

Response to Request for Proposals

# I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS

Colonial Heights, Virginia

State Project Nos.: 0095-106-122

Federal Project Nos.: NH-095-1(328)

Contract ID No.: C00085623DB74

## VOLUME I: TECHNICAL PROPOSAL

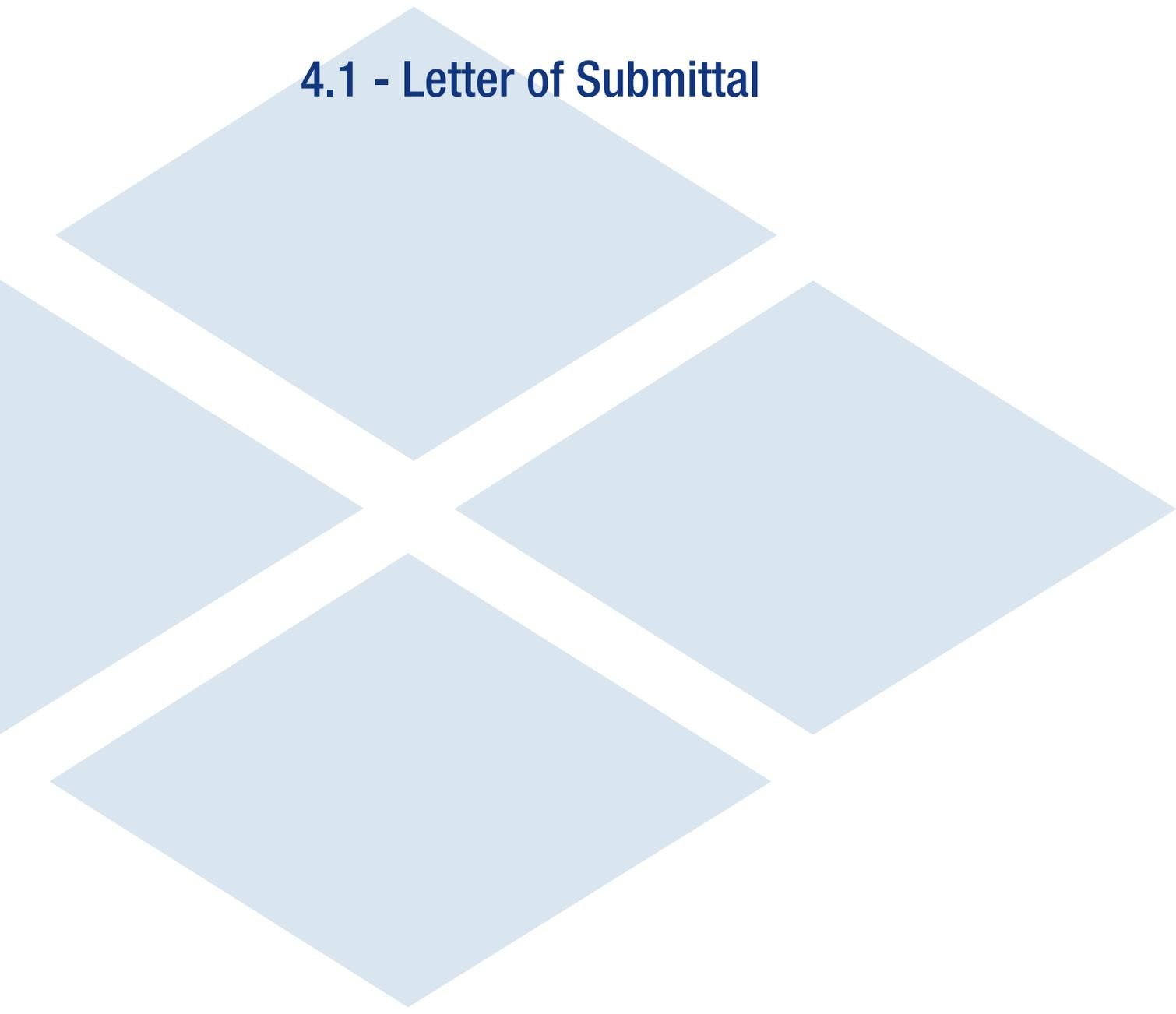


SUBMITTED BY:



IN ASSOCIATION WITH:





## 4.1 - Letter of Submittal



November 7, 2014

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

RE: I-95 at Temple Avenue Interchange Improvements  
Colonial Heights, VA  
Section 4.1 - Letter of Submittal

Dear Mr. Stevenson:

Shirley Contracting Company, LLC (Shirley), is pleased to submit this Technical Proposal for the project referenced above. Our Team is confident we will provide the Virginia Department of Transportation (VDOT) and the traveling public a successfully completed Project that exceeds the Project goals.

**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, 703.550.3579(P), 703.550.9346(F)  
mpost@shirleycontracting.com

**4.1.6 - Final Completion Date:** November 10, 2017

**4.1.7 - Proposal Payment Agreement:** An executed Proposal Payment Agreement, Attachment 9.3.1 is included as an attachment.

**4.1.8 - Certification of Debarment:** Signed Certification of Debarment Forms are included as an attachment to this Letter of Submittal.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Michael E. Post", is written over a light blue circular scribble.

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

## 4.2 - Offeror's Qualifications

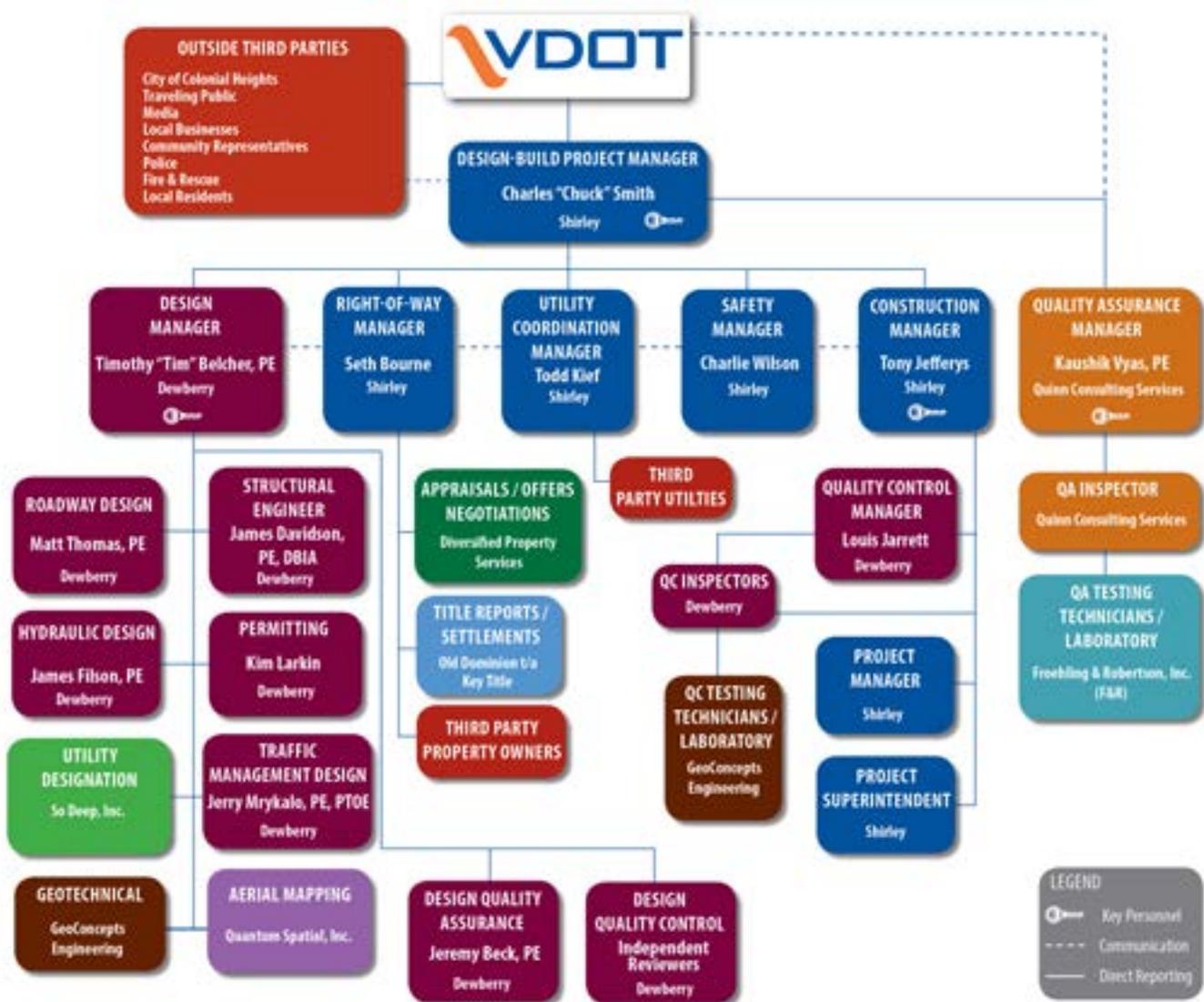
# 4.2 Offeror's Qualifications

## 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. There is one change from our Statement of Qualifications (SOQ). Charlie Wilson will replace the proposed Safety Manager Randy Reale as he is no longer with the company. This change was submitted to VDOT on October 23, 2014. As there are no changes to the chain of command, an updated narrative is not required.



## 4.3 - Design Concept



## 4.3 Design Concept

### Introduction

The I-95 at Temple Avenue Interchange Improvements Project (the Project) is a major access point for motorists from Interstate 95 to reach Colonial Heights, Southpark Mall, and Fort Lee in Hopewell. The current high traffic volumes exceed the existing roadway capacity and introduce large queues that routinely extend onto the I-95 thru lanes during peak times having direct impacts on I-95 motorists. Our Team's design concept acknowledges the existing issues and improves the operations and safety of this area.

Our Team has developed multiple enhancements to the RFP that benefit VDOT and the traveling public. Using our knowledge and experience with interchange modification projects and the unique challenges they present, we have developed a design that minimizes impacts to motorists during construction while providing an efficient and sustainable design. Our proposed design includes enhancements that exceed the RFP requirements which are shown in the attached Volume II Design Concept document and described below.

### Project Enhancements

#### Horizontal Alignment Improvements

Horizontal alignment enhancements include shifting the proposed roundabout to the southeast. This shift reduces the quantity of retaining wall that needs to be constructed and maintained, reduces the amount of 24" water line that needs to be relocated, and pulls the construction farther away from the proposed Kroger development. Additionally, we revised the gore area at the I-95 Southbound ramp. This revision reduces the amount of work on the Interstate and therefore reduces impacts to I-95 mainline traffic which means that 47,000 vehicles per day have been removed from experiencing periodic construction delays.

#### Profile Enhancements

Two major goals include maximizing safety and minimizing impacts to the traveling public during construction. To accomplish these goals, we put an emphasis on safety and mobility during construction which we explain in detail in Section 4.5. We will accomplish these goals by designing the geometry of the improvements in a manner that limits impacts to the public. We have optimized the profile of proposed realigned ramps to and from northbound I-95 where they cross the existing ramps to be nearly at-grade with the existing ramps. By designing the new ramps that avoid being below or above the existing ramps, we are able to minimize the lengths of shoulder closures with necessary barrier, and also limit the amount of ramp disruptions necessary to construct the improvements. This optimization allows for a seamless switch from the existing ramps to the new ramps upon opening, without the need for long-term ramp closures or significant temporary pavement wedges that would otherwise be required.

#### Stormwater Management

The Project utilizes Virginia Stormwater Management (SWM) criteria II-C for pollutant load removal analysis and Best Management Practice (BMP) design. Based on the RFP plans, two water quality BMP's were proposed on the south side of the Project adjacent to the roadway to minimize the possible right-of-way impacts, with one BMP located downslope of the existing petroleum business that has the potential

## 4.3 Design Concept

to have contaminated soils. Based on a site visit and a review of aerial imagery, our Team is aware of an existing quarry pond which is completely located within the new ramp. The existing pond currently has a riser structure that controls the outfall flow. It is our Team's innovative idea to use the existing pond and design an aquatic bench with forebays to treat pollutants and control the runoff to this facility.

This approach uses an existing feature that provides a pollutant removal efficiency of 65%. The use of the proposed retention pond reduces the potential for environmental impacts and monitoring associated with the possibilities of contaminated soils within construction areas. It also reduces the amount of storm sewer systems needed to convey water to the proposed RFP BMP's and enhances an existing feature to provide the water quality and water quantity needs for the Project. The retention pond can potentially treat more than the required project area (up to 8 lb/yr of phosphorous removal based on the total applicable area of 22.45 acres) if VDOT directs our Team to do so. This would be helpful to VDOT as it would provide credits for future projects in this highly urbanized area.

### Improved Western Project Limit Tie-In

Our concept improves upon a deficiency in the RFP design as noted in our proprietary meeting. The RFP plans show an abrupt 12' shift in the westbound Route 144 (Temple Avenue) thru lanes in the Temple/Ridge/Hamilton intersection. Per AASHTO, this amount of shift would need to occur in 320', but instead occurs in less than 100'. Our Team proposes to widen on both sides of Temple Avenue and reduce the channelized median to the minimum acceptable width of 2'. This will reduce the shift required for Westbound Temple Avenue traffic and reduce the amount of work required west of the Temple/Hamilton intersection.

### 4.3.1 CONCEPTUAL ROADWAY PLANS

Our Team's concept will remove the existing I-95 Ramp/Temple Avenue Signal by replacing it with a new roundabout located west of the existing intersection. The relocated ramps provide a 2-lane approach to the new roundabout which will eliminate the existing yield condition that backs up traffic onto I-95 northbound. The ramp relocation is made possible by covering the abandoned Atlantic Coastline rail bed and demolishing the existing bridges carrying Temple Avenue over it.

Our Team's Conceptual Roadway Plans are included in the Volume II Design Concept document. Descriptions of these Design Concepts and details regarding enhancements made to the RFP Plans that meet and/or exceed project requirements are provided below.

### GENERAL GEOMETRY

The general geometry of the various roadway alignments are described below:

Alignment	VDOT Standard	Number of Lanes	Lane Width	Shoulder Width	Curb Present?
I-95 Ramps	GS-R	1-2	16' – 26'	Left: 4' paved, 2' graded Right: 8' paved, 2' graded	Varies
Route 144 (Temple Avenue)	GS-6	2 lanes plus turn lanes	12'	N/A	Yes
Ridge Road	GS-4/GS-8	1 per direction	10'	2' graded	Varies

## 4.3 Design Concept

### HORIZONTAL ALIGNMENTS AND MAXIMUM GRADES

Horizontal and vertical geometry meets or exceeds AASHTO and VDOT Standards as summarized below:

Alignment	VDOT Standard	Design Speed	Minimum Radius	Maximum Grade
I-95 Ramps	GS-R	35 MPH	350'	6%
Route 144 (Temple Avenue)	GS-6	40 MPH	247' (outside of roundabout) 55' (inside roundabout)	6%
Ridge Road	GS-4/GS-8	20 MPH	130'	8%

The Volume II Design Concept document contains our Team's concept to accomplish this Project including the following elements:

- Typical sections of roadway, ramps, and retaining walls;
- Proposed retaining wall plan and elevation;
- Conceptual hydraulic and stormwater management design;
- Comparison of our Team's proposed right-of-way limits versus the RFP Concept; and
- Proposed utility impacts.

Our concept does not feature a substantial deviation from the perspective of Noise Mitigation as defined in RFP Part 2, Section 2.4.8. No noise mitigation (ie. soundwalls) is required similar to the RFP Concept.

### OTHER KEY PROJECT FEATURES

Our proposed concept honors the commitments in the approved Interchange Modification Report. All work can be completed within the proposed limited access that was established by the Commonwealth Transportation Board. Other key features include:

#### Traffic Signals

As identified in the conceptual plans, part of the interchange and roadway improvements includes the reconstruction of the existing traffic signal at the intersection of Temple Avenue and Hamilton Avenue / Ridge Road, and the removal of the existing traffic signal at Temple Avenue and the I-95 ramps.

The reconstructed traffic signal includes replacement of the existing signal equipment with new equipment that meets current VDOT standards and also accommodates the relocated Ridge Road intersection. This signal is designed with enhanced safety equipment, such as emergency vehicle pre-emption, interruptible power supply (battery backup), and the signal timings and phasing is optimized using Synchro software to maximize operational benefit to the traveling public. At all times during construction, the existing signal is maintained until the new signal is operational. In addition, the existing signal at the Temple Avenue and I-95 ramps intersection remains in operation using existing and temporary equipment until the new ramps are operational and the roundabout is opened.

#### Traffic Signing and Lighting

Our Team will design and construct significant signing and lighting improvements to ensure safety and driver comprehension is maximized. New overhead and ground mounted signs are designed by staff highly

## 4.3 Design Concept

experienced in both interchange and roundabout design, and will utilize the latest MUTCD principles and Clearview sign font to maximize safety. We will design and construct the project lighting system as required by the RFP to assist drivers in navigating the reconstructed interchange. Using our recent relevant experience with lighting design and construction on VDOT roadways, our Team ensures that the lighting delivers the maximum safety benefits to the traveling public, while also being cognizant of future VDOT maintenance costs and access.

