrier will improve the Insertion Loss of the noise barrier - a further benefit to the local residences. During final design, an updated noise analysis report is completed by our Team for review and approval to document the revised noise barrier alignment and configuration.

I. Additional Scope Enhancement

Having completed five projects crossing the W&OD Trail in the last 10 years, our Team has an enhanced appreciation and respect for the historic nature of the Trail and the positive impact it has on the community. As we became familiar with the site, we realized that this Project provides a unique opportunity to partner with the NVRPA to develop features and enhancements that benefit the Trail and it's users, and also to provide an excellent public outreach event. For these reasons, our Team is planning, a "Community Service Project" with the concurrence of the NVRPA and other stakeholders prior to Project completion and at ***no cost*** to the Project.

Our Team will relocate the Utterback Bench as part of a Community Service Project.

With an idea of an event in mind as we developed our Team's Conceptual Plans, we realized that our re-configured W&OD Trail Parking Lot provided an ideal location for community enhancements. As we became familiar with the site, one of the first items our Team noticed is the "Utterback Bench" located to the southeast of the existing at-grade crossing. Recognizing the significance of the bench, we contacted the Crossroads United Methodist Church to inquire about its history and background. We received a letter from the church pastor, Dave Norman, who expressed his appreciation to our Team for considering the bench and is excited to work with us to relocate the bench to an appropriate location.

Similar to the kiosk we installed as part of the Church Road overpass of the W&OD Trail, a kiosk identifying the location of the Belmont Station will be installed as part of the Community Service Project to be organized by our Team.

With an area of unused right-of-way adjacent to our relocated Trail parking lot, we are proposing to regrade the site and utilize it as a Trail "rest-area" that incorporates:

- The relocated "Utterback Bench";
- Picnic tables;
- A kiosk recognizing the history of the site as the former "Belmont Station"; and
- Landscaping.

A preliminary layout of our proposed concept is shown on Sheet 9 of Volume II Design Concept. During final design our Team will coordinate closely with NVRPA to develop this Rest Area.

4.3.2 Conceptual Structural Plans

Our Team has successfully completed design-build grade-separated crossings of the W&OD Trail at the following locations:

1. Church Road (Route 625)
2. Atlantic Boulevard
3. Pacific Boulevard
4. Battlefield Parkway
5. Route 7 interchange ramp as part of the Route 7 Truck Climbing Lane (currently under construction)

Battlefield Parkway Over W&OD Trail constructed by our Team.

Additionally, Shirley completed the Reston Parkway crossing of the Trail through traditional design-bid-build delivery, and Dewberry has recently received approval of the design for the upcoming Crosstrail Boulevard overpass of the Trail. This specific experience gives our Team a thorough understanding and appreciation of the requirements and concerns of the NVRPA. Our Team has reviewed the RFP documents and our proposed design will meet or exceed the requirements of the RFP and the NVRPA. Several superstructure and substructure types have been considered in order to develop a concept which benefits the end users of the road and the W&OD Trail, minimize impacts by accelerating construction, and provides a durable, low maintenance structure for VDOT. Our Team's conceptual structural plans are included in Volume II Design Concept.

Route 659 Bridge over W&OD Trail

The bridges will be designed and constructed to meet all requirements of the RFP including:

- Bridge elements are designed using *AASHTO LRFD Bridge Design Specifications, 6th Edition;* 2012 Interim Specifications; and VDOT Modifications (IIM-S&B-80) and the Additional Foundation Criteria, Attachment 2.3;
- Details and drawings are in accordance with Volume V Series of the *VDOT Manual of the Structure and Bridge Division;*
- Bridge utilizes jointless bridge design technologies as outlined in the *VDOT Manual of the Structure and Bridge Division*, Volume V- Part 2, Chapter 17;
- Low permeability concrete in accordance with the Special Provision for Low Permeability Concrete for Design-Build Projects and Corrosion Resistant Reinforcing Steel (CRR) in accordance with IIM-

S&B-81 will be used;

- Architectural requirements for the bridges outlined in the Special Provision for Architectural Treatment, Attachment 2.3B to the RFP will be provided; and
- Proposed bridge meets all of the provisions of the FHWA Technical Advisory T5140.22 *Uncoated Weathering Steel in Structures.*

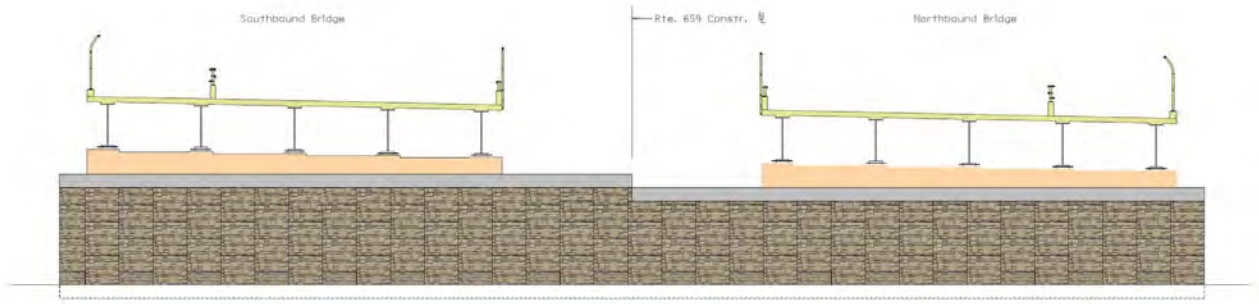
Bridge Layout

In order to develop a cost effective bridge, improve public safety and reduce long-term maintenance, our Team prioritized minimizing the bridge length. Our concept reduces the length of the bridge shown in the RFP Plans by approximately 20' while still meeting all RFP requirements and completely spanning the NVRPA property.

BRIDGE EXCEEDS NVRPA REQUIREMENTS

- Our design exceeds the NVRPA openness requirements while reducing the bridge length by 20'.
- Provides 15' - 0" vertical clearance exceeding the 14'-6' requirement of the Project.

Our bridge section provides the required lane configuration: a 32' wide roadway (allowing for two travel lanes and shoulders), a 14' wide barrier separated shared use path on each bridge; and the required 28'- 4" lightwell between bridges. All substructure elements are located outside of the W&OD Trail right-of-way as required by the RFP. The roadway alignment across the bridge is curved (6,487.5'radius); therefore, our concept is to provide tangent girders and variable width overhangs.



Typical Transverse Section at Abutment

Our Team knows the NVRPA *Guideline for The Development of W&OD Trail Bridge Crossings* and understands the Elevation Open Area requirement. Even though we shortened the bridge from the RFP Plans, ***our proposed bridge exceeds the Open Area requirement by approximately 45%.***

Sequencing

We recognize that a top priority is to eliminate the at-grade crossing of the Trail as early in the construction of the Project as possible, as removal of the at-grade crossing immediately increases public safety by eliminating a historically dangerous pedestrian crossing. In order to accomplish this, we considered construction of a temporary diversion of Route 659 in the vicinity of the crossing to allow for construction of both bridges in one phase. However, the increased environmental and schedule impacts of the diversion

precluded this option. Instead we propose to construct the northbound bridge in Stage 1, while maintaining traffic on the existing roadway (as seen on Sheet IJ of Volume II Design Concept). Once the northbound bridge is constructed, Route 659 vehicular traffic is directed onto the bridge, to allow Trail users to cross under the bridge without any vehicular conflicts.

In order to construct the Stage 1 approaches, it is necessary to construct a temporary retaining wall between existing Route 659 and the new bridge approaches. We envision this wall to be a mechanically stabilized earth (MSE) wire wall, a VDOT approved system for this type of application. We recognize and understand that phased construction requires careful consideration of the details and constructability between the two phases of the abutment construction. We know the installation of the abutment piles for the southbound bridge requires a minimum offset from the wire wall to account for pile installation and drilling equipment. The bridge designer and the construction personnel will coordinate during development of the design plans to ensure that the piles are located such that there is adequate space for installation.

Protection of W&OD Trail users during construction is of paramount importance. Safety fencing is installed to protect Trail users from the abutment construction activities, erection of girders will be completed at night when the Trail is closed, and lagging boards will be installed between girders to provide overhead protection. Flaggers are provided on the Trail whenever overhead work is ongoing.

Superstructure

Based on the skew angle of the bridge and the section algorithm in the bridge design manual, a Deck Slab Extension is required to provide a jointless bridge. Our Team reviewed the RFP Plans and identified different alternatives for the bridge superstructure in order to develop the most cost effective bridge for this location. Each of the alternatives had advantages and disadvantages. We considered:

ALTERNATIVES	ADVANTAGES	DISADVANTAGES
Prestressed concrete bulb tee girders of multiple depths and girder spacings	▪ Faster delivery times ▪ Faster erection times ▪ Lower maintenance costs ▪ Smaller dead load deflections than steel girders	▪ Longer one-piece girders to transport ▪ Heavier sections to lift\install (requires larger crane) ▪ Additional girder lines required ▪ Larger dead loads resulting in larger\heavier foundation
Steel plate girders utilizing Grade 50, weathering steel	▪ Lighter field sections ▪ Fewer girder lines required ▪ Lighter\smaller foundations	▪ Fabrication\delivery dates of up to one year ▪ Larger dead load deflections than concrete girders
Hybrid steel plate girders utilizing Grade 50 weathering steel for the webs and Grade 70 weathering steel for the flanges	▪ Lighter field sections ▪ Fewer girder lines required ▪ Lighter\smaller foundations ▪ More efficient structural sections (additional steel weight savings)	▪ Fabrication\delivery dates of up to one year ▪ Larger dead load deflections than concrete girders
Normal weight concrete for the bridge decks	▪ Lower material cost	▪ Heavier dead loads resulting in deeper girder sections
Lightweight concrete for the bridge decks	▪ Lighter dead loads allowing shallower girder sections and added vertical clearance over the Trail	▪ Higher material cost vs. normal weight concrete

Our final cost and constructability analysis of the bridge superstructure led us to propose the use of Grade 50 weathering steel plate girders and lightweight concrete for the deck slab. ***This configuration allows us to reduce the structure depth and exceeds the required vertical clearance over the W&OD Trail (we anticipate providing approximately 15'- 0" clearance exceeding the RFP requirement of 14'6").***

Substructure

Several types of abutments were considered for these bridges including:

- A Mechanically Stabilize Earth (MSE) wall in front of a cast-in-place concrete abutment supported on two rows of staggered H-piles;
- A MSE wall in front of a cast-in-place concrete abutment supported on spread footings ("True Abutment"); and
- Tall cast-in-place concrete abutment on spread footings.

As part of our analysis, we calculated Service and Factored pile and spread foundation capacities for use in our abutment comparisons. The subsurface conditions are such that all three types of abutments considered are feasible from a geotechnical strength perspective. The final design ensures that the total vertical settlement will be less than 1" over the initial 20-years post construction within 100' of the abutments as required by the RFP.

Our final cost and constructability analysis of the bridge substructure led us to propose the use of MSE walls in front of cast-in-place concrete abutments supported on two rows of staggered H-piles. Due to the depth of rock at the bridge location, we anticipate that the piles will be socketed into competent rock.

Construction of the northwest bridge wingwall will unavoidably impact the existing dry pond at The Chase at Belmont Country Club and both wingwalls will be designed to accommodate a new outfall pipe from the pond that will cross under Route 659 and through the wingwalls. The abutments will be designed to permit jacking and replacement of the bearings. The MSE wall panels we propose have an architectural treatment that meets the requirements of the RFP. Our Team has designed and constructed several other projects, such as River Creek Parkway/Route 7 and Sycolin Road over Route 7\15 using the exact same architectural treatment that is required on this Project.

Retaining Walls

There is one stand alone retaining wall that is required along the outside of the shared use path along southbound Route 659 from Station 135+00 to Station 136+75 which retains the fill near the Belmont Self Storage. An MSE type wall with architectural treatment is anticipated at this location. See Sheet 2A(1) of our Volume II Design Concept for a typical section and Sheet 10 for a plan view of the wall.

Major Drainage Structures

Our Team's concept does not plan for any major drainage structures. This added benefit further reduces both up front and long term maintenance costs.

4.4 - Project Approach

4.4 Project Approach

4.4.1 Environmental Management

With a proven track record of successful on-time completion of design-build projects for VDOT, our Team has developed an approach to management of environmental issues that greatly reduces the risk of delay. The primary outcomes of our Team's approach to environmental management are:

- Avoid and/or minimize impacts to the greatest extent possible;
- Complete the process on or ahead of schedule; and
- Ensure compliance with the Project National Environmental Policy Act (NEPA) commitments, applicable laws, regulations, and VDOT specifications.

These are achieved by implementing the following concepts:

INTEGRATE →	IDENTIFY →	COORDINATE →	EDUCATE
Our Team, is fully integrated into the D-B process - from development of this Technical Proposal to Final Acceptance. With direct input into design, right-of-way, utility, and construction disciplines, we proactively avoid and minimize impacts, create a realistic project schedule that mitigates potential for delays, and ensures compliance.	Earliest possible identification (beginning in the RFP phase) of potential impacts and areas of concern facilitates incorporation across the Project into processes, design, construction activities, and schedule.	Proactive coordination with all affected parties regarding potential impacts leads to opportunities for avoidance and minimization, schedule efficiencies, and compliance.	Education by the Team across disciplines facilitates creative and innovation solutions to perform the work in an environmentally responsible manner, while meeting objectives.

Shirley and Dewberry - An Experienced Team Approach

Our Team brings extensive knowledge of local, state, and federal environmental requirements, as well as specific local knowledge relevant to this Project. We not only are the Lead Designer and environmental consultant for the Route 7/Belmont Ridge Road Interchange, but we have also designed and built five crossings of the W&OD trail in the last 10 years. Further, Our Team has obtained 57 U.S. Army Corps of Engineers (USCOE) and Virginia Department of Environmental Quality (VDEQ) permits, completed five NEPA documents and supplements, conducted numerous cultural resources surveys, relocated a cemetery, mitigated/avoided hazardous material contamination, conducted endangered species surveys, verified noise analysis and provided noise mitigation, and coordinated encroachments on one local and five regional park crossings.

This experience reduces project risk by allowing our Team to optimize design opportunities to minimize project impacts on the local community, wetlands, and the W&OD parkland while successfully providing the facilities required under the Contract, as well as the site specific details typically required by NVRPA.

4.4 **Project Approach**

Approach During Design

Beginning at the RFP stage, our Team works diligently during the development of design plans, and prior to detailed engineering, to identify environmental project constraints, work with the design engineers to avoid and minimize impacts to those resources and to assess which permits or clearances are anticipated for the Project. We accomplish this by a thorough review of the Contract documents; local, state, and federal database searches; extensive field visits to the Project site; and discussions with various permitting agencies and authorities.

Understanding the nature of the environmental process requires the creation of a schedule that realistically accounts for timeframes necessary to obtain required permits and clearances in order to move the Project to timely completion. Based on recent VDOT design-build projects, regulatory agencies are closely scrutinizing proposed permit applications with a concentration on the avoidance/minimization efforts made during the design stage of the Project. It is critical that avoidance alternatives are identified and documented as early as possible, and sufficient justification for impacts proposed are documented. For this reason, our Team completed a preliminary field review of the environmental constraints during this RFP phase. This information has been factored into our design concept to the extent permitted in an effort to reduce these impacts. ***Our review of the site indicated environmental impacts are greater than noted in RFP documents, and the Project will likely require Individual Permits from the USCOE and the VDEQ.***

Permits Anticipated

We have field reviewed the Project alignment and anticipate the Project requires:

- Individual Clean Water Act Sections 404 permit from the USCOE;
- Individual Virginia Water Protection (VWP) permit from the VDEQ;
- Virginia Stormwater Management Program (VSMP) construction general permit;
- NVRPA Surveying permit;
- NVRPA Subsurface investigation permit; and
- NVRPA License for Non-Park Use.

The start and finish dates for these permitting activities are linked to the appropriate design, right-of-way, utility, and construction milestones, and were developed through an iterative process of coordination with each discipline. Our overall schedule and timeframes reflect the individual permit timeframes including any threatened and endangered species time of year restrictions that may be conditions of the permit. For example, we found the Project has the potential to encounter the state threatened Wood Turtle and Green Floater, as well as the federally endangered Northern Long Eared Bat (NLEB). As such, we are prepared to provide project tree clearing outside of the NLEB pup rearing season of June 1 through July 31, as well as conduct any necessary mussel survey and educate our workers on the identification of the Wood Turtle.

Approach to NVRPA Coordination

Our Team has developed an excellent relationship with NVRPA and a thorough understanding of their requirements and concerns. Understanding the complex requirements associated with the federally listed 4(f) and 6(f) resource, we recognize the W&OD crossing as a critical risk to the Project's success. Not only does the crossing of the W&OD Trail have to meet all clearance, open-area, and light-well requirements, but it also must maintain safe clearance from the existing overhead Dominion Virginia Power transmission

power lines. Additionally, in the RFP condition a large portion of the Project drainage flows toward the W&OD Trail property. In our experience, NVRPA has raised concerns regarding additional flows onto their property, as well as the creation of safety hazards adjacent to the Trails. As noted previously, we propose to address this issue by rerouting the existing stormwater management flows under Route 659 through a culvert and away from the W&OD property.

We also recognize that, due to the historic significance of the W&OD Trail, NVRPA frequently establishes trailside markers, benches, rest areas, and other features. On past projects, our Team has participated in these efforts in partnership with NVRPA and it is our intention to do so on this Project as a community service project previously detailed in Section 4.3.1.

Approach to Wetland and Water Impacts

Immediately after NTP we will begin the wetland delineation process to identify the actual limits of jurisdictional wetlands and waters to assist in the design avoidance and minimization of impacts. Our Team typically conducts early permit coordination during the Jurisdictional Determination field review with the regulatory agencies to expedite the permit process when the application is submitted. We have sequenced the application of permits to occur when plans are developed to approximately the 60% complete level.

The existing Project Categorical Exclusion (CE) identified 0.75 acres of wetland impacts. However, preliminary wetland estimates by the Team indicate that impacts could rise as high as 4.0 acres under the RFP design. These preliminary reviews of wetlands included those documented by VDOT, Loudoun Water, and field reviewed by the Team indicates the Project involves impacts on a substantial area of forested wetland between the Chesterton Street and Portsmouth Boulevard intersections. The Team reviewed these constraints and while our current design conforms to the RFP requirements and NEPA commitments, we have made additional efforts to reduce the wetland impacts throughout the Project. Identified opportunities for reduction are:

Identified Opportunity	Benefit
Relocation of sound barrier along the southern portion of the Project	▪ Relocation eliminates the need to replace the sanitary force main ▪ The impact of this utility relocation was not shown in the RFP design
Relocated and reconfigured parking area at W&OD Trail	▪ Reduces wetland and stream impacts in this area by 783 SF of wetland and 177 LF of stream channel versus the RFP design

In addition, our Team has already had preliminary discussions with Loudoun Water regarding agreements for work in and around the adjacent Loudoun water easements in an effort to identify means and methods to reduce temporary and permanent wetland impacts.

Approach to Hazardous Materials

The Team will conduct Phase I Environmental Site Assessments (ESAs) in conformance with ASTM E1527-13 for all right-of-way acquisitions. To minimize the risk of project delays, Phase I ESAs are completed as soon as feasible following NTP from VDOT. This ensures that relevant information is relayed to the design team early in the process in the event that the study finds any Recognized Environmental Conditions (RECs) which can be avoided in design. We conducted a database review of the DEQ and EPA data and found no documented releases within Project limits. Given there are three structures requiring

demolition, our Team will test each structure to determine if they contain asbestos or lead based paint. The findings of the testing will determine if the demolition requires special treatment or disposal, and are included in the submittal of the of the demolition plan to VDOT.

Our Team will also prepare and maintain a Project specific Spill Prevention Control and Countermeasure Plan (SPCC) and provide it to VDOT prior to construction. All hazardous waste, hazardous materials, and solid wastes will be handled by the contractor in accordance with local, state, and federal regulations. Ensuring that materials are properly stored and that wastes such as concrete wash water are properly contained is just part of the team's commitment to environmental excellence.

Approach to Final Design and Construction

Utilizing all the information obtained from our reviews, the environmental staff developed a comprehensive list of environmental commitments shown in the table below. This is used to create an environmental constraints map which details where impact minimization is necessary or where impacts are to be avoided. This information is disseminated to the design, engineering, and construction staff to ensure that avoidance and minimization activities are carried out to the fullest extent possible.

Environmental Resources	Requirements
Categorical Exclusion	▪ Conform with NVRPA 4(f) & 6(f) requirements (see below on W&OD Trail) ▪ 521' of stream impacts – The Team's proposal contains only 453' ▪ 0.75 acres of jurisdictional areas – see wetland/streams below ▪ Coordinate COE and DEQ Permits as required based on final design
EQ-103 Commitments	▪ All precautions taken to limit emissions of VOC, NOx and Particulate Matter (PM2.5) ▪ Open burning and Cutback Asphalt restrictions ▪ Shared use paths & 20-space parking lot constructed at W&OD crossing ▪ W&OD bridge minimum 14.5' clearance over Trail ▪ Comply with NVRPA design guidelines ▪ Phase I Environmental Site Assessment performed on all acquisitions ▪ Noise Barrier construction – openings eliminated which improve function ▪ All correspondence with regulatory agencies provided to VDOT PM
Threatened and Endangered Species	▪ Recent database review notes potential to encounter State Threatened Wood Turtle, Green Floater and Federally Threatened Northern Long Eared Bat. ▪ Conduct worker training on identification of Wood Turtle as per VDGIF and permit requirements ▪ Coordinate with USFWS regarding bat include provision for time of year restriction as required
Noise	▪ Final barrier conditions determined in final design: Conform with VDOT requirements and public commitments. ▪ Team proposed redesign to eliminate gaps in wall to improve performance ▪ Complete final noise analysis
Washington and Old Dominion Trail (W&OD) [4(f) & 6(f)]	▪ Conform to NVRPA requirements for openness and clearance ▪ Bridge constructed with no permanent impact on W&OD right-of-way in compliance with Section 6(f) ▪ Maintain open communication with NVRPA to avoid conflicts and quickly resolve issues or complaints ▪ Maintain a maximum of 0.52 acres of permanent easements including 0.21 acres of drainage easements and 0.31 of aerial easements. ▪ Areas disturbed during construction will be revegetated or stabilized in accordance with the 4(f) determination dated October 28, 2014 and NVRPA approval

Environmental Resources	Requirements
Wetlands/Streams	▪ Potential for wetland impact up to acres. Begin wetland permit process upon NTP ▪ Conduct wetland delineation and obtain Corps Jurisdictional Determination ▪ Stormwater design relocated drainage and designed ponds to minimize impact to existing systems and reduce the overall footprint BMPs while maintaining requirement efficiency. ▪ Evaluate possible avoidance and minimization alternatives ▪ Provide mitigation for unavoidable wetland impacts
Hazardous Materials	▪ Conduct Phase I ESA for all right-of-way acquisitions & Asbestos and Lead Based Paint testing of structure demolitions. ▪ Handle all hazardous waste, solid waste, and hazardous materials in compliance with local, state, and federal regulations ▪ Complete and distribute comprehensive spill prevention, control, and countermeasure (SPCC) plan

Once the design footprint has been established the required permits are obtained. Our staff prepares and submits the Joint Permit Application to obtain the necessary USCOE and DEQ permits. The VSMP permit is obtained following submission of the required LD-445 forms and Phase I ESA reports are completed and submitted in advance of right-of-way plans. Copies of all permits are submitted to VDOT to ensure all team members are aware of the Project status.

Once all permits are received we assure project commitments, permit requirements, and sensitive resources are addressed during construction. This includes preconstruction flagging of the impact limits in the wetland areas as well as on the park property, training construction personnel on the identification of the wood turtle, assuring the construction schedule addresses necessary time of year restrictions and making field adjustments as necessary to comply with regulatory requirements.

4.4.2 Utilities

One of the most critical elements of a complex design-build project is the effective and efficient integration of the utility process into each project discipline. Knowing how much of an impact utilities can have on the project schedule and cost, our Team has expended considerable effort to coordinate with all impacted utility owners during preparation of this Technical Proposal. We carefully studied the RFP Conceptual Plans, reviewed the utilities in the field, discussed the Project extensively with each impacted utility company, researched available records, and developed our Conceptual Plan and Schedule accordingly. This information has directly impacted our Team's concept, proposed sequence of work. By limiting the impact to utility owners, the risk of schedule delays is reduced.

Team Utility Coordination Experience

Our Team has been successfully managing utilities on multiple design-build projects for VDOT and other owners for over 13 years. The key to our success is having the experienced in-house resources, with knowledge of governing bodies' policies and procedures, and established relationships with each utility owner. Our Utility Team is fully engaged throughout the design process coordinating with right-of-way, permitting, construction, and scheduling of all other project disciplines. Our first and highest priority throughout the design and construction phases of the Project is to completely avoid utility impacts. If conflicts cannot be avoided by design, we work diligently with each utility owner 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 new construction. Some of the utility innovations incorporated by our Team are identified in the Table 4.4.1. During construction, our Utility Team remains fully engaged to coordinate relocations between the utility companies and the construction team, ensuring their timely and successful completion.

Table 4.4.1 - Utility Innovations

Utility Strategy	Project Benefit
1. Adjusted Noise Barrier Alignment	Avoids conflict with new sanitary force main, watermain, communications, and gas. Allows for Noise Barrier Construction Early in Project Schedule
2. Decreased Bridge Section	Increases clearance to the Transmission Lines
3. Coordination with DVP Transmission for Grading Around the Towers	Optimizes design with no impact to DVP Transmission
4. Avoidance of OH relocations Over the W&OD Trail	Reduces impact to the W&OD Trail and Project Schedule

Specific Utility Impacts

Our Team has identified multiple unavoidable conflicts with the proposed Project. Listed below is a summary of the known utilities, their potential conflicts, and our mitigation strategy:

Utility/Owner Description	Approximate Location	Known/Potential Conflict	Relocation Plan/ Mitigation Strategy
OVERHEAD POWER/COMMUNICATION LINES			
Dominion Virginia Power Overhead Transmission Lines	Station 119+50	Bridge beam erection at W&OD Trail	De-energize during bridge beam erection
Dominion Virginia Power Distribution Lines	Station 86+50 to 135+00	Road construction	Relocate poles to the west of the proposed shared use path
Dominion Virginia Power Distribution Lines	Station 48+75 to 52+50	Hearford Lane	Relocate west of trail alignment and reconnect to terminal poles
Verizon	Station 117+00 to 135+00	Fill and road widening	Re attach to DVP poles and reconnect to existing OH Verizon
UNDERGROUND POWER/COMMUNICATION LINES			
Dominion Power Distribution (Not identified in the RFP)	Station 50+50 to 69+50	Noise barrier	Adjust in place and reconnect to relocated terminal pole
Comcast	Station 46+50 to 50+50	Proposed road widening and noise barrier	Lift and lay under proposed shared use path and avoid noise barrier
Verizon	Station 50+00 at noise barrier	Noise barrier construction operations	Adjust noise barrier alignment as necessary for avoidance
Verizon (Not identified in the RFP)	Station 50+50 to 69+50	Noise barrier and proposed road grade	Adjust in place as necessary
WATER			
Loudoun Water 30" Water	Station 45+00 to 50+50	Easement being acquired by proposed right-of-way	Relocate into replacement easement
Loudoun Water 20" Water	Station 58+50 to 73+50	Cut for road widening	Relocate onto Loudoun Water property
Loudoun Water 20" Water	Station 84+00 to 127+00	Easement being acquired by proposed right-of-way	Relocate into replacement easement

Utility/Owner Description	Approximate Location	Known/Potential Conflict	Relocation Plan/ Mitigation Strategy
SANITARY SEWER			
Loudoun Water 12" Sanitary Force Main	Station 51+00 to 73+00	Proposed noise barrier and right-of-way	Adjust noise wall alignment to ***eliminate conflict***
GAS			
Washington Gas 2" Plastic (Not identified in the RFP)	Station 124+00	Noise barrier construction operations	Adjust noise barrier alignment as necessary for avoidance
Washington Gas (Not identified in the RFP)	Station 48+00 to 49+00	Noise barrier	Adjust noise barrier to avoid facility at Churchill Downs Drive
Washington Gas 8" Plastic	Station 47+50 to 49+50	Noise barrier	Adjust noise wall to ***eliminate conflict***
Washington Gas 8" Plastic	Station 50+00 to 72+50	Proposed road grade	Relocate into VDOT ROW
Washington Gas 8" Plastic	Station 96+00 to 119+00	Roadway alignment	Relocate out of proposed road
Washington Gas 8" Plastic	Station 120+25 to 126+50	MSE fill	Relocate out of proposed MSE fill

Mitigation Strategies

Our design concept was developed after reviewing the existing facilities and proposed work with each utility owner. Through this coordination, we established the needs for each utility owner, and the impacts our concept has on their systems. In addition to establishing a conceptual plan with each utility owner, ***our Team has located several utilities that were not located as part of the RFP,*** and have begun to coordinate with each discipline to avoid all possible relocations. It is precisely our Team's experience managing these risks that led to the successful completion of every one of our design-build projects for VDOT. This experience provides proven strategies and project-specific concepts that we will implement on the Route 659 Reconstruction Project:

Our Team coordinated with DVP to avoid relocation of the transmission towers at the Church Road overpass.

- First, our Team has decreased the proposed structure depth by optimizing the bridge design thereby ***maximizing the clearance*** to the DVP Transmission lines, while increasing the clearance required over the W&OD Trail. Coordinating with DVP Transmission, our Team will de-energize their lines with no impact to their customers, to ensure safety while performing tasks such as erecting beams;
- Second, our design has been refined to ***limit the number of poles relocated.*** This optimization is most evident at the W&OD Trail, where ***we have eliminated all overhead relocations.*** This minimizes impacts to the Trail and the public, reduces cost and time impacts, and allows our utility design to remain as efficient as possible; and
- Finally, our design concept modifies the alignment of the noise barrier between Hay Road and Chesterton Street. This eliminates the conflict with the new 12" Loudoun Water sanitary force main currently being installed along the northbound lanes of the proposed widening in addition to the existing gas, communications and water facilities. Avoiding these utilities eliminates the need for additional utility easements and impacts to the existing landscaping and berms.

Approach To Utility Coordination

Our Team will follow the VDOT Utility Relocation Policies and Procedures Manual with regard to the utility scope of work. As discussed above, 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 we will perform:

1
- Obtain utility designations
- Review test pit information
- Identify locations of existing easements

2
- Provide feedback to design, permitting and right-of-way managers on potential conflicts
- Develop plans for avoidance of utilities or minimization of utility relocation

3
- Review plans for avoidance or relocations with utility companies
- Coordinate with ROW managers on easements that might be needed to accommodate the relocations

4
- Hold UFI meetings with private utility owners where conflicts exist
- Establish utility relocation plan, budget and schedule
- Incorporate relocations into the Project schedule

5
- Verify each private utility's prior rights
- Prepare UT-9 forms
- Finalize pro-rata share budgets and relocation schedules

6
- Meet with public utilities to finalize avoidance and/or relocation plans
- Incorporate plans into design documents and submit for approval
- Obtain necessary right-of-way (easements) for the utility relocations

7
- Incorporate approved utility relocation plans into the construction schedule
- Identify utility relocation activities which fall on the critical path
- Evaluate resources needed to accomplish critical relocations

8
- Proceed with utility relocations
- Take immediate action on unforeseen utility conflicts
- Maintain team approach to achieve quick resolution on unforeseen conditions and other field issues

Schedule and Mitigation of Delays

There are multiple utilities identified by our Team that are critical to our ability to meet our Proposal Schedule. These conflicts can have a significant impact on the Project success if they are not properly incorporated into the sequence of work. During the RFP phase, our Team coordinated with each discipline to develop phasing for each utility relocation, as detailed in Section 4.7 of this Proposal. We held multiple discussions with each utility owner, and utilized historical data developed from our past experience with these utilities. Listed below are utilities that are critical to our Project Schedule:

Strategy to Mitigate Delays Due To Utility Relocations

- Early Coordination
- Assistance in preparation of Utility Design
- Use of "Common Duct Bank" Where Possible
- Assist in Construction of Relocation
- Performing "In Place" Relocations

Phase One

- ***DVP -*** We have started coordinating with DVP Distribution to discuss temporary relocations of their facilities, and will phase their relocations to allow them to begin work concurrent with the acquisition of right-of-way. This allows DVP Distribution to begin relocations that are in conflict with the construction of the northbound bridge early, in order to minimize the risk of delay;
- ***Loudoun Water -*** Our concept has been developed to relocate the impacted waterline, concurrent with Phase 1 roadway construction. This reduces the risk of schedule impacts during the coordination of Loudoun Water's requested betterment; and
- ***Loudoun Water -*** Our Team's concept to revise the noise barrier alignment, between Hay Road and Chesterton Street, eliminates the conflict with Loudoun Water's new sanitary force main. This allows for noise barrier construction to be completed with minimal risk of delay to the Project.

Phase Two

- Most critical relocations will be completed in Phase 1; however, our Team's Phase 2 schedule includes completion of Loudoun Water's 20" waterline, DVP Distribution's overhead power, and Washington Gas's 8" plastic. These relocations will begin after the necessary right-of-way has been acquired.

4.4.3 Geotechnical

From the outset of the release of the RFP, our Team has established weekly meetings to discuss project constraints, identify challenges, and develop unique concepts which provide a benefit to the end users during construction, following completion, or both. While the geotechnical scope of work doesn't introduce a major challenge to the Project, our Team has made adjustments based on our past history working in the immediate vicinity, and our field investigations of the Project site itself. Construction has the potential to encounter excessively hard rock, rock outcroppings, and rock within close proximity to the existing ground. Consideration of these conditions led to adjustments to the profile, as discussed in Section 4.3.1, and to our selection of the bridge structure foundation described in Section 4.3.2.

Large diabase boulders are a product of the weathering within the Culpeper basin and within the limits of the Project.

The Project itself is located within the Culpeper Basin, which lies near the western edge of the Piedmont Physiographic Province. This basin is generally characterized by sedimentary rocks such as siltstone, sandstone, and shale, which at some locations was intruded by diabase creating metamorphosed hornfels. Diabase intrusions and hornfels have both been identified within the limits of the Project. These rocks are generally known to have highly variable differential weathering due to the varying persistence of the fractures. One of the products of this differential weathering is diabase boulders. These boulders are very common in the area and can dramatically change in size. Well-graded sand to clayey sand and highly plastic clay are also products of weathering of these types of rocks and are expected to be encountered to varying extents within the Project limits.

4.4 **Project Approach**

GeoConcepts' experience working within the Culpeper Basin and immediate vicinity of the Project provides the knowledge necessary to ensure that appropriate geotechnical solutions and cost-effective recommendations are developed as sequenced below:

Step 1 has already been completed. We thoroughly reviewed the RFP documents, including the subsurface exploration logs and laboratory tests, and completed multiple visits to the Project site. This analysis helped our Team develop an understanding of the soil and bedrock conditions anticipated within the Project limits, leading us to adjust the profile of Route 659, to reduce rock excavations and eliminate deep storm drainage runs associated with intermediate low points and sump inlet placement along the corridor.

Step 2 has been initiated, and based on our preliminary roadway, bridge, and drainage layout, we have developed a comprehensive geotechnical boring layout which meets the requirements of the VDOT Materials Manual of Instructions (MOI). Our boring layout takes into account previously completed borings, accounts for the enhancements introduced by our Team, and goes the "extra step" to identify locations for in-situ tests and geophysical tests in order to provide a higher level of detail in estimating the physical characteristics of the soils and bedrock. It is during this stage that potential geotechnical risks are mitigated through additional geotechnical borings and testing. While there are no major existing structures, slopes or foundations within the limits of the Project, there are potential risks associated with subsurface materials that may be encountered on-site. The potential risks expected are identified below, along with modifications or mitigation strategies that our Team has or will incorporate as necessary:

Issue	Potential Risk	Modifications & Mitigation
Corrosive Soils	▪ Slightly acidic to very strongly acidic soils have been identified within project limits. ▪ Potential concrete corrosion is rated as "moderate" ▪ Corrosion to steel is rated as "highly corrosive" ▪ May require larger pile sizes ▪ May limit the use of specific drainage and structure materials	▪ Profile has been revised to avoid rock excavation ▪ Drainage systems have been improved to avoid deep structures and piping of flow against the natural drainage patterns ▪ Intersection profiles have been improved to avoid excavation within the limits of existing intersections
Rock Excavation	▪ Require short-term stoppages of traffic to allow for blasting ▪ May result in additional construction noise associated with hoe-ramming or blasting ▪ Increases construction durations to allow for rock excavation and removal	▪ Profile has been revised to avoid rock excavation ▪ Drainage systems have been improved to avoid deep structures and piping of flow against the natural drainage patterns ▪ Intersection profiles have been improved to avoid excavation within the limits of existing intersections

Issue	Potential Risk	Modifications & Mitigation
Noise Barrier Installation	▪ No geotechnical borings have been completed in the vicinity of the proposed noise barriers ▪ A new sanitary sewer force main is being installed in close proximity to the proposed noise barriers	▪ Noise barrier borings will be completed early in the investigation phase to identify depth to rock ▪ Noise barrier alignment has been revised to avoid impacts to sanitary sewer force main and allow for potential use of spread footings
Differential Settlement of Bridge Abutments and Wingwalls	▪ Different excavation methods may be required to account for variations in weathering of material ▪ Removal of unfractured rock could result in schedule impacts	▪ Additional borings and non-invasive geophysical test methods will be completed to develop a more accurate representation of subsurface geology ▪ Types of bridge foundation and elevations will be established to limit excavation of material ▪ Select foundation types for the bridge and wingwalls which will limit differential settlement

Step 3 Comprehensive laboratory testing will be completed on the collected samples, and testing priority will be developed to ensure that critical early recommendations, such as those needed for bridge foundation designs, are completed first. Testing verifies whether the risks identified above are real or perceived, and determines if additional field exploration is necessary, or if different testing methods are appropriate.

Step 4 will finalize the boring and testing phase through development of a detailed Geotechnical Data Report and recommendations for embankments, soils, pavements, drainage structures, and foundations. Information provided is incorporated into the plans to identify locations and limits of potentially unsuitable materials, pipe bedding requirements, bearing capacities for walls and structures, and to determine whether or not clay liners are required for the stormwater management basins.

Step 5 is considered by our Team to be crucial to the successful completion of the Project. GeoConcepts' project manager remains engaged with the construction staff and materials testing staff to ensure recommendations are properly incorporated, and to facilitate quick field adjustments as needed should different site conditions arise. The close proximity of each of our Team member's offices to the Project site ensures that immediate response is possible to any question or challenge which could arise during construction.

4.4.4 Quality Assurance/Quality Control (QA/QC)

Our Team will deliver a superior quality project that minimizes VDOT's effort. Over the past 13 years we have continuously refined our QA/QC approach resulting in a reduction of VDOT staffing and oversight.

The culmination of our QA/QC experience rests in our QA/QC Plan which will be submitted to VDOT. Our QA/QC Plan addresses both design and construction and defines the organization, work processes, and systems necessary to provide assurance and evidence that the Project is another quality undertaking successfully delivered by our Team. Our QA/QC Plan is in accordance with VDOT's *Minimum Requirements for Quality Assurance and Quality Control on Design Build and Public-Private Transportation Act Projects (January 2012)* and establishes criteria for quality control, quality assurance, owners independent assurance, verification and oversight duties for all personnel.

Design QA/QC Approach

Our approach to design QA/QC includes implementing multiple processes with various QA/QC personnel throughout the duration of the Project. This ensures that appropriate quality standards are included in the plans and other design documents, suitable materials are selected, and work is constructed in a safe manner. Our design QA/QC process is well-structured, easily audited and is continually maintained to minimize VDOT's efforts.

Our Team implements design QA/QC by adhering to the approved QA/QC Plan, conducting design reviews, completing interdisciplinary coordination, performing constructability reviews, involving VDOT in the overall design review process, and ensuring that all field changes follow the same process as original design. A brief discussion of these activities is provided below.