### **Environmental**

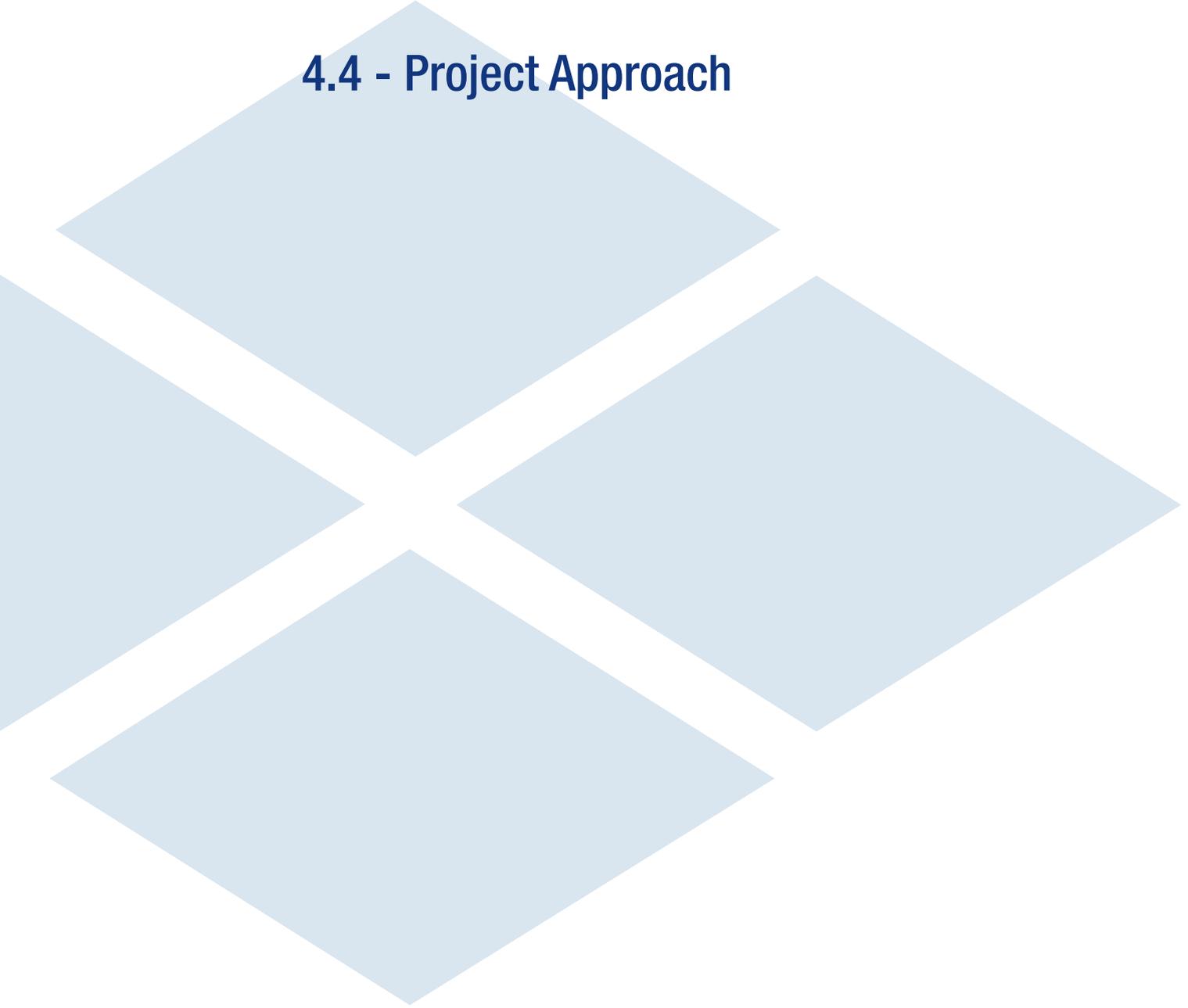
By shifting the proposed roundabout slightly to the southeast, our Team's design reduces impacts over the RFP design which encroached further into the floodplain, adjacent stream channel, and existing water line. The RFP design notes a retaining wall on the stream channel bank within a wetland which would have precipitated impacts for the maintenance of hydrology into the historic Atlantic Coastline Railroad, the Old Town Creek FEMA mapped floodplain, and associated jurisdictional wetlands. The RFP design is more difficult and costly to build in the proposed location given difficulties of working in wetlands, and the high potential for unsuitable soils. Our proposed design reduces the length of the required retaining wall and water line relocation. Our Team's solution meets the required roadway standards while minimizing impacts creating a constructible, lower cost solution.

### **DURABILITY**

VDOT can have confidence in the long-term asset performance and durability of our Team's design for several reasons:

- The roundabout design incorporates truck aprons to anticipate the off-tracking of vehicles and minimizes the frequency of curb replacement;
- The demolition of the existing eastbound Temple Avenue bridge removes a weight restricted bridge from VDOT's maintenance inventory;
- The existing quarry pond area is within VDOT right-of-way and requires ongoing maintenance even if the area is not utilized. As a result of utilizing the existing pond, the total number of stormwater locations requiring long-term VDOT maintenance is reduced from three facilities to one facility; and
- Our Team's elimination of the proposed BMP on Parcel 006 alleviates VDOT from future concerns with the infiltration of potential petroleum contaminants into the stormwater feature.

## 4.4 - Project Approach



# 4.4 Project Approach

## 4.4.1 Utilities

One of the most critical elements of a complex design-build project is the efficient and effective coordination of utility work. Understanding that utilities can have a significant impact on a project, our Team has spent considerable time and effort studying the RFP Conceptual Plans, reviewing utilities in the field, and discussing the Project with each utility company. Based on this effort, we have developed an integrated plan that addresses utility impacts while maintaining the proposed phasing and sequence of work.

This effort will continue as the Project moves into detailed and final design. At the outset of design, utilities will be designated, test-pitted, and reviewed for potential conflicts. Our Utility Team participates in the design process and coordinates with the right-of-way, permitting, construction, and scheduling disciplines. 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.

Our Team has successfully managed the utility discipline on design-build projects for over 12 years. The key to our success is having experienced in-house resources and positive relationships with utility owners. Our first and highest priority throughout the design and construction phases of the Project is to avoid utility relocations. If conflicts cannot be avoided, we will work diligently to minimize these relocations through a combination of design and/or protection measures that allow the utilities to remain in place.

**The Shirley Team has been successfully managing the utility discipline on multiple design-build projects for VDOT and other owners for over 12 years**

### SPECIFIC PROJECT UTILITY IMPACTS

The major aspects of the Project include the construction of the roundabout, new ramps to I-95 and new Ridge Road intersection with Temple Avenue. There are existing utilities in conflict with each of these components, making the approach to utility coordination and relocation paramount to project success. Some of the more critical utility impacts include the overhead power lines along eastbound Temple Avenue which need to be relocated prior to any work commencing on the Project, and the water line parallel to westbound Temple Avenue that is in conflict with fills and retaining walls at the roundabout and Ridge Road. At this stage of design, we have identified those existing underground and overhead utilities that potentially conflict with the design and construction of the Project. Listed below in Table 4.4.1 is a summary of the known utilities and their potential conflicts as determined by our Team:

**TABLE 4.4.1 - KNOWN UTILITIES AND POTENTIAL CONFLICTS**

Utility/ Owner Description	Approximate Location	Known/Potential Conflict	Relocation Plan/Avoidance Strategy
<b>OVERHEAD POWER/COMMUNICATION LINES</b>			
Dominion Power Lines	Temple Ave Station 17+00 west of roundabout to 12+50 east of roundabout	Road/roundabout construction	Relocate as necessary
Dominion Power Lines	I-95 NB Ramp Station 14+00	New ramp	Relocate pole from proposed ramp location
Dominion Power Lines	I-95 SB Ramp Station 12+00 to 14+00	New ramp	Replace with taller poles to clear ramp

## 4.4 Project Approach

Utility/ Owner Description	Approximate Location	Known/Potential Conflict	Relocation Plan/Avoidance Strategy
Dominion Power Lines	Ridge Road Station 10+75 to 12+50	New intersection	Replace with taller pole to clear road
Verizon	Ridge Road Station 10+75 to 12+50	New intersection	Reattach to new Dominion pole
Comcast	Ridge Road Station 10+75 to 12+50	New intersection	Reattach to new Dominion pole
<b>UNDERGROUND POWER/COMMUNICATION LINES</b>			
Dominion Power	Temple Ave Station 17+00	Road / roundabout construction	Tie-in at relocated pole
Electric Power Feed to VDOT facilities	I-95 SB Ramp Station 10+00 to 13+00	New ramp and ditch line	Relocate out of proposed ramp
Dominion Power Handhole	I-95 NB Ramp Station 13+75	New ditch line	Relocate out of proposed ditch
Verizon 4 - 4" Duct & Manhole	Temple Ave Station 15+50 west of roundabout to 14+00 east of roundabout	Road construction	Relocate per Verizon
Verizon	I-95 NB Ramp Station 12+75	New ditch line	Lower in place
Verizon Pedestal	Ridge Road Station 10+75	New intersection	Relocate as necessary
<b>WATER</b>			
ARWA 24" Water Line	Temple Ave Station 19+00 to 23+00	Roundabout retaining wall	Relocate as necessary
Colonial Heights Fire Hydrant	Temple Ave Station 16+00	Clear zone	Relocate as necessary
Colonial Heights 6" Water	Ridge Road Station 10+50 to 12+00	Proposed retaining wall	Relocate below proposed wall location
<b>SANITARY SEWER</b>			
Colonial Heights 8" Sanitary Sewer & Manholes	I-95 Ramp Station 22+75 to 24+50	Ramp construction	Relocate as necessary
Colonial Heights Sanitary Sewer & Manhole	Ridge Road Station 11+00	Proposed retaining wall	Relocate as necessary

### Mitigation Strategies

Utilities have the potential to impact the project schedule and cost. On design-build projects, this risk is even greater for several reasons. At this phase of the Project's development, the roadway plans are at a preliminary level of completion and utility test pits have not been performed. It is not feasible at this stage to determine the accurate location of the existing facilities or the full extent of the impact the design will have on them. Second, the majority of the utility companies have not begun their design and analysis of the cost and schedule for their potential relocations. Lastly, there is limited leverage available to the design-builder to affect the utility companies to complete their work within the overall project schedule. Our Team's experience managing these risks has led to the successful completion of every one of our design-build projects for VDOT. This experience has driven the development of proven strategies and project-specific concepts which we will implement on the Project:

***Alternate design concept to minimize direct utility conflicts.*** As we prepared our Technical Proposal, our Team invested a significant amount of time and effort to determine where utilities are currently located, how they are affected by the design, the cost to relocate unavoidable conflicts, and the schedule for doing so. Our Team is focused on developing a final design concept which minimizes utility relocations to the

## 4.4 Project Approach

greatest extent possible. One area of focus includes the Appomattox River Water Authority's existing 24" water line that runs parallel to westbound Temple Avenue. Our design has shifted the alignment of the roundabout to the southeast reducing the length of required retaining wall thus minimizing the conflict with the 24" ARWA water line.

***Designating a full time Utility Manager with primary focus on managing the utility scope of the Project from concept to completion.*** Our in-house Utility Manager has served in this role on every one of our design-build projects to date and is already engaged in this Project. He has a fundamental working knowledge of the individual utility companies, an indication of the existing utilities present in the Project corridor, and a thorough understanding of the interaction between the utilities and all other project disciplines. Having an in-house Utility Manager allows our Team to exercise more control of the utility relocation process, provides quicker response and flexibility to adapt to project challenges, and facilitates the overall integration and constructability review functions. As an example, our Utility Manager has already contacted Verizon to begin coordinating a conceptual relocation plan for their underground facilities that are in conflict with the demolition of the bridges.

***Completely integrating utilities with all other project disciplines including design, right-of-way, permitting, construction, and QA/QC.*** The primary method of accomplishing this task is by holding, at a minimum, weekly Design Meetings with the entire Project Team. Led by the Design-Build Project Manager, these meetings are an extremely important tool in ensuring that all design-build disciplines have input into the overall design and each other's work. Our Team will review all aspects of the design and keep meeting minutes in order to track progress and define responsibility for action on issues that are identified and their resolution. This interactive process among the various disciplines occurs continuously outside of the scheduled Design Meetings as well. VDOT can be assured that when plans are submitted, they have been created with input and review by all Project disciplines, including utilities.

***Creating a Project Schedule with input from the Utility Manager and other disciplines.*** As shown in the schedule submitted under Section 4.7, we have already reviewed the known utility conflicts and incorporated them into the overall sequence of work. During the development of this Technical Proposal, our Utility Manager has contacted each individual utility company and discussed the Project scope and potential conflicts with them. Based on these discussions, our previous experience and the information provided by the utility companies at the Utility Scoping Meeting on July 17, 2014, we have anticipated the timeframes for relocations and coordinated with the other disciplines, such as right-of-way, permitting and construction to arrive at a proposed sequence of work. In addition to meeting the RFP completion date, the schedule highlights the need to remain focused on the management and coordination of the utility work. Throughout the Project, utility progress is updated on a regular basis by the Design-Build Project Manager and the Utility Manager in order to identify schedule impacts as early as possible so that corrective measures are taken without impacting the completion date.

***Holding weekly (at a minimum) Construction Progress Meetings on the jobsite.*** Led by the Construction Manager, these meetings facilitate coordination during the construction phase among the utility, construction, and QA/QC disciplines. Open for attendance by VDOT's representative(s), the detailed day-to-day schedule of work is reviewed specifically with the foremen and superintendents responsible. The Utility Manager will also attend, along with specific utility company representatives, so that utility work is directly coordinated with the construction crews.

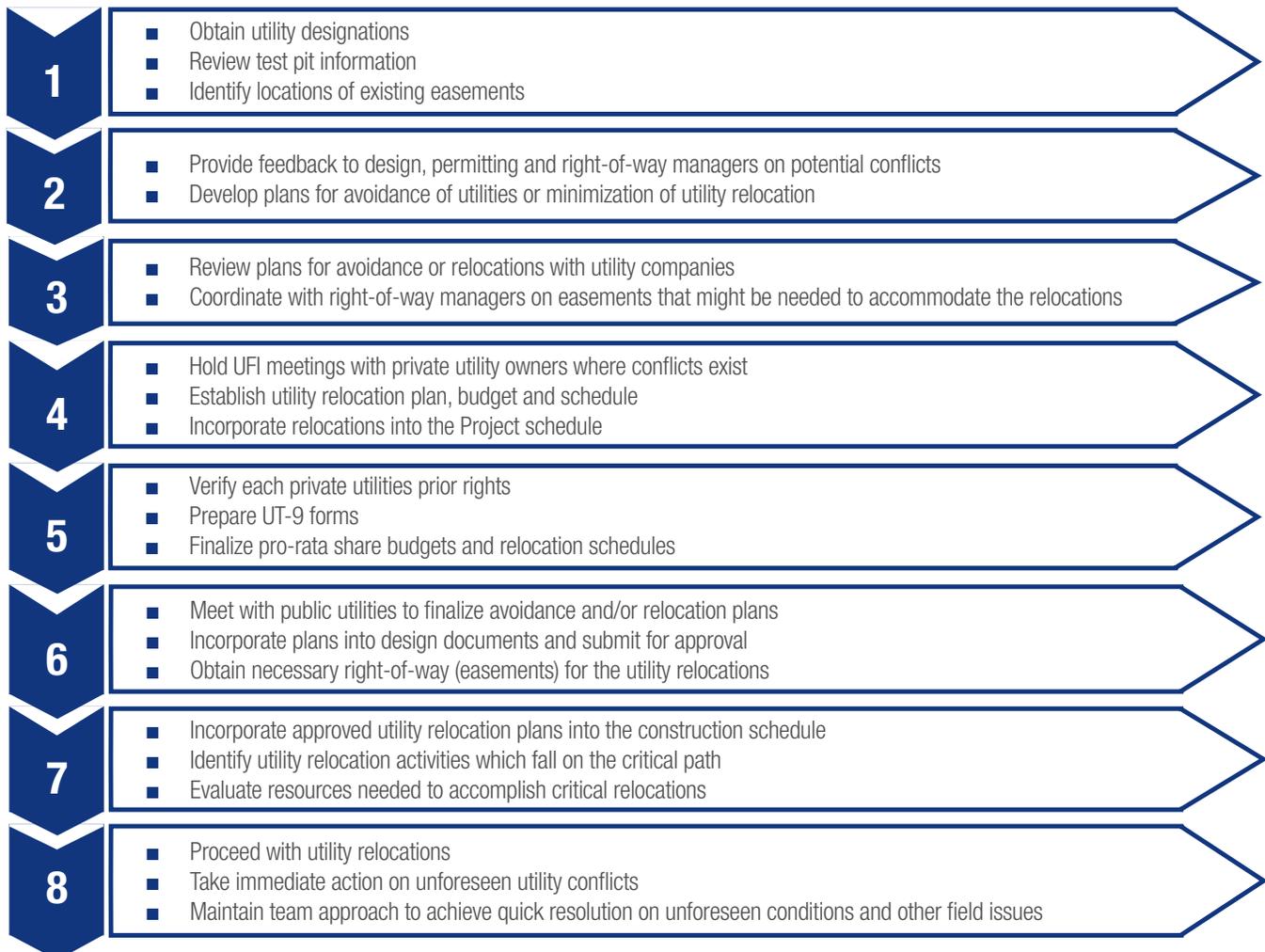
## 4.4 Project Approach

**Supplementing and assisting the utility companies with their work.** Because of our close relationship with the individual utility companies, we employ several techniques that allow us to expedite and maintain greater control over their cost and schedule. In many cases, we are able to complete portions of their relocation design for them. This allows us to directly integrate their relocation design with that of the overall Project's and complete the task more quickly. We are proponents of the "common duct bank" concept for the relocation of multiple underground utilities, such as fiber optic cables. By negotiating an agreement between multiple utilities allowing us to design and construct the duct bank, each realizes a cost and time savings. VDOT and the Project itself benefits by the cost and time savings, but equally important are the benefits of having a single location for underground utilities instead of many individual locations to deal with for years to come. In addition to design activities for utility companies, we perform portions of the actual relocation work ourselves, thus saving additional cost and time. Examples include constructing duct banks, drilling and setting of wood poles for aerial relocations, performing the "in-place" relocations described in Table 4.4.1 above, and setting up temporary traffic control requirements for the utilities use.

### Approach To Utility Coordination

Our Team follows the VDOT Utility Relocation Policies and Procedures Manual with regard to the utility scope of work. We have begun activities to ensure the success of the utility relocation process as we prepared this Technical Proposal. Figure 4.4.2 outlines the steps performed once the Project is underway:

FIGURE 4.4.2 - APPROACH TO UTILITY COORDINATION



## 4.4 Project Approach

### 4.4.2 Quality Assurance/Quality Control (QA/QC)

Our Team is committed to providing VDOT with a project that is of the highest quality. Our extensive experience in design-build has led to the development of a proven QA/QC Program, complete with comprehensive procedures which address all aspects of quality from document inception to construction completion and final acceptance. This Program has been customized for the Project and incorporates all of the project specific contract requirements and the requirements of VDOT's Minimum Requirements for Quality Assurance and Quality Control on Design Build and Public-Private Transportation Act Projects, January 2012 (hereafter VDOT's Minimum QA/QC Requirements). We have successfully implemented this Program, including utilization of independent QA and QC teams, on numerous VDOT design-build projects. As a result of our performance and commitment to QA/QC, VDOT has reduced costs by minimally staffing projects with the basic oversight needed to confirm that quality standards are exceeded.

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

#### Description of Design QA and QC Procedures

Providing a completed project which meets VDOT's requirements and standards for plan development and long term cost effectiveness requires a thorough QA and QC processes during design activities. Our design QA and QC functions are performed separately by independent staff not involved in the other quality role or the production of the design documents.

As identified in our Team's organizational structure, the Design Manager is Tim Belcher, PE of Dewberry Consultants LLC. Tim is responsible for oversight of all design disciplines, ensuring that each discipline coordinates with each other to minimize rework and conflicts. He also monitors the completion of the Design QA and QC functions for all design documents, preparing final design certifications, and signing and sealing all final construction documents. Jeremy Beck, PE will perform Design QA while Design QC will be completed by competent Design Engineers who are not involved in development of specific design elements they are reviewing.

#### Interdisciplinary Coordination

This Project includes a variety of work items to include roadways, bridge structure demolition, retaining walls, traffic signals, drainage, erosion and sediment controls, SWM facilities, permitting, right-of-way, and utilities. Interaction between the Designers, Right-of-Way Manager, Utility Manager, Permitting Manager, and Construction Manager, is a vital part of our Design QA/QC Program which makes the Project comprehensive and complete and minimizes interdiscipline conflicts. During the design phase, the Design Manager holds weekly interdisciplinary coordination meetings to discuss the ongoing design work. The Team identifies potential conflict items or items that may be overlooked, reviews schedule, and discusses the constructability challenges of the Project. Interdiscipline coordination is a major focus of the Design Manager and members of the Design Team before all milestone phases of development and document submission.



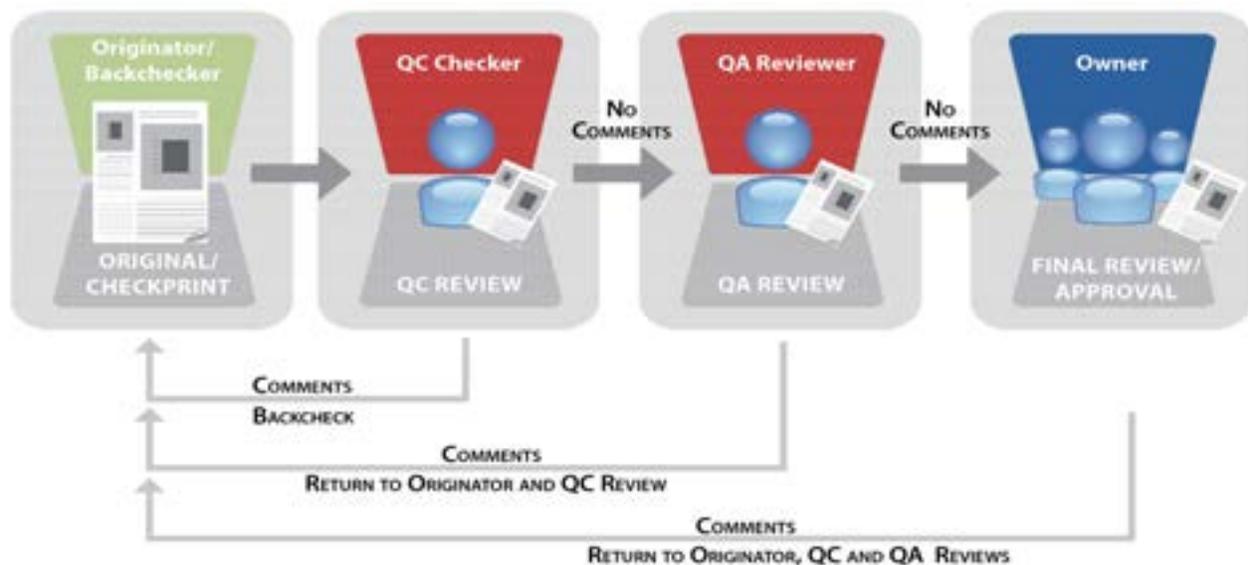
## 4.4 Project Approach

- Verify implementation of and conformance to constructability reviews and findings;
- Confirm interdisciplinary reviews are complete and all comments resolved
- Evaluate overall conformity of final design documents to the design scope of work, project criteria, and client expectations;
- Confirm materials used and elements in the work have been designed to perform for the purpose intended;
- Verify overall appearance, organization and technical accuracy; and
- Verify application of the seal, signature and date of the responsible registered VA Professional Engineer.

Once the Design QA check is completed the Design QA Reviewer and Design Manager signs and completes the “Design QA Review Memorandum” and includes a record of it in the Project file.

The Design QC and QA processes described above are graphically illustrated below by Figure 4.4.4. The QA/QC process could require multiple iterations to ensure design meets contract requirements, avoids conflicts between disciplines, utilizes the appropriate materials and supplies in the correct manner, and ensures that all QA and QC review comments are adequately addressed.

FIGURE 4.4.4



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

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

The most critical design element is the layout of the proposed roundabout and its associated elements. The roundabout design has to be coordinated among numerous disciplines including drainage, stormwater management, maintenance of traffic (MOT), signing and marking, retaining wall design, environmental,

## 4.4 Project Approach

and utility relocation. Our Team's QA/QC approach for the roundabout design is in accordance with VDOT's QA/QC program, utilizes independent reviewers and designers, and culminates with confirmation from the QA Manager that the appropriate QA and QC procedures have been followed and completed. At the outset of design, the location of the roundabout is coordinated with the MOT plan to understand how portions of new construction can be phased to coincide with the phasing plan to demolish the existing railroad bridges. At this point, construction personnel such as the Construction Manager performs a constructability review of the concept before detailed design begins. We will check the geometry of the roundabout using design simulation software. As per RFP Addendum #1, our staff verifies that a WB-67 vehicle and passenger car can travel side-by-side. These AutoTURN plots are included with the first submission of the plans to VDOT. Simultaneously with the constructability review, roadway design, structural, stormwater management, and environmental staff reviews the plans for any concerns that are not related to construction phasing. Concerns could range from unexpected environmental impacts to ensuring that the retaining wall limits are shown accurately.

Finally, from our recent experience in roundabout design at interchanges, we understand that the design is reviewed by the VDOT Roundabout Committee in Central Office. We are aware of comments that were made on other designs, such as mounding in the center to encourage reduced travel speeds, and will incorporate that past experience into the design for efficient review.

Following completion of the QC review process, the QA reviewer checks the QC comments and ensures that adequate modifications are incorporated, and ensures that the QC reviewer and Design Engineer are both satisfied that the plans are correct, complete, and in compliance with standards. The QA reviewer also ensures that designs and details are in compliance with contract requirements and special provisions for environmental commitments. After this process is complete the QA documentation is complete, signed, and turned over to the Design Manager for formal submission.

### Description of Construction QA/QC Procedures

Our Plan stipulates the specific requirements of the Project and implements appropriate Witness and Hold Points for inspection of work at critical stages. These inspection points allow for VDOT review and approval and identifies inspection requirements by key members from the Design Team prior to construction activities continuing. This level of Design Team involvement 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, PE with Quinn Consulting Services, Inc., is independent of the Designer, Contractor and QC Team, and is responsible for the Quality Assurance of the roadway, retaining walls 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

## 4.4 Project Approach

with the Contract requirements or lacking the QA/QC documentation necessary to prove that the work meets the Contract requirements. This authority is given to the QAM in writing by the Design-Build Project Manager prior to the start of construction and a copy of the letter is included in the QA/QC Plan. The QAM 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 is 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 also 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 allow a determination by the QAM and VDOT that all work is completed and tested in accordance with the plans and specifications. All documentation will be adequately identified and cross-referenced to support a field audit by the QAM and VDOT during the life of the Project as well as final audit after project completion.

### Construction Quality Control

The Construction Quality Control Manager (QCM), Louis Jarrett, 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 are responsible for inspection of the construction activities and all QC sampling, testing and analysis of materials on the Project to ensure that construction quality is verified at frequencies exceeding those required by the VDOT Construction Manual, the Materials Manual of Instructions and Tables A-3 and A-4 of VDOT's Minimum QA/QC Requirements. As the QCM, he assures that the QC materials sampling and testing is consistent with the QC plan.

All QC staff actively inspecting and/or testing segments of work complete an Inspector Daily Report (IDR). The IDR's are electronic dairies and include, as an attachment, copies of all QC materials tests completed for the day's activities. Signed hard copies of the IDR's will be submitted to the QCM on a daily basis for review and approval. The Lead QC Inspector completes an electronic Daily General Report, which will summarize the work covered by the IDR's. Copies of all signed Daily General Reports, IDR's, and test reports are 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 Lead QC Inspector that contains summaries of tests, materials placed, actions taken for failing materials, safety, inspection, environmental and schedule challenges.

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Of primary importance, construction staff certified by the VDOT ESSSC Program and the QCM will jointly review the Project's erosion & sediment control conformance in accordance with current standards and complete the required C-105 documentation reporting.

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

A unique construction element on this Project is the installation of Temporary Traffic Control (TTC)/MOT devices that exceed VDOT minimum standards to minimize public inconvenience while at all times maintaining a safe work zone for both the traveling public and our work force.

With the high volumes of traffic on both Temple Avenue, the I-95 Ramps, our QA/QC Team must verify that all contractor and subcontractor personnel on the Project closely follow the approved Transportation Management Plan (TMP) and that all traffic control is set up in accordance with the Manual on Uniform Traffic Devices (MUTCD) and the Virginia Work Area Protection Manual (VWAPM). As part of the approved project specific QA/QC plan, a Preparatory Inspection Meeting (PIM) is held for each TTC activity. This PIM is classified as a hold point in the schedule and, in addition to Shirley, our subcontractors, VDOT, and our QA/QC Team, we invite representatives of VDOT and the City of Colonial Heights to discuss details of our TTC plan and our projected schedule of TTC/MOT activities. At this PIM we discuss the key TTC/MOT elements as detailed in our TMP, TTC Plans, and applicable standards.

The QA/QC inspection Team is certified as Intermediate Work Zone Safety Supervisors and carefully monitors adherence to the TMP by assigning a lead QC Inspector to work with the Design-Build Contractor's designated Certified Work Zone Traffic Coordinator. The assigned Quality Assurance Inspector working in concert with the QAM monitors the Contractor and QC inspection staff for adherence to the requirements of the TMP. Elements of the TMP that are monitored and inspected by the QA/QC staff include:

- Project Phasing
- Temporary Traffic Control Plans
- Bicycle Access
- Motorist and Pedestrian Considerations
- Daily Lane and Shoulder Closures
- Equipment and Materials Storage
- Temporary Signing, Marking, and Signals
- Public Communications
- Incident Management

The QA/QC monitoring and inspection of the elements included in the TMP are guided by Section 512 (MOT) and Section 105.14 (Maintenance During Construction) of the VDOT Road and Bridge Specifications and by the various MOT related Special Provisions included in the contract. QC inspectors fill out the Work Zone Safety Checklist (Form #TE-97001) at least once a week and at a minimum every second weekly review is performed at night. Additional inspections are performed when there are traffic pattern changes or when severe weather could have impacted the TTC/MOT devices and markings. In addition to filling out Form #TE-97001, QC inspectors review the condition of the Project at least twice daily. Daily inspections are performed after any temporary MOT devices are set up for daily activities and at the end of each work day to make certain the work zone is in a safe condition. Inspectors also assure all devices are clean and have proper retroreflectivity characteristics. Besides inspecting the set up and upkeep of traffic work zones, there are many TTC/MOT consideration details that inspectors must closely monitor on the Project. Some of these MOT items include:

**Concrete Barrier Service:** The QC inspection Team inspects all traffic barrier service prior to placing it

## 4.4 Project Approach

in service and during the life of the Project. Impact attenuators are installed at the blunt ends of concrete barrier and are installed and inspected per manufacturer's recommendations. The Project QA/QC Team will regularly inspect attenuators for damage and all damaged units must be replaced immediately.

**Construction Pavement Markings:** With the lane shifts required to construct the project, the proper installation of pavement markings are critical to maintaining a safe flow of traffic. A QC Inspector certified through VDOT's certification school in Pavement Marking is present for all temporary striping activities and ensures that pre-approved materials are used and that the proper checklists and forms such as the C-85 are filled out and signed at the end of each day/night application.

**Construction Signs, Channelization Devices, and Safety Devices:** Each member of the Contractor's and QA/QC staff have a certification in Intermediate Work Zone Safety and Flagging procedures. Signs are installed in accordance with the MUTCD and VWAPM and all parties including the Contractor, QC, and QA monitors and inspect work zones. Once work zones are set up they are inspected for devices that have been displaced, damaged, defaced, or are in need of repositioning or cleaning. We utilize Portable Changeable Message Signs to warn the public of upcoming work and traffic pattern changes. When working near live traffic, the QA/QC staff monitors the clear zones of the roadway for obstructions and checks that equipment and materials are not stored within the deflection zones behind barriers and guardrail.

**Lane Closure Notifications/Restrictions:** The TMP includes the public notification process and tables outlining allowable lane closure times and holiday restrictions. The QA/QC inspection staff must make certain that all lane closures are requested in accordance with the TMP and approved in advance by the VDOT. The QC inspection staff also monitors and documents the times, locations, and number of lanes that are closed and re-opened. The Contractor and QA/QC staff monitor the back-ups in lane closures and notify VDOT personnel of any unusual back-ups requiring removal of the work zone.

Finally, the QAM will schedule and conduct the required preparatory meeting (hold point) for the TTC/MOT work. This meeting assures that the following requirements are met on a consistent basis; flaggers are certified and properly attired; weekly QC & QA inspections are performed utilizing the Work Zone Safety Checklist, and that the daily review of the site is performed to make sure that signs are removed after completion of work activities and lane closures. In addition there are separate inspection, sampling, and testing requirements for markings, signs, and signals.

### Project Staffing

The Construction QA Team consists of the Quality Assurance Manager assisted by a full time Senior QA inspector and an Office Engineer from Quinn Consulting Services, Inc. (Quinn) to complete on-site QA inspections/testing and manage the QA/QC documentation system. Quinn provides additional on-site testing technicians as necessary based on construction volume to complete on-site soils and concrete testing. The QA Team is supplemented by Froehling & Robertson, Inc. to complete off-site laboratory testing of materials.

The Construction QC Team is comprised of the Quality Control Manager assisted by a Senior and a Junior Roadway Inspector and a structural inspector, as needed from Dewberry to complete QC inspections. Additionally, Geoconcepts Engineering, Inc. provides testing technicians to perform on-site QC testing, perform off-site laboratory testing for the QC team, and provide Geotechnical Engineers on an as-needed

## 4.4 Project Approach

basis to inspect foundations. The QC Team is supplemented by additional inspectors and testing technicians during peak construction time frames.

### Scheduling of Inspection and Coordination with VDOT

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

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

The Quality Assurance and Quality Control procedures outlined in this section are the result of many years of successfully completing Design-Build and PPTA projects for VDOT. With each new project we have improved upon the QA/QC process based on project experience, VDOT expectations and feedback, and changes in VDOT QA/QC specifications. Our Team has a focused commitment to quality, both to minimize rework during construction and reduce long term maintenance costs.

### 4.4.3 - GEOTECHNICAL

In preparation of our Technical Proposal, our Team reviewed the geotechnical documents provided with the RFP. One challenge we have identified on this Project is the amount of fill to be placed for the proposed roundabout and road widening, specifically over the abandoned railroad track bed. A maximum of 28 feet in height of new fill will be placed to support the improvements at the roundabout and I-95 ramps. A second geotechnical challenge for this Project is slope stability at various locations across the site, and a third challenge being potentially corrosive soils. By anticipating these challenges and effectively planning for them, we do not expect these conditions to result in schedule delays or problems during construction.

At the outset of design, geotechnical field work is initiated to ensure test borings are completed at the spacing and locations which are required by the most recent VDOT Materials Manual of Instruction (MOI). All design information, including drainage design, stormwater management locations, bridges, retaining wall locations, cross sections, roadway alignments, and profiles are provided to our geotechnical engineer. The sequence of drilling test borings are discussed by the Team such that the test borings on

## 4.4 Project Approach

the critical path for the design are drilled with priority. We anticipate that retaining wall borings will be completed prior to the roadway borings. Our Team's geotechnical experts have proactively identified critical areas of work and areas of concern so that all information necessary for design and construction is coordinated efficiently between all Team members.

The geotechnical testing procedures and boring locations are selected in order to address project challenges and risks, and identify ways in which those challenges/risks can be mitigated. There are specific risks which were identified in the preliminary geotechnical data report. Our Team's experience with soils consistent with the types expected on this Project have led to the following process and testing techniques which will be used on this Project:

***Approach Embankments:*** For the construction of the roadway embankments including the roundabout, significant fills are required. The settlement of the existing soils is an important consideration in the design of embankments and retaining walls adjacent to the roadways. To properly identify potential settlement concerns and for proper design of embankments and walls, our Team will perform consolidation tests and triaxial tests to determine soil properties under drained and undrained conditions. Our Team will also perform in-situ dilatometer tests in order to determine the shear strength and modulus of in-situ soils. These tests allows us to more accurately determine the long term settlement of the existing soils. If necessary, recommendations on staged construction is provided in order to control excessive settlements prior to the placement of parapets, pavements, and finishing elements. This same procedure has been used on past projects to ensure long term settlement is within allowable limits and doesn't result in uneven or excessive settlement of the wall elements.

***Slope Stability:*** The stability of embankment slopes are evaluated utilizing pertinent geologic information and information regarding in-situ engineering properties of soil and rock materials as indicated in the previous geotechnical study and obtained from the proposed additional field investigation. In evaluating engineering properties of soil and rock materials for use in design, consideration is given to possible variation in natural deposits or borrow materials, natural water contents of the materials, climatic conditions, rates and methods of fill placement, and moisture contents and compacted densities that should be expected with normal compacted fill construction. Stability analysis is performed during and at the end of construction. A key component of this analysis is the selection of shear strength parameters. Our Team has extensive experience conducting slope stability analysis in the specific soil conditions encountered at this Project, and has a substantial database of soil parameters for the soil types expected at this Project site.

***Corrosive Soils:*** Based on our review of the United States Department of Agriculture's Natural Resources Conservation Services (NRCS) Web Soil Survey 2.0, four soil units (3B, 3C, 13B, and 20) were mapped in the project vicinity. These soil units are considered corrosive for both steel and concrete. Therefore, corrosive soils are a concern at locations where foundation substructures and large diameter pipes are installed. Highly corrosive soils can damage substructure elements over time, and result in degradation of concrete and steel pipes. To properly identify areas of concern, soil tests at each retaining wall and at each large pipe location will include corrosion series and concrete attack tests to determine the corrosion potential resulting from the presence of sulfate salts in the soil. Where corrosive soils are encountered, protection measures such as steel pipe coating, will be identified. The selection of the preferred way to counteract any corrosive materials will depend on the amount and severity of corrosive soils, and the required installation techniques for the foundation elements and pipes.

## 4.5 - Construction of the Project



## 4.5 Construction of the Project

### 4.5.1 Sequence of Construction

Our Team has developed a sequence of construction for the Project that meets the RFP requirements by achieving Final Completion on November 10, 2017. In order to safely maintain traffic on Temple Avenue including access to and from Interstate 95 while also providing high levels of traffic mobility, a staged approach to the construction of the Project is required. The overall high-level sequence of construction includes the following:

- **Stage 1** - Construct roadway across the former railroad corridor south of the existing bridges to accommodate eastbound Temple Avenue traffic destined for I-95.
- **Stage 2** – Remove existing eastbound bridge and construct new eastbound lanes and portion of roundabout. Construct portion of new I-95 ramps along the former railroad corridor.
- **Stage 3** - Remove existing westbound bridge and construct new westbound lanes and remainder of roundabout. Complete new I-95 ramps.
- **Stage 4** - Open roundabout and new I-95 ramps to traffic, construct remainder of islands, remove traffic signal and demolish existing ramps.

Provided below is a description of each stage and the benefits of this proposed sequence. The staging of construction is also depicted graphically in our Volume II Design Concept.

#### STAGE 1

In order to maintain all existing lanes on Temple Avenue during construction for the benefit of the traveling public, this stage includes the construction of roadway across the former railroad corridor. This will occur immediately south of the existing eastbound bridge, following relocation of overhead power lines, and provides a lane for eastbound traffic to access the I-95 ramps. The work includes clearing, grading, and placement of fill material and new pavement section to the intermediate layer. To accommodate the requirement to maintain two lanes of traffic in each direction, and subject to the results of a load rating analysis, we intend to utilize the westbound bridge to carry 2-way, 3-lane traffic (2-lanes westbound, 1-lane eastbound for eastbound Temple Avenue thru traffic). All necessary temporary crossover pavement will be constructed, and enhanced safety devices such as temporary raised pavement markers and physical devices between eastbound and westbound traffic will be installed. The existing traffic signals shall remain in use throughout Stage 1.