Design QA/QC Plan

As the Design Manager, Steve Kuntz implements and manages the overall design QA/QC program (a subset of our QA/QC Plan) which identifies design quality assurance and quality control requirements. The design QA/QC program establishes the following:

- Procedures for preparing and checking all drawings, specifications, and other design submittals to ensure that they are independently checked by experienced and qualified personnel, including procedures to correct errors and deficiencies prior to submission;
- Processes to ensure drawings, plans, specifications, and other design submittals are stamped, signed, and dated by the responsible Professional Engineer licensed by the Commonwealth of Virginia;
- Actions to ensure that the level, frequency, and methods for review of design, including independent review are in compliance with VDOT's functional requirements for the Project;
- Procedures for coordinating work performed by different persons in the same or different area, fabrication shops, casting yards, and other pertinent fabrication facilities at remote locations, or in related tasks to ensure that conflicts, omission, or misalignments do not occur;
- Procedures for identifying elements of design that require special construction QA/QC attention or emphasis;
- Identification by firm, discipline, name, qualification, duty, responsibility, and authority for all personnel and/or entities responsible for design QA/QC, including sub-consultants; and
- Establishment of design QA/QC functions, including scheduled activities for design QA/QC, identifying the drawings, specifications, and other design submittals that will be submitted to VDOT.

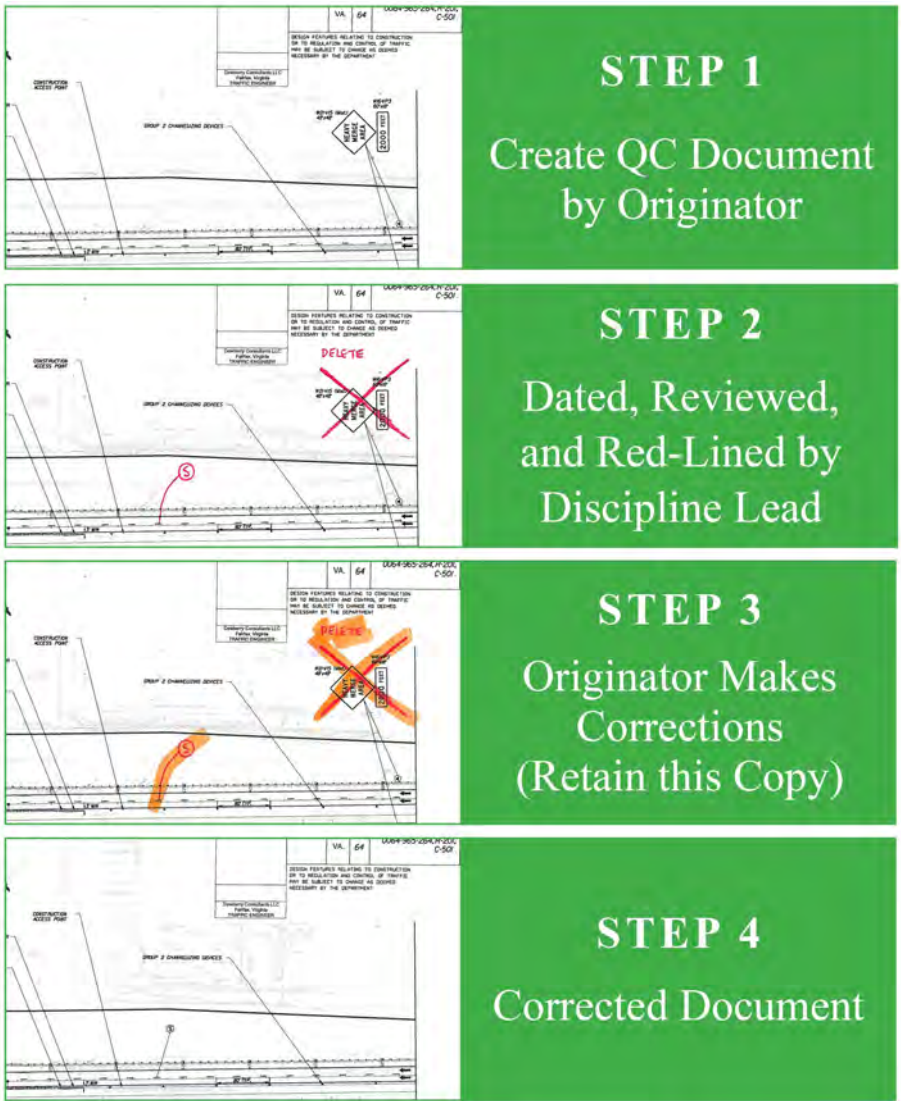
Steve verifies conformance with the QA/QC Plan using informal observations or by conducting audits of the checking and review processes established within the QA/QC Plan. Documents identified as "Released for Construction" are accompanied by written notification from Steve certifying that the documents were reviewed in accordance with the QA/QC Plan.

Design Review

Design quality control includes review of drawings, engineering computations, and other design related documents for technical accuracy, conformance to Contract requirements, as well as form, content, and spelling. Design quality assurance evaluates whether the designers assessed problems appropriately, applied correct analyses, and assigned qualified personnel to tasks when conducting design related activities.

Design quality control functions are provided by design discipline leads checking completed work and are carried out to a level commensurate with the complexity of the design element. This effort is managed by the Design Manager who ensures formal and documented reviews occur at pre-determined times for submitted design documents as identified within the QA/QC Plan.

The process of checking deliverable documents first involves the creation of the QC Document (a copy of the deliverable) by the Originator (designer, writer, etc.). The QC Document is then dated, reviewed, and "red-lined" as appropriate by the design discipline leads who then return the QC Document to the Originator. The Originator "highlights" the "red-line" comments on the QC Document once the correction has been made or discusses the comments with the discipline leader for final determination, making note of final resolution. The Originator keeps the QC Document for record purposes and as evidence of performing design quality reviews in accordance with the QA/QC Plan. The Design Quality Assurance Supervisor ensures that design activities adhere to this process and records of reviews are kept.



He also performs design quality assurance reviews throughout the duration of the Project as set forth in the QA/QC Plan. He ensures and verifies that required quality control functions were performed properly, and in conjunction with the Design Manager, and directs the correction of nonconforming design practices. He ensures design standards, methods, and requirements of the Project are met, professional engineering judgment was applied correctly, and appropriate degree of care was utilized.

Interdisciplinary Coordination

Coordination between disciplines is critical to the success of the Project, not just during design, but also during right-of-way acquisition, utility relocation, and construction phases. Interaction between all discipline leaders through all phases ensures that project elements are properly coordinated, and schedule

impacts and conflicts are avoided from the outset. During design, weekly meetings are held so details can be discussed and coordinated with the multiple design discipline leaders including roadway, structural, hydraulics, and traffic engineers. Additionally, environmental permitting, utility relocation, right-of-way acquisition, and construction staff are involved to ensure design progresses in a manner which considers long lead items (such as environmental permits or structural steel orders), is compliant with environmental regulations (including consideration and documentation of avoidance and minimization strategies), and matches the required phasing for completion of the Project (such as advancing right-of-way or utility relocation plans on critical properties). Potential conflicts or challenges are recognized and discussed at these meetings, and the entire project team is able to efficiently identify alternate solutions. Coordination between disciplines continues beyond the design phase, ensuring that unforeseen situations which may arise are addressed as efficiently and collectively throughout the duration of the Project.

Constructability Review

Throughout our Team's history of working on VDOT design-build projects, we have found that regular, informal, over-the-shoulder type reviews from construction personnel work best to produce quality designs. These types of reviews are conducted at weekly internal progress meetings where the Design Manager (and the discipline leads as appropriate) present roll plots and/or developed plans to the construction personnel who are building particular pieces of the Project. Immediate feedback regarding the design is provided and appropriate adjustments are discussed so that unnecessarily difficult, unsafe, or out of schedule construction is avoided. Conversely, explanations regarding design requirements are conveyed to construction personnel, ultimately resulting in a greater overall understanding of project requirements. This type of on-the-spot review regularly occurs within our design offices between discipline leads and construction personnel, as is typical of all of our VDOT design-build work.

In addition to informal constructability reviews, the Design Manager and Design-Build Project Manager coordinates formal reviews of the design by construction personnel prior to each plan submission. Comments regarding the constructability of the design is provided to the Design Manager for incorporation and/or further discussion prior to completing each design phase.

Quality Assurance and Quality Control of Design and Field Changes

Design changes, including field adjustments, will adhere to the requirements of the QA/QC Plan, commensurate with those applied to the original design. The Design Manager ensures that QA and QC reviews of changes after plan approval occur throughout the duration of the Project. Each change is submitted to VDOT for concurrence prior to implementation in the field.

QA/QC Staffing Plan

The personnel selected as our QA/QC Team provides VDOT with unparalleled experience and understanding of the quality processes and coordination needed to successfully deliver the Project. Our design and construction staff have worked together and for VDOT over many years and is responsible for assembling and overseeing our QA/QC Plan. A description of our QA/QC staff and duties is listed in the table on the following page:

4.4 **Project Approach**

Design-Build Project Manager
As Design-Build Project Manager, ***Jeff Austin, PE, DBIA,*** provides supervision and administrative management of the entire project including the overall design and construction and reports at the executive level. He establishes the QA/QC program and adjusts the process as needed to assure quality of design and construction. He is a Professional Engineer licensed by the Commonwealth of Virginia and is certified as a Design-Build Professional by the Design-Build Institute of America. He has served as the Design-Build Project Manager on 11 of our Team's design-build projects with VDOT, including three that involved grade-separated crossings of the W&OD Trail.
Quality Assurance Manager
Kaushik Vyas, PE, is the Quality Assurance Manager and is responsible for the development of and adherence to the QA/QC Plan, ensuring all work and materials as well as testing and sampling is performed in accordance with the Contract and approved construction plans and specifications. Prior to the start of each work activity, he identifies the quality assurance testing technician(s) and respective tests to be performed. He is from an independent firm and does not report to construction forces or is involved with any construction operations for the Project. He is a Professional Engineer licensed by the Commonwealth of Virginia and reports to the Design-Build Project Manager and other appropriate persons at the executive level. He has full authority to initiate work stoppage and is able to recommend to VDOT withholding payment for design and/or construction activities that are not acceptable - this authority will be made in writing.
Quality Assurance Testing and Inspection Technicians
Quinn Consulting Services, Inc. provides a full-time Lead Quality Assurance Inspector supplemented by additional inspectors to ensure quality assurance testing and inspections of work items is performed, QC inspections are observed, and correction of non-conformities are completed in accordance with the Contract documents. The Lead QA inspector reports directly to our Quality Assurance Manager. Additional QA inspectors and testing technicians report to the Lead QA Inspector. All inspectors and technicians hold current VDOT materials certifications for the types of testing and/or inspections they are assigned to perform including, but not limited to asphalt concrete, hydraulic cement concrete, soils and aggregate, pavement markings, nuclear safety, E&S inspector, work area protection, and others. ***DIW Group, Inc.*** performs QA laboratory testing for the Project. DIW Group is a AMRL and CCRL certified laboratory and is independent from QC laboratory testing on the Project.
Design Manager
Steve Kuntz, PE, DBIA, directs and coordinates the design process including work by sub consultants and is accountable for the design QA/QC Plan. He is responsible for implementing, monitoring, and as necessary adjusting the Design QA/QC Plan to ensure acceptable quality of the design work. Steve reports to the Design-Build Project Manager and communicates with the QA Manager on QA/QC related matters. He is a Professional Engineer licensed by the Commonwealth of Virginia, sealing all final roadway related plans.
Design Quality Assurance Supervisor
Jeremy Beck, PE, is responsible for quality assurance of design elements included in the Project. Following completion of quality control reviews he performs a complete QA review of all design documents prior to submission to VDOT. These reviews will evaluate and confirm that Design QC reviews were completed with all comments appropriately addressed and whether the discipline leads assessed design problems appropriately, applied the correct analysis, and assigned qualified personnel to the tasks. Jeremy will report to the Design-Build Design Manager on design QA related matters. He is a Professional Engineer licensed in the Commonwealth of Virginia.
Independent Design QC Reviewers
Independent Design QC Reviewers performs the design QC function on each design element. The Design QC reviews are completed by qualified indepsnedent reviews who will not have a direct role in the design development or the QA review function. Design QC reviewwers are assigned by and report to the Design Manager, who ensures that each reviewer has the necessary knowledge of the Project and qualifications to effectively review the design package.
Construction Manager
Ricky Meyer, is the Construction Manager and is accountable for day-to-day construction operations, the construction portion of the QA/QC Plan, and for ensuring construction is in accordance with the project requirements. He will be on the Project site for the duration of construction operations, reports to the Design-Build Project Manager, and communicates with the Quality Control Manager to ascertain the necessary quality control testing technicians prior to the start of work packages. Ricky implements, monitors, and adjusts (as necessary) the construction processes to assure quality of construction.

Construction Quality Control Manager
Shawn Ball, PE, is responsible for construction quality control and oversees construction quality control testing and inspection operations. He reports to the Construction Manager and will assign and manage the lead QC Inspectors on the Project. Shawn is a Professional Engineer licensed by the Commonwealth of Virginia.
Construction Quality Control Inspections and Testing
Together, ***Dewberry Consultants LLC & GeoConcepts Engineering*** are responsible for quality control testing and inspection of construction for conformance with the QA/QC Plan and project related documentation. They will report to the Construction Manager through Shawn Ball, PE and will perform QC inspections and field testing of all construction elements. They will possess current VDOT materials certifications for the types of testing and/or inspections they are assigned to complete including, but not limited to asphalt concrete, hydraulic cement concrete, soils and aggregate, pavement markings, nuclear safety, E&S, work area protection, and others. The project staffing plan includes a full-time lead roadway inspector and a full-time lead bridge inspector for the duration of bridge construction. The lead inspectors will be from Dewberry and will be supplemented by additional Dewberry inspectors and testing technicians from GeoConcepts as necessary to ensure QC inspection and testing coverage for all work elements. Additionally, GeoConcepts will provide the independent AMRL and CCRL certified QC Laboratory to perform all QC laboratory tests.

Design QA/QC Procedure for One Unique Project Element

A unique design element our Team considers critical centers around the vertical clearances associated with the Route 659 overpass of the W&OD Trail. Multiple project elements will govern the final vertical clearances provided by our design including the geometry and alignment of Route 659, the overall layout and design of the bridge, NVRPA requirements, Section 4(f) and 6(f) compliance, maintenance of traffic for vehicles and pedestrians, right-of-way and utility impacts and relocation considerations, as well as aesthetics, drainage, and stormwater management requirements.

The following Design QA/QC procedure is implemented for this important design element which is predicated on the QA/QC narrative provided in the preceding sections:

- The horizontal and vertical alignment of Route 659, the W&OD Trail elements below, as well as other items critical to the overpass will be established by the Roadway Design Engineers under the direction of the Roadway Design Lead. The roadway design will be created with NVRPA criteria in mind and will draw upon our experience with recent roadway crossings of the W&OD Trail as well as our efforts conducted as part of this proposal. The Design Manager ensures that other necessary disciplines such as structures, utilities, environmental, right-of-way, and construction provide guidance to the Roadway Design Engineers;
- The Roadway Design Lead completes a formal QC check of the resulting roadway design that was developed by the design engineers. This includes clearance checks between the bridge deck and the overhead power lines as well as clearance checks between the low chord of the bridge superstructure and W&OD Trail. This includes a calculation and check of the Elevation Open Area;
- The verified roadway design is coordinated with Structural Engineers who establishes the overall bridge layout including the abutments, wingwalls, and superstructure considering the desired vertical clearance. This occurs in complete coordination with the appropriate construction personnel so material procurement, construction phasing, and schedule items are fully considered early in the design process;
- The Structural Design Lead completes a formal QC check of the bridge design developed by the structural engineers and checks vertical clearances as well as the Elevation Open Area;

- Following completion of the QC reviews and corrections, the Design Quality Assurance Manager completes this QA review and ensures that our design meets or exceeds the minimum vertical clearances making certain that appropriate degree of care is utilized;
- The Design Manager guides the overall design and presents and discusses the advancement of the overpass elements (particularly the vertical clearances) at weekly progress meetings where management staff participate in vetting and guiding the developing design; and
- He ensures that interdisciplinary coordination is conducted to resolve conflicts and ensures the vertical clearances satisfy utility, right-of-way, and environmental requirements, especially verifying Section 4(f) and 6(f) compliance.

Description of Construction QA/QC Procedures

Our 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 follows 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 reports directly to the Design-Build Project Manager and has 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. The QAM oversees and directs the personnel responsible for performing QA inspections and testing of all materials used and work performed on the Project. He has personnel representing the QA Team that reports directly to him and are not part of the QC Team.

All QA inspection staff complete daily reports and QA Independent Assurance (QA IA) and verification sampling and testing (QA VST) reports of all quality assurance inspections. The QAM compares 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 determines and certifies 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 ensures 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 organizes, tracks and disseminates all Construction QA and QC information. The records present a factual representation of the work performed by the Design-Builder on the Project and allows a determination by the QAM and VDOT that all work was completed and tested in accordance with the plans and specifications. All documentation is 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 audits the testing and inspection records each month prior to certifying the monthly payment application.

Construction Quality Control

The Construction Quality Control Manager (QCM), Shawn Ball, PE, with Dewberry Consultants LLC, manages the day-to-day QC inspections and material testing of the construction as directed by the Construction Manager and reports directly to the Construction Manager. The QCM and the QC Team is 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.

All QC staff actively inspecting and/or testing segments of work complete an Inspector Daily Report (IDR). The IDR's are electronic dairies in accordance with VDOT's Construction Division Memorandum CD-2000-14 and include, as an attachment, copies of all QC materials tests completed for the day's activities. Signed hard copies of the IDR's are submitted to the QCM on a daily basis for review and approval. The QCM completes an electronic Daily General Report, which summarizes the work covered by the IDR's. Copies of all signed Daily General Reports, IDR's, and test reports are then forwarded to the Construction Manager, QA Manager and others on the design-build team for use and review while the original documents are placed in three-ring binders, by project and month and maintained as part of the permanent QC records. All binders are stored in fireproof storage cabinets at the Project site and are available for audit by the QAM and VDOT at any time. A weekly report is produced by the QCM that contains summaries of tests, materials placed, actions taken for failing materials, NCR's, safety, inspection, environmental and schedule challenges.

Construction QA/QC Procedure For One Unique Project Element

A key construction issue on the Project will be the safe and high quality construction of the foundations of the bridges over the existing W&OD Trail. The bridge foundations will be constructed on steel H piles that are pre-bored into sound rock that meets the minimum bearing capacity and pile tip elevation as recommended in the project geotechnical report and shown in the plans. The construction QA and QC procedures start with the Preparatory Inspection Meeting (PIM). The PIM is run by the QA Manager and attended by the QC Manager, QA and QC inspectors, the Construction Manager, Safety Manager, applicable subcontractors, and VDOT personnel, as recommended by VDOT's Construction Manager. During the PIM the QA Manager discusses the following work features and inspections with input from the Construction Team and VDOT:

- The Construction Manager describes the plan to complete the work including means and methods and identifies the subcontractor responsible for drilling and structural crews that will set piles and pour concrete to fill holes around the piles;
- The QA Manager lists all of the contract documents that cover the planned work, including bridge plans by sheet number, specification numbers, hands out copies of relevant special provisions, and the appropriate inspection checklist from the QA/QC Plan;
- The QA Manager verifies approval of subcontractors and materials. Documentation that the sublet request from for the drilling subcontractor has been approved by VDOT is confirmed. The QA Manager reviews the source of materials for the piles and concrete and confirms they were submitted and method of approval has been provided to inspection staff;
- The QA Manager discusses any necessary permits and confirms that they have been acquired. For this activity the VPDES permit is required for the land disturbing activity including the drilling and placement of material excavated from the holes. The Team discusses the required E&S controls to ensure they are in place prior to commencement of the drilling;
- The Team discusses the constructability, safety of workers, and public safety considerations including the proximity of equipment and operations to the traveling public on both the roadway and the Trail. The QA Manager documents special safety considerations in the PIM minutes for further assessment during construction;
- The QA Manager reviews the inspection checklist and provides a list of required tests and frequency of testing. The QA and QC Managers identify the QA and QC staff responsible for the inspections and testing and any required inspections by either members of the Design Team or design-build team members other than QA or QC. For the pile activity the QA Manager identifies the planned inspection by the geotechnical engineer to confirm the bearing capacity of the rock at the pile tip elevation and confirm that the conditions encountered during construction match those anticipated by the Geotechnical report for this activity;
- Finally, the QA Manager identifies any witness and/or hold points, including a witness point for VDOT to observe and participate in the inspection by the geotechnical engineer; and
- Following the PIM, the QA Manager distributes minutes of the meeting that document the meeting discussions and include relevant inspection requirements that will be referred to by the QA and QC inspectors during construction.

Once construction starts in the field, the QA and QC inspection staff utilizes the PIM minutes and Load Bearing Pile Inspection Checklist to ensure all inspections are completed and documented in the Daily Report. Prior to the start of physical construction, the QC inspector verifies and documents the following:

- The sublet request for the drilling subcontractor is approved and the certificate of insurance is up-to-date and on file;
- Piling materials are the correct size and appropriate length according to the plan. Delivery tickets and certifications for the materials are in accordance with the approved source of materials and meet the specifications and special provisions;
- E&S Controls are installed around the work area in accordance with the approved E&S Plans and in compliance with the VPDES Permit;
- Equipment positioning and material staging is in accordance with the PIM discussions and site safety review confirms that site conditions are consistent with the plan of operations and worker and public safety protections are in place; and

- Survey controls and pile layout matches the proposed pile layout in the bridge plan.

Once the pile drilling, setting of piles and pouring concrete begins, the QC inspections continue for verification and documentation of the following:

- During drilling the QC inspector verifies the hole is positioned per stakeout, drill rig is properly aligned to match the planned vertical alignment of the piles, documents the occurrence of ground water, verifies when the drilling has reached the required tip elevation, and coordinates with GeoConcepts to have the geotechnical engineer inspect the foundation material at the tip elevation;
- Prior to setting the piles the QC inspector confirms hole is properly cleaned out and any excess ground water is pumped out into a suitable dewatering basin;
- As the piles are set, the QC inspector verifies placement in accordance with the stakeout, vertical alignment to match the plan, and pile support devices are in place and stable to ensure that piles do not shift during concrete pour;
- Prior to pouring concrete the QC inspector tests every load of concrete for temperature, air content, slump, and unit weight. One set of concrete cylinders is taken for every 100 yards poured for verification of the compressive strength; and
- Following the pour, the QC inspector verifies concrete curing materials are in place and secure and final cleanup of the site is completed leaving the area in a safe condition for workers and the public.

Following completion of all piles at a given foundation element are completed, the QC Inspector completes a center of gravity calculation for the piles. This calculation is reviewed and approved by the Design Manager prior to pouring concrete foundation above the piles.

During the process, the QA inspector performs periodic joint inspections of all operations. The QA inspector is present for the geotechnical engineer's inspections and performs QA IA and QA VST tests of concrete at rates exceeding the frequency described in the QA/QC Plan. The Lead QA Inspector coordinates with VDOT to ensure that Owner IA and Owner VST tests are completed and compares results of all levels of tests to confirm consistent results. The QA inspections, tests, and comparison results are documented in the QA Inspectors daily report.

4.5 - Construction of the Project

4.5 Construction of the Project

4.5.1 Sequence of Construction

Throughout development of our Technical Proposal, our Team focused on means and methods to finish critical stages of work quickly and efficiently. Key elements of our Team's collaborative process included optimizing the sequence of work to achieve the goals of:

- Early completion of critical project elements;
- Ensuring the safety of the public and workers;
- Maintaining mobility;
- Proactive stakeholder coordination; and
- Minimizing impacts to the public.

The result of our Team's efforts is early completion of all of the RFP's milestones plus the commitment to a unique interim milestone as follows:

- ***Shirley's Unique Milestone -*** Remove At-Grade Crossing of the W&OD Trail by October 31, 2017 **(PROPOSED AS A CONTRACTUAL MILESTONE)**
- ***Interim Milestone (RFP) -*** Substantial Completion by November 21, 2018 **(1 MONTH EARLY)**
- ***Final Completion (RFP) -*** by December 31, 2018 **(4 MONTHS EARLY)**

Our Team's Proposal Schedule, presented in Section 4.7, has been developed with input from all Project disciplines including design and engineering, permitting, utilities, right-of-way, QA/QC, and construction. We planned for and incorporated numerous enhancements to exceed the above objectives, including:

Enhancements	Benefits
Installation of a "Hawk" temporary signal at the at-grade crossing of the W&OD Trail at the start of construction.	▪ Improve safety for pedestrians and bicyclists
Adjusted noise barrier locations to avoid sanitary sewer force main.	▪ Allows noise barriers to be constructed early in the schedule; avoids cost to relocate sanitary sewer.
Optimized the design of the twin bridges by shortening the span.	▪ Reduces construction duration and VDOT's long-term maintenance cost
Completed aerial surveys during the RFP stage at-risk.	▪ Avoids delays waiting on leaves to fall after Award, and increases accuracy of the data.
Eliminated ROW acquisitions from four parcels.	▪ Reduces project costs ▪ Minimizes risk of schedule delays
Identified wetland and stream impacts along the entire alignment in the RFP phase.	▪ Avoided numerous impacts through efficient design
Exceeded the "open-area" and lightwell requirements of the NVRPA guidelines.	▪ Ensures expedited approval of the Trail crossing
Construction of the new parking lot for the W&OD Trail as soon as permits are obtained.	▪ Removes dangerous existing parking condition early in schedule ▪ Removes conflict with bridge construction
Initiating design activities at our risk upon receipt of Notice of Intent to Award.	▪ Minimizes risk of schedule delays

Enhancements	Benefits
Adjusted design profiles.	▪ Allows majority of work to occur outside of existing travel lanes, minimizing lane closures and flagging operations ▪ Reduces rock excavation ▪ Improves drainage configurations ▪ Maximizes clearance for the W&OD Trail and utilities ▪ Minimizes risk of schedule delays
Scheduled majority of work to occur in daytime hours.	▪ Minimizes residential impacts
Planned for temporary utility relocations at critical areas.	▪ Allows work to commence earlier in the schedule ▪ Minimizes risk of schedule delays

To organize these enhancements into a cohesive approach that focuses the Team on early completion, meeting milestones, and avoiding the risk of delays, we have organized the Project Schedule into the following general Phases:

1. **Phase 1 - Pre-Construction**
   A. Design
   B. Right-of-Way
   C. Public Involvement
   D. Utility Relocations
   E. Permitting
2. **Phase II - Construction**
   A. ***Stage 1:*** Construction of the new northbound bridge crossing of the W&OD Trail and the approach roadway from approximate Station 113+00 to Gloucester Parkway; removal of the at-grade crossing of the Trail **(Shirley's Unique Milestone);**
   B. ***Stage 1B:*** Construction of the remaining sections of the new northbound lanes from the southern Project limits to approximate Station 113+00;
   C. ***Stage 2A:*** Starting immediately after the completion of Stage 1A, construction of the proposed southbound bridge over the W&OD Trail and the approach roadway;
   D. ***Stage 2B:*** Construction of the remaining 2 southbound lanes;
   E. ***Stage 3:*** Construction of remaining median work, final paving and striping, and opening the roadway to final configuration **(Interim Milestone)**; final inspections, punchlist, and closeout **(Final Completion).**

Our Team's overall sequence of construction is shown on Sheet 1J of our Volume II Design Concept, Section 4.7 Proposal Schedule, and narratively below:

STAGE 1A

1. Mobilization to the Project site including flagging of sensitive areas, installation of construction signing, construction entrances, survey and layout, E&S controls, establishing initial staging and storage areas, and installation of traffic control devices.
2. Installation of the "Hawk" (see page 47 for details) temporary signal at the existing at-grade crossing of the W&OD Trail.
3. Relocation of the temporary parking lot at the W&OD Trail.
4. Temporary relocation of overhead power lines in conflict with the bridge.

5. Construct new northbound bridge over the W&OD Trail including permanent and temporary retaining walls.
6. Construct stormwater management ponds 5 and 6.
7. Construct roadway approaches to the northbound bridge from approximate Stations 113+00 to Gloucester Parkway (2-lanes).
8. Construct the new W&OD Trail parking lot and access.
9. Switch the existing 2-lanes of traffic to the newly constructed 2-lane approach roadway and bridge over the Trail **(Shirley's Unique Milestone).**

STAGE 1B

1. Construction of noise barriers at the south end of the Project.
2. Permanent utility relocations.
3. Begin construction of proposed waterline.
4. Roadway construction of the proposed lanes (including all earthwork, storm sewer, pavement section, shared use paths) in the following areas:
   a. Northbound from Hay Road approximate Station 73+00 (2-lanes)
   b. Northbound and southbound from approximate Stations 73+00 to 82+00 (4-lanes)
   c. Northbound from approximate Stations 82+00 to 99+00 (2-lanes)
   d. Southbound from approximate Stations 99+00 to 113+00 (2-lanes)
5. Install temporary pavement crossovers as needed between the above roadway sections.
6. Open balance of Stage 1B roadway sections (2-lanes).

STAGE 2A

1. After traffic is switched, adjust traffic control devices as needed and remove "Hawk" signal.
2. Continue with remaining utility relocations and waterline.
3. Construct new southbound bridge over the W&OD Trail, including retaining walls.
4. Construct roadway approaches to the southbound bridge from approximate Station 113+00 to Gloucester Parkway.

STAGE 2B

1. Roadway construction of the proposed lanes (including all earthwork, storm sewer, pavement section, shared use paths) in the following areas:
   a. Northbound from approximate Stations 113+00 to 99+00 (2-lanes)
   b. Southbound from approximate Stations 99+00 to 82+00 (2-lanes)
   c. Southbound from approximate Stations 73+00 to Hay Road (2-lanes)

STAGE 3

1. Switch 1-lane of traffic to the newly constructed southbound portion of the roadway and bridge over the W&OD Trail. Each lane will be in the outer-most travel lane.
2. Remove the temporary cross-overs installed in Stage 1 and complete any remaining median construction activities.
3. Complete surface asphalt and permanent pavement markings for all 4 travel lanes.
4. Open roadway in final configuration **(Interim Milestone).**
5. Perform inspections and punchlist.

6. Project administrative closeout activities.
7. **Final Completion.**

Safety & Operations

This proposed sequence of construction provides multiple safety and mobility enhancements for the traveling public. Along the corridor, safety is maximized by utilizing temporary barrier protection, enhanced temporary warning devices, maintaining the full existing lane widths, and utilizing a roadway design that minimizes the need for construction activities within existing intersections. At the W&OD Trail crossing, our sequence of construction utilizes the HAWK signal safety enhancement during the initial phase of bridge construction, and prioritizes the opening of the new northbound bridge in order to eliminate the at-grade crossing as early as possible per our Unique Milestone. To enhance driver mobility we planned construction activities that minimizes the need for disruptive lane closures. When lane closures are required for activities such as new pavement marking installation, we strive to limit the work to the hours of least disruption within the allowable lane closure "windows" as detailed Section 4.5.2. In addition, we are scheduling the final surface asphalt and striping to be completed prior to opening all 4-lanes to traffic, even though the RFP allows this to be completed afterwards. This allows us to complete these activities without disrupting traffic and with an improvement to motorist and worker safety. Our proposal Interim Milestone, achieved ***1 month*** earlier than required by the RFP, delivers the public the tremendous benefit of full 4-lane mobility sooner than otherwise expected. Furthermore, we achieve Final Completion a full ***4 months*** earlier than required - a substantial benefit to VDOT, the public, and all other stakeholders.

Geotechnical Constraints

Our Team prioritizes the required geotechnical investigations and provides methods for remediation of poor soils along the roadway in the early phases of design. Based on our site reviews and geotechnical investigations completed to date, we are expecting minimal, if any, surcharging, 'undercut and replacement', lime or cement soil stabilization, use of geo-stabilization grids and fabrics, or alternate foundation types, but these will be clearly identified in the geotechnical recommendations. After evaluating the affect, if any, these issues have on specific construction activities and sequence, the Team makes the appropriate changes to the schedule and incorporates them into our overall Plan. These changes may include re-sequencing work, adding resources, adjusting activity durations, or possibly re-design so that completion milestones are not affected.

The Team is expecting that rock will be prevalent throughout the corridor and have included time in our schedule to account for this. Every activity that has the potential to encounter rock will be compared to the geotechnical report to confirm the exact location. We will then plan the appropriate methods for removing the rock and include mass blasting, trench blasting, pre-drilling, and hoe-ram techniques in advance of the actual construction activity. Rock will also affect the installation of piles at the bridges over the Trail and will be reflected in our schedule and choice of subcontractor and equipment.

For off-site borrow, sources are tested in advance of delivery to the site to confirm they meet specification requirements prior to placement. During construction, delivered material will be inspected by the QA/QC team to confirm that it is consistent with the tested material and placed with the appropriate methods.

Environmental Impacts

Once plans are finalized and released for construction, the environmental team shifts focus to construction

monitoring of the permit and environmental commitments in the field. Prior to the start of construction the original wetland team returns to the field to remark the limits of streams and wetlands at the permitted impact limits. Critical areas are delineated with safety or silt fence to prevent accidental access and prescribed Erosion and Sediment (E&S) control measures are installed in accordance with the plans.

Monitoring and inspection is conducted in compliance with all permits, commitments and regulatory requirements. E&S inspectors pay particular attention to the condition and effectiveness of installed devices. In addition to weekly routine inspections by construction personnel, environmental staff and designers responsible for the permitting and design make regular site visits ensuring areas of avoidance are preserved and the site is properly stabilized in accordance with the permit documents. Restoration of temporarily disturbed wetlands and streams is inspected to ensure proper repair and stabilization.

During construction phasing, our Team ensures E&S control documents are strictly adhered to and approved Stormwater Pollution Protection Plan (SWPPP) is available for review and is followed. This starts with installation of all Phase I E&S devices such as silt fence, diversion dikes, sediment traps and basins prior to grubbing and grading operations. Our Team ensures stabilization of denuded areas is performed within the required time frames. Most importantly, we dedicate an erosion and sediment maintenance crew to the Project at all times to monitor the site and relieve over-burdened E&S devices, re-install or reinforce existing devices and prepare for forecasted rain and storm events. The crew is led by a foreman carrying the VDOT ESCCC and DCR Registered Land Disturber credentials. VDOT Forms C-107a and C-107b as well as proper documentation are kept current at all times per DCR and VDOT regulations.

Right-of-Way Acquisition (ROW)

Similar to permitting, the ROW acquisition process must be well integrated into the design, utility and construction schedules, and started as early as possible. As we developed our schedule and sequence of work, we continually analyzed the affect these disciplines have on private properties and our ability to minimize and avoid them. These efforts provided us with the ability to avoid impacts to two of the original planned acquisitions, further reducing project cost, impacts to the public, and risk of schedule delay.

For the remainder of the planned acquisitions, our Team has prioritized their acquisition to match the sequence of work. This is critical to our ability to meet the Milestones and is closely monitored throughout the process. If conditions change for any reason, we have the ability to immediately react by adjusting the priorities, resources, and sequence if necessary. Key to doing so, is our Team's in-house ROW resources dedicated to managing the acquisition process. The highest priority parcels are those needed in Stage 1A to clear the way for the northbound bridge and approach roadway construction and include Parcel #'s 029, 033, 035, 056, 057, 036, 038, and 039. Next, the balance of the Stage 1 parcels will be acquired, followed by those needed for Stage 2.

Our Proposal Schedule included in Section 4.7 outlines the complete acquisition process and indicates our planned right-of-way priorities and sequence. Generally, those properties necessary to allow utility relocations and construction for Stage 1A are planned to be acquired first.

Staging and Storage Areas

To maximize safety and avoid delays to the schedule, staging and storage areas must be well-planned and integrated into the overall sequence of work. When planning these areas, the objectives are to establish

locations that do not impact public traffic, do not create a public nuisance, do not have to be relocated during construction, and are close enough to the work area to avoid production inefficiencies. Also critical to maintaining project efficiencies is the location of the field office compound. A distinct advantage of our Team on this Project is that we are the Contractor for the adjacent Route 7/Belmont Ridge Road Interchange Project that will be under construction concurrently. This allows our Team to locate our field office and storage area in a joint compound that further reduces impacts to the public. It also enhances the level of coordination between the two project team's.

Public Involvement/Stakeholder Coordination and Government Approvals

Too avoid the risk of delays to the schedule due to stakeholder approvals, it is imperative that the Team understand all of the parties that have input, their procedures and timeframes for approval, and the affect they have on sequence of work. We identified stakeholders in our Organization Chart included in Section 4.2, and will refine this list as the Project moves forward. At this preliminary stage, we have included those stakeholders that could impact the completion milestones on the schedule included in Section 4.7.

Immediately after Award, the Team will meet with each stakeholder individually to discuss the Project, understand their issues and concerns, and explain the schedule and sequence of work. Input is incorporated in the schedule based on these discussions, and the schedule will in turn be communicated to them. Knowing the importance of obtaining license approvals from groups such as the NVRPA, the Team will establish a regular series of Progress Meetings with them, provide schedule updates, and coordinate with them regarding users of the Trail.

We will plan and hold several "Pardon Our Dust" meetings with the public at critical stages of work to communicate Project details, our sequence of construction, and the overall schedule. We also use this forum to solicit feedback and establish lines of communication with those affected. Because traffic patterns change as the work progresses, it is imperative that we coordinate directly with police, fire and rescue, local schools, and public transportation by establishing points of contact, distributing flyers, and presenting project details directly to them. Traffic changes are communicated on site through the effective use of signs and VMS boards. We will support and update VDOT's website, and set up a Twitter account to distribute important updates. The Team presents updates to local Homeowners Associations, the Loudoun County Board of Supervisors, and other groups. We will also communicate with the public by submitting updates and graphics describing traffic patterns to the local media in order to reach large audiences.

Mitigating Potential Delays

As described above, our Team has advanced a number of concepts, plans and procedures for ensuring the Project is completed ahead of schedule without delay. As we develop our schedules, we are constantly focused on issues and concerns that have the potential to create delays and then direct our efforts on mitigating them. At various stages of the Project, we rely on proven methods for creating, monitoring, and maintaining the schedule:

- ***Technical Proposal Stage:*** As the groundwork for the Team's schedule is developed in this stage, it is critical for all disciplines to have input. Our Team has met on a weekly basis since release of the RFP to discuss issues, create our concept, solicit feedback, and to make schedule adjustments accordingly. The schedule presented in Section 4.7 is the result of this close collaboration and has buy-in from all Team members.

- ***Design Stage:*** As we proceed through the design process, the integration of the various disciplines rises to a higher level. We continue to hold team meetings at a minimum on a weekly basis to provide an over-the-shoulder forum for review, discussion and feedback. During this time period, our formal project schedule is developed and reviewed with VDOT and other stakeholders. Should issues arise or conditions change during design that impact the sequence or completion milestones, the Team reviews schedule options for correction so that these milestones are maintained. Once finalized, it is communicated to each discipline, our construction forces, subcontractors and consultants, and other affected parties and is the basis for the Team's planning efforts moving forward. Throughout this stage, the approved schedule is monitored, updated and communicated to VDOT by the D-B PM to ensure that it remains compliant.
- ***Construction Stage:*** As the Project transitions to construction, the Construction Manager and D-B PM closely monitor and update the schedule on a regular basis. The CM ensures the schedule is communicated to the entire Team, including utility companies, QA/QC, government agencies, and others. In addition, shorter, more detailed schedules are created by the construction teams to better aid planning their work. These 2-week and 6-week "look-ahead" schedules allow teams to plan activities on a daily basis and communicate specific tasks and milestones in a direct, concise way. Our Team also utilizes a proprietary "Daily Shift Cost Report" (DSCR) system that tracks the costs for certain critical activities each day and compares them to the budgeted cost. This is an excellent indicator that scheduled production rates are not being achieved and provides the construction team with "real-time" data. Throughout the construction schedule, these schedules and data are monitored and compared to the approved baseline schedule so that delays can be anticipated. Then, the Team evaluates options for avoiding delay or recovering the schedule including re-sequencing the work, adding resources, or re-design of certain features.

4.5.2 TRANSPORTATION MANAGEMENT PLAN

Our Team is dedicated to delivering this Project with a construction program that minimizes public impacts and sets a new benchmark for public communications during construction. All aspects of our Transportation Management Plan (TMP) and TTC plans are developed with a focus on maximizing safety for the traveling public and construction personnel while minimizing travel delays throughout all stages of construction. To accomplish these safety and mobility goals, we have committed to mitigation and communication strategies that exceed the requirements of the RFP. Some of these strategies are listed below, and are detailed on the following pages:

- A temporary HAWK signal at the at-grade crossing of the W&OD Trail during Stage 1 construction;
- Early opening of new trail parking lot;
- Analyzing existing safety concerns and mitigating them prior to major construction activities;
- Utilizing enhanced safety devices that exceed minimum requirements;
- A sequence of construction that minimizes lane closures;
- Limiting lane closure hours to smaller windows than the RFP allows to minimize public impacts
- Expediting grade separation of trail for pedestrian and driver safety;
- Early completion of the project to minimize work zone duration; and
- Extensive public communication outreach, such as Twitter alerts and "Pardon our Dust" meetings.

TMP Philosophy

Our TMP and construction program is aimed at reducing the Project's anticipated impacts to the traveling

public and exceeding the public safety requirements of the RFP. Above all, our Team values safety in every facet of design and construction. To aid the Team in achieving these goals, our Team brings the following important advantages for this Project:

- Dewberry is the engineer for the adjacent Route 7/659 Interchange project;
- Shirley is the contractor for the adjacent Route 7/659 Interchange project; and
- The Team has completed five projects with grade separations of the W&OD Trail.

As noted in Part 2 Section 2.9 of the RFP, our Team will prepare a Type B, Category III TMP in accordance with VDOT I&IM 241/TE-351. This TMP will be developed by engineers certified in VDOT's Advanced Work Zone Traffic Control training course, and supervised by a highly qualified Professional Traffic Operations Engineer, ***exceeding the requirements of the RFP.***

Traffic Control Details

The planned sequence of construction is highlighted on Sheet 1K of Volume II Design Concept. This sequence depicts the innovative phasing we will use to safely maintain all lanes during construction while also minimizing the overall construction duration. Construction will be accomplished using concrete barrier for both worker and driver safety given the high traffic speeds and volumes, and smooth temporary crossovers meeting the full geometric criteria will be constructed at strategic locations in order to reduce construction duration while maintaining full mobility. Technical highlights of our proposed plan is as follows:

- No long term lane closures or detours planned;
- Time of day restrictions will follow Part 2 Section 2.9.2 of the RFP, with additional restrictions self-imposed to further minimize public impact (see Lane Closure Impact Minimization Section);
- Flagging operations only anticipated for necessary activities such as the installation of temporary traffic barrier in Stage 1 Lane closure requests will be completed and submitted to VDOT at least seven days in advance for approval and will be monitored for traffic queue at all times during use;
- Minimum lane widths on Route 659 and all other roadways will be 11', and our Team will strive to provide 12' widths wherever possible, exceeding the RFP requirements; and
- Along Route 659 a 2' offset will be provided to temporary barrier (1' minimum on other roadways)

Our Team has already completed a thorough analysis utilizing VDOT's TE-350.1 process to determine the appropriate posted speed limit during construction. Based on this analysis, we recommend a temporary reduction from 45 mph to 40 mph to increase safety on the existing roadway due to:

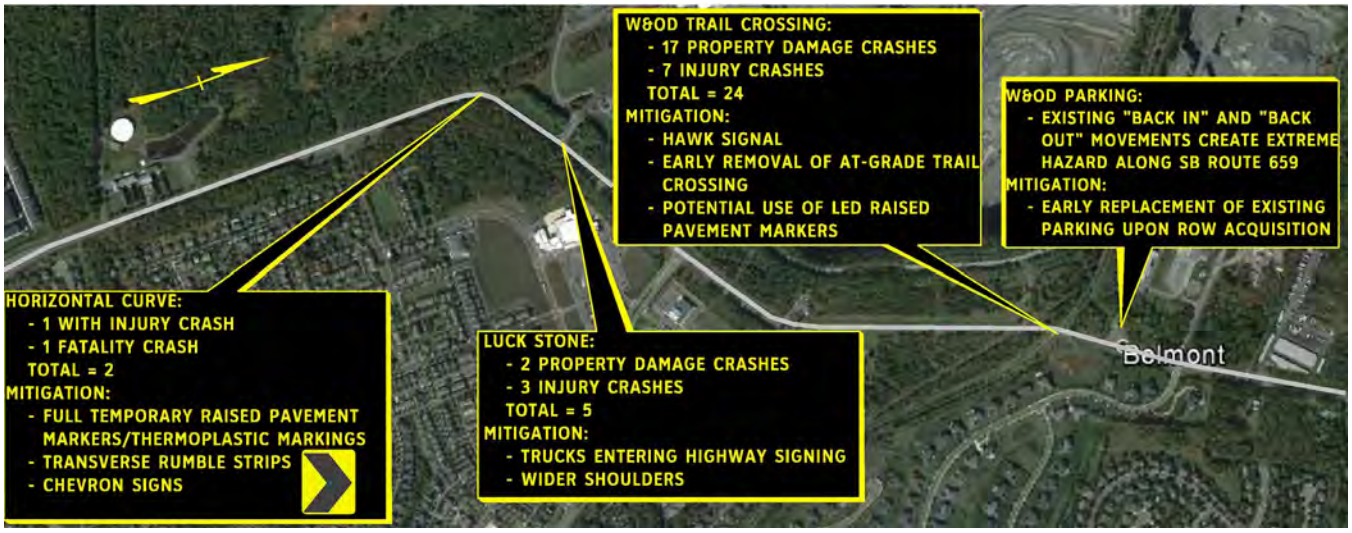
- The geometry of two sharp curves in the middle of the Project that only meet 40 mph criteria.
- There have been several crashes at these curves (including a fatality); and
- Very high traffic volumes.

The 40 mph speed will be a safety enhancement for both construction personnel and W&OD Trail users, as the existing yield-controlled trail crossing has a very low driver compliance rate. We also analyzed potential travel time delays, and found them to be very minor (less than 20 seconds) per vehicle traveling thru the Project. This recommendation will be fully discussed with VDOT's Traffic Engineering staff, and we understand that final approval will be granted by the Regional Traffic Engineer post Award.

Our Team also recognizes common shortfalls with TTC in work zones, and we are committed to avoiding these conditions with carefully design site specific temporary traffic control plans. For example, we know how critical it is to ensure that barrier ends and impact attenuators are flared as far away from traffic as possible, as driver collisions with impact attenuators can result in high-severity crashes. Also, we know that temporary traffic barrier placement must be reviewed to ensure all turning movements and sight distances are maintained at all times and that construction equipment will not prohibit any movements. Long continuous runs of temporary traffic barrier will be avoided ensuring adequate drainage and snow removal capabilities are maintained, and barrier will be promptly removed when it is no longer required.

Investigation and Mitigation of Existing Safety Issues

As one of the many ways we are committed to exceed the RFP requirements and maximizing safety, our Team has performed an investigation of existing crash statistics and safety concerns within the Project limits and has already developed approaches to mitigate these risks. ***Exceeding the RFP requirements,*** our Team will employ site-specific impact management strategies in order to maximize safety. Many of these safety improvements will be installed prior to major construction activities to mitigate existing safety concerns, as we intend to enhance public safety even while the permanent improvements are still in the design phase. The figure below shows the results of our investigation, as well as our proposed mitigation.



3 Year Crash History and Proposed Safety Enhancements.

In addition to installing these enhancements on the existing roadway prior to construction, the following safety improvements will be utilized throughout all construction stages, such as:

- Full temporary raised pavement markers will supplement thermoplastic lane line pavement markings for increased visibility, especially at night and during wet pavement conditions;
- The use of wider than normal lane lines for increased delineation of lane shifts, use of temporary transverse rumble strips to alert motorists of unusual conditions and trail crossing; and
- The use of tighter than required channelizing device spacing for increased work zone delineation and construction personnel safety.

W&OD Trail Safety

Specific attention has been focused on the W&OD Trail intersection with Route 659, as this uncontrolled

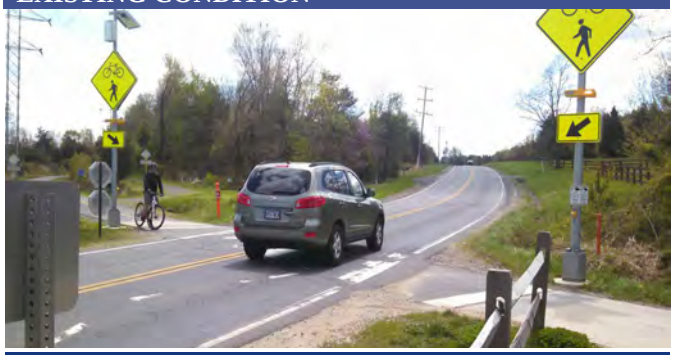
crossing is one of the most challenging for hikers and bikers on the entire W&OD Trail systems. Several site evaluations have been performed by our Team on a regular basis to evaluate the existing conditions, which quickly led to a focus on the road crossing and the current parking lot. Our greatest concerns are safety at these two features. The following describes how we propose to ***go above and beyond RFP requirements*** to have an immediate positive impact on safety:

Trail Crossing

As can be seen in the photo below, even with flashing warning lights, the majority of drivers (over 50%) were observed violating state law and failing to yield to pedestrians and bicyclists at the crossing. The crossing location is particularly dangerous given the limited sight distance, high travel speeds, and steep downgrades approaching the crossing that make it a challenge to stop (resulting in an astounding 24 crashes at this location within the last three years). This condition is particularly concerning to our Team, as when construction starts, drivers are likely to become distracted by construction activity, potentially taking their attention away from the crossing. In addition, sight lines to the trail may become further impeded as fill for the new bridge rises from the ground. To greatly improve Trail safety, our Team proposes to install and maintain the following enhancements:

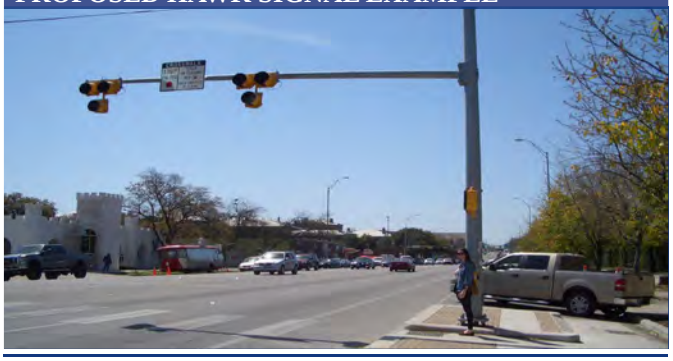
- ***A temporary Pedestrian Hybrid Beacon (HAWK signal)*** at the existing W&OD crossing location to allow Trail traffic to safely cross Route 659. When the pushbuttons to be installed along the Trail are activated by the Trail users, drivers will receive a yellow then red light on standard overhead signal heads to safely decelerate to a stop, allowing a safe controlled crossing for Trail users. Similar HAWK installations have resulted in up to 70% crash reductions, and the HAWK signal is warranted by the MUTCD based on roadway and Trail volumes. Also negligible impacts on vehicular travel times are anticipated, as the "red" indications for traffic is only held for a short duration.
- ***LED pavement-imbedded warning lights*** along the crosswalk facing approaching vehicles for enhanced crosswalk visibility. These MUTCD complaint devices give unsuspecting drivers clear delineation of the crossing location, especially during foggy or rainy conditions when visibility is not ideal. The devices promote higher compliance in drivers yielding to pedestrians, and are not impacted by plowing operations during winter.

EXISTING CONDITION



Trail users activate pedestrian signal and vehicles continue to fail to yield.

PROPOSED HAWK SIGNAL EXAMPLE



Provides full signalization to drivers to ensure W&OD Trail safety during construction.

Parking Lot

As can be seen on the left-hand portion of the image below, to pull out of the existing lot drivers must blindly back directly into the 45 mph thru lanes. This has the potential for high severity angled crashes.

We have identified a temporary early relocation of this existing lot as a priority safety enhancement, which we will implement as follows:

- Immediate replacement with a conventional temporary lot separated from Route 659;
  - Upon right of way acquisition, we will immediately stripe a replacement lot on existing pavement as shown in the bottom right of the image, with a conventional driveway entrance
  - This condition provides safe vehicle access while permanent replacement lot is under construction
  - Access to Trail will be safely maintained with a temporary barrier-separated path along the existing shoulder
- Expediting the opening of the new permanent parking lot;
  - Upon acquisition of right of way and striping of temporary lot, begin construction of new lot
  - Open new permanent lot when it is complete, which is anticipated to be prior to opening of the NB bridge span.

Proposed temporary early relocation of existing substandard parking lot.

Lane Closure Optimization

When full construction starts, lane closure impact minimization will be critical when working along Route 659. The site specific TTC plans will put heavy emphasis on eliminating the need for temporary lane closures to the greatest extent possible. Our Team's innovative phasing will not require the need for regular lane closures to complete construction. Also, as our Team is constructing the adjacent Route 7/659 Interchange Project, all operations will be fully and seamlessly coordinated to ensure that there will be no conflicting traffic control and that operations are minimized. For example, if both projects require a lane closure for work at the project interface, work will be accomplished during a single closure as opposed to two separate closures, having a recognizable benefit to the traveling public.

Example Lane Closure Blocking Plan

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

I-64 Capacity Seg. I - Lane/Shoulder Closure Request Form

VDOT Project No. (FO)0064-965-264 Contract ID No. C00104905DB75

List and Attach Applicable TTC Figure(s): **REQUEST No: 1** Completed By VDOT:

TTC-3.1 with Truck Mounted Attenuator (TMA). Will occupy either left or right shoulder (not both concurrently)

Highway/Ramp: I64 - Yorktown Rd (Rt. 238). to Bland Blvd. Date of Request: 3.25.2015

Direction: East & West Select Lane Closure Type:

Date (s) Scheduled: Monday March 30 thru Friday April 3

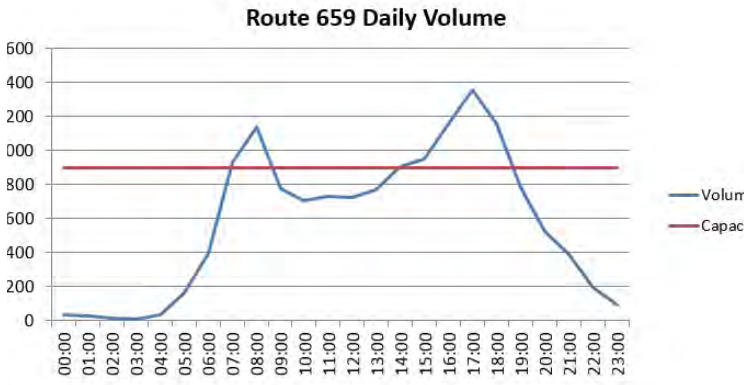
Start Time:		End Time:
M-Th:	9:30am	3:00pm
Fri:	9:30am	12:00pm
Sat:		
Sun:		

4.5 **Construction of the Project**

To coordinate and communicate temporary traffic operations and lane closures, our Team utilizes a specifically developed scheduling "blocking plans" and "lane closure request forms" as an enhancement exceeding the RFP requirements. This detailed scheduling plan provides the Project Team the ability to fully understand the proposed work, and easily ensure that the correct traffic control setups are utilized to maximize safety. This enables transparent communication between the construction team, VDOT, and project stakeholders. As we have found on recent projects, the use of the lane closure blocking plan and VDOT lane closure request forms provide greatly improved communication and the ability to mitigate impacts to these stakeholders throughout construction.

To achieve the goals of maximizing safety and minimizing travel delays, we will collect updated 24-hour volume information for Route 659 as an initial design activity. We recognize that the lane closure restriction times listed in Part 2 Section 2.9.2 of the RFP are to be followed. However, we also recognize that the impacts of closing a single lane on Route 659 is a major public concern. By collecting 2015 current 24-hour traffic volume information, we can utilize it in the development of the TMP to allow for accurate analysis of impacts that specific construction activities will have on traffic flow.

To show our commitment, we already performed this traffic analysis utilizing the most recent available traffic data, which was counted in 2013. The figure to the right shows results on this preliminary 24-hour analysis. From this, our Team has determined which hours temporary lane closures may cause traffic backups and delays. This undesirable condition occurs when Route 659 traffic volumes (shown with blue line) exceed the capacity of the remaining open travel lane (shown with red horizontal line). This analysis will be updated by our Team during final design once our 2015 data is available. However, from the preliminary analysis, we can see delays may occur if a lane closure is in place in mid-morning and mid-late afternoon. Utilizing this analysis gives us the ability to schedule short duration work (such as a 90 minute flagging operation) during low-volume hours where feasible, which has tremendous safety and travel time benefits.



24 Hour Analysis of actual traffic volumes in project limits.

In addition to the lane closure impact minimization plan, our Team will pay special attention to minimize noise during night hours due to close proximity to local communities. Construction activities that generate excessive noise will be scheduled during daytime allowable working hours, and night time operations can be provided for quiet operations such as temporary traffic barrier placement.

Stakeholder Communication and Mitigation Strategies

A public information plan is vital to a successful TMP. We have proactively identified project stakeholders, and ***we have devised specific innovative communication and mitigation strategies that exceed the Project requirements.*** These include the use of a HAWK signal for W&OD safety, Twitter notifications for lane closures, further restrictions on lane closure times, and enhanced safety devices. Our Team recognizes that proactive communication with all project stakeholders (with assistance from VDOT) is essential.

4.5 **Construction of the Project**

Advance notification prior to any significant work activity or temporary lane closures reduces congestion and delays through the Project site, bolster public support, and improve safety. As with any large scale transportation improvement project, some inconvenience is unavoidable, but our Team's goal is to minimize these impacts. These stakeholders, their potential impacts, and our planned communication and mitigation strategies are detailed in the table below.

Stakeholders	Impacts	Communication/Mitigation Strategies
Traveling Public	Minimal travel time delays for temporary operations	▪ Optimization of lane closure hours will limit closures to off-peak allowable hours of lowest volume ▪ All work operations behind barrier and will maximize lane widths ▪ Portable Changeable Message Signs and Twitter will be utilized for public notices
W&OD Trail	Construction along trail and above trail at Route 659 crossing	▪ Installation of HAWK signal with education campaign ▪ Enhanced crosswalk warning devices ▪ Early removal of at-grade crossing and parking lot relocation ▪ No work along the trail within trail operating hours ▪ Encouragement for trail users to follow project Twitter feed
Local Residents Belmont Community Ashburn Village Loudoun County BOS	Possible construction noise and construction activities close to their property	▪ Early installation of noise barriers to provide relief of construction and traffic noise ▪ Coordination of construction activities with residential groups via notification and "Pardon Our Dust" meetings ▪ Access to all properties maintained at all times ▪ Work on each side street will be coordinated with residents and/or HOAs so that work can be scheduled for hours of least impacts
Schools Stone Bridge High Newton-Lee Elementary Trailside Middle Belmont Station Elementary	Potential delays to school buses	▪ Coordination of construction activities directly with school staff ▪ No lane closures during school bus operating hours when possible ▪ Temporary alignments will be analyzed to ensure buses are accommodated using Auto-Turn software ▪ Advance notification of traffic pattern changes
Police, Fire & Rescue Ashburn Fire / Rescue 6 Loudoun County Sheriff Virginia State Police	Potential response time impact	▪ Advance notification of temporary lane restrictions and changes to traffic patterns: ▪ Representatives will be notified of approved lane closure requests ▪ Pre-switch emergency responder meetings for response planning ▪ 24/7 points of contact
Route 7/659 Interchange Project	Potential construction coordination impacts between projects	▪ Temporary lane closures will be coordinated internally ▪ Long-term traffic control set-ups will be coordinated internally to ensure seamless traffic flow between projects ▪ Resources such as PCMS signs can be coordinated and shared for major events ▪ Signal construction at Gloucester Pkwy will be coordinated so that it is initially constructed in a manner that satisfies both projects instead of the Design-Builder having to modify it at a later time
Luck Stone Quarry **Loudoun County Sanitation Authority**	Minimal driveway reconstruction required	▪ Analysis to ensure adequate lane widths and turning movements for hauling vehicles are maintained (using Auto-Turn software) ▪ Representatives will be notified of approved lane closures ▪ Driveway reconstruction will be completed during non-business hours when possible
TRIP II/Greenway	No impacts to TRIP II operations.	▪ Notifications of work will be sent to TRIP II to ensure operations will not conflict with Greenway interchange maintenance.

4.6 - Disadvantaged Business Enterprises

4.6 - Disadvantaged Business Enterprises

4.6 Disadvantaged Business Enterprises

Commitment to Achieving the DBE Goal

Shirley Contracting Company, LLC (Shirley) is committed to achieving the 13% DBE participation goal for the entire value of the Contract.

4.7 - Proposal Schedule

4.7 Proposal Schedule

4.7.1 Proposal Schedule

The Shirley Team's Preliminary Proposal Schedule is provided at the end of the Proposal Schedule Narrative.

4.7.2 Proposal Schedule Narrative

The Shirley Team has developed and optimized our Project schedule and sequence of construction to achieve the grade separation at the intersection of Route 659 and the W&OD Trail by October 31, 2017 (our Team's **Unique Milestone**). In addition, our schedule demonstrates achieving the **Interim Milestone one month early** on November 21, 2018 and **Final Completion** on December 31, 2018, approximately **four months earlier** than the prescribed RFP completion date. The following table summarizes these key dates included in our Proposal Schedule:

Key Activity Summary	Date
Notice of Intent to Award	August 17, 2015
CTB Approval/Notice of Award	September 16, 2015
Contract Execution	October 14, 2015
Notice to Proceed	October 16, 2015
Notice to Proceed for Construction	September 22, 2016
Shirley's Unique Milestone - Stage 1A Complete	October 31, 2017*
Stage 1B Complete	November 29, 2017
Stage 2A Complete	October 10, 2018
Stage 2B Complete	August 30, 2018
Interim Milestone - Stage 3 Complete	November 21, 2018*
Final Completion	December 31, 2018*

***Contractual Completion Date**

Design-Build Preliminary Actions

- Aerial mapping done during procurement phase;
- Begin right-of-way plan development upon Notice of Award;
- Utility coordination to expedite temporary and permanent relocations;
- Advance design based on RFP geotechnical information; and
- Initial environmental investigations and site inspections to streamline permit procurement.

Work Breakdown Structure

The Work Breakdown Structure (WBS) for design-build is broken into project management and construction activities. For pre-construction scope, the WBS details various work elements. For construction, the WBS is broken down by phases of construction as described in Section 4.5.1. The phasing was determined through the optimization of the maintenance of traffic as well as the Team's goals of finishing early. The WBS is further broken down 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, submittal

milestones, and 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, roadway, bridge and waterline.

C. ***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. In order to prioritize groups of properties by order of need, we have included a second level WBS structure that includes separate right-of-way acquisition activities for the two phases. Dividing the right-of-way activities into two separate groups of parcels enables our Team to focus our right-of-way acquisition efforts on the most schedule critical acquisitions and track these critical acquisitions to ensure on-time completion.

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

E. ***Utility Relocations:*** The utility relocation section of the schedule includes activities for UFI meetings, preparation of preliminary engineering (PE) estimates, approval of PE estimates, utility relocation design by the utility owner, approval of the utility design, and utility relocation construction. The utility relocations are separated into second level WBS groups by utility owner.

F. ***Environmental Permitting:*** Includes wetland and stream delineations and jurisdictional determination, permit management and preparation, mitigation, and permit submissions, reviews and approvals. Initial efforts will focus on the Corps of Engineers Individual Permit, Virginia Water Protection Individual Permit, LD 455/VSMP Permit and the SWPPP submission. Section also includes the NVRPA approval process.

G. ***Construction:*** Includes all components of roadway, bridge, retaining walls, culverts, and noise barrier construction as well as MOT, construction access, signage, signals, electrical and drainage. The Construction section of the schedule is segmented by 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.

The table shown below is a complete outline of the WBS Structure for the Project:

WBS Path	WBS Name
1	**Schedule Milestones**
2	**Phase 1 - Project Management**
2.1	**Design Phase** 2.1.1 - Right-of-Way Plans 2.1.2 - Road Plans 2.1.3 - Bridge Plans 2.1.4 - Loudoun Water Plans - Waterline
2.2	**Right of Way Acquisition** 2.2.1 - Phase 1 ROW 2.2.2 - Phase 2 ROW
2.3	**Public Involvement** 2.3.1 - Public Involvement Meetings 2.3.2 - Public Affairs Updates
2.4	**Utility Relocations** 2.4.1 - Loudoun Water 2.4.2 - Dominion Virginia Power 2.4.3 - Verizon 2.4.4 - Washington Gas

WBS Path	WBS Name
2.5	**Permitting** 2.5.1- Wetlands 2.5.2 - VSMP 2.5.3 - Spill Prevention / Hazardous 2.5.4 - NVRPA
3	**Phase 2 - Construction**
3.1	**General / Preparatory**
3.2	**Stage 1A** 3.2.1 - NB Station 113+00 to Gloucester Parkway 3.2.1.1 - NB Bridge Structure 3.2.2 - W&OD Trail
3.3	**Stage 1B** 3.3.1 - NB Hay Road to Station 99+00 3.3.1.1 - Noise Barrier Construction 3.3.2 - SB - Station 113+00 to 99+00 3.3.3 - SB - Station 82+00 to 73+00
3.4	**Stage 2A** 3.4.1 - SB - Gloucester Parkway to Station 113+00 3.4.1.1 - SB Bridge Structure
3.5	**Stage 2B** 3.5.1 - NB - Station 99+00 to 113+00 3.5.2 - SB - Station 99+00 to 82+00 3.5.3 - SB - Station 73+00 to Hay Road
3.6	**Stage 3** 3.6.1 - Demolish Median Crossovers 3.6.2 - Establish Final Configuration 3.6.3 - W&OD Trail 3.6.4 - Inspect, Punchlist, Demobilize, & Closeout

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

Global Calendar

All calendars are based on eight hour work days and include the following holidays:

Calendar 01 - "5 DAY WORKWEEK W/HOLIDAYS" – this calendar is based on five working days per week and is used for all design, administrative, and construction activities that are outside of the winter weather months. Saturdays are typically reserved for weather make-up days.
Calendar 02 – "7 DAY WORKWEEK" – Assigned to activities that have durations based on calendar days instead of work days. For example VDOT's 21 calendar day review duration.
Calendar 03 – "5 DAY WEATHER" – This calendar is based on working part-time from December 25 to March 15; is assigned to activities that are anticipated to have reduced productivity during winter months.
Calendar 04 – "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 24 of one year to March 14 of the next year.

4.7 **Proposal Schedule**

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 found in Exhibit A-1.

Design Phase

The Design section includes activities related to the Design efforts prior to the commencement of construction.

- ***Geotechnical -*** This section includes activities related to any additional soil borings, geotechnical analysis or design necessary to be performed.
- ***Roadway Design -*** This section includes activities related to the preparation, submission and approval of construction plans. Final roadway plans will include final drainage and SWM reports. The final plans will be broken into packages to minimize schedule delays and provide flexibility for planning purposes. This section includes all Noise Barriers and Retaining Walls.
- ***Structural Design -*** This section includes activities related to the design, submission and approval of the bridge structure over the W&OD Trail.
- ***Utility Design (Waterline) -*** This section includes activities for the plan preparation and design coordination with Loudoun Water for any conflict relocations identified.

Public Involvement

The Public Involvement section contains activities necessary for public communication and outreach.

- ***Emergency Contact Plan -*** This section includes activities related to the submission and implementation of the emergency contact plan.
- ***Pardon Our Dust/Citizen Outreach Meetings -*** This section tracks any and all public outreach and public information meetings held for the Project.

Environmental Permitting

The Environmental Permitting section contains activities pertinent to the evaluation, preparation, submission and approval of any and all environmental permits required for the Project.

- ***Individual Wetland Permit -*** This section contains activities related to the preparation and acquisition of the individual wetlands permit that are anticipated to be needed for the Project. It allows for appropriate delineations, minimization studies and coordination with appropriate permitting agencies.
- ***VSMP / SWPPP Permitting -*** This section includes activities regarding the submission and approval of the SWPPP Certifications and permits required for the Project.
- ***Spill Prevention Plan -*** This section includes activities regarding the development, submission and approval of the SPCC plan for the Project.
- ***NVRPA Permit -*** This section includes activities regarding the preparation and acquisition of the following NVRPA Permits: Surveying, Subsurface Investigation, and License for Non-Park Use.

Right-of-Way Acquisition

The right-of-way ccquisition section includes activities related to the coordination between our Team and VDOT to acquire the ROW including but not limited to all temporary and permanent construction and

utilities easements and property. The ROW acquisition will be grouped into individual parcel groups to minimize schedule delays and provide flexibility for planning.

- ***Site Assessments & Appraisals -*** This section includes activities related to the necessary site investigations and appraisals required for the affected properties.
- ***Negotiations -*** This section contains activities pertaining to the negotiation period required for parcels impacted by the Project.
- ***Settlements, Right of Entries & Certificates -*** This section includes the activities related to the completion of the acquisition process.

Utility Relocations

The Utility Relocations section contains activities involved with the design, approval and resolution of utility conflicts identified throughout the Project by various different methods. The WBS breaks down each individual utility conflict into the following subcategories.

- ***Prepare Plans & Estimates -*** This section includes the activities required to meet with the individual utility companies, develop the relocation plans and the scope. This also involves the plan submittals and approvals through VDOT.
- ***Utility Relocations -*** This sections contains the activities related to the actual relocation of the individual utility conflicts identified on the Project.

Construction

The Construction section of the schedule includes all of the activities related to the actual construction of the approved design. The WBS for Construction is further broken down into the different stages and areas of the job to track intermediate progress throughout the Project. It also includes the different definable features of work located within each area and each stage.

GENERAL / PREPARATORY

- Mobilize to the Project site;
- Generate structural design and shop drawings for all precast and steel elements; and
- Perform preparatory meetings for all definable features of work.

Stage 1A

NB Station 113+00 to Gloucester Parkway

- Establish flagging or sensitive areas, installation of construction signing, constructing site entrances, performing initial surveying control verification, and installation of E&S controls;
- Install temporary HAWK Signal at intersection of W&OD Trail & existing Route 659.
- Temporarily relocate parking lot at the W&OD Trail;
- Perform temporary relocation of overhead power lines and communications in conflict with the bridge;
- Construct new NB bridge over the W&OD Trail including retaining wall approaches creating a grade separation between the two alignments;
- Construct SWM/BMP facilities #5 and #6;
- Construct permanent two lane roadway from Station 113+00 to Gloucester Parkway;
- Construct the new W&OD Trail parking lot and access point; and

- Switch the existing 2-lanes of traffic to the newly constructed 2-lane approach roadway and bridge over W&OD Trail.

Stage 1B

NB Hay Road to Station 99+00, SB Station 113+00 to 99+00, SB Station 82+00 to 73+00

- Construct new noise barrier separating the new Route 659 and the HOA while avoiding sanitary sewer conflicts;
- Begin construction of proposed waterline;
- Construction of two lane roadway segments including earthworks, storm sewer, pavement section and shared use path in the following areas:
    - NB Hay Road to Station 99+00
    - SB Station 113+00 to 99+00
    - SB Station 82+00 to 73+00
- Install temporary pavement crossovers as needed between the above mentioned roadway sections.
- Open remaining Stage 1B roadway sections to two lanes.

Stage 2A

SB Gloucester Parkway to Station 113+00

- After grade separation is provided during Stage 1A, adjust traffic control devices and remove "Hawk" signal;
- Perform the remaining utility relocations in order to facilitate SB bridge installation; and
- SB Station Gloucester Parkway to 113+00 - Construct new SB bridge over the W&OD Trail.

Stage 2B

NB Station 99+00 to 113+00, SB Station 99+00 to 82+00, SB Station 73+00 to Hay Road

- Construction SWM/BMP Facility #4;
- Construction of 2-lane roadway segments including earthworks, storm sewer, pavement section and shared use path in the following areas:
    - NB Station 99+00 to 113+00
    - SB Station 99+00 to 82+00
    - SB Station 73+00 to Hay Road

Stage 3

Final Configuration & Closeout

- Transition the single SB lane of traffic to newly constructed roadway and bridge over W&OD Trail. Traffic will be in outer most travel lanes in each direction;
- Demolish temporary crossovers throughout project establishing permanent configurations for medians;
- Apply surface paving and pavement markings throughout project establishing permanent configuration. Open traffic to motorists;
- Perform punchlist inspections and activities; and
- Perform project administrative closeout processes.

Critical Path Description

Phase 1 - Project Management

Design Phase, Right of Way Plans

- CTB Approval / Notice of Award
- Prepare ROW/MOT Plans (1st Submission) (Beginning Early At-Risk)
- Design QA/QC Review (1st Submission)
- Submit 1st Submission ROW Plans
- VDOT Review / Comment (1st Submission)
- Prepare ROW/MOT Plans (2nd Submission)
- Design QA/QC Review (2nd Submission)

Right of Way Acquisition, Phase 1 ROW

- Prepare Title Reports (Begin at Constractor's Risk)
- Prepare Appraisals
- Independent Appraisal Review / Approval
- Prepare / Deliver Offers
- Negotiations
- Prepare Acceptance or Certificate
- Settlement or Record Cert.

After phase 1 is complete there are two defined critical paths identified below:

Phase II - Construction (Path A)

Stage 1A, NB - Station 113+00 to Gloucester Parkway

- Clearing, E&S, MOT
- Demolish Structures
- Storm Drainage

Stage 1B, NB - Hay Road to Station 99+00

- Storm Drainage
- Earthworks

Stage 1B, SB - Station 82+00 to 73+00

- Earthworks Cuts & Fills
- Roadway Sections

Stage 1B, SB - Station 113+00 to 99+00

- Roadway Section

Stage 1B, NB - Hay Road to Station 99+00

- Roadway Section
- Ready to Switch Traffic to 2B

Stage 2B, NB - 113+00 to Station 99+00

- Clearing, E&S, MOT

Stage 2B, SB - Station 99+00 to 82+00

- Clearing, E&S, MOT

Stage 2B, SB - Station 73+00 to Hay Road

- Clearing, E&S, MOT

- Storm Drainage
- Earthworks

Stage 2B, SB - Station 99+00 to 82+00

- Earthwork Cuts & Fills

Stage 3, Demolish Median Crossovers

- E&S, MOT
- Demo Crossovers & Establish Medians
- Roadway Section

Stage 2A, SB - Gloucester Parkway to Station 113+00

- Roadway Section
- Ready to Surface Pave

Stage 3, Establish Final Configuration

- Place Surface Asphalt / Pavement Markings
- All Lanes Open

General / Project Milestone

- Interim Milestone - Substantial Completion

Stage 3

- Closeout Documents, As-builts, Materials Books
- Final Completion

Phase II Construction (Path B)

Stage 1A, NB - Station 113+00 to Gloucester Parkway

- Clearing, E&S, MOT

Stage 1A, NB Bridge Structure

- Drive Abutment A Pile
- Place Abutment A MSE Wall Leveling Pad
- Install Abutment A - MSE and Wire Wall
- FPS Abument B - Pile Cap and Beam Seat
- Erect Bridge Beams
- FPS Abutment A - Backwall
- Install Bridge Deck Overhang and Install Nelson Studs
- Place Bridge Deck Reinforcing
- Place Screed Rail - Dry Run
- Cast and Cure Deck
- FPS Abutment A Approach Slab
- FPS Abutment B Approach Slab
- Backfill Abutment A Approach Slab
- Backfill Abutment B Approach Slab
- Install Barrier and Curb Reinforcing Steel
- FPS Barrier and Curb Fence Concrete
- Install BR-27C and Pedestrian Fence

Stage 1A, NB - Station 113+00 to Gloucester Parkway

- Roadway Section - Bridge Approaches
- Ready to Switch Traffic into Stage 2A

General / Project Milestones

- Achieve Unique Shirley Milestone - Grade Separation at W&OD Trail

Stage 2A, SB - Gloucester Parkway to Station 113+00

- Clearing, E&S, MOT
- Storm Drain
- Earthworks Cuts & Fills
- Drive Abutment A Pile
- Place Abutment A - MSE Wall Leveling Pad
- Install Abutment A - MSE Wall
- Install Abutment B - MSE Wall
- FPS Abutment B - Pile Cap and Beam Seat
- Erect Bridge Beams
- Install SIP Deck Pans
- FPS Abutment A - Backwall
- FPS Abutment B - Backwall
- Install Bridge Deck Overhang and Install Nelson Studs
- Place Bridge Deck Reinforcing
- Place Screed Rail - Dry Run
- FPS Abutment A Approach Slab
- Backfill Abutment A Approach Slab
- Backfill Abutment B Approach Slab
- Ready for Approach Pavement

General / Project Milestones

- Stage 2A Complete

Stage 3

- Inspect, Punchlist, Demobilize & Closeout
- Closeout Documents, As-builts, Materials Books
- Final Completion

Means and Methods

The following is a list of means and methods we plan on implemented on the Project:

- Temporary “Hawk Signal” to be placed along the at-grade crossing of the W&OD Trail and Route 659 at the start of construction. This will be in place until the grade separation of the Trail is provided.
- In order to control our desired foundation installation production, our Team plans to pre-drill both bridge abutments and noise barriers foundations prior to pile installation.
- Our proposal utilizes temporary relocations of both communications and power distribution to allow earlier construction of the northbound bridge and to minimize the risk of permanent relocation delays.
- Installation of Bridge Beams
    - Prior to bid - coordinated with DVP on de-energizing the overhead transmission lines for beam erection.

    - Off peak construction - Night time operation ensuring safety of motorists and Trail users.
- During design and prior to construction - geotechnical explorations are performed to locate rock elevations at critical areas of excavation. As an example, our Team will explore where storm sewer is to be located verifying the elevation and type of rock so that we can determine if pre-installation blasting or drilling will be necessary to pre-excavate pipe runs. This ensures our planned production, maintains efficiency and reduces risk of schedule delays.
- Surface paving will be performed prior to opening traffic to final configuration, verses afterwards as described in the RFP. This will increase motorist and worker safety, and reduce the schedule duration and risk of delays.
- As Shirley is the Contractor for the Route 7/Belmont Ridge Road Interchange, coordination between the two projects is greatly enhanced. In addition, we plan to establish a combined storage and office complex for both projects limit the impact to the surrounding community.
- To provide the grade separation of Route 659 over the W&OD Trail adjacent to live traffic and within RFP restricted right-of-way footprint, a temporary wire wall will be installed between the bridge phases.