#### STAGE 2

With eastbound traffic relocated from the existing eastbound bridge and the work area separated a substantial distance from existing traffic, demolition can proceed. The work includes removal of existing bridge decks, girders, and concrete piers and abutments in accordance with the RFP requirements. Temporary shoring will be utilized to support westbound bridge elements during Stage 2, as required. After demolition is complete, construction of the eastbound thru lanes and the southern portion of the roundabout will follow. Once subgrade has been prepared, aggregate base and pavement material is placed up to the intermediate layer. Temporary markings for 2-lanes of westbound traffic and 1-lane of eastbound traffic will be installed on the new roadway. This allows shifting of traffic onto the pavement constructed in Stage 2 and the permanent closure of the existing westbound bridge. Temporary pavement will be

## 4.5 Construction of the Project

installed in the permanent splitter island areas and truck apron areas in order to maintain the thru lanes prior to completion of the roundabout.

Stage 2 also includes the construction of the majority of the new I-95 ramps along the existing railroad corridor. This work includes clearing, grading, removal of any unsuitable soils and a substantial amount of fill material placed along the former railroad corridor. Grading and construction of stormwater elements at the existing quarry pond including retaining walls will also be constructed. A new turn around area will be constructed along Ridge Road and residential access to the area from Temple Avenue will be detoured. The existing traffic signals shall remain in use throughout Stage 2.

### STAGE 3

Stage 3 will begin by shifting Temple Avenue traffic to the south onto the new pavement reconstructed in Stage 2 (in the previous location of the eastbound bridge). With traffic relocated from the existing westbound bridge, demolition can proceed safely, separated from traffic. The work includes removal of existing bridge decks, girders, and concrete piers and abutments in accordance with the RFP requirements. After demolition is complete, the new retaining wall along the northern limits of the roundabout will be constructed to retain the substantial fill required in this stage. Following wall and earthwork construction, subgrade will be prepared, and base aggregate and pavement will be placed up to the intermediate layer. The pavement will then receive temporary markings and all new signage required for the new roundabout will be installed. The new ramps to I-95 will also be completed during Stage 3 while maintaining traffic on the existing ramps at all times. This continuous maintenance is possible as our ramp profiles have been optimized to eliminate the grade difference between the existing and proposed ramps.

At the Ridge Road/Hamilton Avenue intersection, the new retaining wall and pavement will be constructed in advance of the new intersection opening in Stage 4.

### STAGE 4

During one off-peak period, we will open the roundabout as well as the new I-95 ramps during one major traffic switch, which is a benefit to the traveling public as we will eliminate the need to learn a temporary configuration prior to the ultimate configuration. With the permanent traffic configuration and permanent traffic control devices now in place, we will complete the installation of concrete median barriers, truck apron, islands and placement of surface layer asphalt. All required lighting and new signage elements will be installed. The existing traffic signal at Temple Avenue/I-95 ramps will be dismantled and the former I-95 access roads will be removed. During Stage 4, the new four-leg intersection at Hamilton Avenue/Ridge Road will open with the new signal.

### SEQUENCE OF CONSTRUCTION BENEFITS

The proposed sequence of construction has several benefits which include:

- Maintains continuous, safe passage of the traveling public along Temple Avenue with four travel lanes, as well as continuous maintenance of the ramps to and from Interstate 95;
- Traffic signals and residential access will be maintained continuously;
- After Stage 2 work, maintenance of traffic plan does not require splitting of traffic around the work zone which increases the level of safety for both the traveling public and the workers.

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- Stage 1 construction may commence prior to relocation of the Appomattox River Water Authority 24" water line.
- Wide separation of majority of work from existing traffic significantly reduces amount of temporary lanes closures necessary to complete construction.
- Business access will be continuously maintained to Hardees and Kangaroo gas station.

These benefits focus on mobility and safety for the traveling public, which includes residents of the surrounding neighborhoods. Our Team is committed to exceeding the RFP requirements regarding safety and traffic operations, while also delivering the Project on time.

### Geotechnical Constraints

As indicated in Section 4.4.3 of this Technical Proposal, there are several geotechnical challenges associated with the Project which introduce limitations on the construction sequence. These limitations include the compaction, testing and monitoring of fills required to construct the roundabout and approaches. Due to the quantity of fill required at the former railroad corridor and the potential for settlement of existing soils, it is expected that the work will need to be staged to control excessive settlements. Another challenge for the Project, and therefore a potential limitation on sequence and schedule, is maintaining the stability of embankment slopes during construction. We will mitigate this challenge through the performance of slope stability analysis throughout the construction process.

### Environmental Impacts

Our Team has conducted research on the presence of environmental concerns including existing wetlands at the Project site. We will incorporate this information into the final design in order to avoid or minimize any environmental impacts or relocations. Immediately following NTP, our Team will initiate field surveys to identify existing wetland and stream locations in order to receive the required jurisdictional determination (JD) with the COE. We will then immediately apply for the appropriate permits when the plans are developed to approximately 60% complete. We anticipate this project will likely require a VWP-3 or individual permit from DEQ and a Corps of Engineers individual permit, no permit is anticipated to be required from the Virginia Marine Resources Commission. A Virginia Stormwater Management Program Permit is anticipated to be obtained through VDOT using the LD 445 series forms.

During construction phasing, our Team ensures that the Erosion and Sediment (E&S) control documents are strictly adhered to and the approved Stormwater Pollution Protection Plan (SWPPP) is followed. This starts with installation of all Stage 1 E&S devices such as silt fence, diversion dikes, sediment traps and basins prior to grubbing and grading operations. Our Team ensures that stabilization of denuded areas is performed within the required time frames. We will continually monitor the site and over-burdened E&S devices, reinstall or reinforce existing devices and prepare for forecasted rain and storm events.

Asbestos and Lead Based Paint testing will be necessary for the structure demolitions associated with Parcel 005, and have been incorporated the time frame in our project schedule. Given the relocation of the SWM basin, we do not anticipate the need for additional investigations on Parcel 006. The Atlantic Coast Rail property (Parcel 4) will need to be evaluated, as noted in the RFP, for TPH, PAHs, herbicides, PCB's and heavy metals, and the results coordinated with VDOT as our Team has successfully done on other DB projects.

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### Right-Of-Way Acquisition

The sequence of construction takes into account the property acquisitions required for the construction of new access ramps to and from I-95 and required Stormwater Management facilities and drainage elements, as well as any easements that may be required for utility relocations. As information about the proposed development to the southwest of the roundabout becomes available, we will coordinate with VDOT, the City of Colonial Heights and developer on final design and any permanent easements that may be required.

### Staging and Storage

Our Team understands that a clean, orderly project improves public perception and safety for all involved. As with all of our projects, our Team thoroughly understands storage of materials will be isolated to areas where safe delivery access can be provided while ensuring that no material is stored in a location which would introduce a hazard. We will ensure there is no blockage of sight lines and that material and equipment is stored beyond the deflection zones of temporary barrier and guardrail. Our sequence of construction provides storage areas that are safely separated from traffic, and exceeds standards. We will show allowable storage areas on our TTC/MOT plans where sight lines have been verified by our engineers.

### Public Involvement / Stakeholder Coordination

There are numerous stakeholders associated with the Project including VDOT, the City of Colonial Heights, the traveling public, businesses, schools, residents, police and emergency services. It is paramount that the sequence of construction for the Project not only be communicated to these stakeholder, but also be executed precisely to mitigate any negative impacts to the stakeholders. Effective and efficient communication when issues arise leads to quick resolution and ensures the timely delivery of the Project.

### Governmental Approvals

Through our Team's extensive experience in completing design-build projects over the past decade, we understand the importance of the timely submissions of permit applications and design packages. We will work with VDOT, Colonial Heights, utility providers and other stakeholders to ensure that any required approval do not impact the critical construction milestone dates for the Project.

## 4.5.2 TRANSPORTATION MANAGEMENT PLAN

With our Team's constant attention on safety in every facet of design and construction, as well as successful past experience with significant interchange reconstruction projects, we will provide a TMP and construction program that significantly reduces the Projects' anticipated impacts to the traveling public and exceeds minimum public safety requirements of the RFP. We know that setting the stage for a successful and safe project (for the traveling public, construction, inspection, and VDOT project staff) begins with the development of a comprehensive and accurate Transportation Management Plan (TMP). As noted in Section 2.11 of the RFP, our Team will prepare a Type C Category IV TMP in accordance with VDOT I&IM 241.5/TE-351 as well as a site-specific Temporary Traffic Control (TTC) plan for each stage of construction.

The TMP and TTC plans are developed with a constant focus on maximizing safety for the traveling public and construction personnel. The plans put heavy emphasis on eliminating the need for temporary

## 4.5 Construction of the Project

lane closures to the extent possible, as we recognize the high traffic volumes on Temple Avenue as well as the impacts that lane closures could have on ramps leading to and from I-95. To meet these high safety and mobility standards, the TTC and TMP plan development is led by our Traffic Engineer, Jerry Mrykalo, Professional Traffic Operations Engineer and certified as a VDOT Work Zone Traffic Control instructor. Additionally, our Design Engineers are VDOT certified in the development of TTC and TMP plans based on successful completion of our in-house Work Zone Traffic Control Training program. These qualifications and training program exceed RFP requirements, and allow us to develop TTC and TMP plans that equally exceed safety and mobility minimum standards.

In order to achieve the goals of maximizing safety and minimizing travel delays, we will initiate design activities by collecting current 24-hour volume information on Temple Avenue and the I-95 ramps. We recognize that the lane closure restriction times listed Section 2.11.2 of the RFP are to be followed, yet by collecting this updated 24-hour traffic volume information, we can utilize it in development of the TMP to allow for construction activities that require lane closures to occur during the hours of lowest volume to minimize impacts to the public. This process allows us to schedule shorter duration work during the hours of lowest volume within the longer allowable temporary lane closure window. This process is valuable as we recognize the unique travel characteristics associated with this Project given that it is in both a densely developed area and along heavily traveled I-95. We also recognize that traffic patterns constantly shift, and volumes collected in previous years may no longer reflect current conditions. Given these reasons, we believe it is very important to use these updated traffic counts to limit necessary temporary lane closures to the hours of least impact whenever possible.

Detailed analysis computations are provided for the 24-hour traffic volume information, as well as graphs to easily visualize the data. Figure 4.5.1 shows our 24-hour analysis results from a recent VDOT Design-Build project, where we verified that overnight operations were limited to hours in which the traffic volumes (shown with green line) were less than the capacity of the remaining open travel lane (shown with the horizontal red line). By completing this analysis, we are able to ensure that traffic impacts to the public are minimized to the fullest extent possible, which has safety and travel time benefits.

Immediately after beginning the design of the TMP, our Team begins developing site-specific Temporary Traffic Control (TTC) plans for the Project. The TTC plans detail each and every specific element required during construction of the Project.

These plans are developed for each stage of construction to identify barrier and channelization locations, safe maintenance of existing pedestrian facilities, temporary sign locations, temporary pavement marking and marker requirements and limits, temporary traffic signalization, temporary drainage requirements, areas of temporary and permanent construction, and all other requirements per VDOT's

FIGURE 4.5.1



## 4.5 Construction of the Project

I&IM-241.5, The VWAPM and the Manual on Uniform Traffic Control Devices (MUTCD). Given that intersection reconfiguration on Temple Avenue is anticipated to be required, all turning movements will be analyzed with AutoTURN software to ensure temporary geometry accommodates the turning paths of the appropriate design vehicle during all stages of construction. Also, intersection sight distance is analyzed to avoid the potentially dangerous condition of devices such as temporary barrier blocking the sight lines of turning traffic. In addition, Portable Changeable Message Sign (PCMS) device locations and messages are included in the plans. The careful design of locations meeting sight distance requirements and concise, clear message design by our traffic engineers ensures that these valuable devices are utilized to the maximum benefit without providing confusing or incomplete information. Specific details of our TTC plans, including planned lane closures and lane width restrictions are as follows:

### Temple Avenue

- On Temple Avenue two minimum 11' wide travel lanes in each direction (one eastbound lane dedicated to I-95 ramps) are maintained in each direction of travel during all stages of construction to successfully accommodate traffic;
- Minimum 1' wide offsets to temporary barrier are maintained throughout all stages of construction;
- Traffic will be maintained along Temple Avenue by using staged roundabout construction;
- All temporary traffic shifts are designed to meet the full posted speeds on Temple Avenue wherever possible, exceeding the requirements of the Virginia Work Area Protection Manual and the RFP;
- Along Temple Avenue, existing pedestrian access are maintained throughout construction;
- No posted speed reductions will be proposed for Temple Avenue and analysis of advisory speeds during temporary traffic phasing will be performed;
- No temporary detours are proposed, and temporary lane closures are limited to off-peak hours. Flagging operations will only be implemented when absolutely necessary, and are anticipated to occur during overnight hours in accordance with Part 2 of the RFP;
- Temporary lane closures are in accordance with the lane closure restriction times identified in the RFP, with a full temporary lane closures analysis completed by our Team as described above. Temporary lane closures are anticipated for night time paving, placement of traffic barriers, delivery of materials, traffic signal work, roundabout construction, and bridge demolition; and
- Temporary 20 minute maximum full stoppages on Temple Avenue during overnight hours are only expected for overhead sign and traffic signal work.

### Interchange Ramps

- Minimum 12' wide travel lane(s) are maintained;
- Minimum 2' wide shoulders are maintained on both sides of each interchange ramp, with full paved shoulders provided for incident management and vehicle breakdown wherever possible;
- The ramps to and from I-95 are maintained throughout construction;
- No speed reductions are proposed for the ramps;
- No flagging operations are anticipated; and
- Temporary 20 minute maximum full stoppages on ramps during overnight hours are only expected for overhead work or major traffic switches (such as interchange ramp switch-overs).

### Intersecting Streets (Ridge Road)

- On cross streets, existing lanes are maintained using minimum 11' wide travel lane(s);

## 4.5 Construction of the Project

- Minimum 1' wide offsets to temporary barrier are maintained throughout all stages of construction;
- Existing traffic signals at intersections are maintained throughout construction;
- Any necessary temporary traffic shifts are designed to meet the full posted speeds wherever possible, exceeding the requirements of the Virginia Work Area Protection Manual and the RFP;
- Existing pedestrian access are maintained throughout construction;
- No speed reductions are proposed for any intersecting streets;
- No temporary detours will be proposed, and temporary lane closures are limited to off-peak hours. Flagging operations will only be implemented when absolutely necessary, and are anticipated to occur during off-peak hours and per the requirements of Part 2 of the RFP; and
- Temporary 20 minute maximum full stoppages during overnight hours are only expected for overhead traffic signal work.

Our Team does not anticipate the need for regulatory speed reductions thru the work zone, as all geometry and lane shifts are designed to meet standards for the existing posted speeds, and 11'-12' lane widths (per locations above) are maintained throughout construction. Our experience based on similar past projects has found that maintaining existing posted speed limits where geometric conditions permit has multiple benefits. In addition to minimizing motorist delay, research has proven that lowering speed limits where geometric conditions do not require the reduction actually lessen safety, since large deviations between driver's speeds commonly result in increased accidents.

To enhance our TTC Plans, our Team will employ site-specific impact management strategies that exceed RFP requirements in order to maximize safety and mobility. These strategies are particularly focused on avoiding potentially high-severity run-off-road, head-on, and intersection crashes, given the high traffic volumes, horizontal curvature, and intersections along Temple Avenue. For example, full temporary raised pavement markers will be used to supplement lane line pavement markings for increased visibility, especially at night and during wet pavement conditions, which has a significant benefit in reducing occurrences of vehicle leaving their travel lanes. Temporary intersection warning signs exceeding the requirements of the VWAPM will be installed to warn drivers of intersection locations, especially as roadway configurations change during construction. Other strategies that will be utilized include the use of wider than normal lane lines for increased delineation of lane shifts, and the use of tighter than required channelizing device spacing for increased work zone delineation and construction personnel safety. Our Team will further exceed requirements by providing forgiving roadside design during construction and utilizing temporary concrete barrier for the protection of both the traveling public and construction personnel.

We will also focus on expediting the implementation of safety and operational improvements in the interim condition during construction, prior to the final design solutions being constructed. For example, we will prioritize the opening of the new thru lanes where possible to provide the public with this tremendous mobility benefit. We will also analyze the phasing and signal timings for all temporary lane configurations at traffic signals using Synchro analysis software in order to provide immediate traffic relief once additional thru and turn lanes are available.

A significant public outreach campaign is also vital to a successful TMP. Our Team with the involvement of VDOT, will proactively communicate with area citizens, community groups, Colonial Heights City Council, fire and rescue, and Colonial Heights Public Schools staff who could be impacted during critical elements of construction. Advance notifications are provided prior to any significant work activity or temporary lane

## 4.5 Construction of the Project

closures to help reduce congestion and delays through the Project site. This will be communicated through a public outreach campaign, which will include Citizen Information Meetings, Pardon Our Dust Meetings, website updates, press releases, and special meetings for specific groups/concerns. As with any large scale transportation improvement projects, some inconvenience are unavoidable, but our Team's goal will be to minimize these concerns for all major stakeholders. Identification of these stakeholders in advance of construction activities helps to identify mitigation strategies for any temporary impacts. Provided below is a list of the major Project Stakeholders and how they may be impacted during construction:

***Police, Fire & Rescue:*** We do not anticipate any measurable impacts to fire and rescue or police service or response, as all existing roadways and ramps will remain open. Coordination is required with the fire and rescue staff to provide advance notification of temporary lane restrictions and roadway closures. This coordination will primarily include the Colonial Heights Police Department and the Virginia State Police. Our Team will also partner with these police agencies to provide support during temporary lane closures to maximize safety for all parties.

***Local Businesses:*** Local businesses and motorist services along Temple Avenue are in the vicinity of construction, yet we do not anticipate access impacts for these important stakeholders. To minimize impacts, temporary lane closures limited to off-peak hours, and all business signing along I-95 and the ramps directing interstate traffic to the services will be maintained throughout construction. For any temporary lane closures necessary in the vicinity of business entrances our Team will coordinate closely with business management to construct necessary improvements during the hours of least impact.

***Schools:*** Coordination with the following school organizations will be necessary since their school boundaries encompass the Project site, their bus routes travel on Temple Avenue, or they are in close proximity to the project:

- Colonial Heights Public Schools including Lakeview Elementary School, Colonial Heights Middle School, and Colonial Heights High School have bus routes in proximity of the Project.
- Virginia State University utilizes Temple Avenue interchange for I-95 access.

Although impacts are expected to be minimal as our Team will not implement lane closures during typical school bus hours, comprehensive coordination efforts will be undertaken with each of these school organizations to make them aware of temporary construction impacts.

***Traveling Public:*** The maintenance of all existing lanes, ramps, and access points throughout construction will limit impacts to the traveling public. In addition, our optimization of the temporary lane closure hours that will be limited to off-peak hours will further reduce impacts.