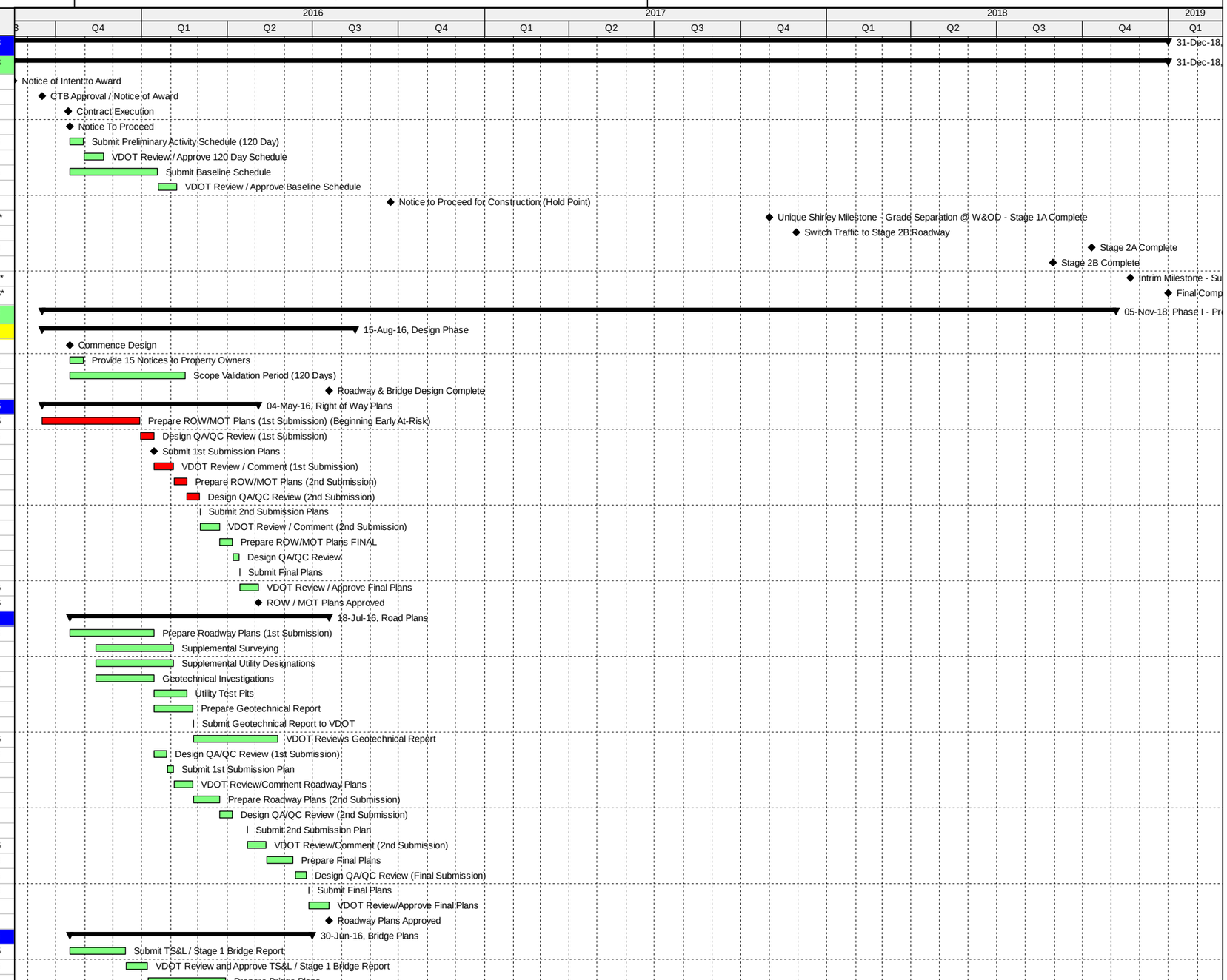
Key Assumptions

- The Sanitary Sewer conflict between Station 51+00 to 73+00 can be avoided with our Team's design concept of the noise barrier as discussed in the Proprietary Meeting.
- Environmental permitting agencies will accept VDOT's RFP avoidance and minimization efforts taken in the RFP phase as sufficient to process permit without delay.
- Utility companies will coordinate their relocations in accordance with our Project Schedule.
- NVPRA will accept the accommodations made in the RFP when granting the Project license.
- There are no hazardous material, threatened & endangered species, or unforeseen environmental constraints, other than those identified in the RFP, that could delay the Project Schedule.
- Crew leveling has been developed through crew-flow relationships between like activities.

Summary

Our Team's comprehensive pre-proposal preparation, proven experience in all phases of design-build, and extensive project controls and schedule management and recovery techniques serve to ensure that the Project will complete on schedule. Over the years, we have built a solid professional reputation on meeting our commitments, completing projects ahead of schedule and under budget, performing quality work in a safe work environment, and establishing a problem-solving atmosphere and partnership with the Owner. This is a result of our extensive experience, quality people, and corporate commitment. The Route 659 (Belmont Ridge Road) - Reconstruct to 4-Lanes Project is a challenging and exciting Project for our Team and is one that we will bring this same level of commitment to for the benefit of VDOT, Loudoun County, NVRPA, and the public.

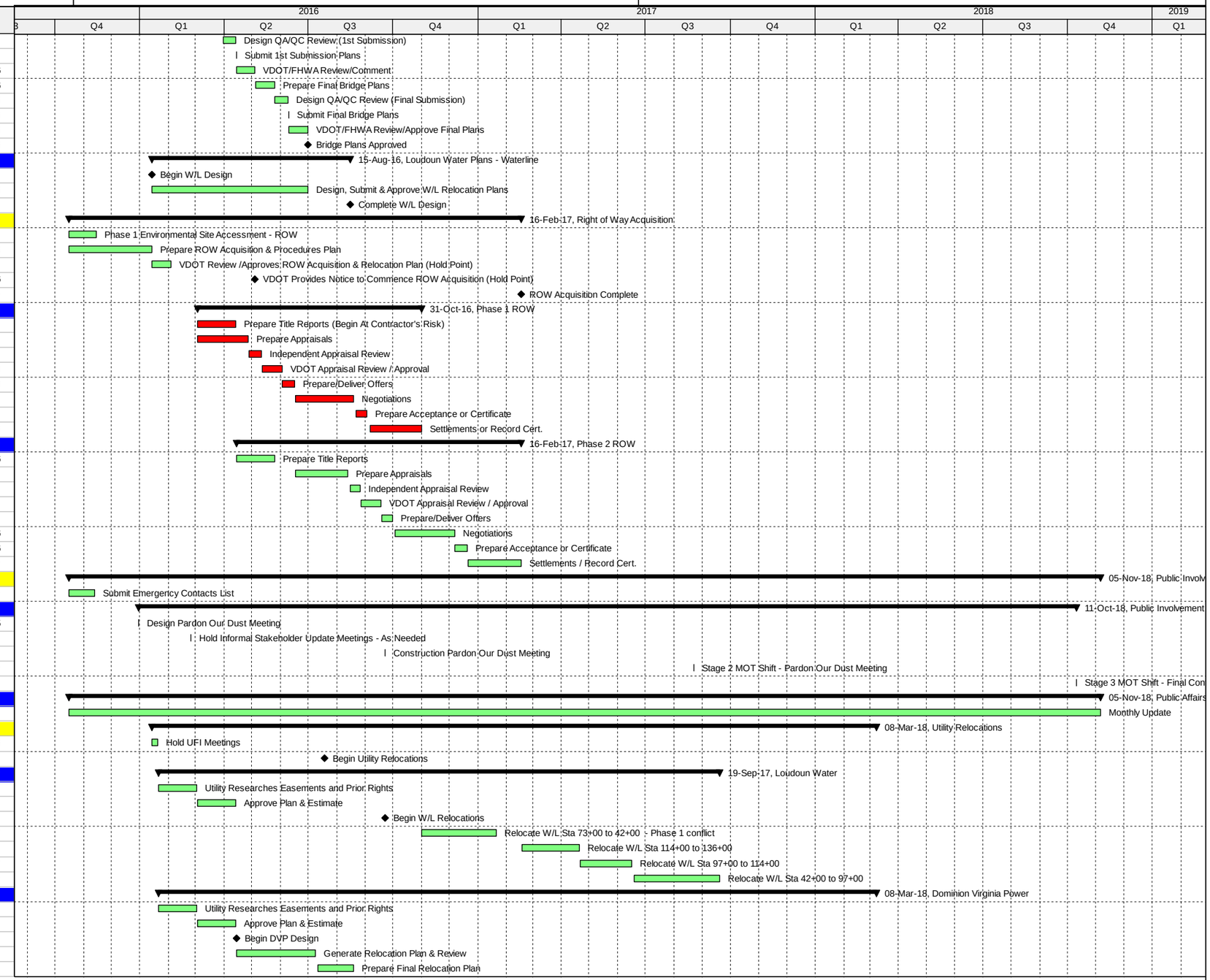
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
Route 659 (Belmont Ridge Road) - Reconst		881	86	17-Aug-15	31-Dec-18
General / Project Milestones		881	0	17-Aug-15	31-Dec-18
MS-1000	Notice of Intent to Award	0	21		17-Aug-15
MS-1010	CTB Approval / Notice of Award	0	0	16-Sep-15*	
MS-1020	Contract Execution	0	20	14-Oct-15*	
MS-1030	Notice To Proceed	0	18	16-Oct-15*	
MS-1100	Submit Preliminary Activity Schedule (120 D	15	284	16-Oct-15	30-Oct-15
MS-1110	VDOT Review / Approve 120 Day Schedule	21	284	31-Oct-15	20-Nov-15
MS-1200	Submit Baseline Schedule	90	230	16-Oct-15	17-Jan-16
MS-1210	VDOT Review / Approve Baseline Schedule	21	230	18-Jan-16	07-Feb-16
MS-2000	Notice to Proceed for Construction (Hold P	0	4	22-Sep-16	
MS-2100	Unique Shirley Milestone - Grade Separatic	0	0		31-Oct-17*
MS-2200	Switch Traffic to Stage 2B Roadway	0	20		29-Nov-17
MS-2300	Stage 2A Complete	0	0		10-Oct-18
MS-2350	Stage 2B Complete	0	29		30-Aug-18
MS-2450	Intrim Milestone - Substantial Completion -	0	0		21-Nov-18*
MS-2800	Final Completion	0	0		31-Dec-18*
Phase I - Project Management		819	126	16-Sep-15	05-Nov-18
Design Phase		239	86	16-Sep-15	15-Aug-16
DES-1000	Commence Design	0	18	16-Oct-15	
DES-1010	Provide 15 Notices to Property Owners	15	42	16-Oct-15	30-Oct-15
DES-1050	Scope Validation Period (120 Days)	120	47	16-Oct-15	16-Feb-16
DES-1500	Roadway & Bridge Design Complete	0	49		18-Jul-16
Right of Way Plans		166	5	16-Sep-15	04-May-16
DES-2000	Prepare ROW/MOT Plans (1st Submissior	72	0	16-Sep-15	29-Dec-15
DES-2010	Design QA/QC Review (1st Submission)	10	0	30-Dec-15	13-Jan-16
DES-2020	Submit 1st Submission Plans	0	0	14-Jan-16	
DES-2030	VDOT Review / Comment (1st Submission)	21	0	14-Jan-16	03-Feb-16
DES-2040	Prepare ROW/MOT Plans (2nd Submissio	10	0	04-Feb-16	17-Feb-16
DES-2050	Design QA/QC Review (2nd Submission)	10	0	18-Feb-16	02-Mar-16
DES-2060	Submit 2nd Submission Plans	0	5	03-Mar-16	03-Mar-16
DES-2070	VDOT Review / Comment (2nd Submissior	21	7	03-Mar-16	23-Mar-16
DES-2080	Prepare ROW/MOT Plans FINAL	10	5	24-Mar-16	06-Apr-16
DES-2090	Design QA/QC Review	5	5	07-Apr-16	13-Apr-16
DES-2100	Submit Final Plans	0	5	14-Apr-16	14-Apr-16
DES-2110	VDOT Review / Approve Final Plans	21	7	14-Apr-16	04-May-16
DES-2120	ROW / MOT Plans Approved	0	5		04-May-16
Road Plans		197	50	16-Oct-15	18-Jul-16
DES-3000	Prepare Roadway Plans (1st Submission)	60	19	16-Oct-15	13-Jan-16
DES-3010	Supplemental Surveying	55	42	13-Nov-15	03-Feb-16
DES-3020	Supplemental Utility Designations	55	42	13-Nov-15	03-Feb-16
DES-3030	Geotechnical Investigations	40	19	13-Nov-15	13-Jan-16
DES-3040	Utility Test Pits	25	110	14-Jan-16	17-Feb-16
DES-3050	Prepare Geotechnical Report	30	19	14-Jan-16	24-Feb-16
DES-3060	Submit Geotechnical Report to VDOT	0	19	25-Feb-16	25-Feb-16
DES-3070	VDOT Reviews Geotechnical Report	90	27	25-Feb-16	24-May-16
DES-3080	Design QA/QC Review (1st Submission)	10	27	14-Jan-16	27-Jan-16
DES-3090	Submit 1st Submission Plan	5	27	28-Jan-16	03-Feb-16
DES-3100	VDOT Review/Comment Roadway Plans	21	39	04-Feb-16	24-Feb-16
DES-3110	Prepare Roadway Plans (2nd Submission)	20	27	25-Feb-16	23-Mar-16
DES-3120	Design QA/QC Review (2nd Submission)	10	27	24-Mar-16	06-Apr-16
DES-3130	Submit 2nd Submission Plan	0	50	22-Apr-16	22-Apr-16
DES-3140	VDOT Review/Comment (2nd Submission)	21	71	22-Apr-16	12-May-16
DES-3200	Prepare Final Plans	20	49	13-May-16	10-Jun-16
DES-3210	Design QA/QC Review (Final Submission)	10	49	13-Jun-16	24-Jun-16
DES-3220	Submit Final Plans	0	49	27-Jun-16	27-Jun-16
DES-3230	VDOT Review/Approve Final Plans	21	69	27-Jun-16	18-Jul-16
DES-3240	Roadway Plans Approved	0	49		18-Jul-16
Bridge Plans		185	62	16-Oct-15	30-Jun-16
DES-4000	Submit TS&L / Stage 1 Bridge Report	40	18	16-Oct-15	14-Dec-15
DES-4010	VDOT Review and Approve TS&L / Stage 1	21	26	15-Dec-15	06-Jan-16
DES-4020	Prepare Bridge Plans	60	18	07-Jan-16	30-Mar-16



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Shirley Contracting Company, LLC

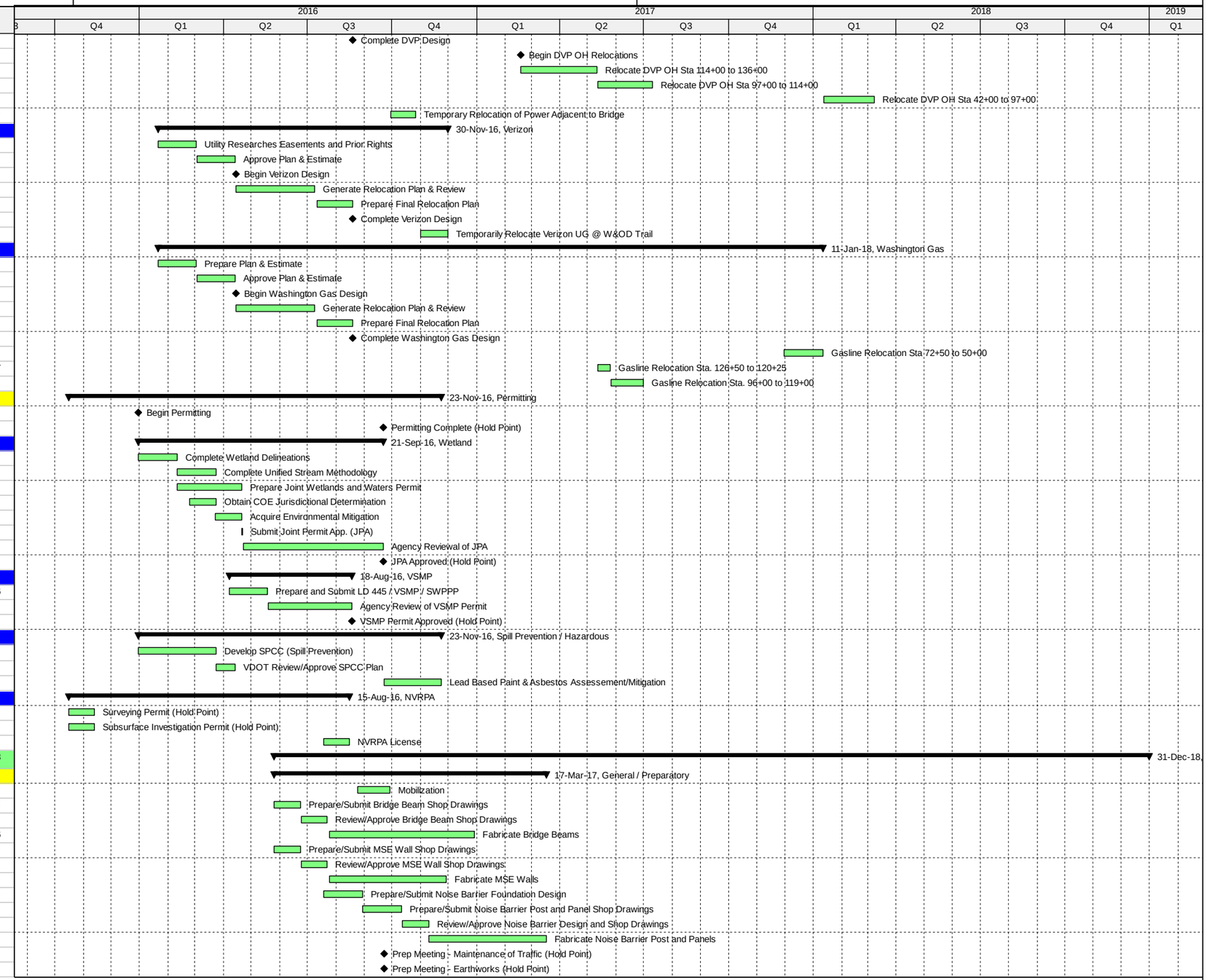
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
DES-4030	Design QA/QC Review (1st Submission)	10	18	31-Mar-16	13-Apr-16
DES-4040	Submit 1st Submission Plans	0	18	14-Apr-16	14-Apr-16
DES-4050	VDOT/FHWA Review/Comment	21	26	14-Apr-16	04-May-16
DES-4060	Prepare Final Bridge Plans	15	18	05-May-16	25-May-16
DES-4070	Design QA/QC Review (Final Submission)	10	60	26-May-16	09-Jun-16
DES-4080	Submit Final Bridge Plans	0	60	10-Jun-16	10-Jun-16
DES-4090	VDOT/FHWA Review/Approve Final Plans	21	86	10-Jun-16	30-Jun-16
DES-4100	Bridge Plans Approved	0	60		30-Jun-16
Loudoun Water Plans - Waterline		**151**	**83**	**14-Jan-16**	**15-Aug-16**
UR-2020	Begin W/L Design	0	114	14-Jan-16	
UR-2030	Design, Submit & Approve W/L Relocation I	120	114	14-Jan-16	30-Jun-16
UR-2040	Complete W/L Design	0	83		15-Aug-16
Right of Way Acquisition		**350**	**6**	**16-Oct-15**	**16-Feb-17**
ROW-1000	Phase 1 Environmental Site Accessment - I	30	56	16-Oct-15	14-Nov-15
ROW-1010	Prepare ROW Acquisition & Procedures Pl	60	70	16-Oct-15	13-Jan-16
ROW-1060	VDOT Review /Approves ROW Acquisition	21	98	14-Jan-16	03-Feb-16
ROW-1080	VDOT Provides Notice to Commence ROV	0	5		04-May-16
ROW-1100	ROW Acquisition Complete	0	6		16-Feb-17
Phase 1 ROW		**173**	**0**	**03-Mar-16**	**31-Oct-16**
ROW-2000	Prepare Title Reports (Begin At Contractor'	30	0	03-Mar-16	13-Apr-16
ROW-2010	Prepare Appraisals	40	0	03-Mar-16	27-Apr-16
ROW-2020	Independent Appraisal Review	10	0	28-Apr-16	11-May-16
ROW-2030	VDOT Appraisal Review / Approval	21	0	12-May-16	02-Jun-16
ROW-2040	Prepare/Deliver Offers	10	0	03-Jun-16	16-Jun-16
ROW-2050	Negotiations	45	0	17-Jun-16	19-Aug-16
ROW-2060	Prepare Acceptance or Certificate	10	0	22-Aug-16	02-Sep-16
ROW-2070	Settlements or Record Cert.	40	0	06-Sep-16	31-Oct-16
Phase 2 ROW		**221**	**6**	**14-Apr-16**	**16-Feb-17**
ROW-3000	Prepare Title Reports	30	50	14-Apr-16	25-May-16
ROW-3010	Prepare Appraisals	40	5	17-Jun-16	12-Aug-16
ROW-3020	Independent Appraisal Review	10	5	15-Aug-16	26-Aug-16
ROW-3030	VDOT Appraisal Review / Approval	21	9	27-Aug-16	17-Sep-16
ROW-3040	Prepare/Deliver Offers	10	6	19-Sep-16	30-Sep-16
ROW-3050	Negotiations	45	6	03-Oct-16	06-Dec-16
ROW-3060	Prepare Acceptance or Certificate	10	6	07-Dec-16	20-Dec-16
ROW-3070	Settlements / Record Cert.	40	6	21-Dec-16	16-Feb-17
Public Involvement		**797**	**126**	**16-Oct-15**	**05-Nov-18**
PI-1000	Submit Emergency Contacts List	20	221	16-Oct-15	12-Nov-15
Public Involvement Meetings		**712**	**30**	**30-Dec-15**	**11-Oct-18**
PI-2000	Design Pardon Our Dust Meeting	0	47	30-Dec-15	30-Dec-15
PI-2010	Hold Informal Stakeholder Update Meetings	0	91	25-Feb-16	25-Feb-16
PI-2020	Construction Pardon Our Dust Meeting	0	28	22-Sep-16	22-Sep-16
PI-2030	Stage 2 MOT Shift - Pardon Our Dust Mee	0	50	22-Aug-17	22-Aug-17
PI-2040	Stage 3 MOT Shift - Final Configuration - P	0	30	11-Oct-18	11-Oct-18
Public Affairs Updates		**1100**	**176**	**16-Oct-15**	**05-Nov-18**
PI-3000	Monthly Update	1100	176	16-Oct-15	05-Nov-18
Utility Relocations		**548**	**20**	**14-Jan-16**	**08-Mar-18**
UR-1000	Hold UFI Meetings	5	77	14-Jan-16	20-Jan-16
UR-1010	Begin Utility Relocations	0	103	19-Jul-16	
Loudoun Water		**424**	**69**	**21-Jan-16**	**19-Sep-17**
UR-2000	Utility Researches Easements and Prior Ri	30	169	21-Jan-16	02-Mar-16
UR-2010	Approve Plan & Estimate	30	169	03-Mar-16	13-Apr-16
UR-2050	Begin W/L Relocations	0	57	22-Sep-16	
UR-2060	Relocate W/L Sta 73+00 to 42+00 - Phase	55	29	01-Nov-16	20-Jan-17
UR-2070	Relocate W/L Sta 114+00 to 136+00	45	56	17-Feb-17	20-Apr-17
UR-2080	Relocate W/L Sta 97+00 to 114+00	40	69	21-Apr-17	16-Jun-17
UR-2090	Relocate W/L Sta 42+00 to 97+00	65	69	19-Jun-17	19-Sep-17
Dominion Virginia Power		**543**	**20**	**21-Jan-16**	**08-Mar-18**
UR-3000	Utility Researches Easements and Prior Ri	30	77	21-Jan-16	02-Mar-16
UR-3005	Approve Plan & Estimate	30	77	03-Mar-16	13-Apr-16
UR-3010	Begin DVP Design	0	77	14-Apr-16	
UR-3020	Generate Relocation Plan & Review	60	77	14-Apr-16	08-Jul-16
UR-3030	Prepare Final Relocation Plan	30	77	11-Jul-16	19-Aug-16



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Shirley Contracting Company, LLC

Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
UR-3040	Complete DVP Design	0	77		19-Aug-16
UR-3050	Begin DVP OH Relocations	0	6	17-Feb-17	
UR-3060	Relocate DVP OH Sta 114+00 to 136+00	60	6	17-Feb-17	11-May-17
UR-3070	Relocate DVP OH Sta 97+00 to 114+00	40	149	12-May-17	10-Jul-17
UR-3080	Relocate DVP OH Sta 42+00 to 97+00	40	20	12-Jan-18	08-Mar-18
UR-3090	Temporary Relocation of Power Adjacent to	20	50	29-Sep-16	26-Oct-16
Verizon		220	27	21-Jan-16	30-Nov-16
UR-4000	Utility Researches Easements and Prior Ri	30	77	21-Jan-16	02-Mar-16
UR-4010	Approve Plan & Estimate	30	77	03-Mar-16	13-Apr-16
UR-4020	Begin Verizon Design	0	77	14-Apr-16	
UR-4030	Generate Relocation Plan & Review	60	77	14-Apr-16	08-Jul-16
UR-4040	Prepare Final Relocation Plan	30	77	11-Jul-16	19-Aug-16
UR-4050	Complete Verizon Design	0	77		19-Aug-16
UR-4060	Temporarily Relocate Verizon UG @ W&OI	20	27	01-Nov-16	30-Nov-16
Washington Gas		503	20	21-Jan-16	11-Jan-18
UR-5000	Prepare Plan & Estimate	30	343	21-Jan-16	02-Mar-16
UR-5010	Approve Plan & Estimate	30	343	03-Mar-16	13-Apr-16
UR-5020	Begin Washington Gas Design	0	343	14-Apr-16	
UR-5030	Generate Relocation Plan & Review	60	343	14-Apr-16	08-Jul-16
UR-5040	Prepare Final Relocation Plan	30	343	11-Jul-16	19-Aug-16
UR-5050	Complete Washington Gas Design	0	343		19-Aug-16
UR-5060	Gasline Relocation Sta 72+50 to 50+00	30	20	30-Nov-17	11-Jan-18
UR-5070	Gasline Relocation Sta. 126+50 to 120+25	10	6	12-May-17	25-May-17
UR-5080	Gasline Relocation Sta. 96+00 to 119+00	25	6	26-May-17	30-Jun-17
Permitting		289	6	16-Oct-15	23-Nov-16
ENV-1000	Begin Permitting	0	4	30-Dec-15	
ENV-1020	Permitting Complete (Hold Point)	0	4		21-Sep-16
Wetland		191	4	30-Dec-15	21-Sep-16
ENV-2000	Complete Wetland Delineations	30	4	30-Dec-15	10-Feb-16
ENV-2010	Complete Unified Stream Methodology	30	24	11-Feb-16	23-Mar-16
ENV-2020	Prepare Joint Wetlands and Waters Permit	50	4	11-Feb-16	20-Apr-16
ENV-2030	Obtain COE Jurisdictional Determination	21	24	24-Feb-16	23-Mar-16
ENV-2040	Acquire Environmental Mitigation	21	4	23-Mar-16	20-Apr-16
ENV-2050	Submit Joint Permit App. (JPA)	1	4	21-Apr-16	21-Apr-16
ENV-2060	Agency Reviewal of JPA	150	6	22-Apr-16	21-Sep-16
ENV-2070	JPA Approved (Hold Point)	0	4		21-Sep-16
VSMP		96	28	07-Apr-16	18-Aug-16
ENV-3000	Prepare and Submit LD 445 / VSMP / SWP	30	27	07-Apr-16	18-May-16
ENV-3010	Agency Review of VSMP Permit	90	39	19-May-16	18-Aug-16
ENV-3020	VSMP Permit Approved (Hold Point)	0	27		18-Aug-16
Spill Prevention / Hazardous		236	6	30-Dec-15	23-Nov-16
ENV-4000	Develop SPCC (Spill Prevention)	60	116	30-Dec-15	23-Mar-16
ENV-4010	VDOT Review/Approve SPCC Plan	21	164	24-Mar-16	13-Apr-16
ENV-4020	Lead Based Paint & Asbestos Assessemer	45	4	22-Sep-16	23-Nov-16
NVRPA		211	54	16-Oct-15	15-Aug-16
ENV-5000	Surveying Permit (Hold Point)	20	42	16-Oct-15	12-Nov-15
ENV-5010	Subsurface Investigation Permit (Hold Poin	20	49	16-Oct-15	12-Nov-15
ENV-5020	NVRPA License	20	54	19-Jul-16	15-Aug-16
Phase II - Construction		678	0	26-May-16	31-Dec-18
General / Preparatory		212	85	26-May-16	17-Mar-17
C0000	Mobilization	25	23	24-Aug-16	28-Sep-16
C0020	Prepare/Submit Bridge Beam Shop Drawin	20	84	26-May-16	23-Jun-16
C0025	Review/Approve Bridge Beam Shop Drawir	21	86	24-Jun-16	22-Jul-16
C0030	Fabricate Bridge Beams	110	85	25-Jul-16	29-Dec-16
C0040	Prepare/Submit MSE Wall Shop Drawings	20	18	26-May-16	23-Jun-16
C0045	Review/Approve MSE Wall Shop Drawings	21	19	24-Jun-16	22-Jul-16
C0050	Fabricate MSE Walls	88	19	25-Jul-16	28-Nov-16
C0060	Prepare/Submit Noise Barrier Foundation D	30	83	19-Jul-16	29-Aug-16
C0070	Prepare/Submit Noise Barrier Post and Par	30	83	30-Aug-16	11-Oct-16
C0075	Review/Approve Noise Barrier Design and	21	87	12-Oct-16	09-Nov-16
C0080	Fabricate Noise Barrier Post and Panels	88	83	10-Nov-16	17-Mar-17
C0200	Prep Meeting - Maintenance of Traffic (Hol	0	28	22-Sep-16	
C0210	Prep Meeting - Earthworks (Hold Point)	0	117	22-Sep-16	



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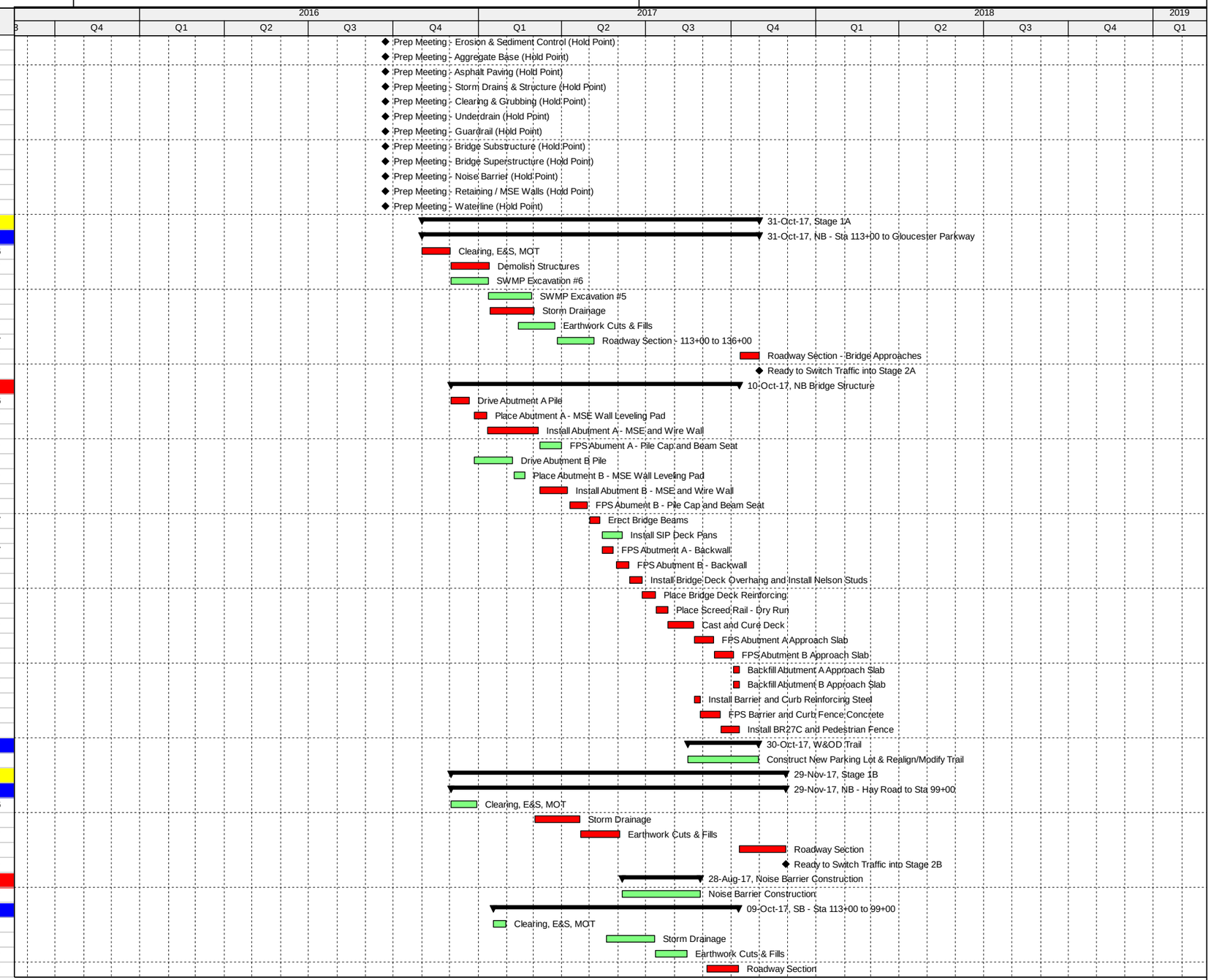
Remaining Work | Milestone

Shirley Contracting Company, LLC

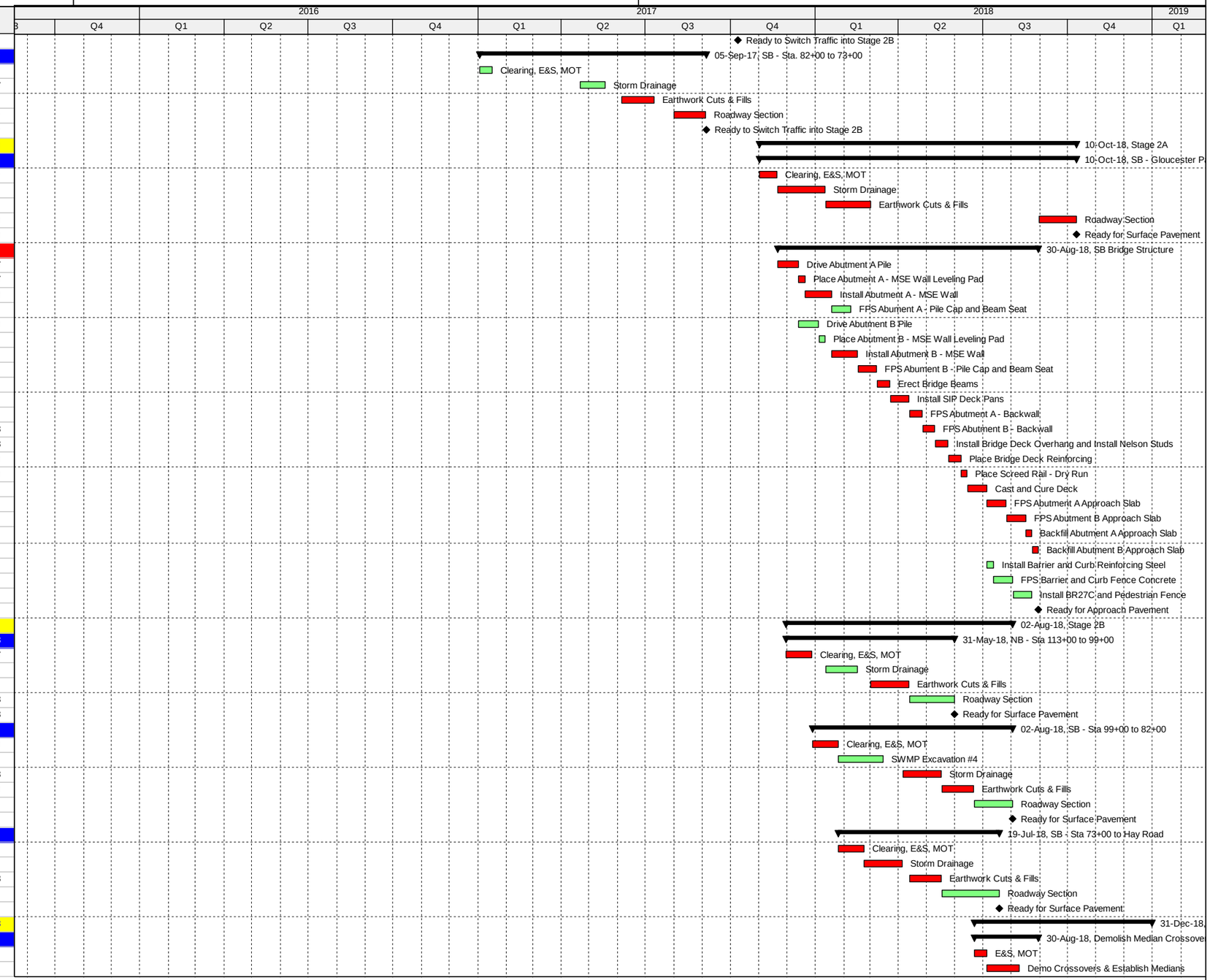
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
C0220	Prep Meeting - Erosion & Sediment Control	0	28	22-Sep-16	
C0230	Prep Meeting - Aggregate Base (Hold Point)	0	187	22-Sep-16	
C0240	Prep Meeting - Asphalt Paving (Hold Point)	0	187	22-Sep-16	
C0250	Prep Meeting - Storm Drains & Structure (H	0	77	22-Sep-16	
C0260	Prep Meeting - Clearing & Grubbing (Hold P	0	28	22-Sep-16	
C0270	Prep Meeting - Underdrain (Hold Point)	0	187	22-Sep-16	
C0280	Prep Meeting - Guardrail (Hold Point)	0	187	22-Sep-16	
C0290	Prep Meeting - Bridge Substructure (Hold P	0	49	22-Sep-16	
C0300	Prep Meeting - Bridge Superstructure (Hold	0	153	22-Sep-16	
C0310	Prep Meeting - Noise Barrier (Hold Point)	0	206	22-Sep-16	
C0320	Prep Meeting - Retaining / MSE Walls (Hold	0	65	22-Sep-16	
C0330	Prep Meeting - Waterline (Hold Point)	0	57	22-Sep-16	
Stage 1A		261	0	01-Nov-16	31-Oct-17
NB - Sta 113+00 to Gloucester Parkway		261	0	01-Nov-16	31-Oct-17
C1200	Clearing, E&S, MOT	21	0	01-Nov-16	01-Dec-16
C1205	Demolish Structures	30	0	02-Dec-16	12-Jan-17
C1210	SWMP Excavation #6	27	1	02-Dec-16	11-Jan-17
C1215	SWMP Excavation #5	33	59	12-Jan-17	27-Feb-17
C1220	Storm Drainage	35	0	13-Jan-17	02-Mar-17
C1230	Earthwork Cuts & Fills	30	19	13-Feb-17	24-Mar-17
C1240	Roadway Section - 113+00 to 136+00	30	59	27-Mar-17	05-May-17
C1250	Roadway Section - Bridge Approaches	15	0	11-Oct-17	31-Oct-17
C1260	Ready to Switch Traffic into Stage 2A	0	0		31-Oct-17
NB Bridge Structure		223	0	02-Dec-16	10-Oct-17
C1300	Drive Abutment A Pile	15	0	02-Dec-16	22-Dec-16
C1305	Place Abutment A - MSE Wall Leveling Pad	5	0	27-Dec-16	09-Jan-17
C1310	Install Abutment A - MSE and Wire Wall	20	0	11-Jan-17	06-Mar-17
C1315	FPS Abument A - Pile Cap and Beam Seat	15	20	08-Mar-17	31-Mar-17
C1320	Drive Abutment B Pile	15	5	27-Dec-16	06-Feb-17
C1325	Place Abutment B - MSE Wall Leveling Pad	5	5	08-Feb-17	20-Feb-17
C1330	Install Abutment B - MSE and Wire Wall	20	0	08-Mar-17	07-Apr-17
C1335	FPS Abument B - Pile Cap and Beam Seat	15	0	10-Apr-17	28-Apr-17
C1340	Erect Bridge Beams	10	0	01-May-17	12-May-17
C1345	Install SIP Deck Pans	15	15	15-May-17	05-Jun-17
C1350	FPS Abutment A - Backwall	10	0	15-May-17	26-May-17
C1355	FPS Abutment B - Backwall	10	0	30-May-17	12-Jun-17
C1360	Install Bridge Deck Overhang and Install N	10	0	13-Jun-17	26-Jun-17
C1365	Place Bridge Deck Reinforcing	10	0	27-Jun-17	11-Jul-17
C1370	Place Screed Rail - Dry Run	9	0	12-Jul-17	24-Jul-17
C1375	Cast and Cure Deck	20	0	25-Jul-17	21-Aug-17
C1380	FPS Abutment A Approach Slab	15	0	22-Aug-17	12-Sep-17
C1385	FPS Abutment B Approach Slab	15	0	13-Sep-17	03-Oct-17
C1390	Backfill Abutment A Approach Slab	5	0	04-Oct-17	10-Oct-17
C1395	Backfill Abutment B Approach Slab	5	0	04-Oct-17	10-Oct-17
C1396	Install Barrier and Curb Reinforcing Steel	5	0	22-Aug-17	28-Aug-17
C1397	FPS Barrier and Curb Fence Concrete	15	0	29-Aug-17	19-Sep-17
C1398	Install BR27C and Pedestrian Fence	15	0	20-Sep-17	10-Oct-17
W&OD Trail		54	1	15-Aug-17	30-Oct-17
C1400	Construct New Parking Lot & Realign/Modi	54	1	15-Aug-17	30-Oct-17
Stage 1B		259	0	02-Dec-16	29-Nov-17
NB - Hay Road to Sta 99+00		259	0	02-Dec-16	29-Nov-17
C1100	Clearing, E&S, MOT	20	43	02-Dec-16	30-Dec-16
C1140	Storm Drainage	35	0	03-Mar-17	20-Apr-17
C1150	Earthwork Cuts & Fills	30	0	21-Apr-17	02-Jun-17
C1160	Roadway Section	35	0	10-Oct-17	29-Nov-17
C1170	Ready to Switch Traffic into Stage 2B	0	0		29-Nov-17
Noise Barrier Construction		60	29	05-Jun-17	28-Aug-17
C1130	Noise Barrier Construction	60	29	05-Jun-17	28-Aug-17
SB - Sta 113+00 to 99+00		190	37	17-Jan-17	09-Oct-17
C1500	Clearing, E&S, MOT	10	79	17-Jan-17	30-Jan-17
C1510	Storm Drainage	35	1	19-May-17	10-Jul-17
C1520	Earthwork Cuts & Fills	25	1	11-Jul-17	14-Aug-17
C1530	Roadway Section	25	0	05-Sep-17	09-Oct-17



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Shirley Contracting Company, LLC

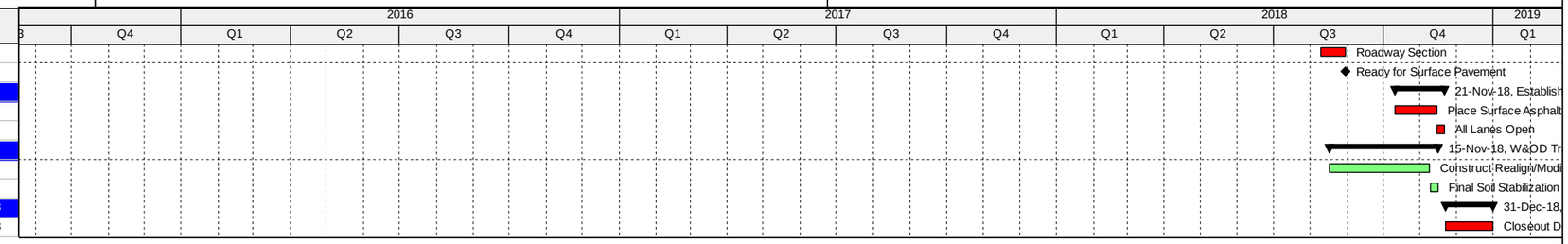
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
C1540	Ready to Switch Traffic into Stage 2B	0	35		09-Oct-17
SB - Sta. 82+00 to 73+00		**175**	**62**	**03-Jan-17**	**05-Sep-17**
C3560	Clearing, E&S, MOT	10	68	03-Jan-17	16-Jan-17
C3570	Storm Drainage	20	1	21-Apr-17	18-May-17
C3580	Earthwork Cuts & Fills	25	0	05-Jun-17	10-Jul-17
C3590	Roadway Section	25	0	01-Aug-17	04-Sep-17
C3600	Ready to Switch Traffic into Stage 2B	0	60		05-Sep-17
Stage 2A		**246**	**0**	**01-Nov-17**	**10-Oct-18**
SB - Gloucester Parkway to Sta 113+00		**246**	**0**	**01-Nov-17**	**10-Oct-18**
C2100	Clearing, E&S, MOT	14	0	01-Nov-17	20-Nov-17
C2120	Storm Drainage	35	0	21-Nov-17	11-Jan-18
C2130	Earthwork Cuts & Fills	35	0	12-Jan-18	01-Mar-18
C2140	Roadway Section	29	0	31-Aug-18	10-Oct-18
C2150	Ready for Surface Pavement	0	0		10-Oct-18
SB Bridge Structure		**203**	**0**	**21-Nov-17**	**30-Aug-18**
C3310	Drive Abutment A Pile	15	0	21-Nov-17	13-Dec-17
C3320	Place Abutment A - MSE Wall Leveling Pad	5	0	14-Dec-17	20-Dec-17
C3330	Install Abutment A - MSE Wall	20	0	21-Dec-17	18-Jan-18
C3340	FPS Abument A - Pile Cap and Beam Seat	15	5	19-Jan-18	08-Feb-18
C3350	Drive Abutment B Pile	15	5	14-Dec-17	04-Jan-18
C3360	Place Abutment B - MSE Wall Leveling Pad	5	5	05-Jan-18	11-Jan-18
C3370	Install Abutment B - MSE Wall	20	0	19-Jan-18	15-Feb-18
C3380	FPS Abument B - Pile Cap and Beam Seat	15	0	16-Feb-18	08-Mar-18
C3390	Erect Bridge Beams	10	0	09-Mar-18	22-Mar-18
C3400	Install SIP Deck Pans	15	0	23-Mar-18	12-Apr-18
C3410	FPS Abutment A - Backwall	10	0	13-Apr-18	26-Apr-18
C3420	FPS Abutment B - Backwall	10	0	27-Apr-18	10-May-18
C3430	Install Bridge Deck Overhang and Install N	10	0	11-May-18	24-May-18
C3440	Place Bridge Deck Reinforcing	10	0	25-May-18	07-Jun-18
C3450	Place Screed Rail - Dry Run	5	0	08-Jun-18	14-Jun-18
C3460	Cast and Cure Deck	15	0	15-Jun-18	05-Jul-18
C3470	FPS Abutment A Approach Slab	15	0	06-Jul-18	26-Jul-18
C3480	FPS Abutment B Approach Slab	15	0	27-Jul-18	16-Aug-18
C3490	Backfill Abutment A Approach Slab	5	0	17-Aug-18	23-Aug-18
C3500	Backfill Abutment B Approach Slab	5	0	24-Aug-18	30-Aug-18
C3510	Install Barrier and Curb Reinforcing Steel	5	5	06-Jul-18	12-Jul-18
C3520	FPS Barrier and Curb Fence Concrete	15	5	13-Jul-18	02-Aug-18
C3530	Install BR27C and Pedestrian Fence	15	5	03-Aug-18	23-Aug-18
C3550	Ready for Approach Pavement	0	0		30-Aug-18
Stage 2B		**176**	**49**	**30-Nov-17**	**02-Aug-18**
NB - Sta 113+00 to 99+00		**131**	**94**	**30-Nov-17**	**31-May-18**
C2300	Clearing, E&S, MOT	20	0	30-Nov-17	28-Dec-17
C2310	Storm Drainage	25	5	12-Jan-18	15-Feb-18
C2320	Earthwork Cuts & Fills	30	0	02-Mar-18	12-Apr-18
C2330	Roadway Section	35	50	13-Apr-18	31-May-18
C2340	Ready for Surface Pavement	0	94		31-May-18
SB - Sta 99+00 to 82+00		**155**	**49**	**29-Dec-17**	**02-Aug-18**
C2400	Clearing, E&S, MOT	20	0	29-Dec-17	25-Jan-18
C2410	SWMP Excavation #4	35	15	26-Jan-18	15-Mar-18
C2420	Storm Drainage	30	0	06-Apr-18	17-May-18
C2430	Earthwork Cuts & Fills	25	0	18-May-18	21-Jun-18
C2440	Roadway Section	30	5	22-Jun-18	02-Aug-18
C2450	Ready for Surface Pavement	0	49		02-Aug-18
SB - Sta 73+00 to Hay Road		**125**	**59**	**26-Jan-18**	**19-Jul-18**
C3610	Clearing, E&S, MOT	20	0	26-Jan-18	22-Feb-18
C3630	Storm Drainage	30	0	23-Feb-18	05-Apr-18
C3640	Earthwork Cuts & Fills	25	0	13-Apr-18	17-May-18
C3650	Roadway Section	45	15	18-May-18	19-Jul-18
C3660	Ready for Surface Pavement	0	59		19-Jul-18
Stage 3		**137**	**0**	**22-Jun-18**	**31-Dec-18**
Demolish Median Crossovers		**50**	**29**	**22-Jun-18**	**30-Aug-18**
C3100	E&S, MOT	10	0	22-Jun-18	05-Jul-18
C3110	Demo Crossovers & Establish Medians	25	0	06-Jul-18	09-Aug-18



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Shirley Contracting Company, LLC

Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
C3120	Roadway Section	15	0	10-Aug-18	30-Aug-18
C3130	Ready for Surface Pavement	0	29		30-Aug-18
Establish Final Configuration		**30**	**0**	**11-Oct-18**	**21-Nov-18**
C4000	Place Surface Asphalt / Pavement Marking:	25	0	11-Oct-18	14-Nov-18
C4020	All Lanes Open	5	0	15-Nov-18	21-Nov-18
W&OD Trail		**65**	**4**	**17-Aug-18**	**15-Nov-18**
C5000	Construct Realign/Modify Trail	60	4	17-Aug-18	08-Nov-18
C5010	Final Soil Stabilization - Green Areas	5	4	09-Nov-18	15-Nov-18
Inspect, Punchlist, Demobilize & Closeout		**28**	**0**	**22-Nov-18**	**31-Dec-18**
FC-1030	Closeout Documents, As-Builts, Materials E	28	0	22-Nov-18	31-Dec-18



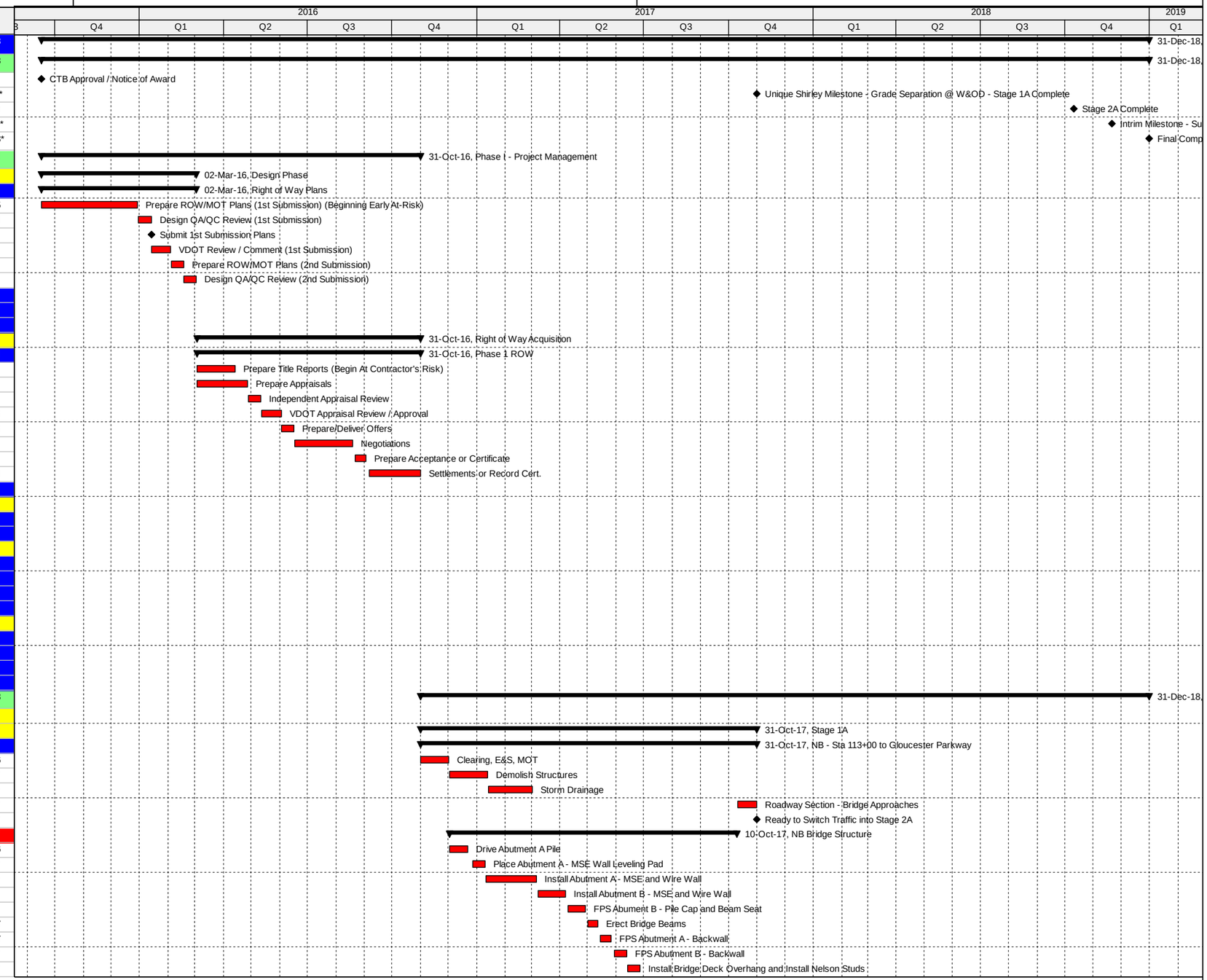
Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Route 659 (Belmont Ridge Road) - Reconstruct to 4-Lanes

4.7 Proposal Schedule - Critical Path

June 15, 2015

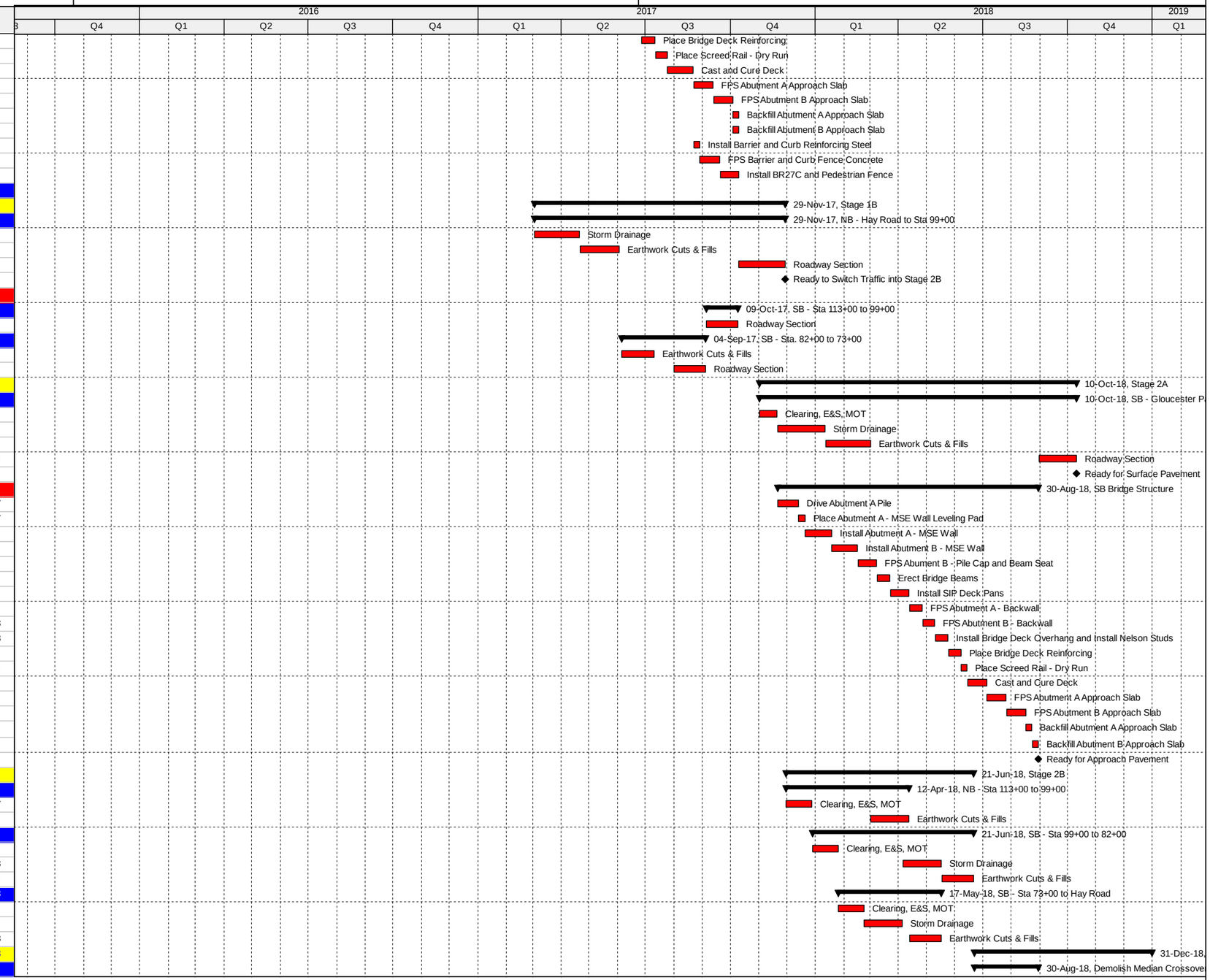
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
Route 659 (Belmont Ridge Road) - Reconst		859	0	16-Sep-15	31-Dec-18
General / Project Milestones		842	0	16-Sep-15	31-Dec-18
MS-1010	CTB Approval / Notice of Award	0	0	16-Sep-15*	
MS-2100	Unique Shirley Milestone - Grade Separatic	0	0		31-Oct-17*
MS-2300	Stage 2A Complete	0	0		10-Oct-18
MS-2450	Intrim Milestone - Substantial Completion -	0	0		21-Nov-18*
MS-2800	Final Completion	0	0		31-Dec-18*
Phase I - Project Management		294	0	16-Sep-15	31-Oct-16
Design Phase		121	0	16-Sep-15	02-Mar-16
Right of Way Plans		121	0	16-Sep-15	02-Mar-16
DES-2000	Prepare ROW/MOT Plans (1st Submissior	72	0	16-Sep-15	29-Dec-15
DES-2010	Design QA/QC Review (1st Submission)	10	0	30-Dec-15	13-Jan-16
DES-2020	Submit 1st Submission Plans	0	0	14-Jan-16	
DES-2030	VDOT Review / Comment (1st Submission)	21	0	14-Jan-16	03-Feb-16
DES-2040	Prepare ROW/MOT Plans (2nd Submissio	10	0	04-Feb-16	17-Feb-16
DES-2050	Design QA/QC Review (2nd Submission)	10	0	18-Feb-16	02-Mar-16
Road Plans		0	0		
Bridge Plans		0	0		
Loudoun Water Plans - Waterline		0	0		
Right of Way Acquisition		173	0	03-Mar-16	31-Oct-16
Phase 1 ROW		173	0	03-Mar-16	31-Oct-16
ROW-2000	Prepare Title Reports (Begin At Contractor'	30	0	03-Mar-16	13-Apr-16
ROW-2010	Prepare Appraisals	40	0	03-Mar-16	27-Apr-16
ROW-2020	Independent Appraisal Review	10	0	28-Apr-16	11-May-16
ROW-2030	VDOT Appraisal Review / Approval	21	0	12-May-16	02-Jun-16
ROW-2040	Prepare/Deliver Offers	10	0	03-Jun-16	16-Jun-16
ROW-2050	Negotiations	45	0	17-Jun-16	19-Aug-16
ROW-2060	Prepare Acceptance or Certificate	10	0	22-Aug-16	02-Sep-16
ROW-2070	Settlements or Record Cert.	40	0	06-Sep-16	31-Oct-16
Phase 2 ROW		0	0		
Public Involvement		0	0		
Public Involvement Meetings		0	0		
Public Affairs Updates		0	0		
Utility Relocations		0	0		
Loudoun Water		0	0		
Dominion Virginia Power		0	0		
Verizon		0	0		
Washington Gas		0	0		
Permitting		0	0		
Wetland		0	0		
VSMP		0	0		
Spill Prevention / Hazardous		0	0		
NVRPA		0	0		
Phase II - Construction		565	0	01-Nov-16	31-Dec-18
General / Preparatory		0	0		
Stage 1A		261	0	01-Nov-16	31-Oct-17
NB - Sta 113+00 to Gloucester Parkway		261	0	01-Nov-16	31-Oct-17
C1200	Clearing, E&S, MOT	21	0	01-Nov-16	01-Dec-16
C1205	Demolish Structures	30	0	02-Dec-16	12-Jan-17
C1220	Storm Drainage	35	0	13-Jan-17	02-Mar-17
C1250	Roadway Section - Bridge Approaches	15	0	11-Oct-17	31-Oct-17
C1260	Ready to Switch Traffic into Stage 2A	0	0		31-Oct-17
NB Bridge Structure		223	0	02-Dec-16	10-Oct-17
C1300	Drive Abutment A Pile	15	0	02-Dec-16	22-Dec-16
C1305	Place Abutment A - MSE Wall Leveling Pad	5	0	27-Dec-16	09-Jan-17
C1310	Install Abutment A - MSE and Wire Wall	20	0	11-Jan-17	06-Mar-17
C1330	Install Abutment B - MSE and Wire Wall	20	0	08-Mar-17	07-Apr-17
C1335	FPS Abument B - Pile Cap and Beam Seat	15	0	10-Apr-17	28-Apr-17
C1340	Erect Bridge Beams	10	0	01-May-17	12-May-17
C1350	FPS Abutment A - Backwall	10	0	15-May-17	26-May-17
C1355	FPS Abutment B - Backwall	10	0	30-May-17	12-Jun-17
C1360	Install Bridge Deck Overhang and Install N	10	0	13-Jun-17	26-Jun-17



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Shirley Contracting Company, LLC

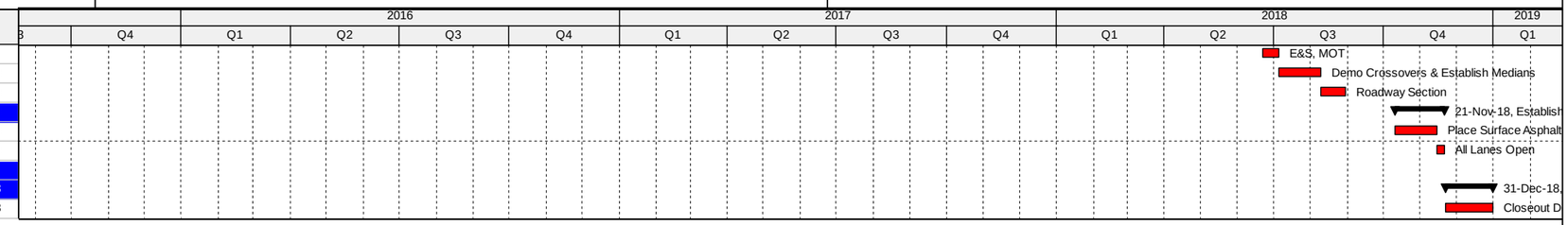
Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
C1365	Place Bridge Deck Reinforcing	10	0	27-Jun-17	11-Jul-17
C1370	Place Screed Rail - Dry Run	9	0	12-Jul-17	24-Jul-17
C1375	Cast and Cure Deck	20	0	25-Jul-17	21-Aug-17
C1380	FPS Abutment A Approach Slab	15	0	22-Aug-17	12-Sep-17
C1385	FPS Abutment B Approach Slab	15	0	13-Sep-17	03-Oct-17
C1390	Backfill Abutment A Approach Slab	5	0	04-Oct-17	10-Oct-17
C1395	Backfill Abutment B Approach Slab	5	0	04-Oct-17	10-Oct-17
C1396	Install Barrier and Curb Reinforcing Steel	5	0	22-Aug-17	28-Aug-17
C1397	FPS Barrier and Curb Fence Concrete	15	0	29-Aug-17	19-Sep-17
C1398	Install BR27C and Pedestrian Fence	15	0	20-Sep-17	10-Oct-17
W&OD Trail		0	0		
Stage 1B		194	0	03-Mar-17	29-Nov-17
NB - Hay Road to Sta 99+00		194	0	03-Mar-17	29-Nov-17
C1140	Storm Drainage	35	0	03-Mar-17	20-Apr-17
C1150	Earthwork Cuts & Fills	30	0	21-Apr-17	02-Jun-17
C1160	Roadway Section	35	0	10-Oct-17	29-Nov-17
C1170	Ready to Switch Traffic into Stage 2B	0	0		29-Nov-17
Noise Barrier Construction		0	0		
SB - Sta 113+00 to 99+00		25	0	05-Sep-17	09-Oct-17
C1530	Roadway Section	25	0	05-Sep-17	09-Oct-17
SB - Sta. 82+00 to 73+00		66	0	05-Jun-17	04-Sep-17
C3580	Earthwork Cuts & Fills	25	0	05-Jun-17	10-Jul-17
C3590	Roadway Section	25	0	01-Aug-17	04-Sep-17
Stage 2A		246	0	01-Nov-17	10-Oct-18
SB - Gloucester Parkway to Sta 113+00		246	0	01-Nov-17	10-Oct-18
C2100	Clearing, E&S, MOT	14	0	01-Nov-17	20-Nov-17
C2120	Storm Drainage	35	0	21-Nov-17	11-Jan-18
C2130	Earthwork Cuts & Fills	35	0	12-Jan-18	01-Mar-18
C2140	Roadway Section	29	0	31-Aug-18	10-Oct-18
C2150	Ready for Surface Pavement	0	0		10-Oct-18
SB Bridge Structure		203	0	21-Nov-17	30-Aug-18
C3310	Drive Abutment A Pile	15	0	21-Nov-17	13-Dec-17
C3320	Place Abutment A - MSE Wall Leveling Pad	5	0	14-Dec-17	20-Dec-17
C3330	Install Abutment A - MSE Wall	20	0	21-Dec-17	18-Jan-18
C3370	Install Abutment B - MSE Wall	20	0	19-Jan-18	15-Feb-18
C3380	FPS Abument B - Pile Cap and Beam Seat	15	0	16-Feb-18	08-Mar-18
C3390	Erect Bridge Beams	10	0	09-Mar-18	22-Mar-18
C3400	Install SIP Deck Pans	15	0	23-Mar-18	12-Apr-18
C3410	FPS Abutment A - Backwall	10	0	13-Apr-18	26-Apr-18
C3420	FPS Abutment B - Backwall	10	0	27-Apr-18	10-May-18
C3430	Install Bridge Deck Overhang and Install Ne	10	0	11-May-18	24-May-18
C3440	Place Bridge Deck Reinforcing	10	0	25-May-18	07-Jun-18
C3450	Place Screed Rail - Dry Run	5	0	08-Jun-18	14-Jun-18
C3460	Cast and Cure Deck	15	0	15-Jun-18	05-Jul-18
C3470	FPS Abutment A Approach Slab	15	0	06-Jul-18	26-Jul-18
C3480	FPS Abutment B Approach Slab	15	0	27-Jul-18	16-Aug-18
C3490	Backfill Abutment A Approach Slab	5	0	17-Aug-18	23-Aug-18
C3500	Backfill Abutment B Approach Slab	5	0	24-Aug-18	30-Aug-18
C3550	Ready for Approach Pavement	0	0		30-Aug-18
Stage 2B		146	0	30-Nov-17	21-Jun-18
NB - Sta 113+00 to 99+00		96	0	30-Nov-17	12-Apr-18
C2300	Clearing, E&S, MOT	20	0	30-Nov-17	28-Dec-17
C2320	Earthwork Cuts & Fills	30	0	02-Mar-18	12-Apr-18
SB - Sta 99+00 to 82+00		125	0	29-Dec-17	21-Jun-18
C2400	Clearing, E&S, MOT	20	0	29-Dec-17	25-Jan-18
C2420	Storm Drainage	30	0	06-Apr-18	17-May-18
C2430	Earthwork Cuts & Fills	25	0	18-May-18	21-Jun-18
SB - Sta 73+00 to Hay Road		80	0	26-Jan-18	17-May-18
C3610	Clearing, E&S, MOT	20	0	26-Jan-18	22-Feb-18
C3630	Storm Drainage	30	0	23-Feb-18	05-Apr-18
C3640	Earthwork Cuts & Fills	25	0	13-Apr-18	17-May-18
Stage 3		137	0	22-Jun-18	31-Dec-18
Demolish Median Crossovers		50	0	22-Jun-18	30-Aug-18



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Shirley Contracting Company, LLC

Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
C3100	E&S, MOT	10	0	22-Jun-18	05-Jul-18
C3110	Demo Crossovers & Establish Medians	25	0	06-Jul-18	09-Aug-18
C3120	Roadway Section	15	0	10-Aug-18	30-Aug-18
Establish Final Configuration		30	0	11-Oct-18	21-Nov-18
C4000	Place Surface Asphalt / Pavement Marking:	25	0	11-Oct-18	14-Nov-18
C4020	All Lanes Open	5	0	15-Nov-18	21-Nov-18
W&OD Trail		0	0		
Inspect, Punchlist, Demobilize & Closeout		28	0	22-Nov-18	31-Dec-18
FC-1030	Closeout Documents, As-Builts, Materials E	28	0	22-Nov-18	31-Dec-18



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Shirley Contracting Company, LLC

Appendix

Technical Proposal Checklist

Technical Proposal Checklist

ATTACHMENT 4.0.1.1

Route 659 (Belmont Ridge Road) – Reconstruct to 4-Lanes

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	Page 1
Offeror's official representative information	NA	Section 4.1.1	yes	Page 1
Authorized representative's original signature	NA	Section 4.1.1	yes	Page 1
Declaration of intent	NA	Section 4.1.2	yes	Page 1
120 day declaration	NA	Section 4.1.3	yes	Page 1
Point of Contact information	NA	Section 4.1.4	yes	Page 1
Principal Officer information	NA	Section 4.1.5	yes	Page 1
Final Completion Date	NA	Section 4.1.6	yes	Page 1
Proposal Payment Agreement or Waiver of Proposal Payment	Attachment 9.3.1 or 9.3.2	Section 4.1.7	no	N/A
Certification Regarding Debarment Forms	Attachment 11.8.6(a) Attachment 11.8.6(b)	Section 4.1.8	no	N/A
Offeror's Qualifications	NA	Section 4.2		

ATTACHMENT 4.0.1.1

Route 659 (Belmont Ridge Road) – Reconstruct to 4-Lanes

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Confirmation that the information provided in the SOQ submittal remains true and accurate or indicates that any requested changes were previously approved by VDOT	NA	Section 4.2.1	yes	Page 2
Organizational chart with any updates since the SOQ submittal clearly identified	NA	Section 4.2.2	yes	Page 2
Revised narrative when organizational chart includes updates since the SOQ submittal	NA	Section 4.2.2	yes	Page 2
Design Concept	NA	Section 4.3		
Conceptual Roadway Plans and description	NA	Section 4.3.1.1	yes	Page 4-14 Page 52-73
Conceptual Structural Plans and description	NA	Section 4.3.1.2	yes	Page 14-17 Page 74-75
Project Approach	NA	Section 4.4		
Environmental Management	NA	Section 4.4.1	yes	Page 18-22
Utilities	NA	Section 4.4.2	yes	Page 22-26
Geotechnical	NA	Section 4.4.3	yes	Page 26-28
Quality Assurance/ Quality Control (QA/QC)	NA	Section 4.4.4	yes	Page 28-37
Construction of Project	NA	Section 4.5		

ATTACHMENT 4.0.1.1

Route 659 (Belmont Ridge Road) – Reconstruct to 4-Lanes

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Sequence of Construction	NA	Section 4.5.1	yes	Page 38-44
Transportation Management Plan	NA	Section 4.5.2	yes	Page 44-50
Disadvantaged Business Enterprises (DBE)	NA	Section 4.6		
Written statement of percent DBE participation	NA	Section 4.6	yes	Page 51
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

Form C-78

Form C-78

Form C-78-RFP

ATTACHMENT 3.6

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

RFP NO. C00076244DB76

PROJECT NO.: 0659-053-262, R204, C504, B670, B671

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 February 18, 2015 – RFP
   (Date)
2. Cover letter of March 6, 2015 – Addendum #1
   (Date)
3. Cover letter of May 7, 2015 – Addendum #2
   (Date)
4. Cover letter of June 5, 2015 – Addendum #3
   (Date)
5. Cover letter of June 12, 2015 – Addendum #4
   (Date)

SIGNATURE

June 17, 2015
DATE

Michael E. Post
PRINTED NAME

President/CEO/Manager
TITLE

Proposal Payment Agreement

Proposal Payment Agreement

ATTACHMENT 9.3.1
PROPOSAL PAYMENT AGREEMENT

THIS PROPOSAL PAYMENT AGREEMENT (this "Agreement") is made and entered into as of this 17th day of June, 2015, 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 **May 29, 2014** Request for Qualifications ("RFQ") and was invited to submit proposals in response to a Request for Proposals ("RFP") for the **Route 659 (Belmont Ridge Road) – Reconstruct to 4-Lanes, Project No. 0659-053-262** ("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 **[*written number*] and 00/100 Dollars ($[*numerical*].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

Debarment Forms

Debarment Forms

ATTACHMENT NO. 11.8.6(a)

CERTIFICATION REGARDING DEBARMENT
PRIMARY COVERED TRANSACTIONS

Project: 0659-053-262
Contract ID: C00076244DB76

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

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

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

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

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

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

	6/17/2015	President/CEO/ Manager
Signature	Date	Title

Shirley Contracting Company, LLC
Name of Firm

ATTACHMENT NO. 11.8.6(b)

CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project: 0659-053-262
Contract ID: C00076244DB76

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 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.

	6/9/15	ASSOCIATE VICE PRESIDENT
Signature	Date	Title

DEWBERRY CONSULTANTS LLC

Name of Firm

ATTACHMENT NO. 11.8.6(b)

CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project: 0659-053-262
Contract ID: C00076244DB76

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 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.

Elizabeth Quinn June 8, 2015 President
Signature Date Title

Quinn Consulting Services, Inc.
Name of Firm

ATTACHMENT NO. 11.8.6(b)

CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project: 0659-053-262
Contract ID: C00076244DB76

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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.

	6/9/15	President
Signature	Date	Title

GeoConcepts Engineering, Inc.
Name of Firm

ATTACHMENT NO. 11.8.6(b)

CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project: 0659-053-262
Contract ID: C00076244DB76

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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.

Mark A. Warner 6/9/15
Signature Date

Vice President - Business Development
Title

So-Deep, Inc.
Name of Firm

ATTACHMENT NO. 11.8.6(b)

CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project: 0659-053-262
Contract ID: C00076244DB76

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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.

John W. 6/9/15		President and Chief Operating Officer
Signature	Date	Title

Skelly and Loy, Inc.

Name of Firm

ATTACHMENT NO. 11.8.6(b)

CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project: 0659-053-262
Contract ID: C00076244DB76

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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.

Edward M Cosser 6/9/15 — Vice President

Signature — Date — Title

Quantum Spatial, Inc.

Name of Firm

ATTACHMENT NO. 11.8.6(b)

CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project: 0659-053-262
Contract ID: C00076244DB76

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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.

[illegible]	6-8-15	Settlement officer
Signature	Date	Title

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

ATTACHMENT NO. 11.8.6(b)

CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project: 0659-053-262
Contract ID: C00076244DB76

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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.

Patricia E. Dobbs 6/9/15 President

Signature Date Title

Diversified Property Services, Inc.