***Local Residences:*** Homeowners and local businesses immediately adjacent to Temple Avenue will be impacted temporarily with added construction noise and clearing, grading and construction activities close to their properties. Impacts will be minimized as much as possible through the reduction of temporary and permanent easement impacts, and by constructing improvements in the vicinity of residences during mid-day hours where possible.

On several recent projects, we implemented interim improvements aimed solely at improving traffic flow during construction. On this Project, we have already introduced significant enhancements that exceed the requirements of the RFP. Our Team is committed to providing and maintaining a safe work zone.

## 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 12% DBE participation goal for the Project for the entire value of the contract.

### The Shirley Plan to Meet DBE Subcontracting Goal

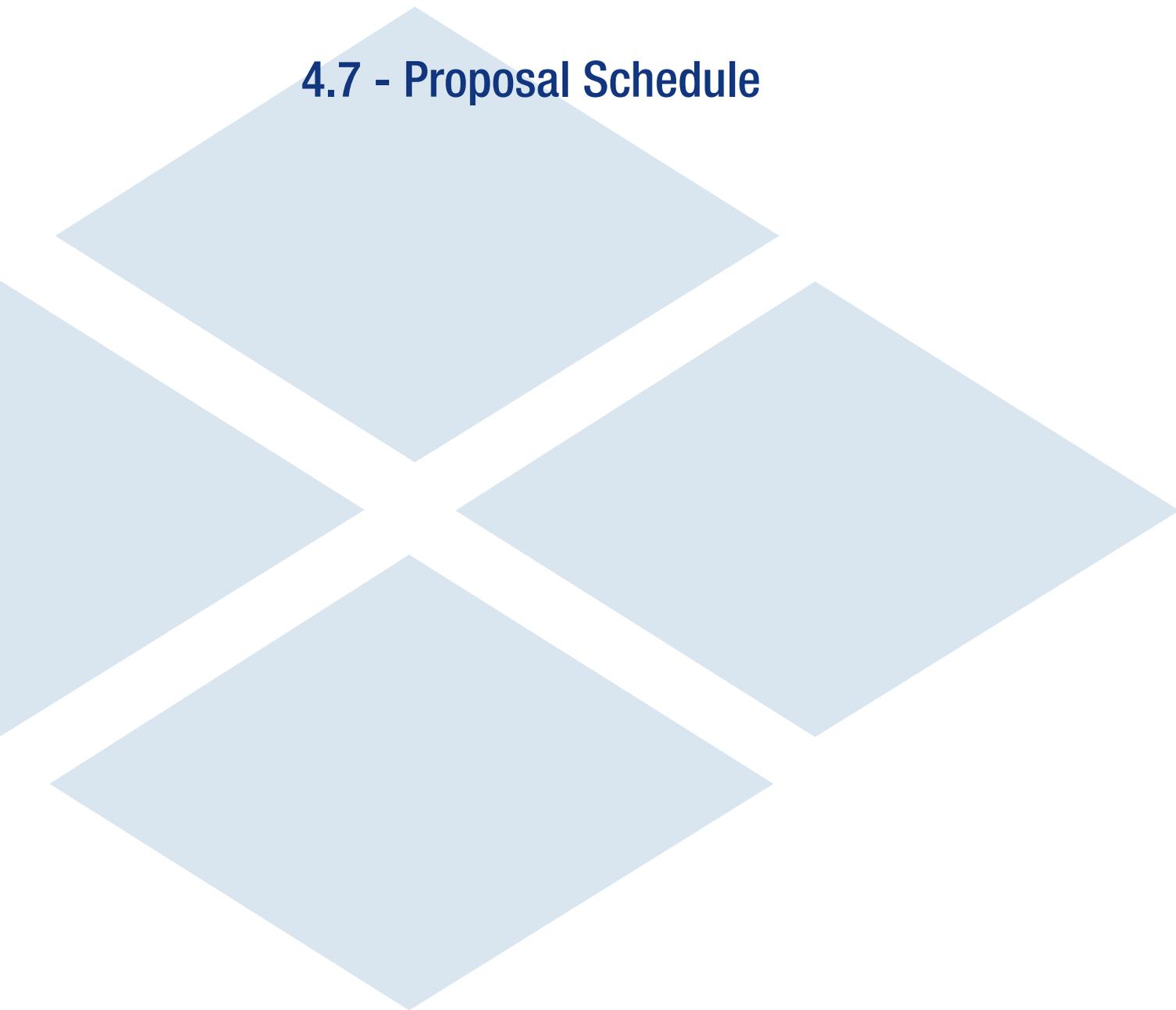
The Shirley Team currently includes the following DBE firms, Diversified Property Services, Inc., GeoConcepts Engineering, and Quinn Consulting Services, Inc. Each of these firms is highly respected and has worked with the Shirley Team on past VDOT Design-Build projects.

Concurrent with the preparation of this Technical Proposal, we will, as part of the Price Proposal, solicit firm pricing for the work from other potential DBE subcontractors and vendors. The following narrative outlines the steps that will be taken to meet the DBE requirement for the Project:

- We will examine the Project, nature of the work, and our internal company DBE database to determine where we believe the opportunities for DBE participation will be available. We will then take the necessary steps to ensure that we communicate with and provide adequate notice of the Project opportunities to the DBE community.
- We will contact DBE firms in our company database to inform them of the opportunity. We will include in an e-mail solicitation the scope of the Project, the construction trades we believe will be able to provide subcontracting opportunities, and notice that plans are available at our company's main office for viewing.
- We will continue to make follow-up telephone calls to these firms as a means of determining actual interest in the Project.
- We will post the opportunity on our company website to reach a broader spectrum of contractors, vendors and other potential interested persons.
- We will also solicit interest in the Project by placing ads in a local newspaper and other media outlets identifying the Project and the potential opportunity to supply materials and services.
- Throughout the development and preparation of our Technical and Price Proposals for the Project, we will track and maintain the status of our expected DBE participation. In this manner, we were immediately and constantly aware of the need to solicit increased participation from the DBE community in order to meet the goal.

Throughout the design and construction phases of the Project, we will continually monitor the status of our Team's DBE participation. The Design-Build Project Manager will be responsible for this task, and will develop a method to do so that will be shared with VDOT on a regular basis.

## 4.7 - Proposal Schedule



## 4.7 Proposal Schedule

### 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

Shirley has provided a Preliminary Schedule identifying our plan for all phases of the design-build process based on the following project Milestones listed in Table 4.7.1.

TABLE 4.7.1

Milestone	Date
<b>Notice of Intent to Award Date</b>	December 19, 2014
<b>Commonwealth Transportation Board Approval</b>	January 21, 2015
<b>Design-Build Contract Execution</b>	February 18, 2015
<b>Notice to Proceed Date</b>	February 25, 2015
<b>Begin Construction</b>	September 14, 2015
<b>Final Plan and Permitting Approval</b>	February 8, 2016
<b>Property Rights Acquired</b>	July 25, 2016
<b>Project Ready for VDOT Walkthrough</b>	October 5, 2017
<b>Complete VDOT Punchlist</b>	November 9, 2017
<b>Substantial and Final Completion</b>	November 10, 2017

### Work Breakdown Structure

In order to deliver the Project on schedule, our Team has developed a detailed Preliminary Proposal Schedule in accordance with the RFP requirements. The Team has organized the schedule into a hierarchical Work Breakdown Structure (WBS) in order to demonstrate the relationships and activity durations amongst the design, environmental permitting, public involvement, right-of-way acquisition, utility relocation, and construction disciplines. This is shown as our Level 1 Work Breakdown Structure. All elements of the design-build process are captured under these Level 1 tasks and are briefly described below:

- 01. Project Milestones:** Area reserved for easy review of the project status.
- 02. Design:** Includes preliminary engineering services, plan development, QA/QC reviews, submittal milestones, and VDOT reviews and approvals of plans.
- 03. Public Involvement:** This section of the schedule includes activities and milestones for developing the planned public involvement process including communications plans, public information meetings, and updates to the Office of Public Affairs for major traffic shifts and the VDOT website.
- 04. Environmental Permitting:** Includes wetland and stream delineations, jurisdictional determinations, permit management and preparation, mitigation, and permit submissions and reviews from the authorities having jurisdiction.
- 05. Right-of-way Acquisition:** The acquisition of property rights will be required to obtain permanent right-of-way as well as permanent and temporary construction and utility easements.
- 06. Utility Relocations:** Includes activities for UFI meetings, preparation of preliminary engineering

## 4.7 Proposal Schedule

(PE) estimates, approval of PE estimates, utility relocation design by the utility owner, approval of the utility design, and utility relocation construction. The utility relocations are separated into second level WBS groups based on utility owner.

**07. Construction:** Includes all components of roadway construction including the Quality Assurance and Quality Control process required throughout construction. The Construction section of the schedule is segmented by additional levels of WBS structure to divide the construction activities into stages and areas of work. This grouping of work packages has proven to allow for easy and clear tracking of activity progress to ensure on-time completion of the Project.

Table 4.7.2 shown below is a complete outline of the WBS Structure for the Project:

TABLE 4.7.2

WBS Code	WBS Description
<b>I-95 at TEMPLE AVE.PROJECT.A</b>	Schedule Milestones
<b>I-95 at TEMPLE AVE.PROJECT.B</b>	Design Phase
<b>I-95 at TEMPLE AVE.PROJECT.B.1</b>	Preliminary Design Work
<b>I-95 at TEMPLE AVE.PROJECT.B.2</b>	Roadway Design
<b>I-95 at TEMPLE AVE.PROJECT.C</b>	Public Involvement
<b>I-95 at TEMPLE AVE.PROJECT.D</b>	Environmental Permitting
<b>I-95 at TEMPLE AVE.PROJECT.E</b>	Right-of-Way Acquisitions
<b>I-95 at TEMPLE AVE.PROJECT.E.1</b>	Acquisition Plan and Settlements
<b>I-95 at TEMPLE AVE.PROJECT.E.2</b>	ROW Acquisitions - Temple Ave
<b>I-95 at TEMPLE AVE.PROJECT.F</b>	Utility Relocations
<b>I-95 at TEMPLE AVE.PROJECT.F.1</b>	Dominion Virginia Power Overhead / Underground
<b>I-95 at TEMPLE AVE.PROJECT.F.2</b>	Verizon Overhead / Underground
<b>I-95 at TEMPLE AVE.PROJECT.F.3</b>	Comcast Overhead
<b>I-95 at TEMPLE AVE.PROJECT.F.4</b>	Appomattox River Water Authority
<b>I-95 at TEMPLE AVE.PROJECT.F.5</b>	Colonial Heights Sewer and Water
<b>I-95 at TEMPLE AVE.PROJECT.G</b>	Construction
<b>I-95 at TEMPLE AVE.PROJECT.G.1</b>	Preconstruction, Submittals and Material Procurement
<b>I-95 at TEMPLE AVE.PROJECT.G.1.A</b>	Quality Assurance / Quality Control Process
<b>I-95 at TEMPLE AVE.PROJECT.G.2</b>	Stage 1-Construct Temp Rd for EB Turn Lane/Shift EB Thru Lane to WB Bridge
<b>I-95 at TEMPLE AVE.PROJECT.G.2.A</b>	Area 1 - Temple Ave / Roundabout
<b>I-95 at TEMPLE AVE.PROJECT.G.2.A.1</b>	Construct Temporary Roadways / EB Bypass
<b>I-95 at TEMPLE AVE.PROJECT.G.2.A.2</b>	Shift Eastbound Traffic to New Lanes
<b>I-95 at TEMPLE AVE.PROJECT.G.2.B</b>	Area 2 - I-95 Ramps
<b>I-95 at TEMPLE AVE.PROJECT.G.2.C</b>	Area 3 - Temple / Hamilton / Ridge Rd Intersection
<b>I-95 at TEMPLE AVE.PROJECT.G.3</b>	Stage 2 - Remove EB Bridge, Construct New Roads and Shift Traffic
<b>I-95 at TEMPLE AVE.PROJECT.G.3.A</b>	Area 1 - Temple Ave / Roundabout
<b>I-95 at TEMPLE AVE.PROJECT.G.3.A.1</b>	Demo EB Bridge
<b>I-95 at TEMPLE AVE.PROJECT.G.3.A.2</b>	Construct Lanes for Eastbound Traffic
<b>I-95 at TEMPLE AVE.PROJECT.G.3.A.3</b>	Shift Traffic to New Lanes
<b>I-95 at TEMPLE AVE.PROJECT.G.3.B</b>	Area 2 - I-95 Ramps (Station 15+00 to 25+00)
<b>I-95 at TEMPLE AVE.PROJECT.G.3.B.4</b>	Construct Stormwater Management Facility

## 4.7 Proposal Schedule

WBS Code	WBS Description
<b>I-95 at TEMPLE AVE.PROJECT.G.3.C</b>	Area 3 - Temple / Hamilton / Ridge Rd Intersection
<b>I-95 at TEMPLE AVE.PROJECT.G.4</b>	Stage 3 - Remove WB Bridge, Construct New Roads and Ramps
<b>I-95 at TEMPLE AVE.PROJECT.G.4.A</b>	Area 1 - Temple Ave / Roundabout
<b>I-95 at TEMPLE AVE.PROJECT.G.4.A.1</b>	Demo WB Bridge
<b>I-95 at TEMPLE AVE.PROJECT.G.4.A.2</b>	Build Retaining Wall and Roadbed
<b>I-95 at TEMPLE AVE.PROJECT.G.4.A.3</b>	Construct Temple Ave WB Lanes
<b>I-95 at TEMPLE AVE.PROJECT.G.4.B</b>	Area 2 - I-95 Ramps (Ramp from I-95 SB to Temple Ave)
<b>I-95 at TEMPLE AVE.PROJECT.G.4.C</b>	Area 3 - Temple / Hamilton / Ridge Rd Intersection
<b>I-95 at TEMPLE AVE.PROJECT.G.5</b>	Stage 4 - Open Temple Ave, Roundabout & Ramps to Traffic
<b>I-95 at TEMPLE AVE.PROJECT.G.5.A</b>	Area 1 - Temple Ave / Roundabout
<b>I-95 at TEMPLE AVE.PROJECT.G.5.B</b>	Area 2 - I-95 Ramps
<b>I-95 at TEMPLE AVE.PROJECT.G.5.C</b>	Area 3 - Temple / Hamilton / Ridge Rd Intersection

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

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

**Calendar 1:** “5-Day Workweek” – This calendar is based on five working days per week and is used for all design, administrative, as well as the majority of construction activities.

**Calendar 2:** “7-Day Calendar” – Assigned to activities that have durations based on calendar days instead of work days. For example, VDOT’s 21-calendar day review duration.

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

**Calendar 4:** “Winter Shutdown Calendar” - Assigned to activities that are unable to be performed during mid-December through mid-March due to cold weather.

### Schedule Timing and Critical Path

The narrative below describes our Team’s planned schedule and sequence of operations grouped by the Level 1 WBS Project disciplines of design, environmental permitting, public involvement, right-of-way acquisition, utility relocation, and construction. The sequencing of all disciplines was developed by considering the construction phasing of operations and determining the longest path to project completion with all factors considered including manpower, subcontractors, materials, design and environmental constraints, and most importantly, public safety and safety of the workforce. The Project phasing was developed based upon our maintenance of traffic and sequencing shown in our Volume II Design Concept Plans. Additionally, we divided the Project into three distinct areas of work that can be tracked and managed during construction. These areas are as follows:

- AREA 1 - Temple Avenue and Roundabout
- AREA 2 - I-95 Ramps
- AREA 3 - Temple / Hamilton / Ridge Rd Intersection

## 4.7 Proposal Schedule

### Design of the Project

This section of the schedule includes those activities necessary for preliminary and final roadway design and engineering plan preparation and approvals. This section includes time for the necessary Design Quality Assurance / Quality Control reviews at multiple stages of the design process. As specified in the RFP, we have included a 21-calendar day activity for VDOT review after each submission. The design phase also includes non-critical activities for the completion of surveys, utility designations, test pits and geotechnical investigations, including a 60-calendar day activity for VDOT's review of the geotechnical report prior to submission of the final roadway plans. The schedule also reflects our plan to generate an early "ROW Plan Set" to allow the acquisition of property rights to commence prior to approval of the final roadway plans.

Our Team will begin the design phase of the Project immediately upon execution of the design-build Contract. The first formal plan submission will occur within four months of the February 25, 2015 Notice to Proceed date and will include the first submission of roadway plans. The Preliminary Schedule reflects final approval of all plans by November 2, 2015.

Critical Path activities in the design phase of the Preliminary Schedule include the base mapping and surveys necessary to start the design process. Preparation, reviews, and approvals of the first two submissions (60%) of roadway design plans are also critical in this phase as they will be the triggers to the right-of-way acquisition process on the Project.

### Public Involvement

The public involvement schedule includes submitting our emergency contact list upon NTP, developing our Public Information and Communication Plan (PICP) and holding Public Information Meetings in incremental stages during construction. This includes providing regular updates to the Office of Public Affairs throughout the entire design-build process. However, there are many other public involvement activities that our Public Relations Team performs throughout the Project. These include holding meetings with local businesses and attending meetings with homeowners associations, local government representatives, and community groups. We also provide information for regular updates on weekly lane closure plans on the Project website as well as VDOT's website.

### Environmental Permitting

Environmental Permitting will begin at NTP with gaining access to affected property owners within the Project area to begin the required Phase I environmental surveys. Our Team immediately performs wetland delineations, obtains jurisdictional determinations and prepares the Joint Wetlands and Water Permit Application. Following completion and acceptance of the 60% roadway plans we submit the necessary Permit Applications to the authorities having jurisdiction. We anticipate that the Individual Permit for USACE as well as the Virginia Water Protection Permit #3 from DEQ will require a 4 to 6 month approval time frame. Our Team will also complete the requisite VDOT stormwater forms (LD-445 series), and will provide Stormwater Pollution Prevention Plans (SWPPP) and related information for inclusion on the VDOT SWPPP General Information sheets. The LD 445/VSMP permit will be acquired by September 14, 2015 with the completion of all permitting by February 8, 2016.

## 4.7 Proposal Schedule

### Right-of-Way Acquisition

The acquisition of property rights is required to obtain permanent right-of-way as well as permanent and temporary construction and utility easements. The right-of-way required will impact the ability to relocate utilities in conflict with the new roadways out of limited access, as well as the construction of roadways themselves (i.e. I-95 ramps). Our Team is very familiar with the right-of-way process and, as shown on the Proposal Schedule, have detailed the historical average timeframes that we anticipate for acquisition of property rights either by agreed negotiation or by certificate of take. We will dedicate the necessary resources to assure that the right-of-way acquisition process is completed within the timeframe included in the schedule.

Critical Path activities in the Right-of-Way Acquisition section of the schedule include the completion of title exams, appraisals, VDOT review of appraisals, negotiations, settlement and the filing of documents with VDOT and Colonial Heights.