Name of Firm

ATTACHMENT NO. 11.8.6(b)

CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project: 0659-053-262
Contract ID: C00076244DB76

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 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 12, 2015	President
Signature	Date	Title

Specialized Engineering

Name of Firm

ORIGINAL

Response to Request for Proposals

ROUTE 659 (BELMONT RIDGE ROAD) - RECONSTRUCT TO 4 LANES

Loudoun County, Virginia

State Project Nos.: 0659-053-262, R204, C504, B670, B671
Federal Project Nos.: STP-5A0-1(583)
Contract ID No.: C00076244DB76

VOLUME II: DESIGN CONCEPT

Submitted By:

SHIRLEY CONTRACTING COMPANY, LLC

In Association With:

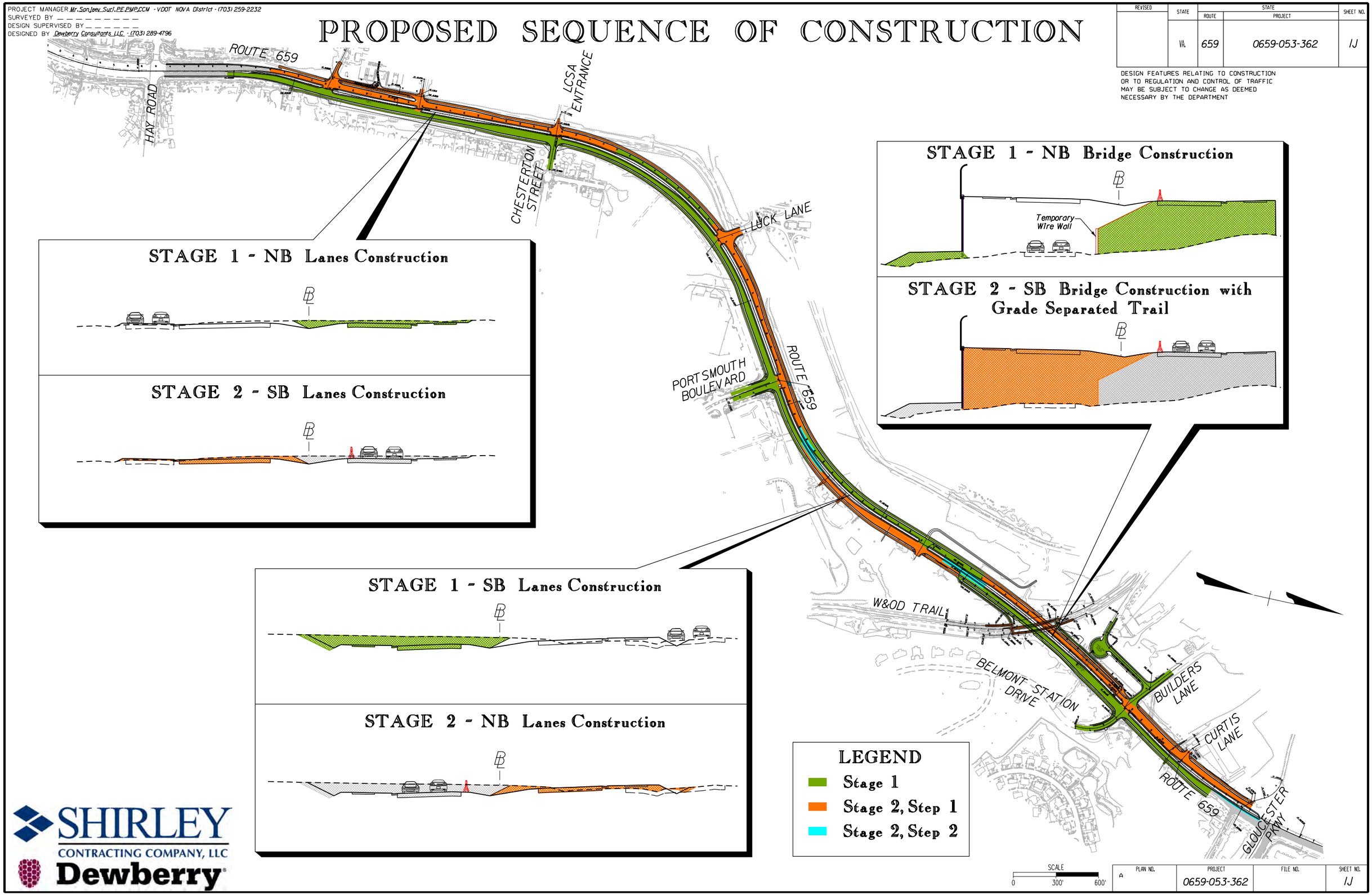
Dewberry

PROJECT MANAGER Mr. Sanjeev Sud, P.E. PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants, LLC - (703) 289-4796

PROPOSED SEQUENCE OF CONSTRUCTION

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	IJ

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



PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0659-053-362		IJ

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

PROJECT MANAGER Mr. Sanjeev Suri, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

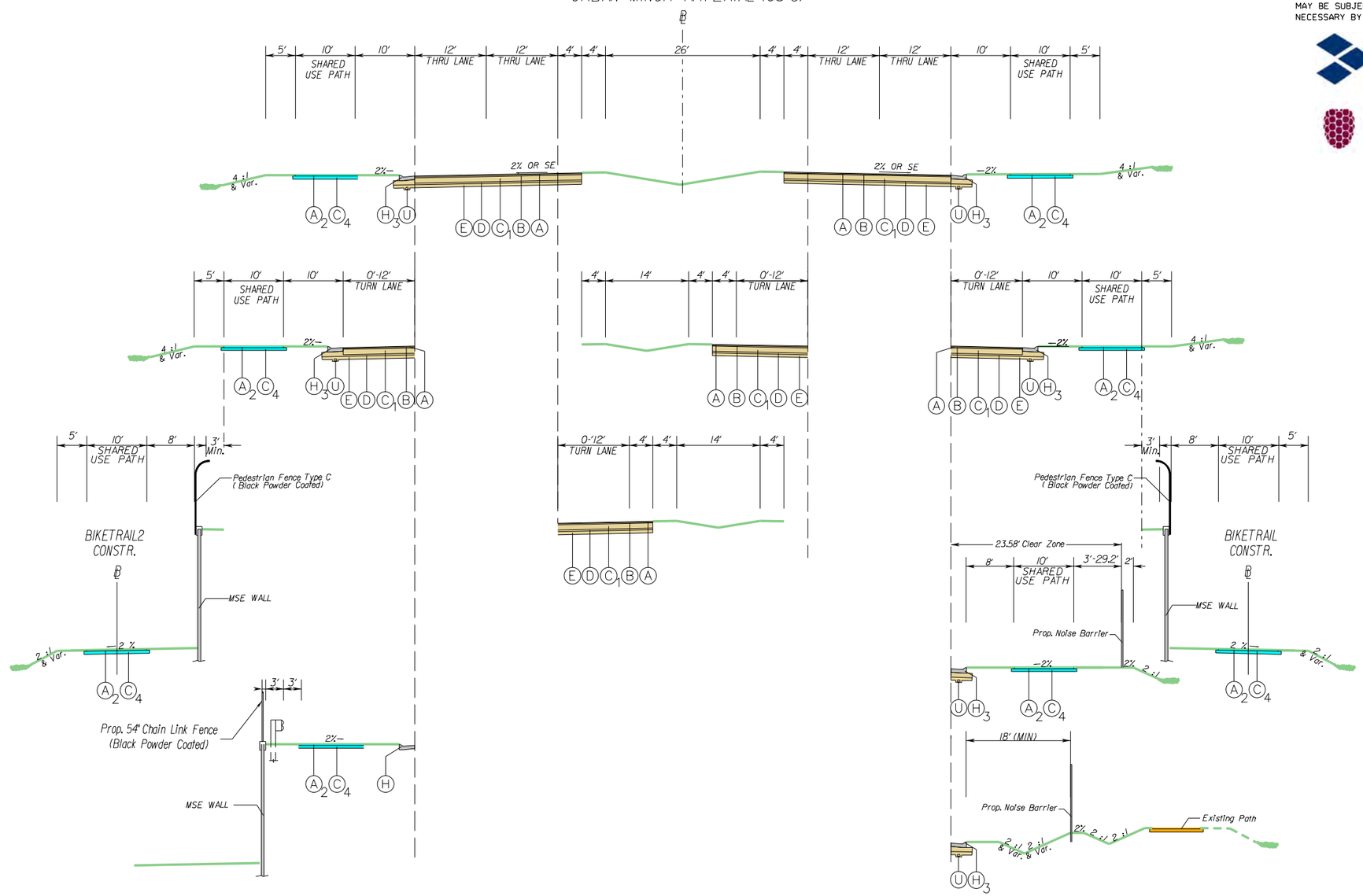
REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	2A(1)

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

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

TYPICAL SECTIONS

BELMONT RIDGE ROAD (ROUTE 659) - 50 MPH DESIGN SPEED
URBAN MINOR ARTERIAL (GS-6)



LEGEND

- (A) 1.5" Asphalt Concrete, Type SM-9.5D @ 180 lbs/sy
- (A)$_1$ 1.5" Asphalt Concrete, Type SM-9.5A @ 180 lbs/sy
- (A)$_2$ 2" Asphalt Concrete, Type SM-9.5A @ 242 lbs/sy
- (B) 2" Asphalt Concrete, Type IM-19.0A @ 240 lbs/sy
- (C) 12" Asphalt Concrete, Type BM-25.0A
- (C)$_1$ 10" Asphalt Concrete, Type BM-25.0A
- (C)$_2$ 6" Asphalt Concrete, Type BM-25.0A
- (C)$_3$ 3" Asphalt Concrete, Type BM-25.0A
- (C)$_4$ 6" Plain Aggregate, Type I, Size No. 21B Extended 6" on Either Side of The Surface
- (D) 3" Stabilized Open Graded Drainage Layer (OGDL) Connected to a Standard UD-4 Edge Drain Beneath the Outside Edges of Shoulders or Curb or Curb and Gutter.
- (E) 6" Aggregate Base Material, Type I, Size No. 21A Pugmill Mixed with 4% Hydraulic Cement by Weight Extended a Minimum 12" Beyond the Edge of Mainline Pavement
- (E)$_1$ 8" Aggregate Base Material, Type I, Size No. 21A, Pugmill Mixed with 4% Hydraulic Cement by Weight
- (E)$_2$ 6" Select Material, Type I, Minimum CBR 30 Connected to a UD-4 Edge Drain Located Beneath the Outside Edges of Paved Shoulders
- (E)$_3$ 6" Aggregate Base Material, Type I, Size No. 21B, Connected to a Standard UD-4 Edge Drain Beneath Shoulders or Curb and Gutter or Daylighted
- (H) Curb, St'd. CG-3
- (H)$_1$ Curb, St'd. CG-2
- (H)$_2$ Curb and Gutter, St'd. CG-6
- (H)$_3$ Curb and Gutter, St'd. CG-7
- (M) Mill Existing Pavement, 1.5"
- (P) Profile Grade Line
- (R) Point Of Rotation
- (U) Underdrain, St'd. UD-4

NOTES:

1. When liquid asphalt is used as a curing material for the cement stabilized course, it shall be liquid asphalt CRS-1, CRS-1h or CMS-2 applied at a rate of 0.2 gal/sq.yd. Where necessary for maintenance of traffic, cover material consisting of No. 10 Aggregate or Grading B Sand shall be applied at a rate of 10 lb/sy.yd.
2. All pavement widening shall be completed in accordance with St'd. WP-2. See sheet 2A(4) for details.
3. For exact guardrail locations, refer to grading, drainage, and pavement plans.

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0659-053-362		2A(1)

PROJECT MANAGER Mr. Sanjeev Suri, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

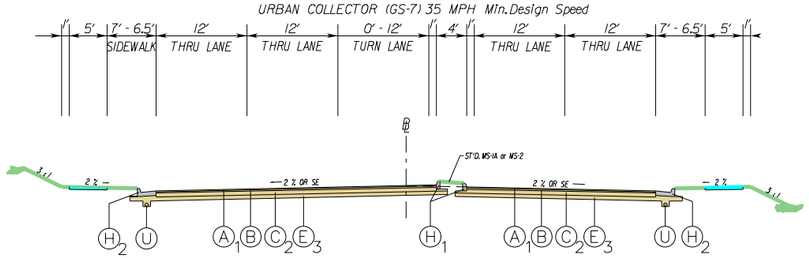
REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	2A(2)

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

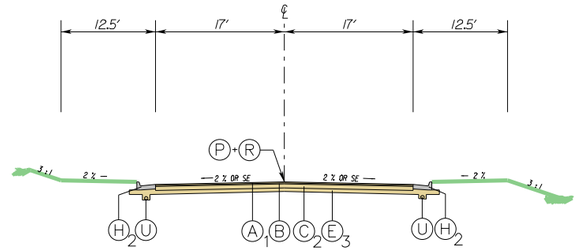
SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

TYPICAL SECTIONS

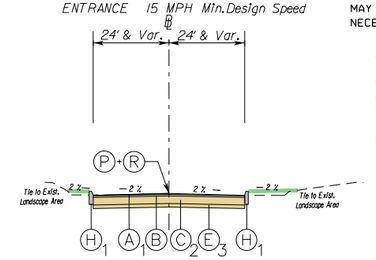
Portsmouth Blvd.
URBAN COLLECTOR (GS-7) 35 MPH Min. Design Speed



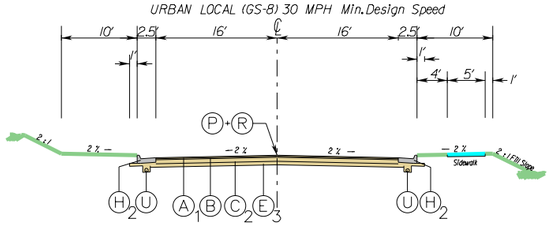
Chesterton Street
URBAN LOCAL (GS-8) 30 MPH Min. Design Speed
RURAL LOCAL CLASSIFICATION UTILIZING



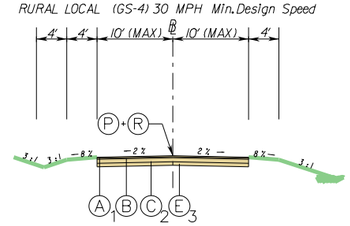
Luck Lane
ENTRANCE 15 MPH Min. Design Speed



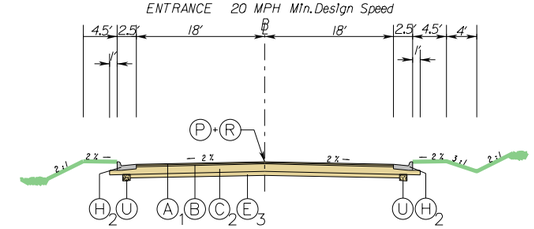
Belmont Station Dr.
URBAN LOCAL (GS-8) 30 MPH Min. Design Speed



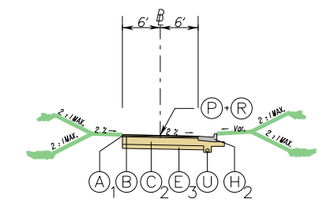
Hearford Lane
RURAL LOCAL (GS-4) 30 MPH Min. Design Speed



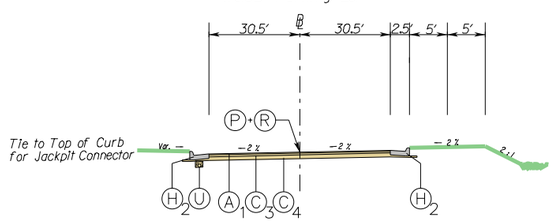
Builders Lane
ENTRANCE 20 MPH Min. Design Speed



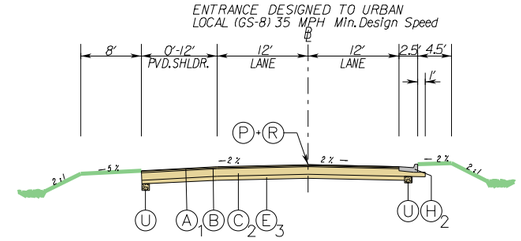
Service Entrance
SERVICE ROAD (GS-9) 15 MPH Min. Design Speed



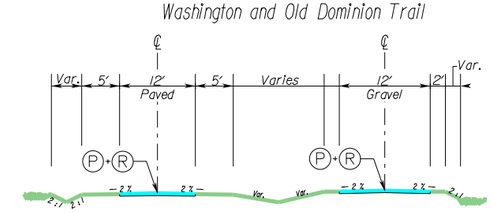
W&OD Parking Lot



Jackpit Connector/Lane
ENTRANCE DESIGNED TO URBAN LOCAL (GS-8) 35 MPH Min. Design Speed



Washington and Old Dominion Trail



LEGEND

- (A) 1.5" Asphalt Concrete, Type SM-9.5D @ 180 lbs/sy
- (A)1 1.5" Asphalt Concrete, Type SM-9.5A @ 180 lbs/sy
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- (B) 2" Asphalt Concrete, Type IM-19.0A @ 240 lbs/sy
- (C) 12" Asphalt Concrete, Type BM-25.0A
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- (C)4 6" Plain Aggregate, Type I, Size No. 21B Extended 6" on Either Side of The Surface
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- (E) 6" Aggregate Base Material, Type I, Size No. 21A Pugmill Mixed with 4% Hydraulic Cement by Weight Extended a Minimum 12" Beyond the Edge of Mainline Pavement
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- (H)1 Curb, St'd. CG-2
- (H)2 Curb and Gutter, St'd. CG-6
- (H)3 Curb and Gutter, St'd. CG-7
- (M) Mill Existing Pavement, 1.5"
- (P) Profile Grade Line
- (R) Point Of Rotation
- (U) Underdrain, St'd. UD-4

NOTES:

1. When liquid asphalt is used as a curing material for the cement stabilized course, it shall be liquid asphalt CRS-1, CRS-1h or CMS-2 applied at a rate of 0.2 gal/sq.yd. Where necessary for maintenance of traffic, cover material consisting of No. 10 Aggregate or Grading B Sand shall be applied at a rate of 10 lb/sy.yd.
2. For exact guardrail locations, refer to grading, drainage, and pavement plans.

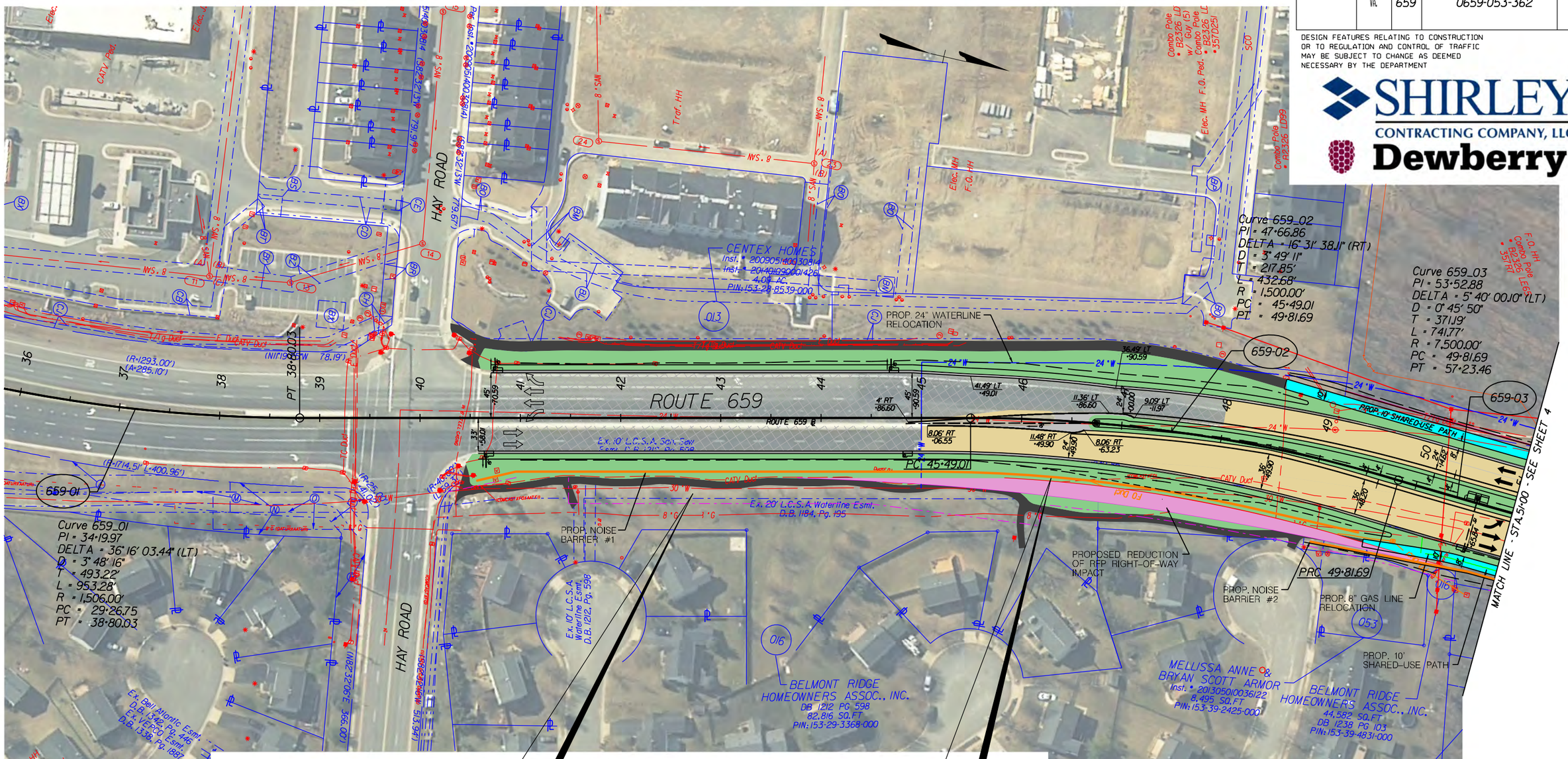
PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0659-053-362		2A(2)

PROJECT MANAGER Mr. Sanjeev Sud, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	3

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

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry



OUR TEAM'S IMPROVED NOISE BARRIER ALIGNMENT WILL ELIMINATE IMPACTS TO EXISTING LANDSCAPING LOCATED ON BERMS BEHIND THE EXISTING SHARED USE PATH, AS SHOWN ABOVE

THIS RENDERING SHOWS OUR TEAM'S REVISED ALIGNMENT OF PROPOSED NOISE BARRIER #1 IN FRONT OF THE BELMONT RIDGE COMMUNITY.

IMPACTS TO THE EXISTING BERM, LANDSCAPING, AND UTILITIES ARE ALL AVOIDED WITH THIS IMPROVED ALIGNMENT

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0659-053-362		3

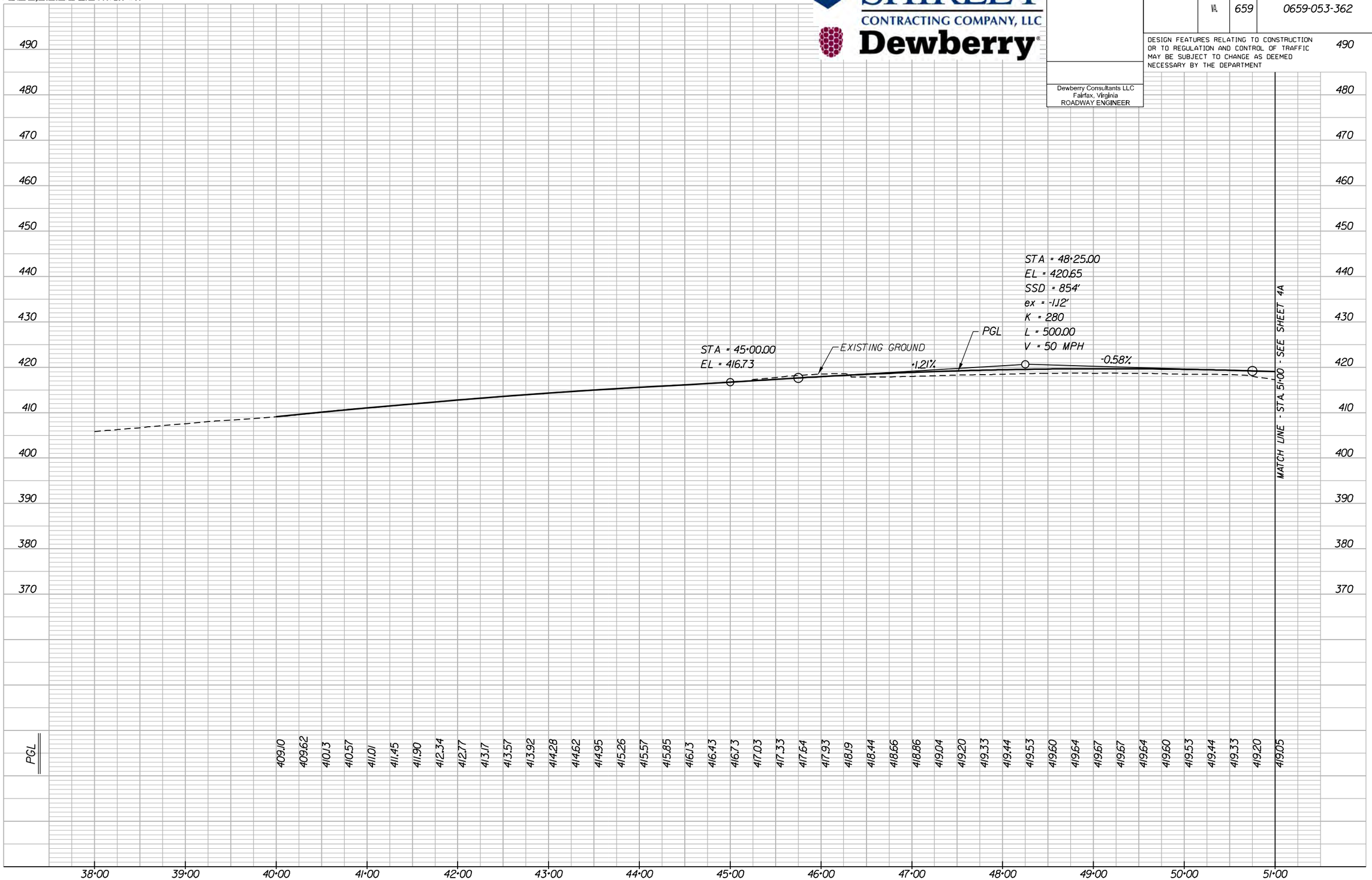
PROJECT MANAGER Mr. Sanjeev Suri, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

Dewberry Consultants LLC
Fairfax, Virginia
ROADWAY ENGINEER

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	3A

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



ROUTE 659

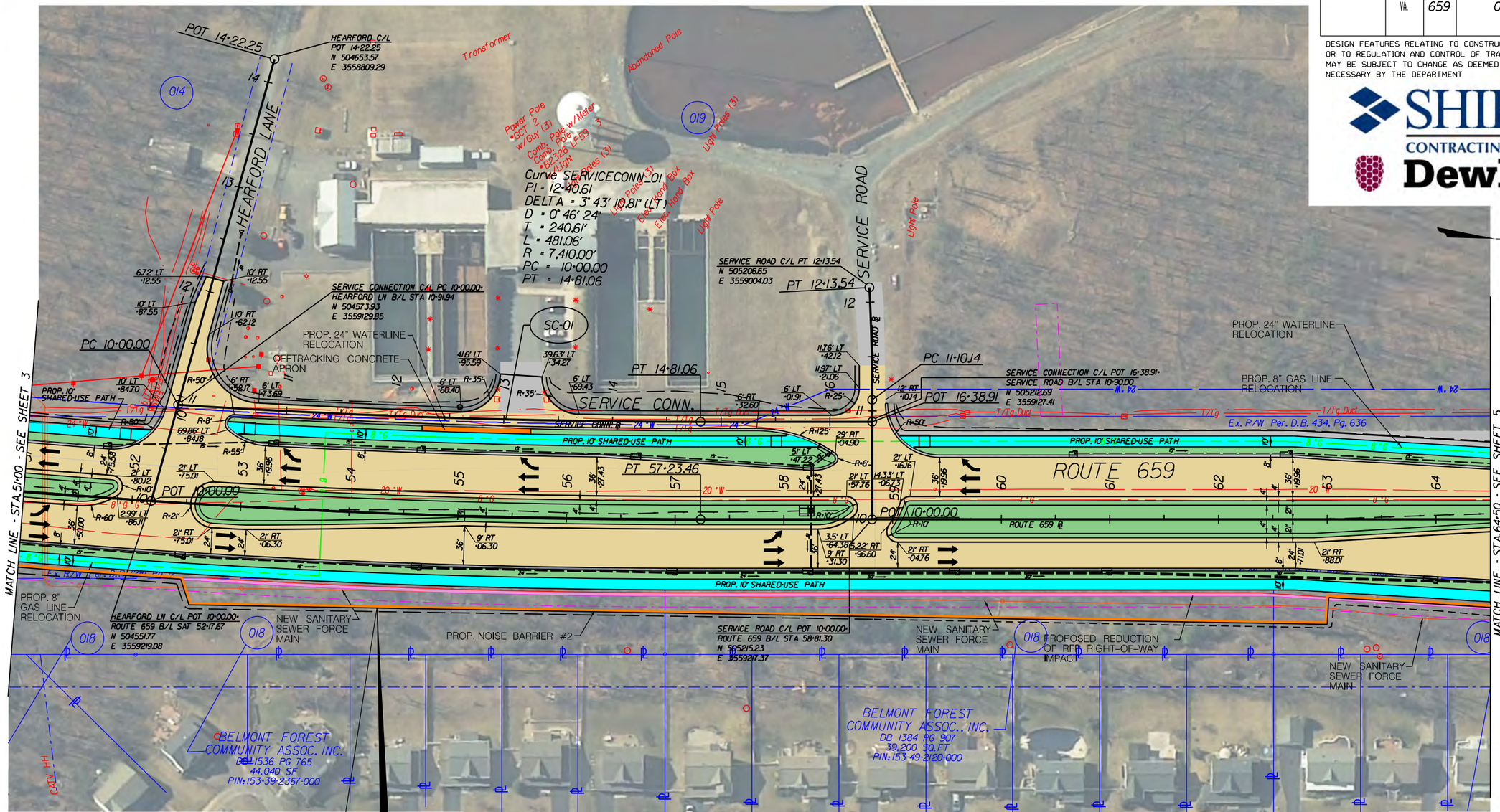
PROJECT	SHEET NO.
0659-053-362	3A

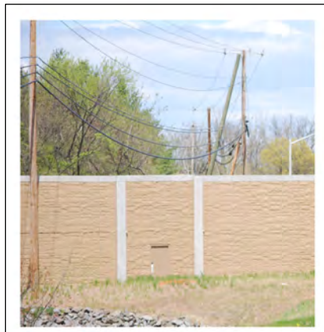
PROJECT MANAGER Mr. Sanjeev Sud, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	4

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

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry





OUR TEAM HAS COORDINATED WITH LOUDOUN WATER IN AN EFFORT TO AVOID RELOCATION OF THE SANITARY SEWER FORCE MAIN. OUR REVISED NOISE BARRIER ALIGNMENT WILL AVOID RELOCATION OF THE SANITARY SEWER FORCE MAIN AND PRESERVE THE FULL SEWER EASEMENT WIDTH REQUIRED BY LOUDOUN WATER

PICTURED TO THE LEFT IS THE NOISE BARRIER DESIGNED AND BUILT BY OUR TEAM ON THE SYCOLIN ROAD DB PROJECT, WHICH WAS ADJUSTED TO AVOID IMPACTS TO THE EXISTING SANITARY SEWER, WATER MAIN, AND DRAINAGE FACILITIES

- Denotes Existing Pavement
- Denotes Milling and Overlay/Build-Up
- Denotes Full Depth Pavement
- Denotes Proposed Median/ Buffer/Planted Area
- Denotes Proposed Shared Use Path
- Denotes Proposed Bridge
- Denotes Existing Trails/Paths
- Denotes Proposed W&OD Trail
- Denotes Reduction of Right-Of-Way Impact

SCALE 0 50' 100'

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0659-053-362		4

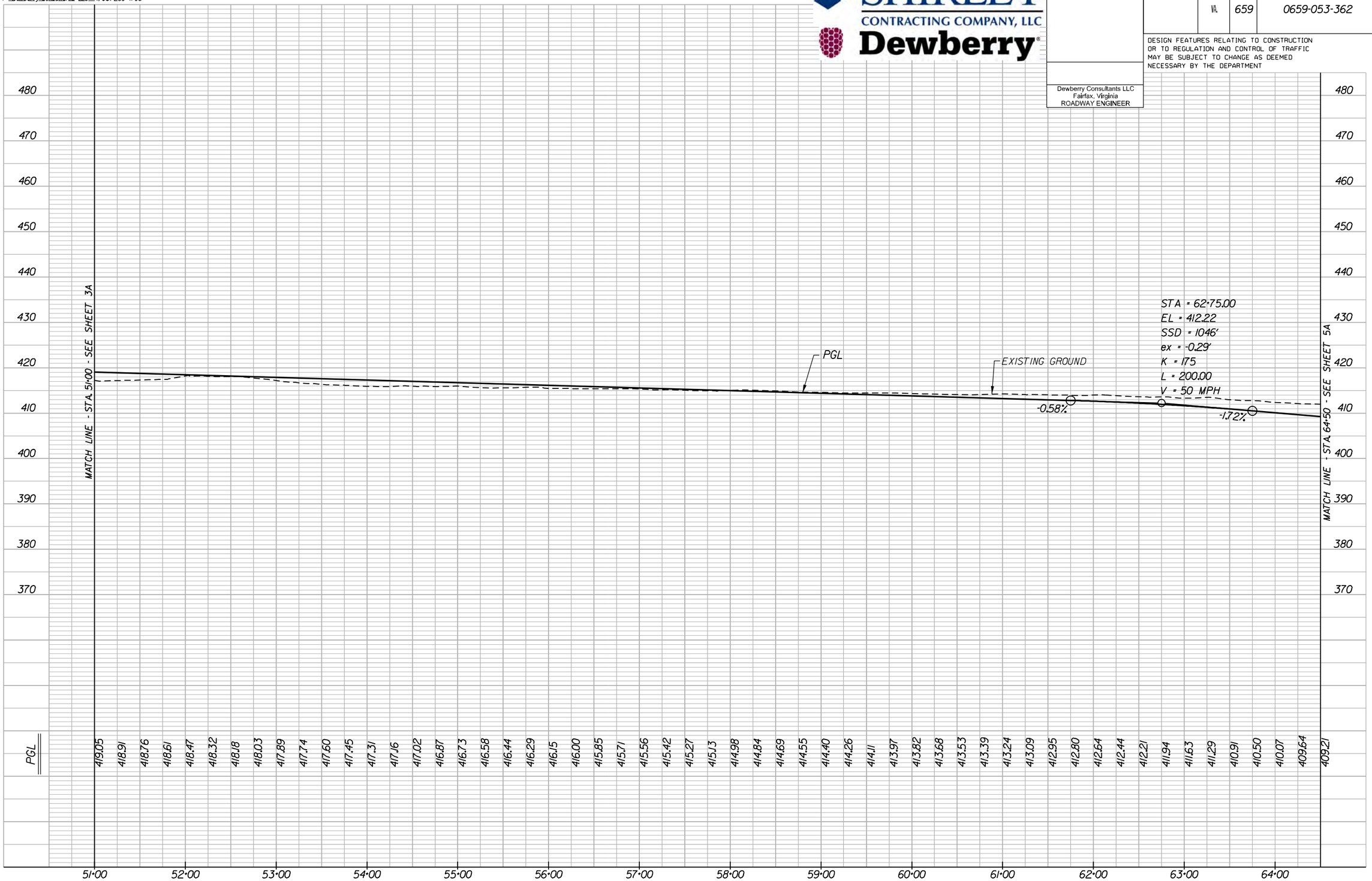
PROJECT MANAGER Mr. Sanjeev Suri, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

Dewberry Consultants LLC
Fairfax, Virginia
ROADWAY ENGINEER

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	4A

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



ROUTE 659

PROJECT	SHEET NO.
0659-053-362	4A

PROJECT MANAGER Mr. Sanjeev Suri, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

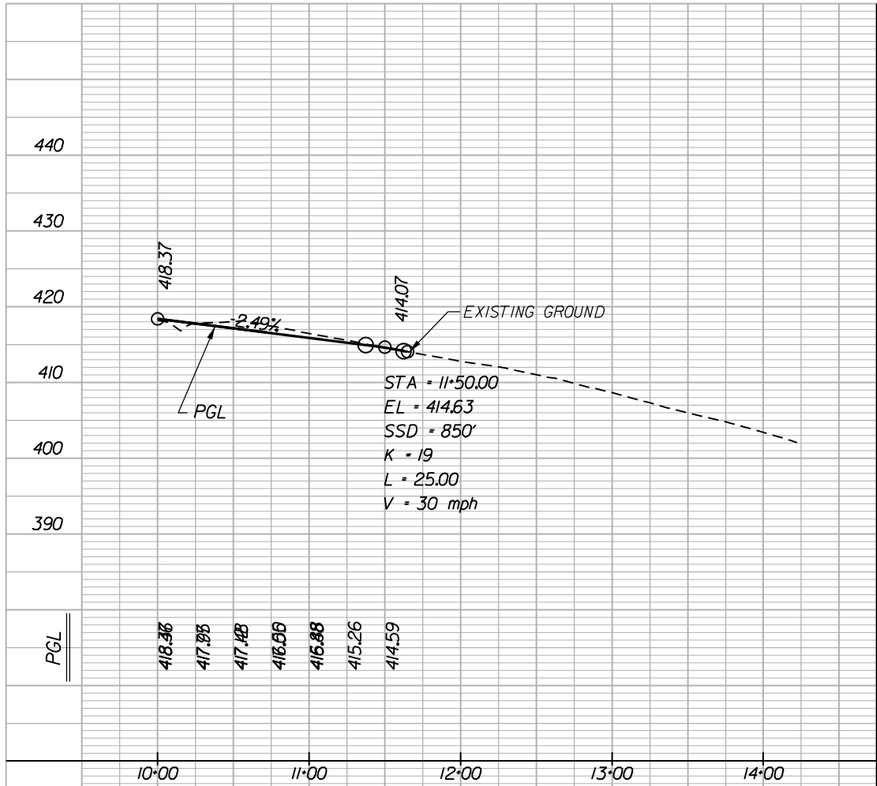
SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

Dewberry Consultants LLC
Fairfax, Virginia
ROADWAY ENGINEER

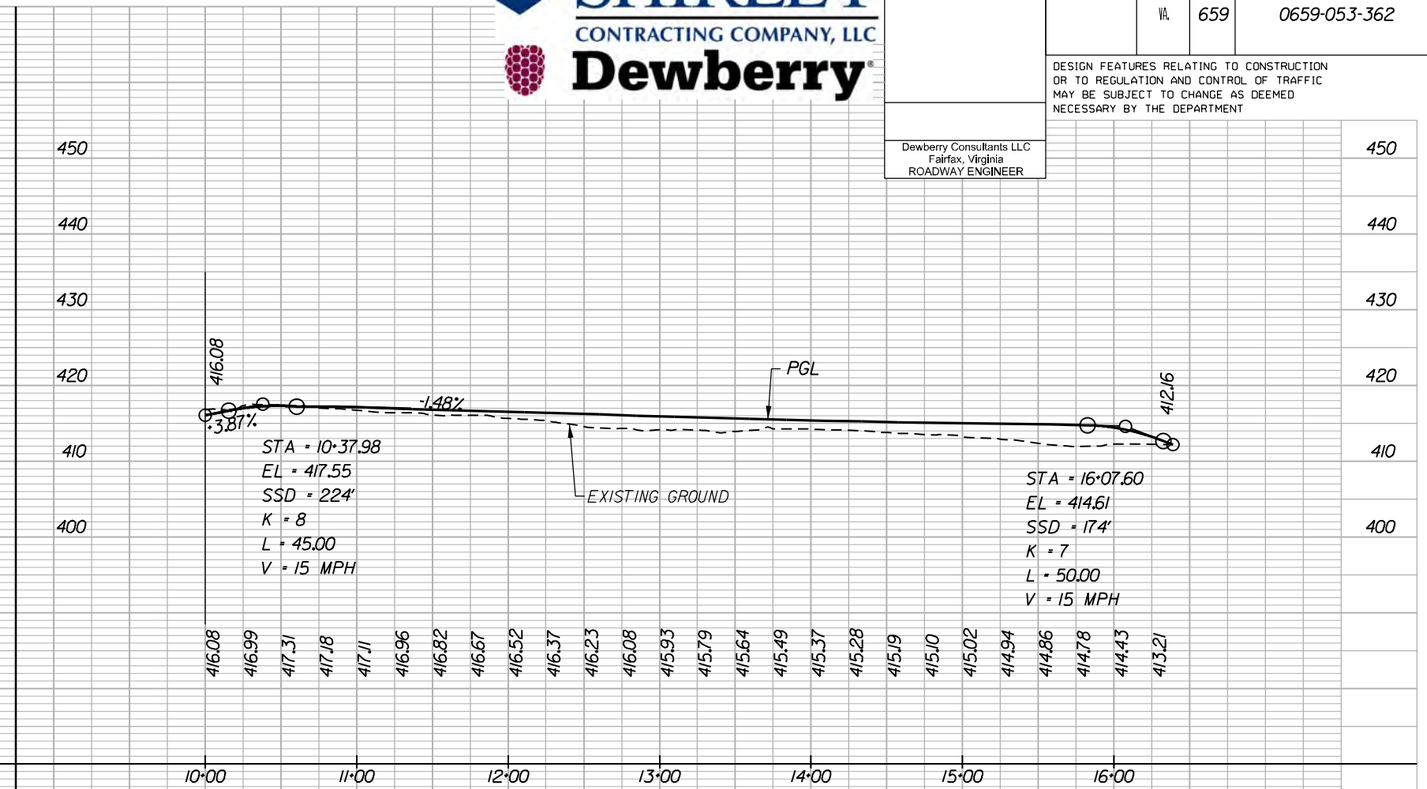
REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	4B

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

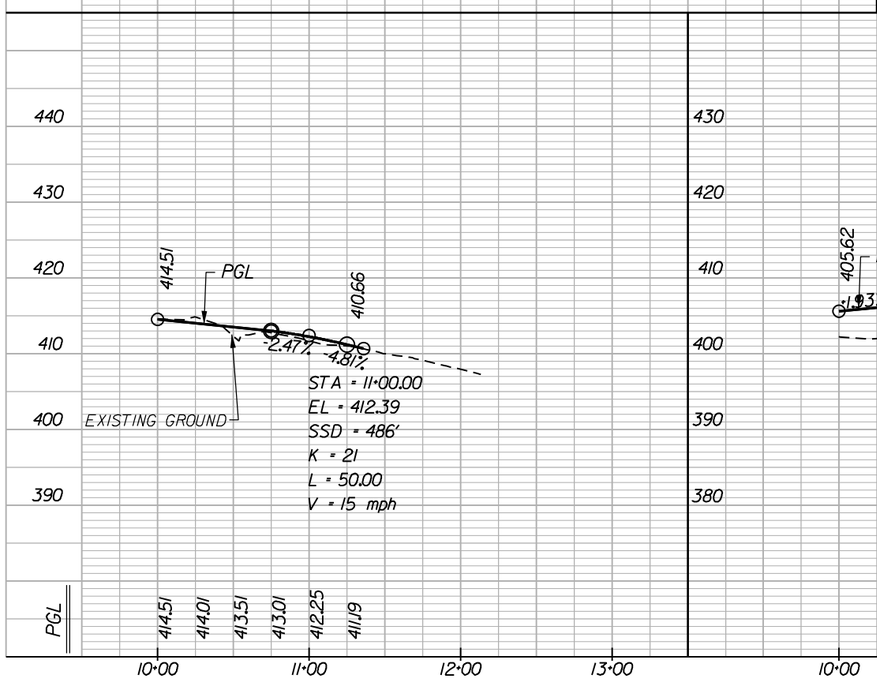
HEARFORD LANE



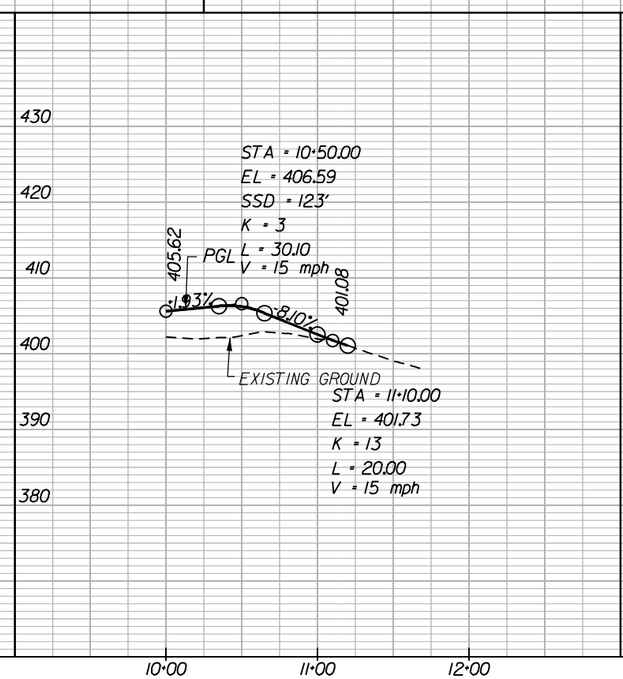
SERVICE CONNECTION



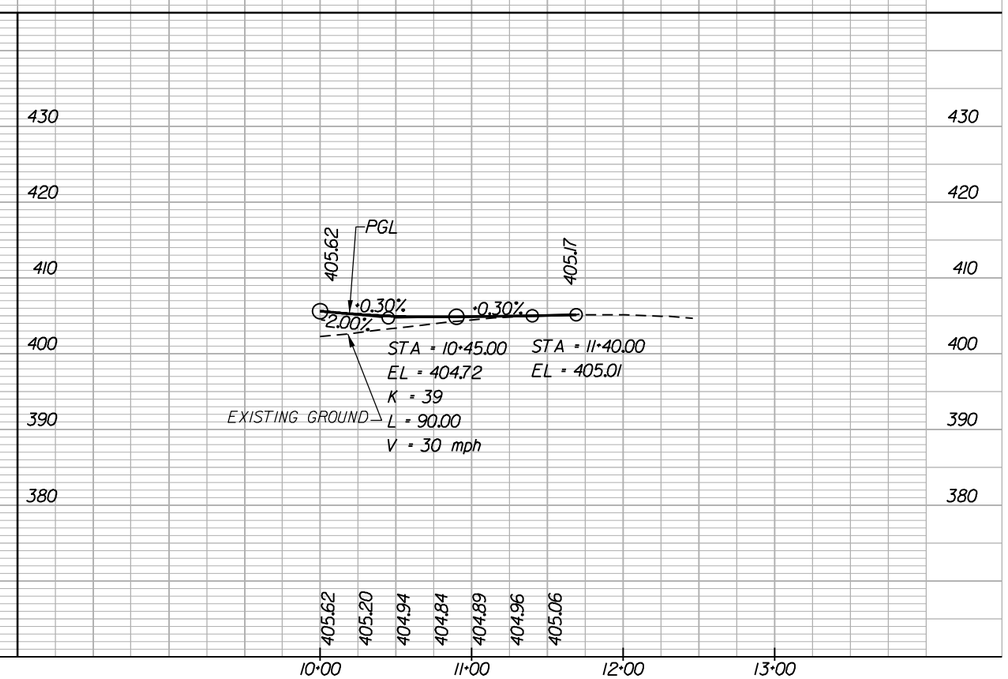
SERVICE ROAD



LCSA ENTRANCE



CHESTERTON STREET



PROJECT	SHEET NO.
0659-053-362	4B

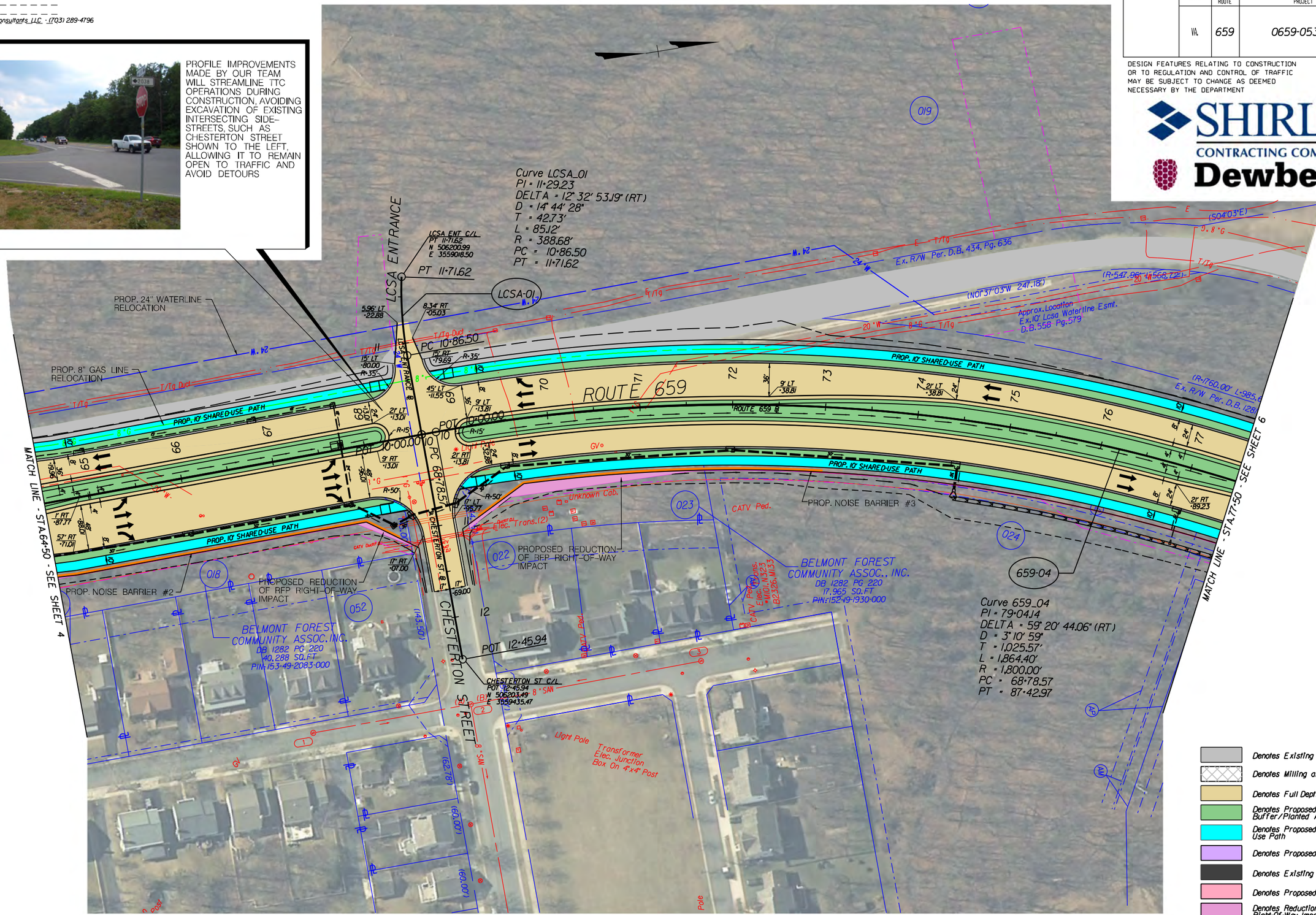
PROJECT MANAGER Mr. Sanjeev Suri, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	5

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

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

PROFILE IMPROVEMENTS MADE BY OUR TEAM WILL STREAMLINE TTC OPERATIONS DURING CONSTRUCTION, AVOIDING EXCAVATION OF EXISTING INTERSECTING SIDE-STREETS, SUCH AS CHESTERTON STREET SHOWN TO THE LEFT, ALLOWING IT TO REMAIN OPEN TO TRAFFIC AND AVOID DETOURS



Denotes Existing Pavement
Denotes Milling and Overlay/Build-Up
Denotes Full Depth Pavement
Denotes Proposed Median/ Buffer/Planted Area
Denotes Proposed Shared Use Path
Denotes Proposed Bridge
Denotes Existing Trails/Paths
Denotes Proposed W&OD Trail
Denotes Reduction of Right-Of-Way Impact

SCALE 0 50' 100'

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0659-053-362		5

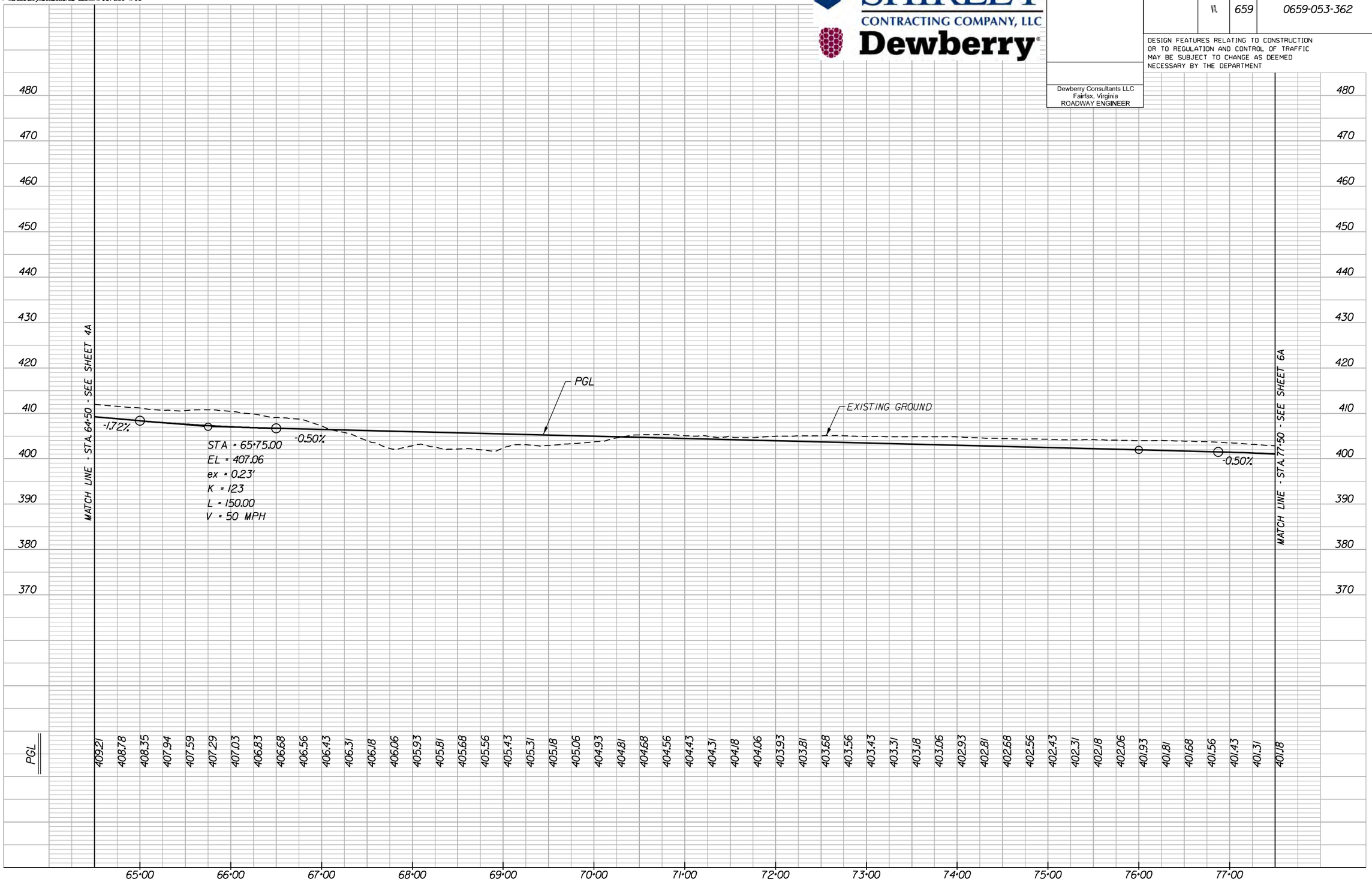
PROJECT MANAGER Mr. Sanjeev Suri, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

Dewberry Consultants LLC
Fairfax, Virginia
ROADWAY ENGINEER

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	5A

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



ROUTE 659

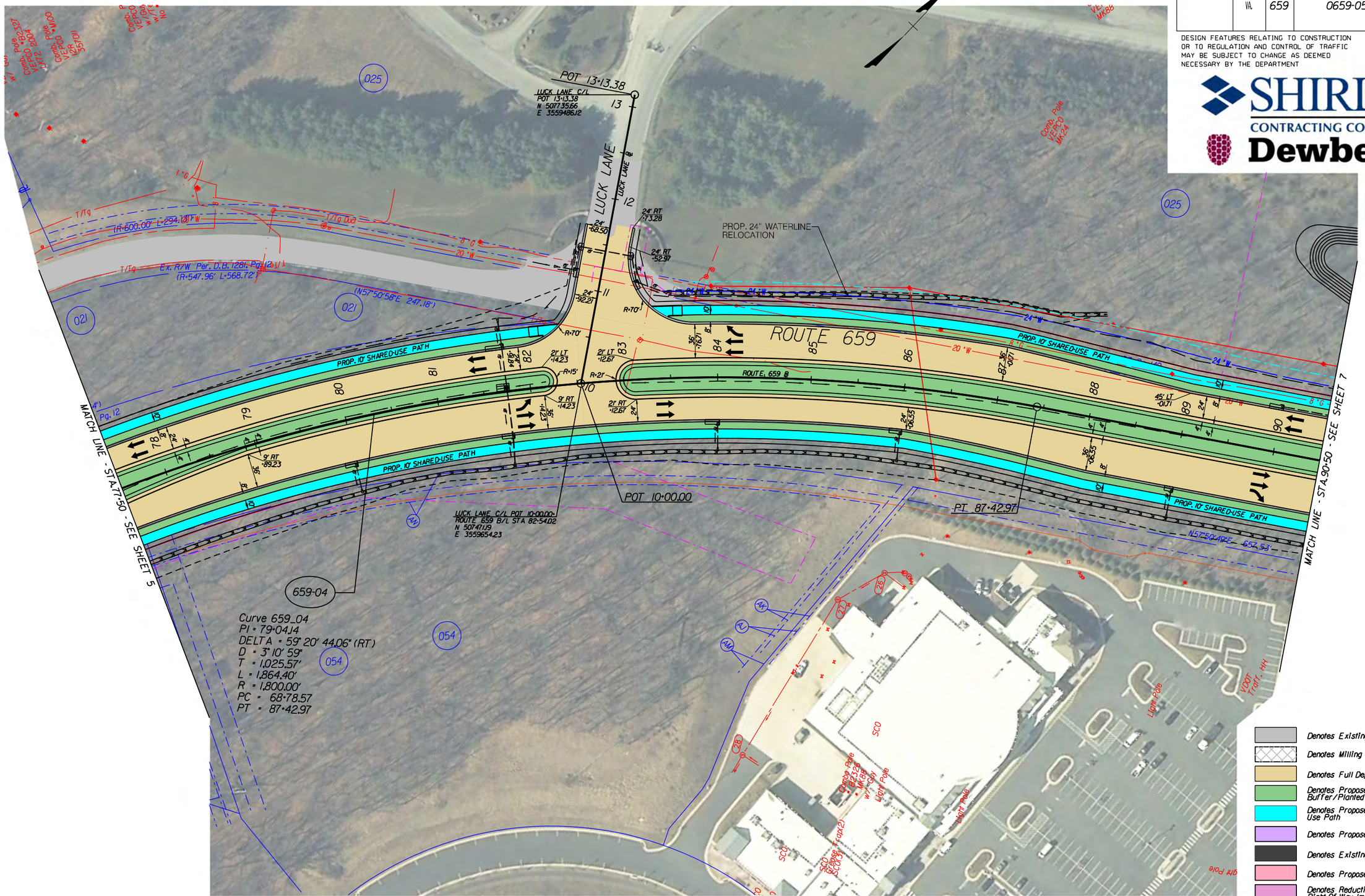
PROJECT	SHEET NO.
0659-053-362	5A

PROJECT MANAGER Mr. Sanjeev Sud, P.E. PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	6

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

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry



SCALE 0 50' 100'

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0659-053-362		6

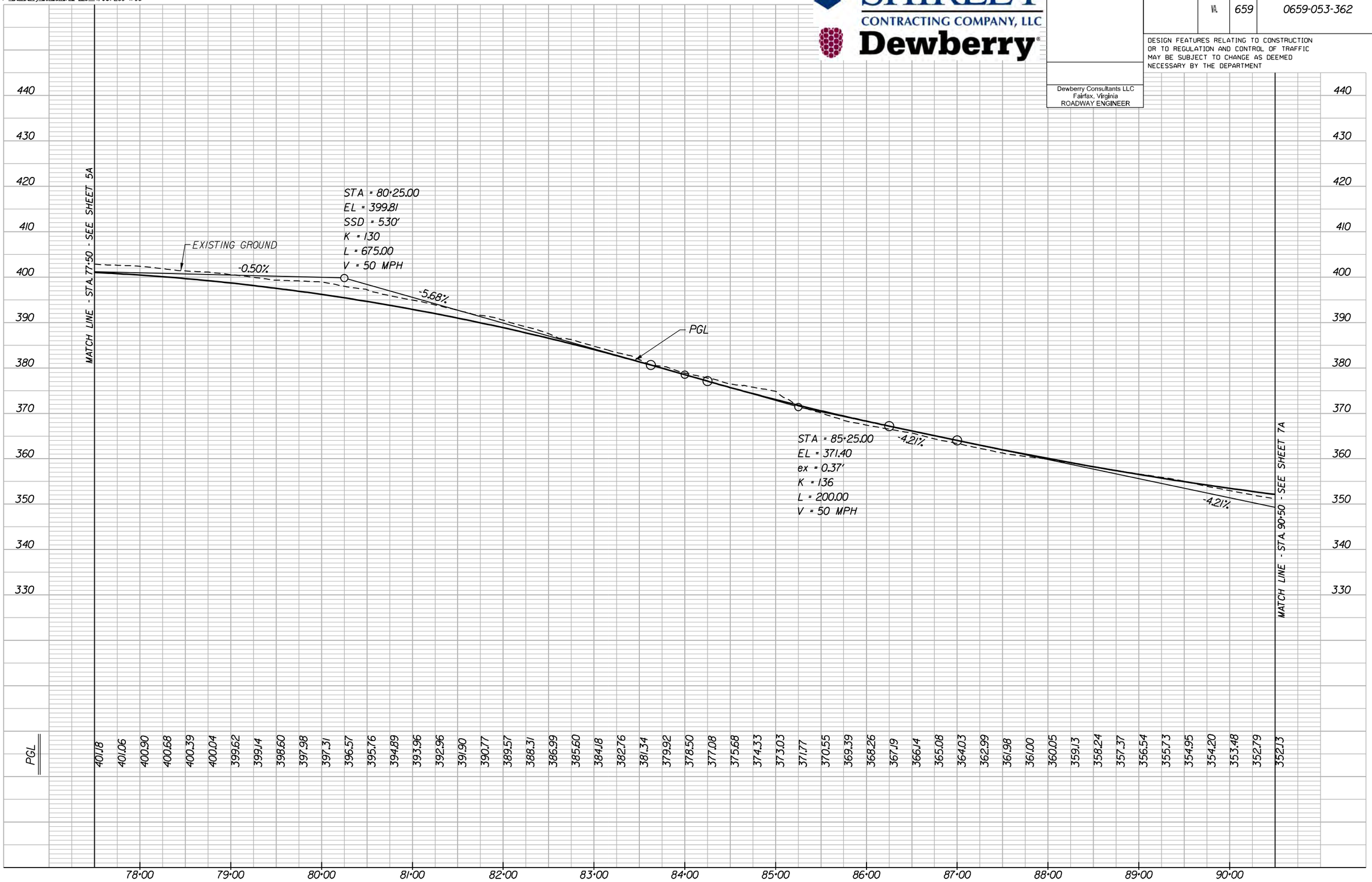
PROJECT MANAGER Mr. Sanjeev Suri, P.E. PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

Dewberry Consultants LLC
Fairfax, Virginia
ROADWAY ENGINEER

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	6A

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



ROUTE 659

PROJECT	SHEET NO.
0659-053-362	6A

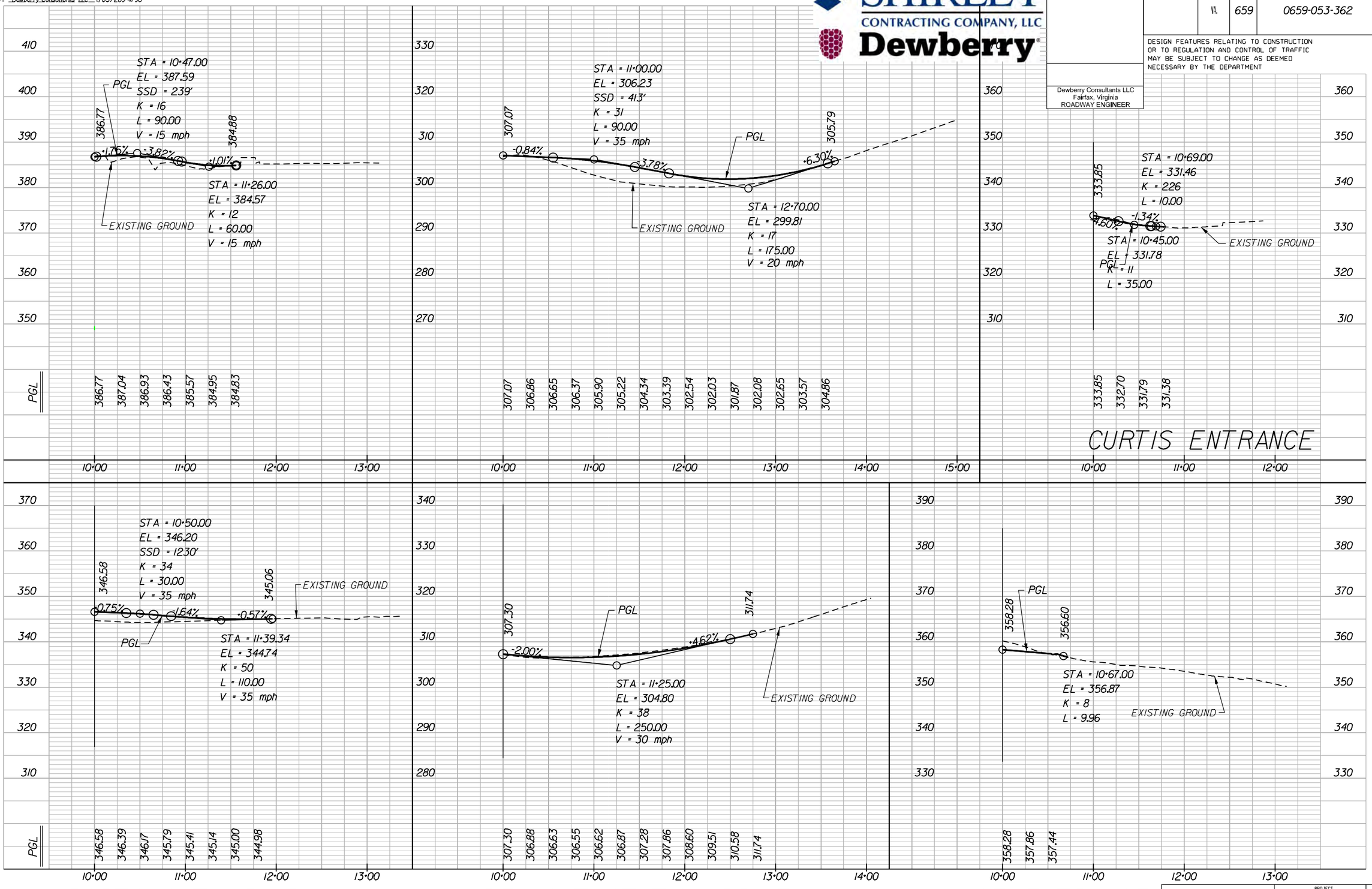
PROJECT MANAGER Mr. Sanjeev Suri, P.E. PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	6B

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



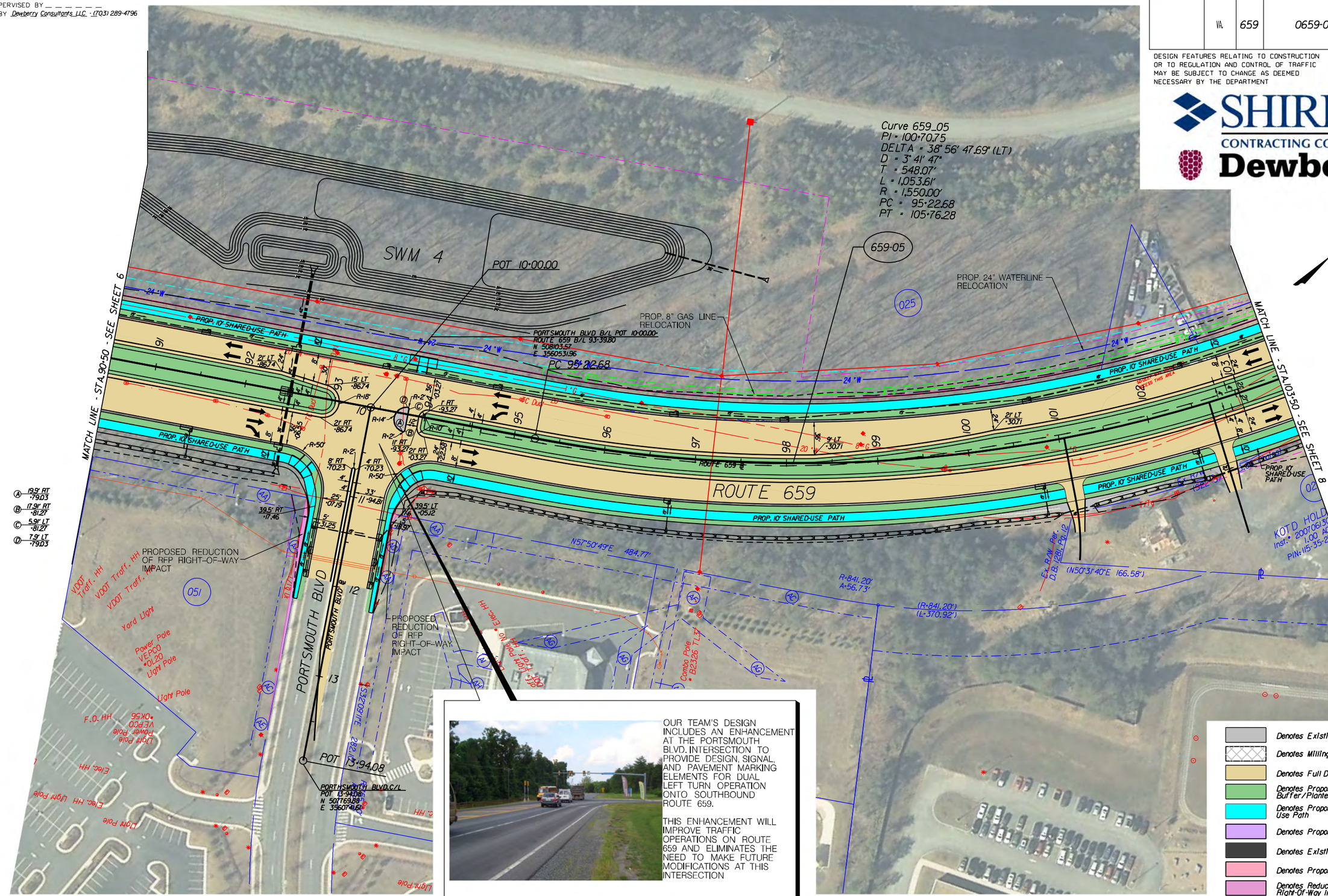
PROJECT	SHEET NO.
0659-053-362	6B

PROJECT MANAGER Mr. Sanjeev Sud, P.E. PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	7

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

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry



OUR TEAM'S DESIGN INCLUDES AN ENHANCEMENT AT THE PORTSMOUTH BLVD. INTERSECTION TO PROVIDE DESIGN, SIGNAL, AND PAVEMENT MARKING ELEMENTS FOR DUAL LEFT TURN OPERATION ONTO SOUTHBOUND ROUTE 659.

THIS ENHANCEMENT WILL IMPROVE TRAFFIC OPERATIONS ON ROUTE 659 AND ELIMINATES THE NEED TO MAKE FUTURE MODIFICATIONS AT THIS INTERSECTION

- Denotes Existing Pavement
- Denotes Milling and Overlay/Build-Up
- Denotes Full Depth Pavement
- Denotes Proposed Median/ Buffer/Planted Area
- Denotes Proposed Shared Use Path
- Denotes Proposed Bridge
- Denotes Existing Trails/Paths
- Denotes Proposed W&OD Trail
- Denotes Reduction of Right-Of-Way Impact

SCALE 0 50' 100'

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0659-053-362		7

PROJECT MANAGER Mr. Sanjeev Suri, P.E. PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

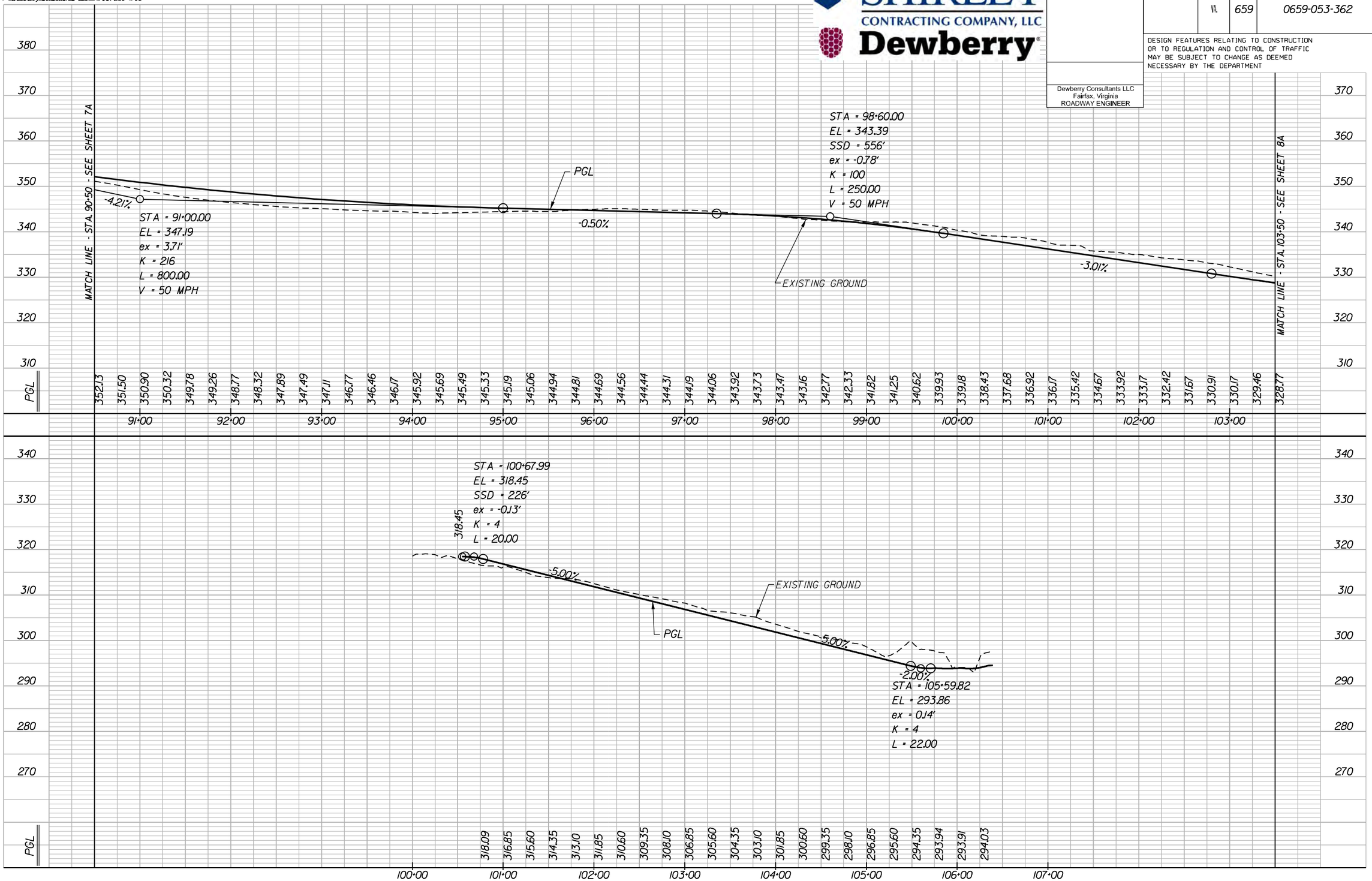
ROUTE 659

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

REVISED	STATE	ROUTE	PROJECT	SHEET NO.
	VA.	659	0659-053-362	7A

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



NORTHBOUND BIKE CONNECTOR

PROJECT	SHEET NO.
0659-053-362	7A

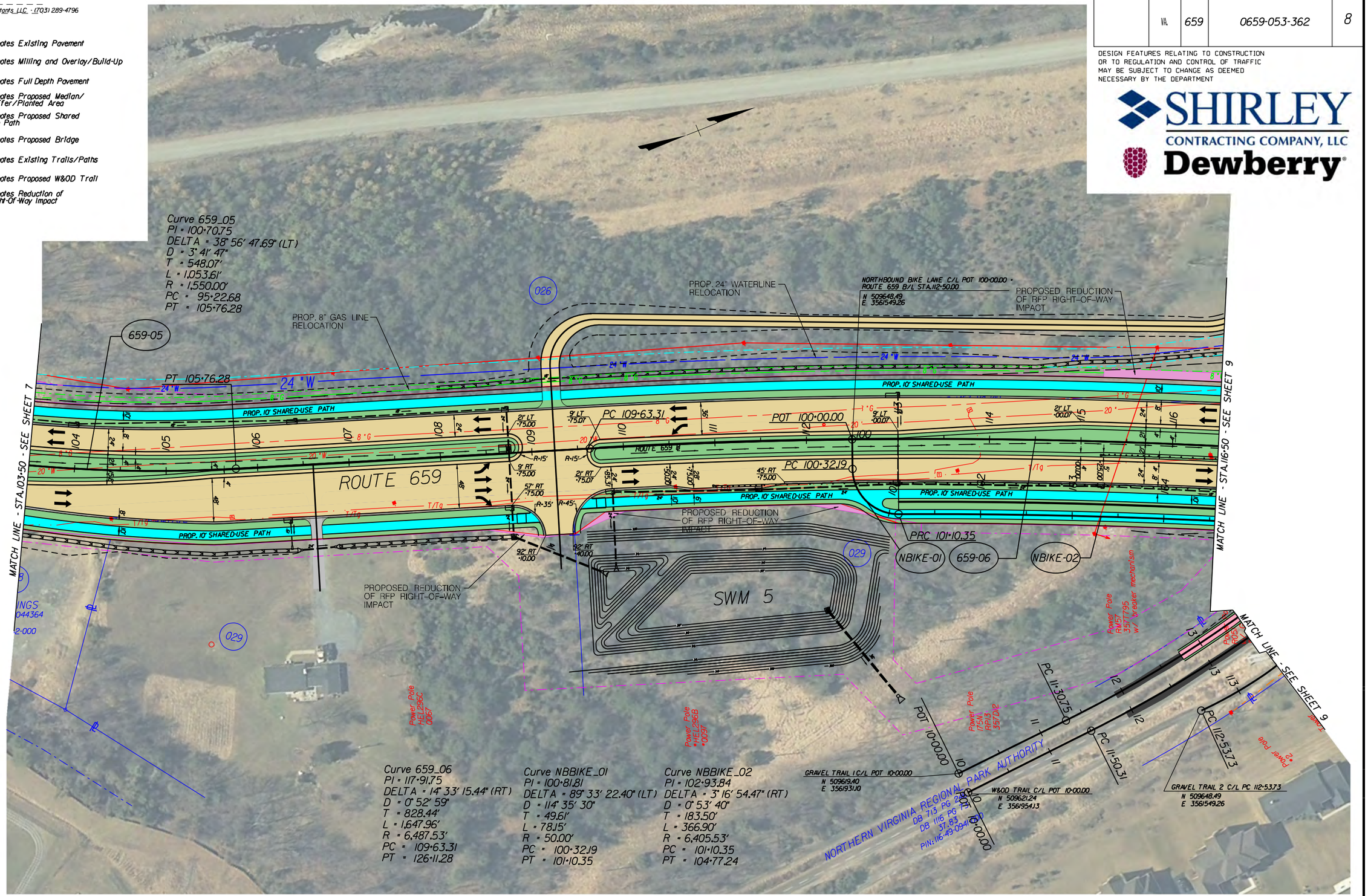
PROJECT MANAGER Mr. Sanjeev Sud, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	8

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

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

- Denotes Existing Pavement
- Denotes Milling and Overlay/Build-Up
- Denotes Full Depth Pavement
- Denotes Proposed Median/ Buffer/Planted Area
- Denotes Proposed Shared Use Path
- Denotes Proposed Bridge
- Denotes Existing Trails/Paths
- Denotes Proposed W&OD Trail
- Denotes Reduction of Right-Of-Way Impact



SCALE 0 50' 100'

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0659-053-362		8

PROJECT MANAGER Mr. Sanjeev Suri, P.E. PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

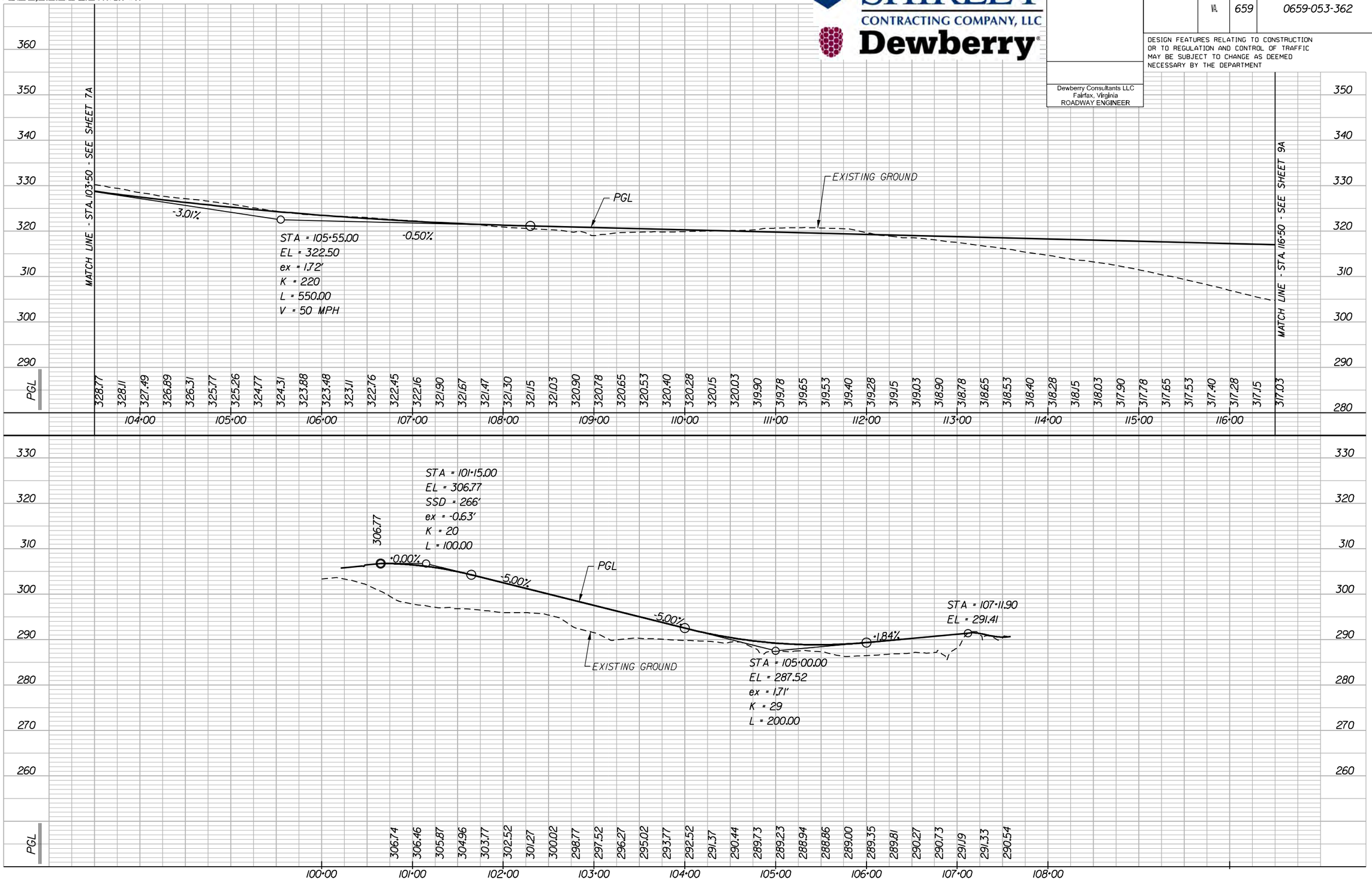
ROUTE 659

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	8A

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



SOUTHBOUND BIKE CONNECTOR

PROJECT	SHEET NO.
0659-053-362	8A

PROJECT MANAGER Mr. Sanjeev Sud, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

REVISED	STATE	ROUTE	PROJECT	SHEET NO.
	VA.	659	0659-053-362	9

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

AT NO COST TO VDOT, OUR TEAM WILL CONSTRUCT A "REST AREA" FOR THE W&OD TRAIL AS PART OF A PUBLIC OUTREACH ACTIVITY. THE UTTERBACK BENCH, PICNIC TABLES, AND A KIOSK PROVIDING HISTORIC SITE INFORMATION WILL ALL BE LOCATED AT THIS "REST AREA"

Curve JACKPIT_01
PI = 14+74.57
DELTA = 76° 01' 27.26" (RT)
D = 63° 39' 43"
T = 70.35'
L = 119.42'
R = 90.00'
PC = 14+04.22
PT = 15+23.64

LUCK STONE CORPORATION
DB 537 PG 216
Inst. # 200808260005895
80.6071 AC.
PIN: 114-25-6156-000

NORTHERN VIRGINIA PARK AUTHORITY REGIONAL PARK
DB 713 PG 246
Inst. # 200400094000
37.82 AC.