### Utility Relocations

Table 4.4.1 in Section 4.4 of our Technical Proposal lists the anticipated utility relocations and potential conflicts for the Project. To simplify and track the utility relocations, we have created a work breakdown structure that groups the utility relocation activities by utility owner and Project location. This further allows us to coordinate the work associated with the utility relocations with the construction sequencing. Within each utility owner group, we have included activities for holding the Utility Field Investigation (UFI) meeting, preparation of the Preliminary Engineering (PE) estimates by the utility owner, approval of the PE estimate, design of the utility relocation, and construction of the relocation by area. The utility relocation schedule starts with formal UFI meetings starting in Summer 2015 following completion of all utility test pits and progression of design documents to roughly 60%. This enables our Team to confirm and adjust our list of utility conflicts based on the field test pit data prior to holding the formal UFI meeting. We will continue this early coordination of utilities throughout the Design Phase of the Project to ensure that the Right-of-Way and Roadway Plans are coordinated with the utility relocation plans.

Critical Path activities include the relocation of overhead power lines at Temple Avenue eastbound lanes by Dominion Virginia Power, and relocation of the 24" water line north of Temple Avenue westbound lanes.

## Construction Sequence

### Pre-Construction, Submittals and Material Procurement

In this section of the schedule, we have identified early construction activities such as survey, submittals, material procurement, and production of shop drawings and fabrication of long lead items such as signs and lighting. In a separate WBS group we have identified the major QA/QC Preparatory Meetings (Hold Points) that will be required prior to commencing with construction activities. The overall Level of Effort for the QA/QC process is represented by a bar spanning all construction activities until final punch-out of the Project.

### STAGE 1

In order to maintain all existing lanes on Temple Avenue during construction for the benefit of the traveling I-95 at Temple Avenue Interchange Improvements  
Colonial Heights, Virginia

## 4.7 Proposal Schedule

public, this initial Stage includes the construction of roadway across the former railroad corridor. This will occur immediately south of the existing eastbound bridge, following relocation of overhead power lines in the same location, and will provide a lane for eastbound traffic to access the I-95 ramps in Stage 2. To accommodate the requirement to maintain two lanes of traffic in each direction, and subject to the results of a load rating analysis, we intend to utilize the westbound bridge to carry 2-way, 3-lane traffic (2 lanes westbound, 1 lane eastbound for eastbound Temple Ave thru traffic) in Stage 2. All necessary temporary crossover pavement will be constructed, and enhanced safety devices such as temporary raised pavement markers and physical devices between eastbound and westbound traffic will be installed, exceeding minimum standards. The existing traffic signals shall remain in use throughout Stage 1.

### *Area 1 - Temple Avenue and Roundabout*

With overhead power lines relocated out of limited access, Critical Path construction activities commence in Area 1 including the installation of erosion and sediment controls and temporary access roads. The construction area will be cleared for grading, stripping of topsoil and the placement and compaction of fill materials. Once fill reaches sub-grade elevation, fine grading and placement of aggregate and pavement layers follow. After installation of the intermediate pavement layer and setting of temporary traffic barriers, temporary pavement markings are installed to allow the shifting of eastbound traffic as described above. All of these Stage 1, Area 1 activities fall on the critical path.

### *Area 2 - I-95 Ramps*

Work in Area 2 during Stage 1 includes the installation of erosion and sediment controls as well as the clearing and grubbing of the former railroad corridor for the future I-95 ramps. This work is intended to overlap with the clearing activity in Stage 1, Area 1.

### *Area 3 - Temple / Hamilton / Ridge Rd Intersection*

Once all of the clearing has been completed in Areas 1 and 2, and E&S measures installed, the minor clearing at the new Ridge Road intersection will be completed.

## **STAGE 2**

With eastbound traffic successfully relocated from the existing eastbound bridge, demolition can proceed with the benefit of work being separated a substantial distance from existing traffic. After demolition is complete, construction of the eastbound through lanes and the southern portion of the roundabout follow. This will allow shifting of traffic onto the pavement constructed in Stage 2 and the permanent closure of the existing westbound bridge. Temporary pavement will be installed in the permanent splitter island areas and truck apron areas in order to maintain the thru lanes prior to completion of the roundabout.

### *Area 1 - Temple Avenue and Roundabout*

Critical Path activities include saw-cutting at the eastbound bridge, removal of bridge parapets and the existing deck, removal of girders, and removal of piers and abutments in accordance with the RFP requirements. The placement and compaction of fill material to create new sub-grade follow demolition, and then aggregate base and pavement material is placed up to the intermediate layer. We will then install temporary markings for two lanes of westbound traffic and one lane of eastbound traffic on the new roadway.

## 4.7 Proposal Schedule

### *Area 2 - I-95 Ramps*

Stage 2 includes the construction of the majority of the new I-95 ramps along the railroad corridor. This work includes the stripping of topsoil, removal of any unsuitable soils and the import of fill material to create the new roadbed. Retaining walls will be constructed as required by the final design. The Stage 2, Area 2 work includes the installation of aggregate base layer, asphalt pavement up to and including the intermediate layer, and the construction of concrete median separating traffic moving to and from Temple Avenue.

### *Area 3 - Temple / Hamilton / Ridge Rd Intersection*

Work continues in Area 3 including the construction of the turn-around at Ridge Road, setting up maintenance of traffic signage, and closing Ridge Road to through traffic.

## **STAGE 3**

Stage 3 will begin by shifting Temple Avenue to the south onto the new pavement reconstructed in Stage 2 (in the previous location of the eastbound bridge). With traffic successfully relocated from the existing westbound bridge, demolition can proceed safely separated from traffic. After demolition is complete, construction of the westbound through lanes and the remaining portion of the roundabout (northern portion) follow. The new ramps to I-95 will also be completed during Stage 3 while maintaining traffic on the existing ramps at all times. This continuous maintenance is possible as our ramp profiles are optimized to eliminate the grade difference between the existing and proposed ramps.

### *Area 1 - Temple Avenue and Roundabout*

Stage 3, Area 1 work includes include saw-cutting at the westbound bridge, removal of bridge parapets and the existing deck, removal of girders, and removal of piers and abutments in accordance with the RFP requirements. Work to the north of westbound lanes follows including, clearing, installation of storm structures, and construction of a retaining wall. The placement and compaction of fill material to create new sub-grade follow demolition, and then aggregate base and pavement material are placed up to the intermediate layer.

Critical Path activities include the start of bridge demolition, clearing and grubbing, installation of a retaining wall north of westbound lanes / roundabout, and construction of roadway for the new westbound lanes. The installation of curb and gutter, concrete medians and truck apron at the northern half of the roundabout will occur during Stage 3.

### *Area 2 - I-95 Ramps*

With construction progressing to the point where the new ramps and the roundabout are ready for traffic, work will commence on the improvements to the ramp from I-95 southbound to Temple Avenue. The activities include clearing and grubbing, stripping of topsoil, placement and compaction of ill material, grading of the roadway, and placement of aggregate and pavement.

### *Area 3 - Temple / Hamilton / Ridge Rd Intersection*

Following completion of all utility relocations at the new Ridge Road intersection, we will build the retaining wall along Ridge Road, allowing placement of fills needed to meet existing elevation of Temple Avenue. Construction of the roadway through the intermediate layer will occur in Stage 3.

## 4.7 Proposal Schedule

### STAGE 4

During one off-peak period, we will open the roundabout as well as the new I-95 ramps during one major traffic switch, which is a tremendous benefit to the traveling public as we will eliminate the need to learn a temporary configuration prior to the ultimate configuration. With the permanent traffic configuration and permanent traffic control devices now in place, we will complete the installation of concrete median barriers, truck apron, islands and placement of surface layer asphalt. The existing traffic signal will be dismantled and, lastly, the former I-95 access roads will be removed.

#### *Area 1 - Temple Avenue and Roundabout*

The remaining work at Area 1 is completed in Stage 4 and includes installation of signage, lighting, guardrail and landscaping. The roundabout will open to traffic in conjunction with the I-95 ramps. In coordination with Areas 2 and 3, final pavement are placed and permanent traffic markings installed. Critical Path activities include the installation of signage and guardrail, as well as the completion of concrete medians and islands at the southern portion of the roundabout. Final paving in Area 1 also falls on the critical path.

#### *Area 2 - I-95 Ramps*

As with Area 1, Stage 4 work includes the installation of signage, lighting, landscaping and guardrail. The new ramps will receive surface course asphalt and permanent traffic markings. The last of the activities in Area 2 include removal of the existing traffic signal and the former ramp pavement.

#### *Area 3 - Temple / Hamilton / Ridge Rd Intersection*

As in Areas 1 and 2, the remaining work in Area 3 includes signage, lighting, guardrail and landscaping. The existing traffic signal will be completely replaced. Following final paving and installation of permanent traffic markings, the Ridge Road intersection with Temple Avenue will open to traffic. Final paving in Area 3 falls on the critical path as it is tied to completion of paving in Areas 1 and 2.

## Project Controls

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

## Schedule Development

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

## 4.7 Proposal Schedule

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

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

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

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

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

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

## 4.7 Proposal Schedule

to advance the schedule ahead of the planned completion or mitigate schedule delays; and general design review, constructability, and determination of means and methods.

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

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

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

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

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

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

## 4.7 Proposal Schedule

### Mitigation of Major Delay Risks

#### Timely Review and Approval of Submittals

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

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

Submittals deemed critical to the success of the Project, including design and permitting submissions and major materials submissions, are included in the Project CPM Schedule where the progress can be monitored concurrently with the affected construction activity. Each submittal includes a transmittal cover sheet identifying the submittal's priority level. For submittals between the contractor and design firm, normal priority submittals is returned within four weeks, high priority submittals within two weeks and urgent submittals within three days. This also allows the Team to prioritize multiple submittals that are turned in concurrently. For submittals to government agencies and utilities, we include adequate review timeframes in the CPM Schedule for approval of environmental permits and utility submissions as applicable.

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

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

#### Utility Relocations

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

## 4.7 Proposal Schedule

We facilitate these discussions through the preexisting relationships that we have developed through other design-build projects. Our Utility Coordinator, Todd Kief, has coordinated over \$50 million of utility relocations on our design-build projects over the last 12 years. This experience has enabled Todd to develop relationships with over 25 different utility owners in the area including all of the utilities that are impacted by the Project.

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

### Summary

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 serves to ensure that the Project is completed on schedule. Over the years, we have built a solid professional reputation on meeting our commitments, completing projects ahead of schedule and under budget, performing quality work in a safe work environment, and establishing a problem-solving atmosphere and partnership with the Owner. This is a result of our extensive experience, quality people, and corporate commitment. The I-95 at Temple Avenue Interchange Improvements Project is a challenging and exciting Project for our Team and is one that we will bring this same level of commitment to for the benefit of VDOT, Colonial Heights, and the public.

Activity ID	Activity Name	Original Duration	Start	Finish	2015												2016												2017												2018											
					Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug															
<b>I-95 at TEMPLE AVENUE INTERCHANGE IMPROVEMENTS</b>					→ 10-Nov-2017																																															
<b>Contract: C00085623DB74 I-95 at TEMPLE AVE</b>					→ 10-Nov-2017																																															
<b>SCHEDULE MILESTONES</b>					→ 10-Nov-2017																																															
A1000	NOTICE OF INTENT TO AWARD (12/19/2014)	0d	19-Dec-2014	19-Dec-2014	◆ NOTICE OF INTENT TO AWARD (12/19/2014)																																															
A1010	CTB AWARD	0d	21-Jan-2015	21-Jan-2015	◆ CTB AWARD																																															
A1020	DESIGN-BUILD CONTRACT EXECUTION	0d	18-Feb-2015	18-Feb-2015	◆ DESIGN-BUILD CONTRACT EXECUTION																																															
A1030	NOTICE TO PROCEED (02/25/2015)	0d	25-Feb-2015	25-Feb-2015	◆ NOTICE TO PROCEED (02/25/2015)																																															
A1040	SCOPE VALIDATION PERIOD (120 DAYS)	120d	25-Feb-2015	24-Jun-2015	SCOPE VALIDATION PERIOD (120 DAYS)																																															
A1050	BEGIN CONSTRUCTION	0d	14-Sep-2015	14-Sep-2015	◆ BEGIN CONSTRUCTION																																															
A1065	FINAL PLAN and PERMITTING APPROVAL	0d	08-Feb-2016	08-Feb-2016	◆ FINAL PLAN and PERMITTING APPROVAL																																															
A1060	PROPERTY RIGHTS ACQUIRED	0d	25-Jul-2016	25-Jul-2016	◆ PROPERTY RIGHTS ACQUIRED																																															
A1120	PROJECT READY FOR FINAL WALKTHROUGH	0d		05-Oct-2017	◆ PROJECT READY FOR FINAL WALKTHROUGH, 05-Oct-2017																																															
A1130	COMPLETE VDOT PUNCHLIST	25d	05-Oct-2017	09-Nov-2017	COMPLETE VDOT PUNCHLIST																																															
A1140	SUBSTANTIAL and FINAL COMPLETION	0d		10-Nov-2017	◆ SUBSTANTIAL and FINAL COMPLETION, 10-Nov-2017																																															
<b>DESIGN PHASE</b>					→ 02-Nov-2015																																															
<b>PRELIMINARY DESIGN WORK</b>					→ 15-Aug-2015																																															
B11000	BASE MAPPING/FIELD SURVEY	47d	25-Feb-2015	12-Apr-2015	BASE MAPPING/FIELD SURVEY																																															
B11010	UTILITY DESIGNATIONS	60d	17-Mar-2015	15-May-2015	UTILITY DESIGNATIONS																																															
B11020	GEOTECHNICAL INVESTIGATION	80d	29-Mar-2015	16-Jun-2015	GEOTECHNICAL INVESTIGATION																																															
B11030	UTILITY TEST PITS	45d	26-Apr-2015	09-Jun-2015	UTILITY TEST PITS																																															
B11040	VDOT REVIEWS GEOTECHNICAL REPORTS	60d	17-Jun-2015	15-Aug-2015	VDOT REVIEWS GEOTECHNICAL REPORTS																																															
<b>ROADWAY DESIGN</b>					→ 02-Nov-2015																																															
B21000	PREPARE ROADWAY PLANS (1ST SUBMISSION)	70d	13-Apr-2015	21-Jun-2015	PREPARE ROADWAY PLANS (1ST SUBMISSION)																																															
B21010	DESIGN QA/QC (1ST SUBMISSION)	5d	22-Jun-2015	26-Jun-2015	DESIGN QA/QC (1ST SUBMISSION)																																															
B21020	SUBMIT ROADWAY PLANS (1ST SUBMISSION)	0d		26-Jun-2015	◆ SUBMIT ROADWAY PLANS (1ST SUBMISSION), 26-Jun-2015																																															
B21030	VDOT/FHWA REVIEW/COMMENT ROADWAY PLA	21d	27-Jun-2015	17-Jul-2015	VDOT/FHWA REVIEW/COMMENT ROADWAY PLANS (1ST SUBMISSION)																																															
B21040	PREPARE ROADWAY PLANS (2ND SUBMISSION)	35d	13-Jul-2015	16-Aug-2015	PREPARE ROADWAY PLANS (2ND SUBMISSION)																																															
B21050	DESIGN QA/QC (2ND SUBMISSION)	5d	17-Aug-2015	21-Aug-2015	DESIGN QA/QC (2ND SUBMISSION)																																															
B21060	SUBMIT ROADWAY PLANS (2ND SUBMISSION)	0d		21-Aug-2015	◆ SUBMIT ROADWAY PLANS (2ND SUBMISSION), 21-Aug-2015																																															
B21070	VDOT/FHWA REVIEW/COMMENT ROADWAY PLA	21d	22-Aug-2015	11-Sep-2015	VDOT/FHWA REVIEW/COMMENT ROADWAY PLANS (2ND SUBMISSION)																																															
B21075	ROW PLAN SET APPROVED FOR ACQUISITIONS	0d		11-Sep-2015	◆ ROW PLAN SET APPROVED FOR ACQUISITIONS, 11-Sep-2015																																															
B21080	PREPARE FINAL ROADWAY PLANS	25d	12-Sep-2015	06-Oct-2015	PREPARE FINAL ROADWAY PLANS																																															
B21090	DESIGN FINAL QA/QC PLANS	5d	07-Oct-2015	11-Oct-2015	DESIGN FINAL QA/QC PLANS																																															
B21100	SUBMIT FINAL ROADWAY PLANS	1d	12-Oct-2015	12-Oct-2015	SUBMIT FINAL ROADWAY PLANS																																															
B21110	VDOT/FHWA REVIEW/COMMENT FINAL ROADW	21d	13-Oct-2015	02-Nov-2015	VDOT/FHWA REVIEW/COMMENT FINAL ROADWAY PLANS																																															
B21120	FINAL ROADWAY PLANS APPROVED	0d		02-Nov-2015	◆ FINAL ROADWAY PLANS APPROVED, 02-Nov-2015																																															
<b>PUBLIC INVOLVEMENT</b>					→ 05-Oct-2017																																															
C1000	SUBMIT EMERGENCY CONTACT LIST	10d	25-Feb-2015	06-Mar-2015	SUBMIT EMERGENCY CONTACT LIST																																															
C1050	PUBLIC INFO MTGS/WEBSITE UPDATES/ SOCIAL	954d	25-Feb-2015	05-Oct-2017	PUBLIC INFO MTGS/WEBSITE UPDATES/ SOCIAL MEDIA																																															
C1010	DEVELOP PUBLIC INFORMATION and COMMUNI	120d	07-Mar-2015	04-Jul-2015	DEVELOP PUBLIC INFORMATION and COMMUNICATION PLAN (PICP)																																															
C1020	DESIGN PUBLIC INVOLVEMENT & AFFAIRS MEE1	5d	22-Jun-2015	26-Jun-2015	DESIGN PUBLIC INVOLVEMENT & AFFAIRS MEETING																																															
C1030	VDOT REVIEW PICP WITH TEAM AND MODIFY	30d	06-Jul-2015	14-Aug-2015	VDOT REVIEW PICP WITH TEAM AND MODIFY																																															
C1060	FINAL PICP APPROVED	0d		14-Aug-2015	◆ FINAL PICP APPROVED, 14-Aug-2015																																															
C1040	PRECONSTRUCTION PUBLIC INFORMATION ME	30d	24-Oct-2015	22-Nov-2015	PRECONSTRUCTION PUBLIC INFORMATION MEETING																																															
<b>ENVIRONMENTAL PERMITTING</b>					→ 17-Apr-2016																																															
D1000	DISTRIBUTE ACCESS LETTERS	7d	25-Feb-2015	03-Mar-2015	DISTRIBUTE ACCESS LETTERS																																															
D1010	PROPERTY ACCESS HOLD	15d	04-Mar-2015	18-Mar-2015	PROPERTY ACCESS HOLD																																															
D1020	HAZARDOUS MATERIAL SURVEY PHASE I	60d	19-Mar-2015	17-May-2015	HAZARDOUS MATERIAL SURVEY PHASE I																																															
D1035	WETLAND DELINEATIONS, SURVEYS, & JURISDI	60d	13-Apr-2015	11-Jun-2015	WETLAND DELINEATIONS, SURVEYS, & JURISDICTIONAL DETERMINATION																																															
D1060	T&E SPECIES COORDINATION	60d	13-Apr-2015	11-Jun-2015	T&E SPECIES COORDINATION																																															
D1030	HAZARDOUS MATERIAL SURVEY PHASE II (IF RE	30d	19-Mar-2016	17-Apr-2016	HAZARDOUS MATERIAL SURVEY PHASE II (IF REQUIRED)																																															
D1050	ENVIRONMENTAL PERMIT "EARLY COORDINATI	90d	12-Jun-2015	09-Sep-2015	ENVIRONMENTAL PERMIT "EARLY COORDINATION"																																															
D1070	LD-445 FORMS - TO BE SUBMITTED WITH 60% F	30d	11-Aug-2015	09-Sep-2015	LD-445 FORMS - TO BE SUBMITTED WITH 60% PLANS																																															
D1080	REQUEST PERMIT COVERAGE (APPLICATION C	0d		10-Sep-2015	◆ REQUEST PERMIT COVERAGE (APPLICATION COMPLETE - HOLD PT)																																															
D1090	COMPLETE SWPPP (LD-455E) CERTIFICATIONS	5d	10-Sep-2015	14-Sep-2015	COMPLETE SWPPP (LD-455E) CERTIFICATIONS																																															
D1160	NOTICE PERIOD FOR ARCHEOLOGY AT RAILRO	30d	10-Sep-2015	21-Oct-2015	NOTICE PERIOD FOR ARCHEOLOGY AT RAILROAD CORRIDOR																																															