PROPOSED REDUCTION OF RFP RIGHT-OF-WAY & STREAM CHANNEL IMPACTS

PROP. 24" WATERLINE RELOCATION
PROP. 8" GAS LINE RELOCATION
PROP. 10' SHARED-USE PATH
ROUTE 659
ROUTE 659 B
JACKPIT LANE/CONNECTOR
BUILDERS LANE
BUILDERS STATION DR.
SWM 6
MATCH LINE - STA.116+50 - SEE SHEET 8
MATCH LINE - STA.129+50 - SEE SHEET 10
PROPOSED REDUCTION OF RFP RIGHT-OF-WAY IMPACT
BELMONT COMMUNITY ASSOCIATION
ANTHONY BROWN AND ANTONETTE BROWN
JAYACHANDRAN V. KALATH AND ANKITA J. KALATH

Curve 659_06
PI = 117+91.75
DELTA = 14° 33' 15.44" (RT)
D = 0° 52' 59"
T = 828.44'
L = 1,647.96'
R = 6,487.53'
PC = 109+63.31
PT = 126+11.28

Curve BELMONT STA_01
PI = 12+68.58
DELTA = 65° 06' 06.49" (RT)
D = 20° 52' 27"
T = 475.21'
L = 311.88'
R = 274.48'
PC = 10+93.38
PT = 14+05.26

THE RENDERING ABOVE SHOWS OUR TEAM'S ENHANCED CONCEPT OF THE ROUTE 659 OVERPASS OF THE W&OD TRAIL, INCLUDING THE REDUCED BRIDGE SPAN AND IMPROVED TRAIL CONNECTOR PROFILES

5 GRAVEL ROAD 01 C/L PT 14+59.69 - NORTHBOUND BIKE LANE B/L STA.14+59.69
N 510071.50
E 3561856.97

6 NORTHBOUND BIKE LANE C/L POT 106+39.17 - GRAVEL ROAD 02 B/L STA.114+62.60
N 510092.40
E 3561916.28

7 SOUTHBOUND BIKE LANE C/L PT 107+58.82 - W&OD TRAIL B/L STA.17+78.16
N 510364.92
E 3561755.22

10 BUILDERS LANE C/L PT 10+00.00 - ROUTE 659 B/L STA 127+54.54
N 510975.38
E 3562251.67

11 BELMONT STATION C/L POT 10+00.00 - ROUTE 659 B/L STA 127+64.56
N 510983.75
E 3562257.18

- Denotes Existing Pavement
- Denotes Milling and Overlay/Build-Up
- Denotes Full Depth Pavement
- Denotes Proposed Median/ Buffer/Planted Area
- Denotes Proposed Shared Use Path
- Denotes Proposed Bridge
- Denotes Existing Trails/Paths
- Denotes Proposed W&OD Trail
- Denotes Reduction of Right-Of-Way Impact

SCALE 0 50' 100'

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0659-053-362		9

PROJECT MANAGER Mr. Sanjeev Suri, P.E. PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

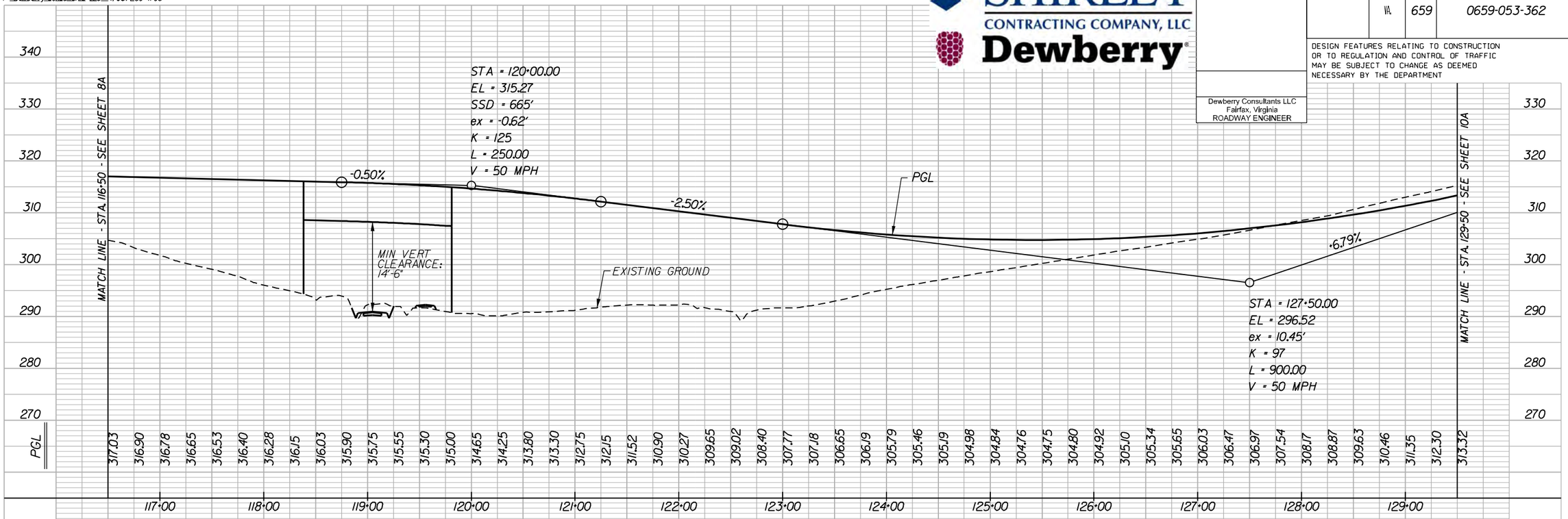
ROUTE 659

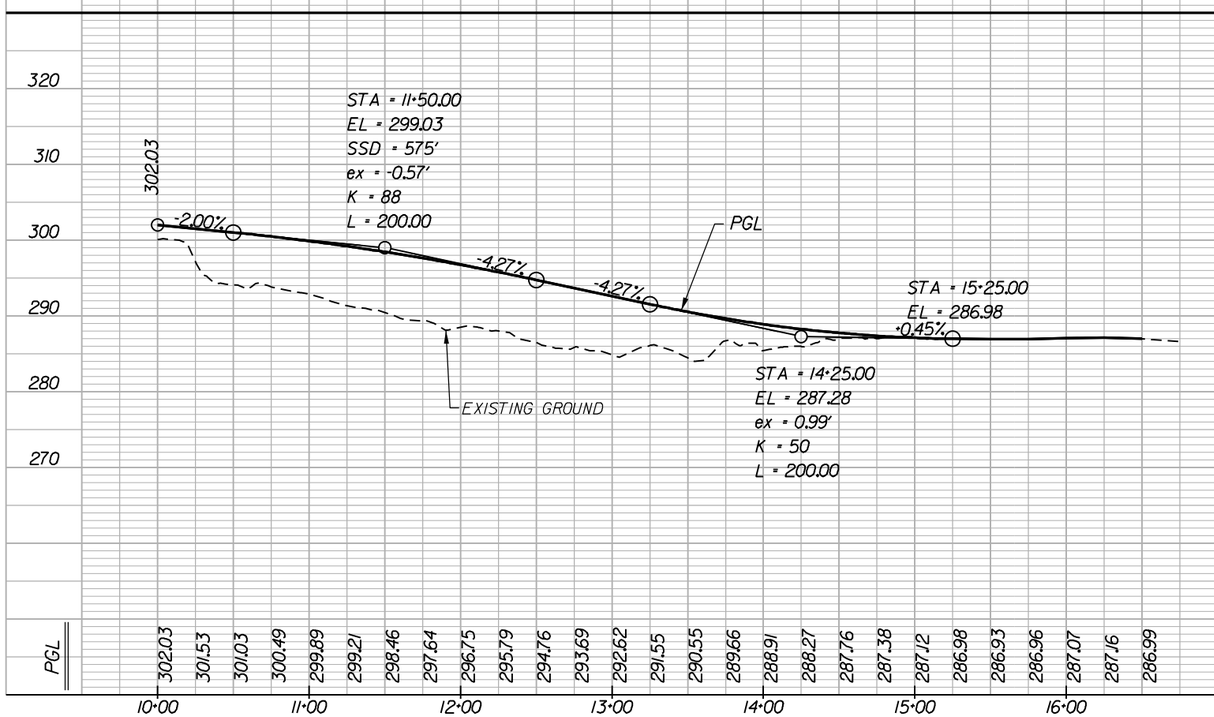
SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	9A

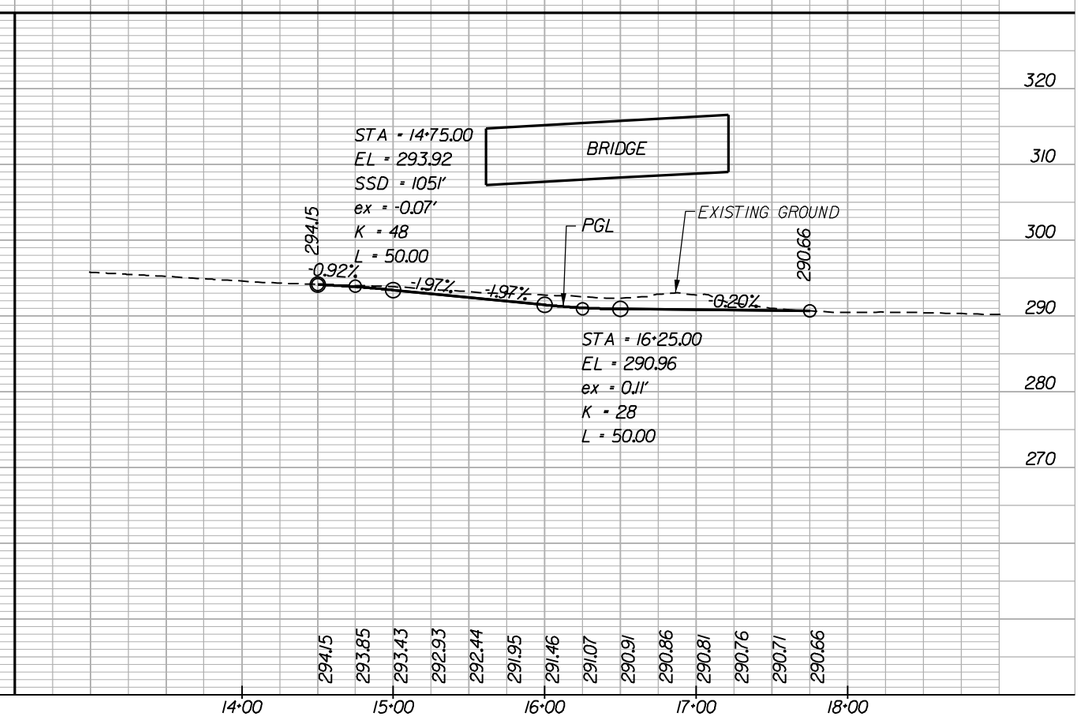
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Dewberry Consultants LLC
Fairfax, Virginia
ROADWAY ENGINEER





JACKPIT LANE/CONNECTOR



W&OD TRAIL

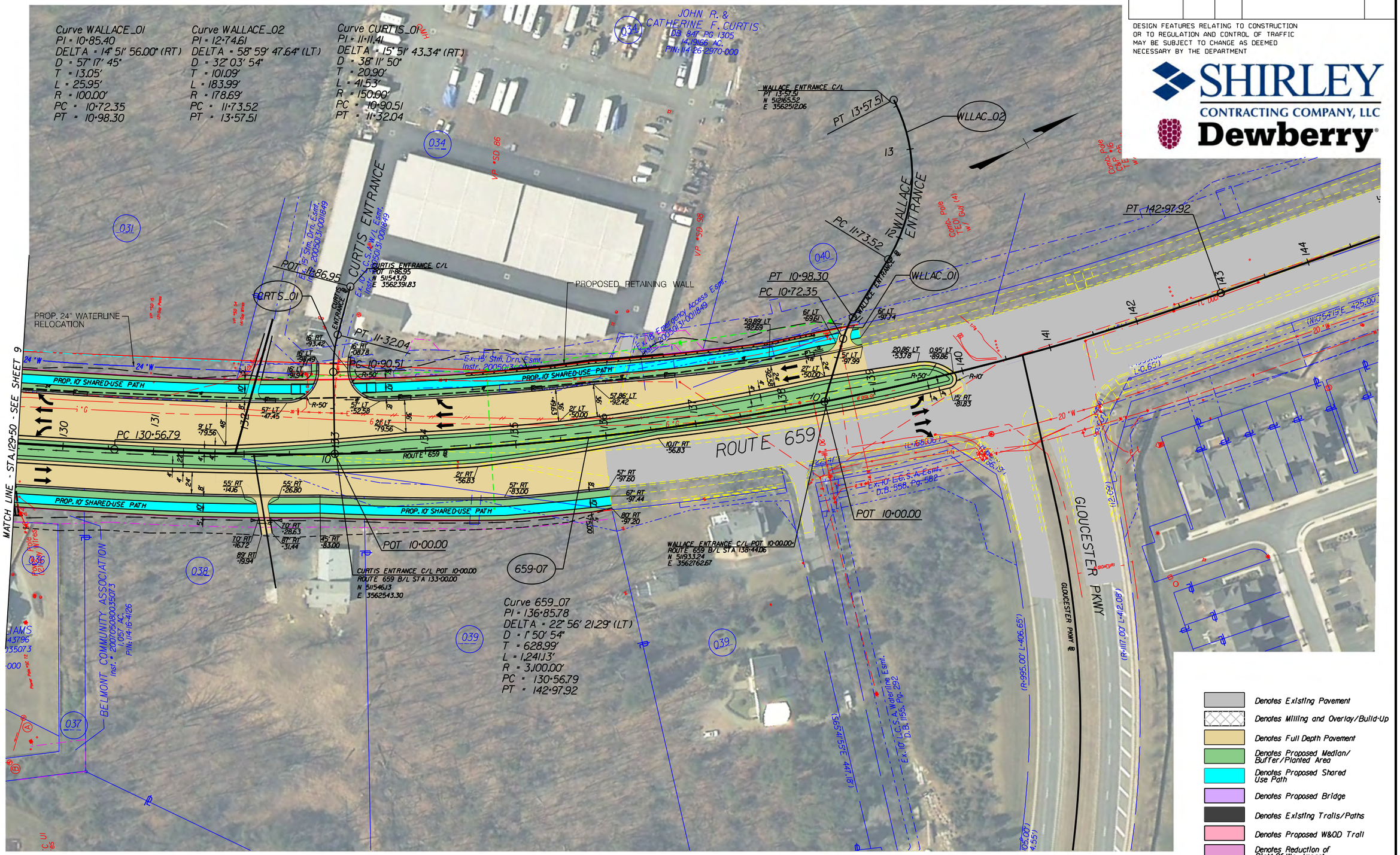
PROJECT	SHEET NO.
0659-053-362	9A

PROJECT MANAGER Mr. Sanjeev Sud, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	10

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

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry



SCALE 0 50' 100'

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0659-053-362		10

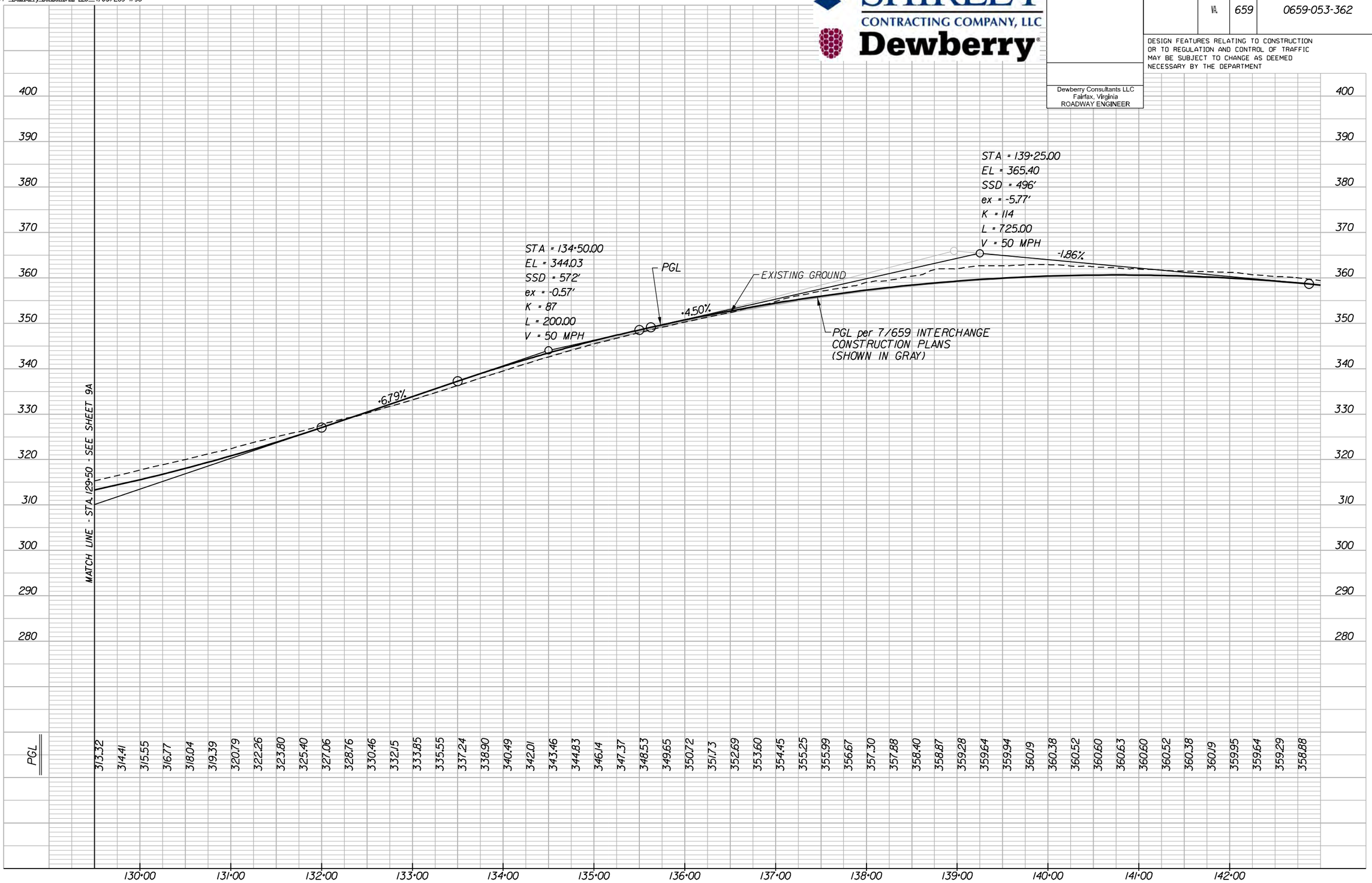
PROJECT MANAGER Mr. Sanjeev Suri, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY
DESIGN SUPERVISED BY
DESIGNED BY Dewberry Consultants LLC - (703) 289-4796

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

Dewberry Consultants LLC
Fairfax, Virginia
ROADWAY ENGINEER

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	10A

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



ROUTE 659

PROJECT	SHEET NO.
0659-053-362	10A

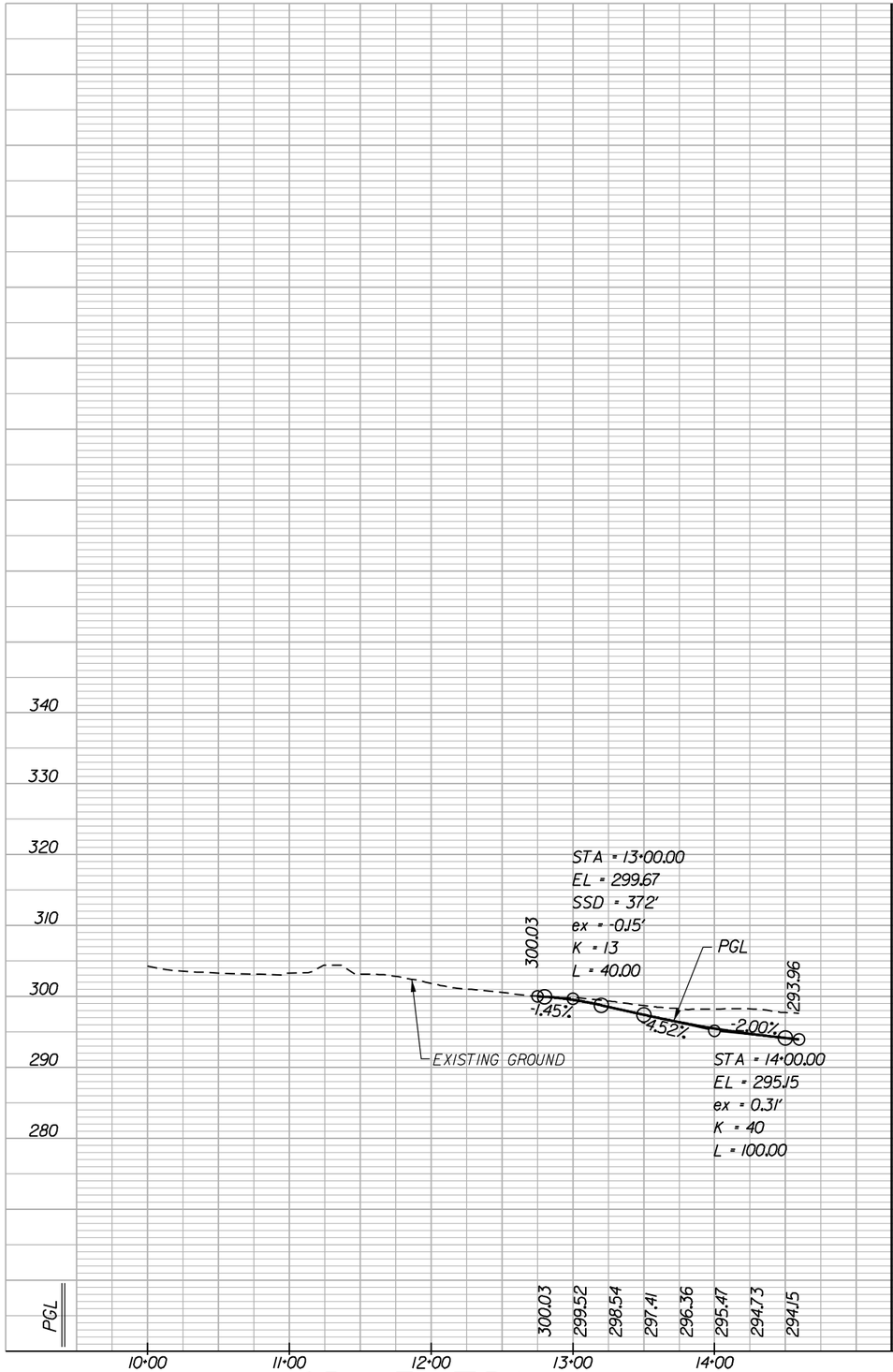
PROJECT MANAGER Mr. Sanjeev Suri, PE, PMP, CCM - VDOT NOVA District - (703) 259-2232
SURVEYED BY _ _ _ _ _ _ _ _
DESIGN SUPERVISED BY _ _ _ _ _ _
DESIGN BY Dewberry Consultants LLC - (703) 289-4796

SHIRLEY CONTRACTING COMPANY, LLC
Dewberry

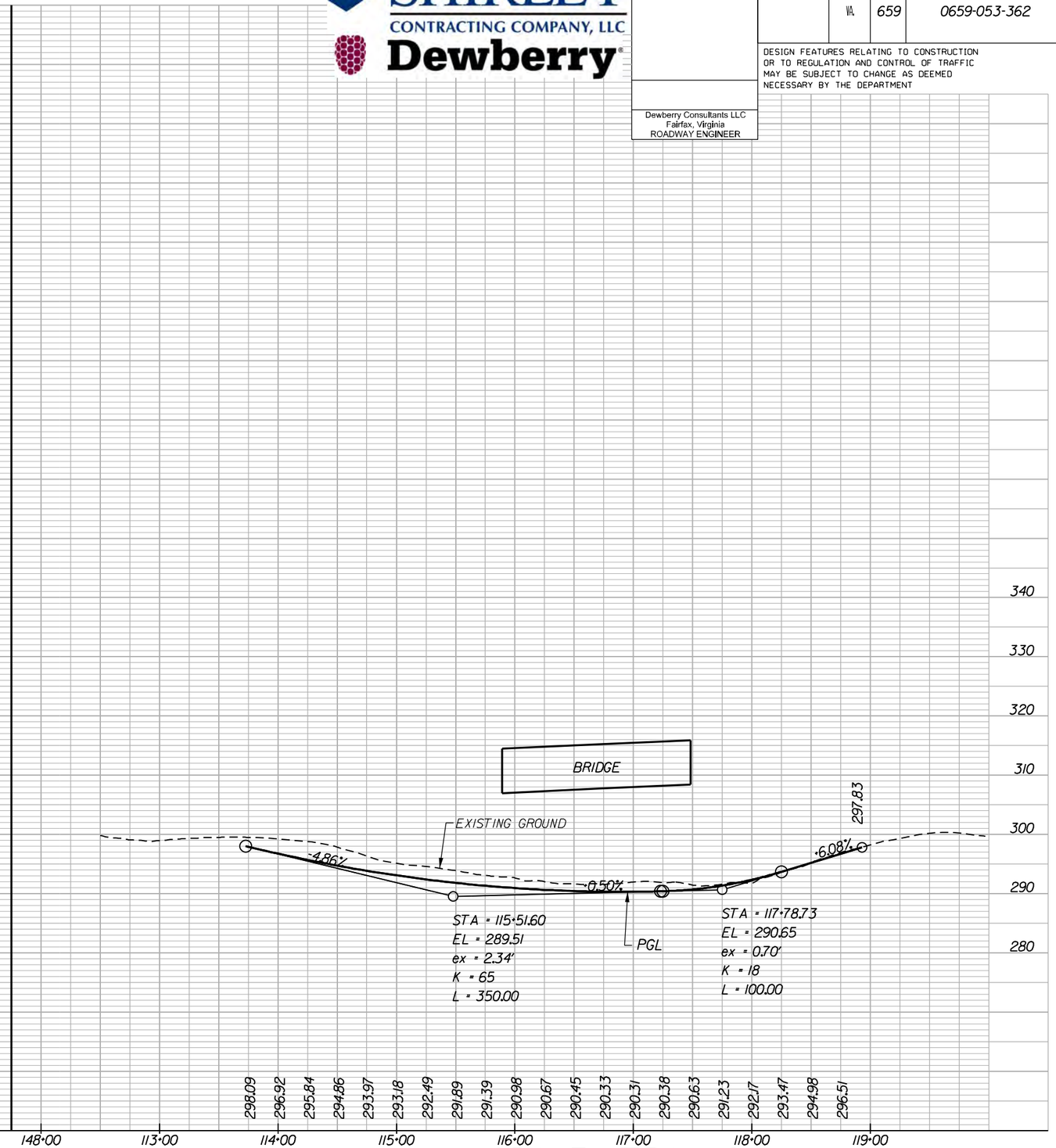
Dewberry Consultants LLC
Fairfax, Virginia
ROADWAY ENGINEER

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	659	0659-053-362	10B

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



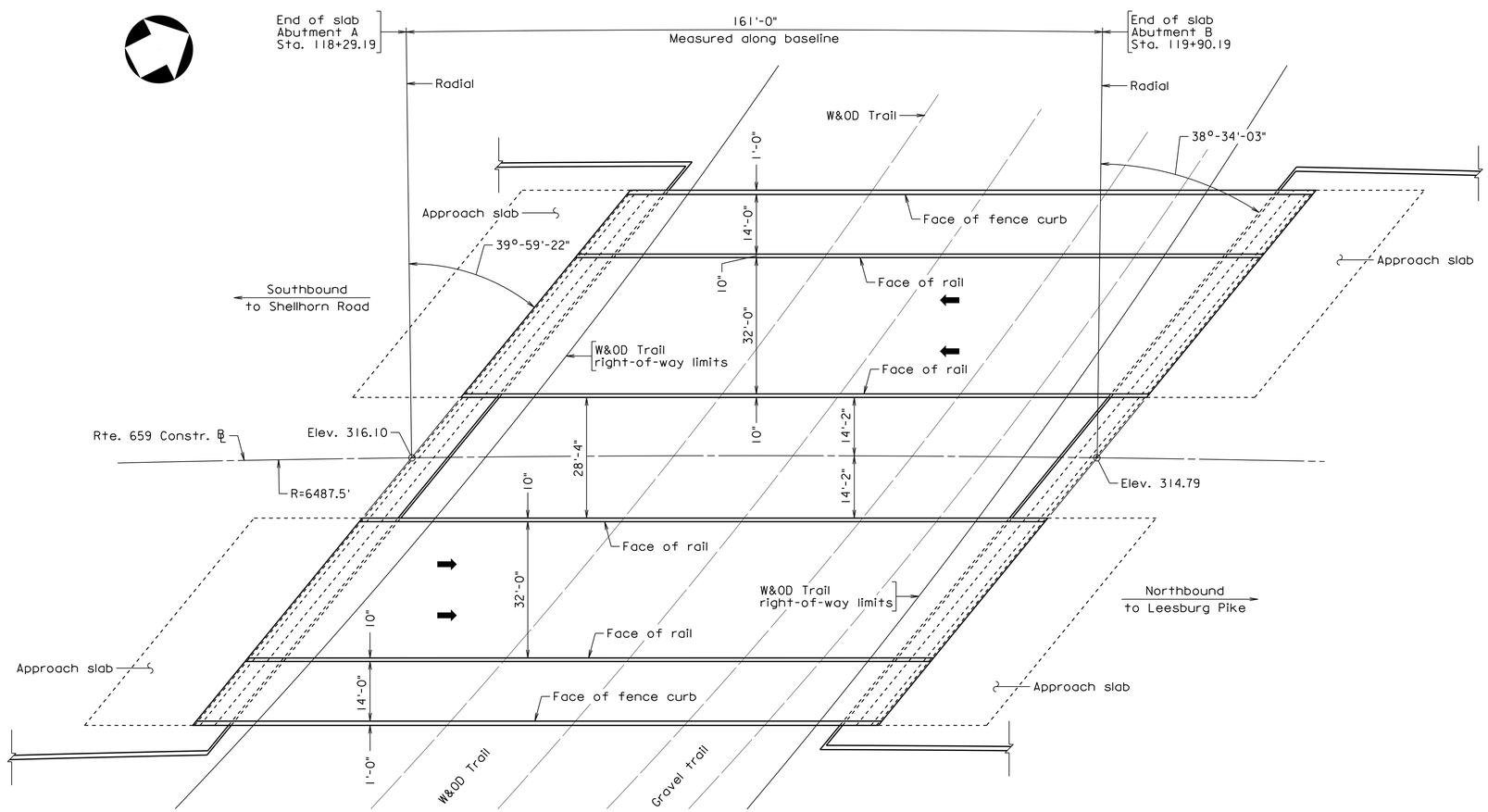
GRAVEL TRAIL 1



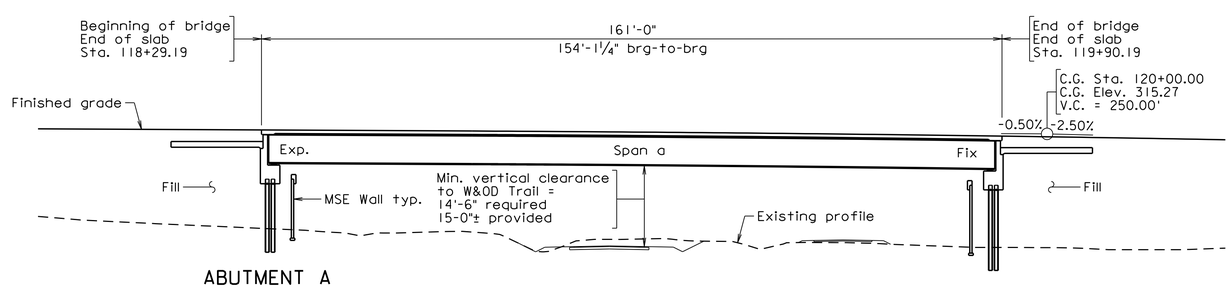
GRAVEL TRAIL 2

PROJECT	SHEET NO.
0659-053-362	10B

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—	STP-053-9 ()	659	0659-053-262, B670, B671	1
NBIS Number: 000000000028403 000000000028404			UPC No. 76244		
Federal Oversight Code:			FHWA Construction and Scour Code:	X9__-SN	



PLAN



DEVELPED SECTION ALONG ℄

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

DESIGN EXCEPTION(S):

GENERAL NOTES:

Width: 10" barrier, 32'-0" roadway, 10" barrier, 14'-0" shared-use path, 1'-0" fence. Width is 48'-8" out-to-out of rails Northbound and Southbound.

Span layout: 180'-0" single span

Capacity: HL-93 loading.

Specifications:

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

Design: AASHTO LRFD Bridge Design Specifications, 6th Edition with 2012 interim editions; and VDOT modifications

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

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

Note to Offerors:

These plans depict the approximate location and a concept of the proposed structure. The bridge geometrics, span lengths, type and size of superstructure members and substructure elements and maintenance of traffic are to be developed by the Offeror.

PRELIMINARY PLANS

THESE PLANS NOT TO BE USED FOR CONSTRUCTION

SHIRLEY CONTRACTING COMPANY, LLC

Dewberry

VDOT

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF TRANSPORTATION

PROPOSED BRIDGE ON
RTE. 659 OVER WASHINGTON AND OLD DOMINION TRAIL
LOUDOUN COUNTY - 1.3 MI. S RTE. 7
PROJ. 0659-053-262, B670, B671

No.	Description	Date

REVISIONS

For Table of Revisions, see Sheet 2.

PLANS BY:	CENTRAL OFFICE
COORDINATED:	
SUPERVISED:	
DESIGNED:	
DRAWN:	
CHECKED:	

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

Approved: _____ Chief Engineer _____ Date

Date: Apr. 2015

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286-11

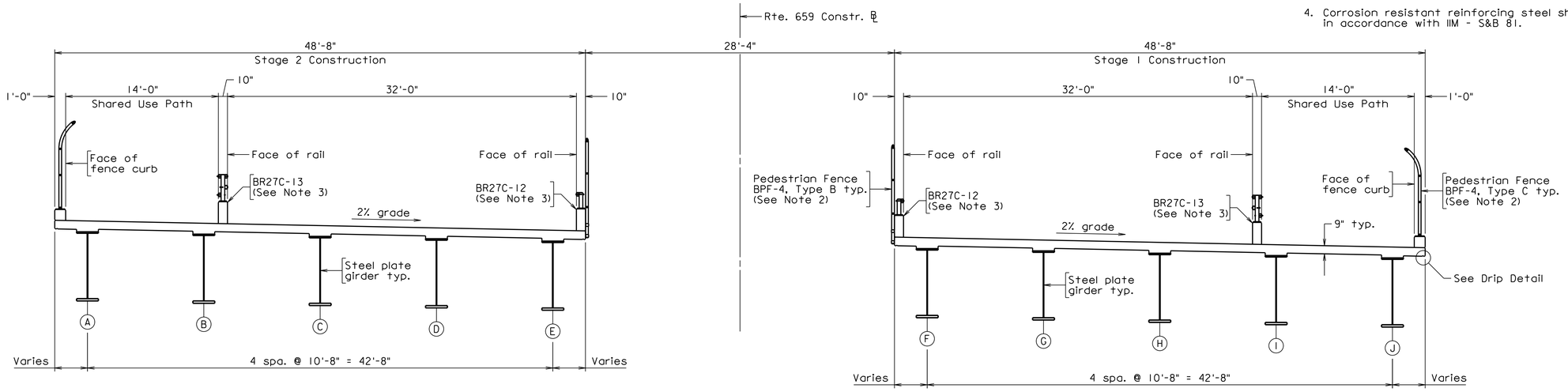
Sheet 1 of 2

Rte 659 - GP&E.dgn

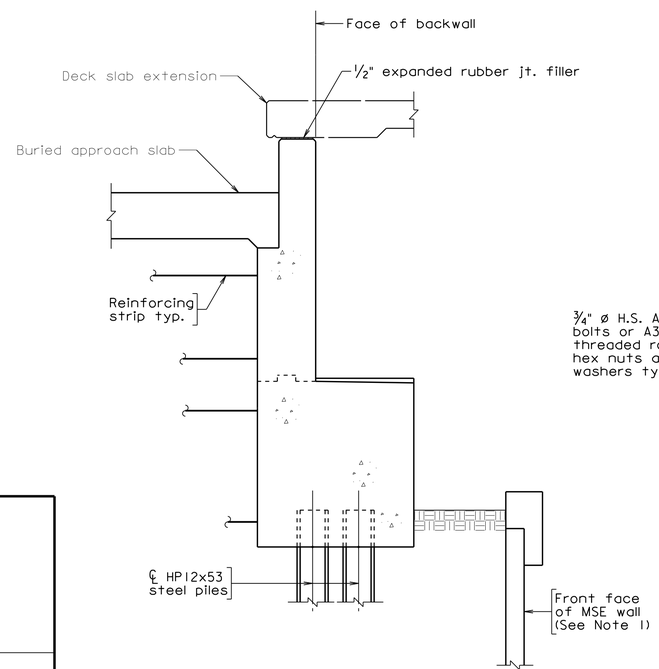
STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—		659	0659-053-262, B670, B671	2

Notes:

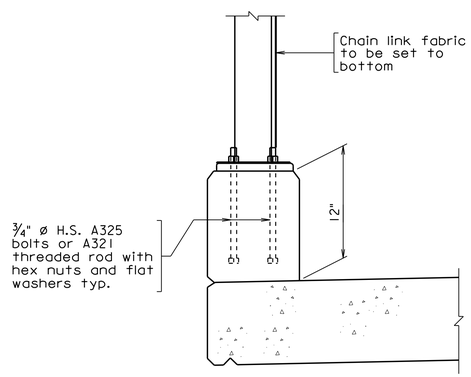
1. MSE wall will receive architectural treatment in accordance with RFP Attachment 2.3.B - Architectural Treatment Criteria.
2. Chain link, fabric, posts, rails and other associated hardware shall be black vinyl coated in accordance with RFP requirements.
3. The steel railing shall be galvanized and then powder coated, coal black, Federal Color No. 27038, in accordance with RFP Attachment 2.3.B - Architectural Treatment Criteria.
4. Corrosion resistant reinforcing steel shall be provided as required and in accordance with IIM - S&B 81.



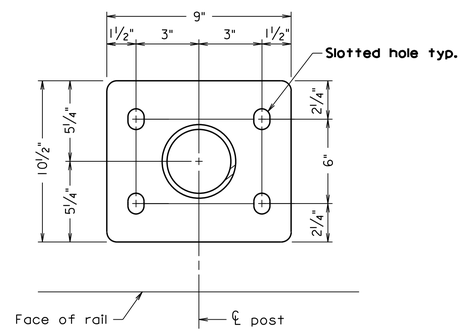
TRANSVERSE SECTION



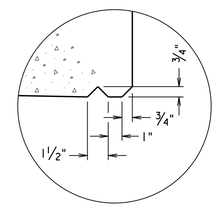
ABUTMENT SECTION
Scale: ½" = 1'-0"



ANCHOR BOLT DETAIL
Scale: 1½" = 1'-0"



BASE PLATE DETAIL
Not to scale



DRIP DETAIL

SHIRLEY CONTRACTING COMPANY, LLC

Dewberry

Scale: 3/16" = 1'-0" unless otherwise noted

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No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

TRANSVERSE SECTION AND DETAILS

Designed: DJT
Drawn: DJT
Checked: JDD

Date	Plan No.	Sheet No.
Apr. 2015	286-11	2 of 2

Rte 659 - Transverse Section and Details.dgn