Level of Effort   
 Remaining Work   
 ◆ Milestone   
 ◆ Milestone  
 Actual Work   
 Critical Remaining Work   
 → Summary



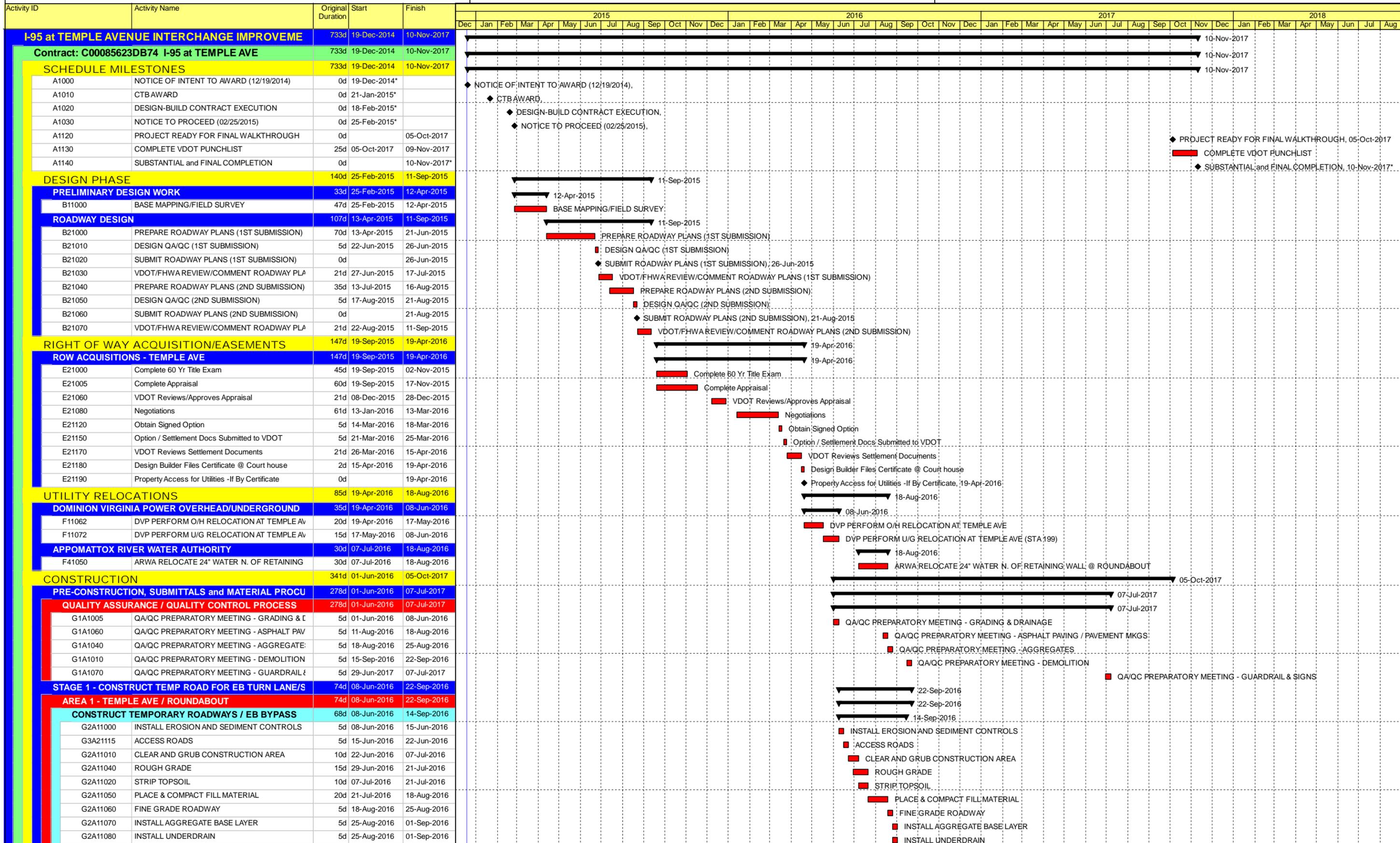










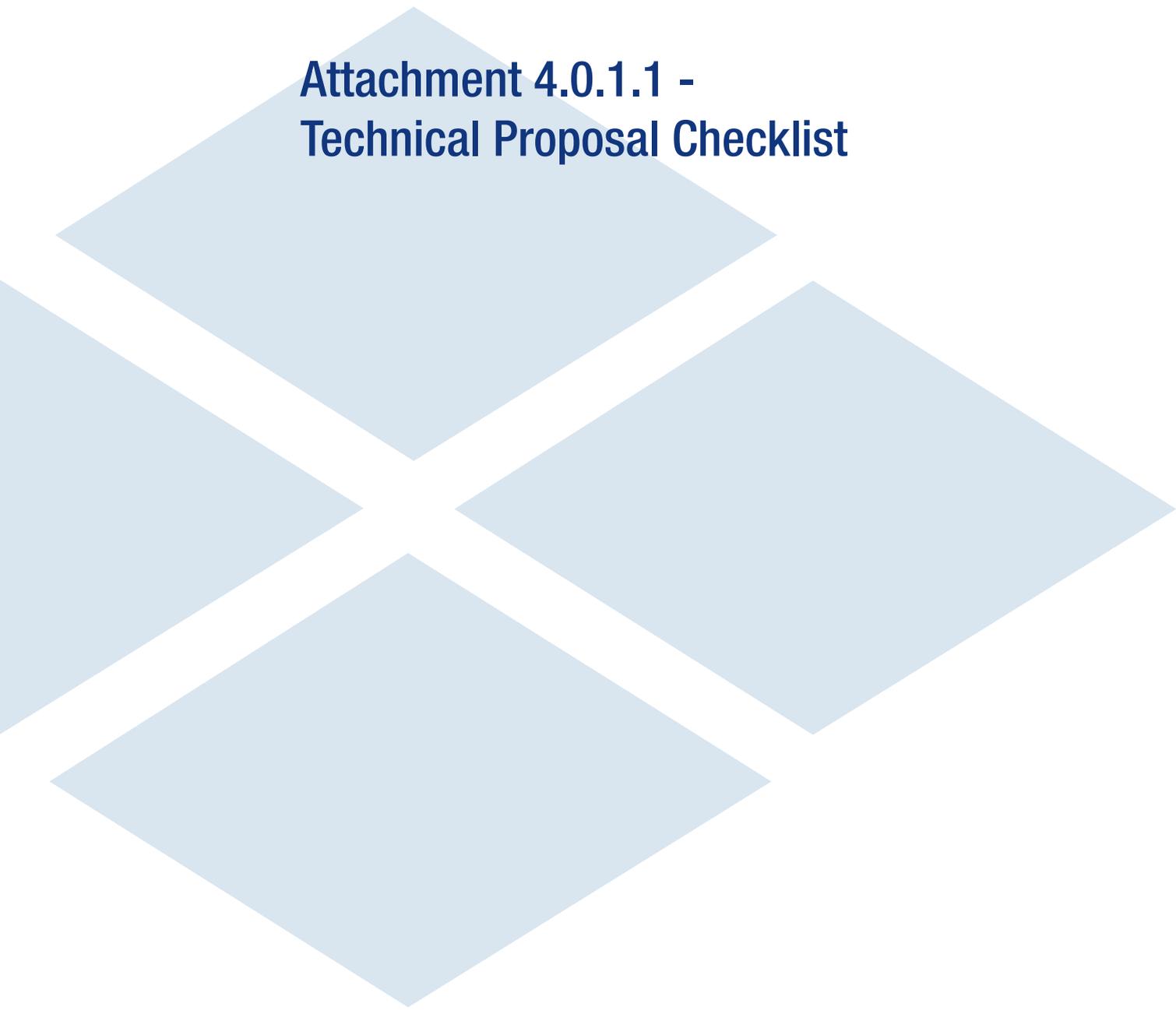


Level of Effort Remaining Work Milestone Actual Work Critical Remaining Work Summary





**Appendix**



# Attachment 4.0.1.1 - Technical Proposal Checklist

**ATTACHMENT 4.0.1.1**

**I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS**

**TECHNICAL PROPOSAL CHECKLIST AND CONTENTS**

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

<b>Technical Proposal Component</b>	<b>Form (if any)</b>	<b>RFP Part 1 Cross Reference</b>	<b>Included within page limit?</b>	<b>Technical Proposal Page Reference</b>
<b>Technical Proposal Checklist and Contents</b>	Attachment 4.0.1.1	Section 4.0.1.1	no	N/A
<b>Acknowledgement of RFP, Revisions, and/or Addenda</b>	Attachment 3.6 (Form C-78-RFP)	Sections 3.6, 4.0.1.1	no	N/A
<b>Letter of Submittal</b>	NA	Sections 4.1		
Letter of Submittal on Offeror's letterhead	NA	Section 4.1.1	yes	1
Offeror's official representative information	NA	Section 4.1.1	yes	1
Authorized representative's original signature	NA	Section 4.1.1	yes	1
Declaration of intent	NA	Section 4.1.2	yes	1
120 day declaration	NA	Section 4.1.3	yes	1
Principal Officer information	NA	Section 4.1.5	yes	1
Final Completion Date	NA	Section 4.1.6	yes	1
Proposal Payment Agreement or Waiver of Proposal Payment	Attachment 9.3.1 or 9.3.2	Section 4.1.7	no	1
Certification Regarding Debarment Forms	Attachment 11.8.6(a) Attachment 11.8.6(b)	Section 4.1.8	no	1
<b>Offeror's Qualifications</b>	NA	Section 4.2		
Confirmation that the information provided in the SOQ submittal remains true and accurate or indicates that any	NA	Section 4.2.1	yes	2

**ATTACHMENT 4.0.1.1**

**I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS**

**TECHNICAL PROPOSAL CHECKLIST AND CONTENTS**

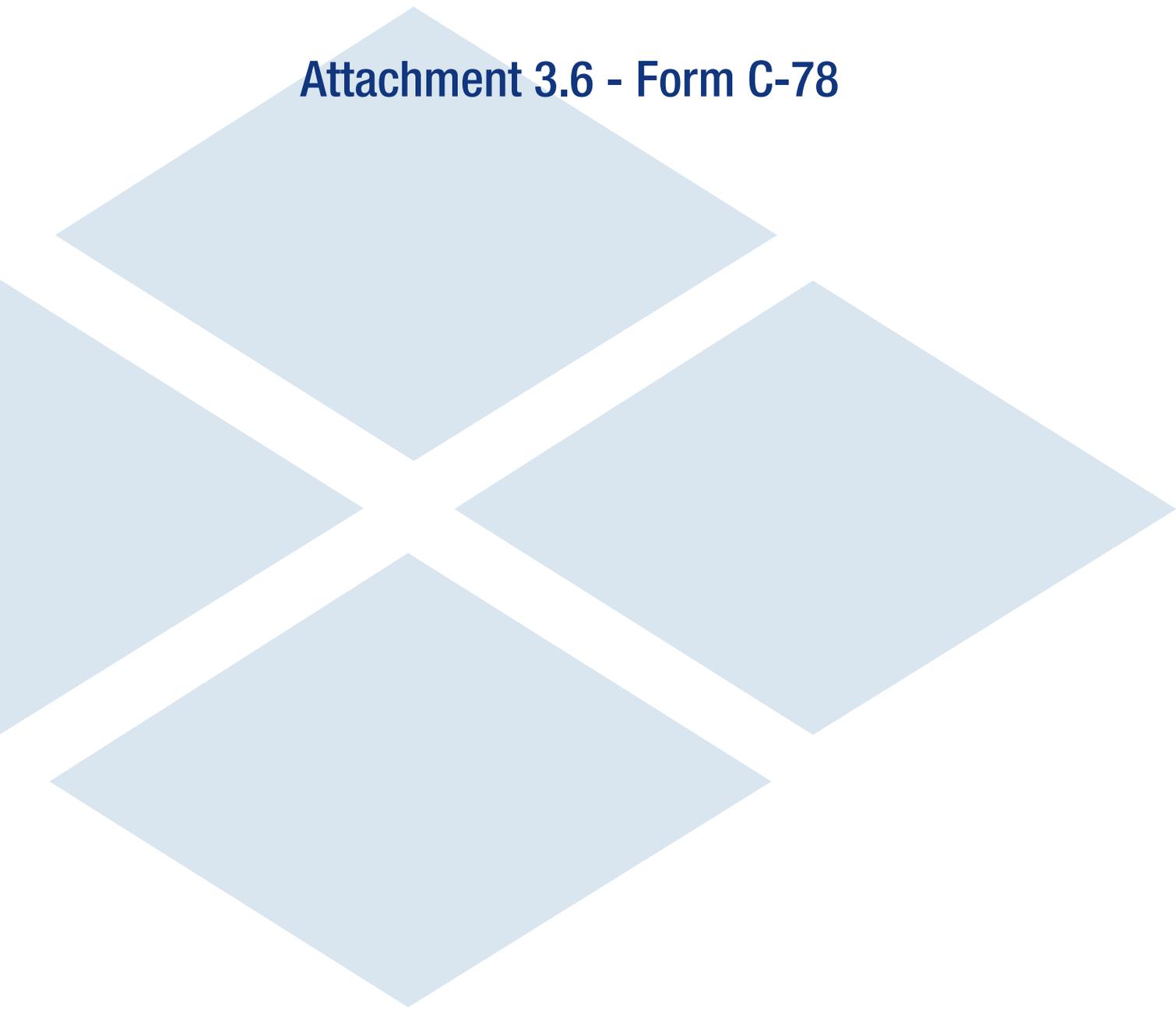
<b>Technical Proposal Component</b>	<b>Form (if any)</b>	<b>RFP Part 1 Cross Reference</b>	<b>Included within page limit?</b>	<b>Technical Proposal Page Reference</b>
requested changes were previously approved by VDOT				
Organizational chart with any updates since the SOQ submittal clearly identified	NA	Section 4.2.2	yes	2
Revised narrative when organizational chart includes updates since the SOQ submittal	NA	Section 4.2.2	yes	2
<b>Design Concept</b>	NA	Section 4.3		
Conceptual Roadway Plans and description	NA	Section 4.3.1	yes	3-6 29-40
<b>Project Approach</b>	NA	Section 4.4		
Utilities	NA	Section 4.4.1	yes	7-10
Quality Assurance/ Quality Control (QA/QC)	NA	Section 4.4.2	yes	11-18
Geotechnical	NA	Section 4.4.3	yes	18-19
<b>Construction of Project</b>	NA	Section 4.5		
Sequence of Construction	NA	Section 4.5.1	yes	20-23
Transportation Management Plan	NA	Section 4.5.2	yes	23-27
<b>Disadvantaged Business Enterprises (DBE)</b>	NA	Section 4.6		

**ATTACHMENT 4.0.1.1**

**I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS**

**TECHNICAL PROPOSAL CHECKLIST AND CONTENTS**

<b>Technical Proposal Component</b>	<b>Form (if any)</b>	<b>RFP Part 1 Cross Reference</b>	<b>Included within page limit?</b>	<b>Technical Proposal Page Reference</b>
Written statement of percent DBE participation	NA	Section 4.6	yes	28
DBE subcontracting narrative	NA	Section 4.6	yes	28
<b>Proposal Schedule</b>	NA	Section 4.7		
Proposal Schedule	NA	Section 4.7	no	N/A
Proposal Schedule Narrative	NA	Section 4.7	no	N/A
Proposal Schedule in electronic format (CD-ROM)	NA	Section 4.7	no	N/A



# Attachment 3.6 - Form C-78

**ATTACHMENT 3.6**

**COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF TRANSPORTATION**

RFP NO. C00085623DB74

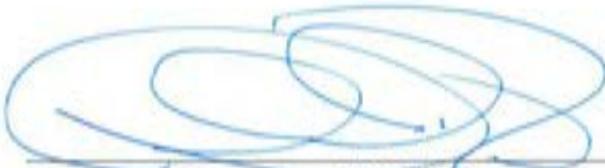
PROJECT NO.: 0095-106-122

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

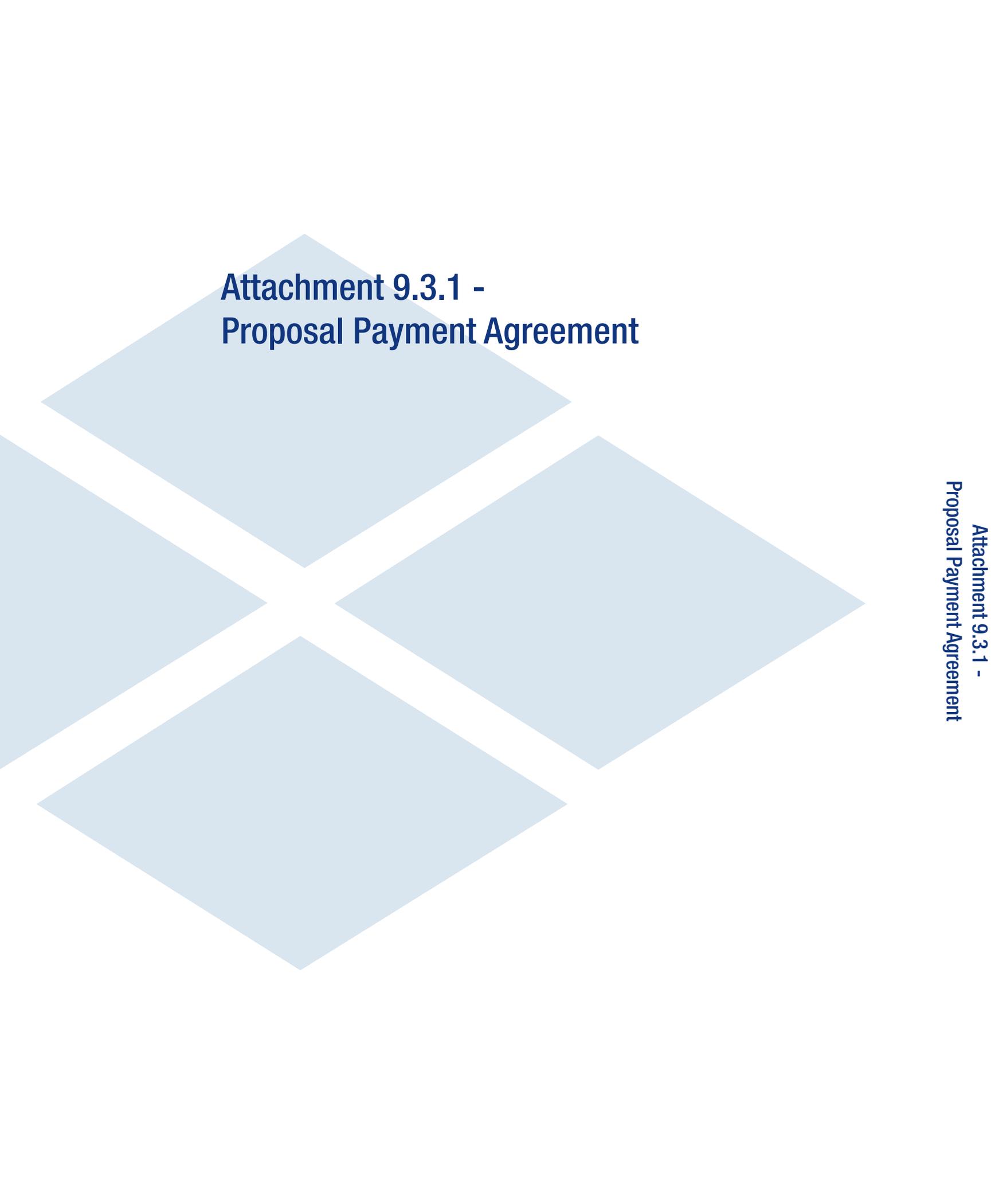
Acknowledgement shall be made of receipt of the Request for Proposals (RFP) and/or any and all revisions and/or addenda pertaining to the above designated project which are issued by the Department prior to the Letter of Submittal submission date shown herein. Failure to include this acknowledgement 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 July 7, 2014 – RFP  
(Date)
2. Cover letter of Addendum #1- October 17, 2014 – RFP  
(Date)
3. Cover letter of Addendum #2- November 4, 2014 – RFP  
(Date)

  
SIGNATURE

10/5/14.  
DATE

The background of the page features a decorative pattern of light blue diamonds. The diamonds are arranged in a grid-like fashion, with some overlapping and others separated by white space. The overall effect is a clean, modern, and geometric design.

# **Attachment 9.3.1 - Proposal Payment Agreement**

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

**THIS PROPOSAL PAYMENT AGREEMENT** (this “Agreement”) is made and entered into as of this 6th day of November, 2014, by and between the Virginia Department of Transportation (“VDOT”), and Shirley Contracting Company, LLC (“Offeror”).

**WITNESSETH:**

**WHEREAS**, Offeror is one of the entities who submitted Statements of Qualifications (“SOQs”) pursuant to VDOT’s **October 15, 2013** Request for Qualifications (“RFQ”) and was invited to submit proposals in response to a Request for Proposals (“RFP”) for the **I-95 at Temple Avenue Interchange Improvements, Project No. 0095-106-122** (“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: \_\_\_\_\_

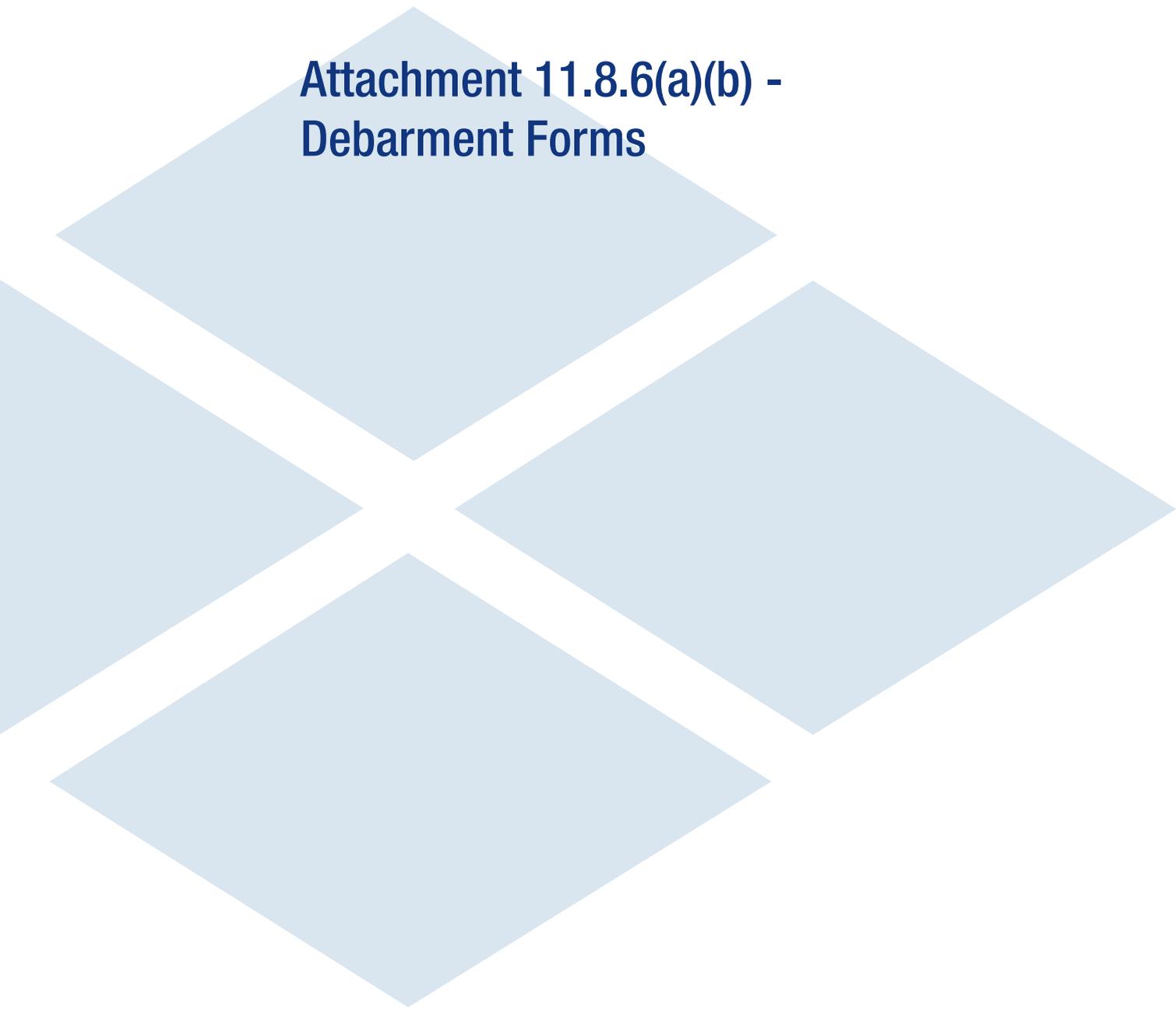
Title: \_\_\_\_\_

*[Insert Offeror's Name]*

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

Name: Michael E. Post

Title: President/CEO/Manager



**Attachment 11.8.6(a)(b) -  
Debarment Forms**

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

**Project No.: 0095-106-122**

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

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

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

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

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

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

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

  
\_\_\_\_\_  
Signature

11/6/14  
\_\_\_\_\_  
Date

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

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

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

**Project No.: 0095-106-122**

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

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

	<u>10-21-2014</u>	<u>Executive Vice President</u>
Signature	Date	Title

Dewberry Consultants LLC  
Name of Firm



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

**Project No.: 0095-106-122**

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

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

 Signature	November 1, 2014 Date	President Title
<hr/>		
Quinn Consulting Services, Inc.		
<hr/>		
Name of Firm		

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

**Project No.: 0095-106-122**

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

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

	10/29/14	President & COO
Signature	Date	Title

Froehling & Robertson, Inc.  
Name of Firm

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

**Project No.: 0095-106-122**

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

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

Robert P. Pardo                      10-29-14                      Settlement Officer  
Signature                              Date    Title

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

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

**Project No.: 0095-106-122**

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

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

<u>Mark A. Wash</u>	<u>October 21, 2014</u>	<u>Vice President - Business Development</u>
Signature	Date	Title

So-Deep, Inc.  
Name of Firm

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

**Project No.: 0095-106-122**

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

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

<u>William J. McKeague</u>	<u>10/21/14</u>	<u>Vice President</u>
Signature	Date	Title
<u>Quantum Spatial, Inc.</u>		
Name of Firm		

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

**Project No.: 0095-106-122**

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

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

	10/29/14	President
Signature	Date	Title

Diversified Property Services, Inc.

---

Name of Firm

Response to Request for Proposals

# I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS

Colonial Heights, Virginia

State Project Nos.: 0095-106-122

Federal Project Nos.: NH-095-1(328)

Contract ID No.: C00085623DB74

## VOLUME II: DESIGN CONCEPT



SUBMITTED BY:



IN ASSOCIATION WITH:



INDEX OF SHEETS

1	TITLE SHEET	
1C(1)	SEQUENCE OF CONSTRUCTION - STAGE 1	
1C(2)	SEQUENCE OF CONSTRUCTION - STAGE 2	
1C(3)	SEQUENCE OF CONSTRUCTION - STAGE 3	
1C(4)	SEQUENCE OF CONSTRUCTION - STAGE 4	
2A	TYPICAL SECTIONS	
2B	TYPICAL SECTIONS	
3	PLAN VIEW -	TEMPLE AVE. W STA. 10+00.00 TO STA. 18+23.38 RIDGE ROAD
4	PLAN VIEW -	TEMPLE AVE. W STA. 18+23.38 TO STA. 23+09.46 TEMPLE AVE. E STA. 10+00.00 TO STA. 16+73.44 RAMPS STA. 115+00.00 TO STA. 118+03.73 ROUNDBOUT I-95 RAMPS
4A	PROFILE VIEW -	TEMPLE AVE. STA. 10+00.00 TO STA. 16+73.44 RIDGE ROAD
5	PLAN VIEW -	I-95 SOUTHBOUND EXIT RAMP I-95 SOUTHBOUND ENTRANCE RAMP I-95 NORTHBOUND RAMPS
5A	PROFILE VIEW -	I-95 SOUTHBOUND EXIT RAMP I-95 SOUTHBOUND ENTRANCE RAMP I-95 NORTHBOUND RAMPS



COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE OF PROPOSED  
STATE HIGHWAY

CITY OF COLONIAL HEIGHTS  
RTE 95-INTERCHANGE IMPROVEMENT/ROUNDBOUT  
FROM: 0.041 MI WEST OF HAMILTON AVE.  
TO: 0.069 MI EAST OF EXISTING I-95 RAMP

FHWA 534 Data = 2A121

STATE	FEDERAL AID PROJECT	ROUTE	STATE PROJECT	SHEET NO.
VA.	NH-095-1(***) (See tabulation below for section numbers)	95	(F0) 0095 - 106 - 122 (SEE TABULATION BELOW FOR SECTION NUMBERS)	1

URBAN INTERSTATE (RAMPS) - DIVIDED - ROLLING - 35 MPH At Rte. 144 (Temple Ave.)					
	I-95	I-95NB Exit Ramp	I-95SB Exit Ramp	I-95NB Entrance Ramp	I-95SB Entrance Ramp
ADT (2013)	94,700	5,140	10,110	3,050	5,090
ADT (2037)	114,670	7,000	11,390	3,600	6,160
DHV	11,470				
D (%) (design hour)	53/47				
T (%) (design hour)	10				
V (MPH)	*				

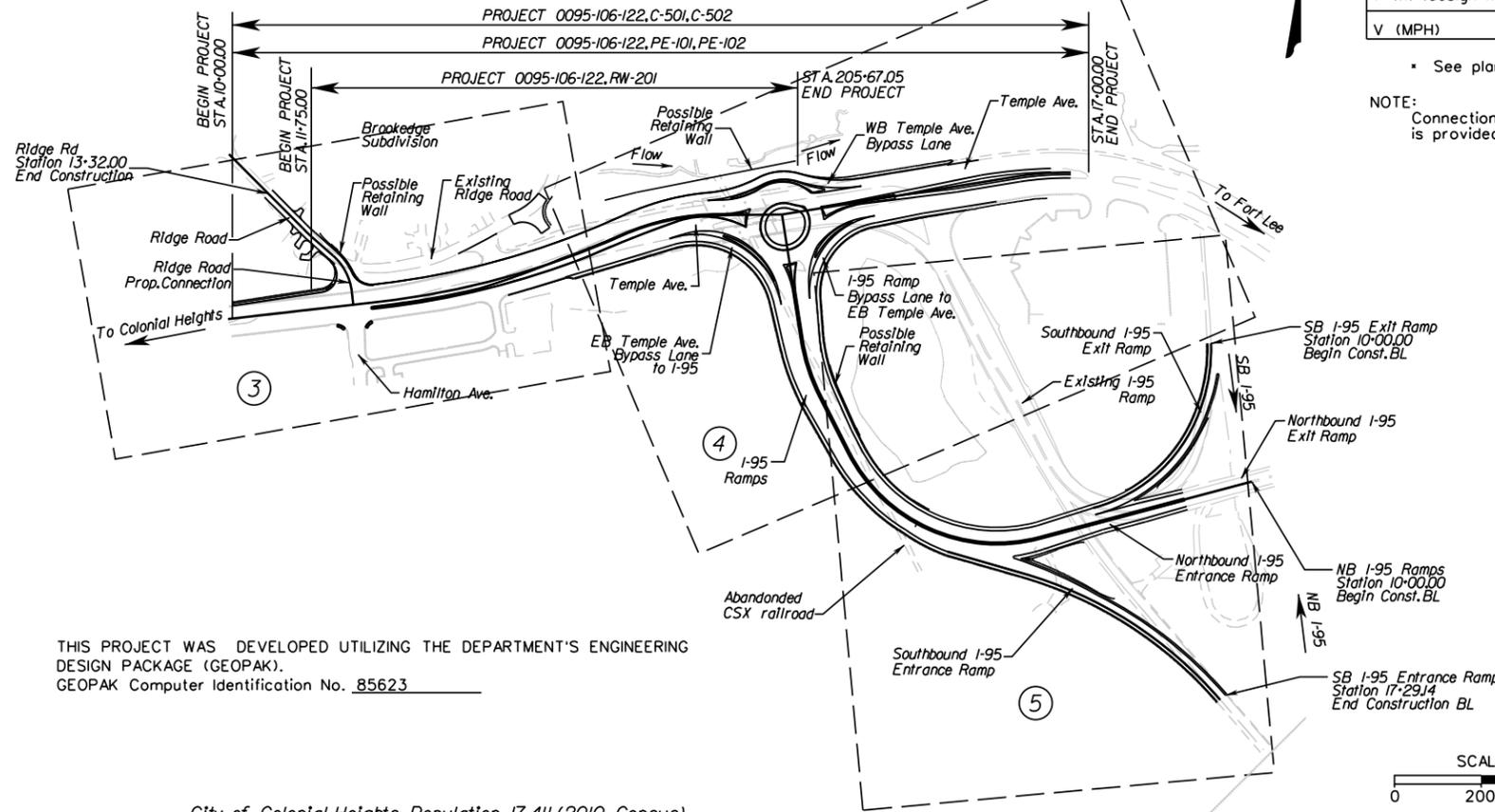
  

TEMPLE AVENUE: URBAN MINOR ARTERIAL - DIVIDED - ROLLING - 40 MPH	
ADT (2013)	26,400
ADT (2037)	33,550
DHV	1,890
D (%) (design hour)	58/42
T (%) (design hour)	11
V (MPH)	*

\* See plan and profile sheets for vertical and horizontal curve design speed

NOTE: Connection Functional Classification, ADT and Minimum Design Speed is provided on the Typical Section Sheets.

PROJECT MANAGER Shirley Contracting Company, LLC  
SURVEYED BY, DATE Dewberry (703) 849-0607  
DESIGN BY Shirley Contracting Company, LLC  
SUBSURFACE UTILITY BY, DATE Dewberry (703) 849-0607



CONVENTIONAL SIGNS

STATE LINE	.....
COUNTY LINE	.....
CITY, TOWN OR VILLAGE	.....
RIGHT OF WAY LINE	.....
FENCE LINE	.....
UNFENCED PROPERTY LINE	.....
FENCED PROPERTY LINE	.....
WATER LINE	.....
SANITARY SEWER LINE	.....
GAS LINE	.....
ELECTRIC UNDERGROUND CABLE	.....
TRAVELED WAY	.....
GUARD RAIL	.....
RETAINING WALL	.....
RAILROADS	.....
BASE OR SURVEY LINE	.....

LEVEE OR EMBANKMENT	.....
BRIDGES	.....
CULVERTS	.....
DROP INLET	.....
POWER POLES	.....
TELEPHONE OR TELEGRAPH POLES	.....
TELEPHONE OR TELEGRAPH LINES	.....
HEDGE	.....
TREES	.....
HEAVY WOODS	.....
GROUND ELEVATION	.....
GRADE ELEVATION	.....

THIS PROJECT WAS DEVELOPED UTILIZING THE DEPARTMENT'S ENGINEERING DESIGN PACKAGE (GEOPAK).  
GEOPAK Computer Identification No. 85623

City of Colonial Heights Population 17,411 (2010 Census)

STATE PROJECT NO.	SECTION	FEDERAL AID PROJECT NO.	TYPE CODE	UPC NO.	EQUALITIES		LENGTH INCLUDING BRIDGE(S)		LENGTH EXCLUDING BRIDGE(S)		BRIDGE PROJECT NO.	TYPE PROJECT	DESCRIPTION
					FEET		FEET	MILES	FEET	MILES			
0095-106-122	PE-101	NH-095-1(278)		85623			1950	0.369	1950	0.369		Prelim. Eng.	Fr: 0.041 Mi. W. of Hamilton Ave. To: 0.069 Mi. E. of Existing I-95 Ramp
	PE-102	NH-095-1(326)		85623								Prelim. Eng.	Fr: 0.016 Mi. W. of Hamilton Ave. To: 0.051 Mi. W. of Existing I-95 Ramp
	RW-201	NH-095-1(327)		85623			1192.05	0.226	1192.05	0.226		Right of Way	
	C-501	NH-095-1(328)	1000	85623			2031	0.385	2031	0.385		Construction	Fr: 0.041 Mi. W. of Hamilton Ave. To: 0.084 Mi. E. of Existing I-95 Ramp
	C-502	NH-095-1(328)	1000	85623								Construction	

Project Lengths are based on Temple Avenue Construction Baseline.



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

PROJECT MANAGER \_\_\_\_\_  
 SURVEYED BY, DATE \_\_\_\_\_  
 DESIGN BY *Dewberry* \_\_\_\_\_  
 SUBSURFACE UTILITY BY, DATE \_\_\_\_\_

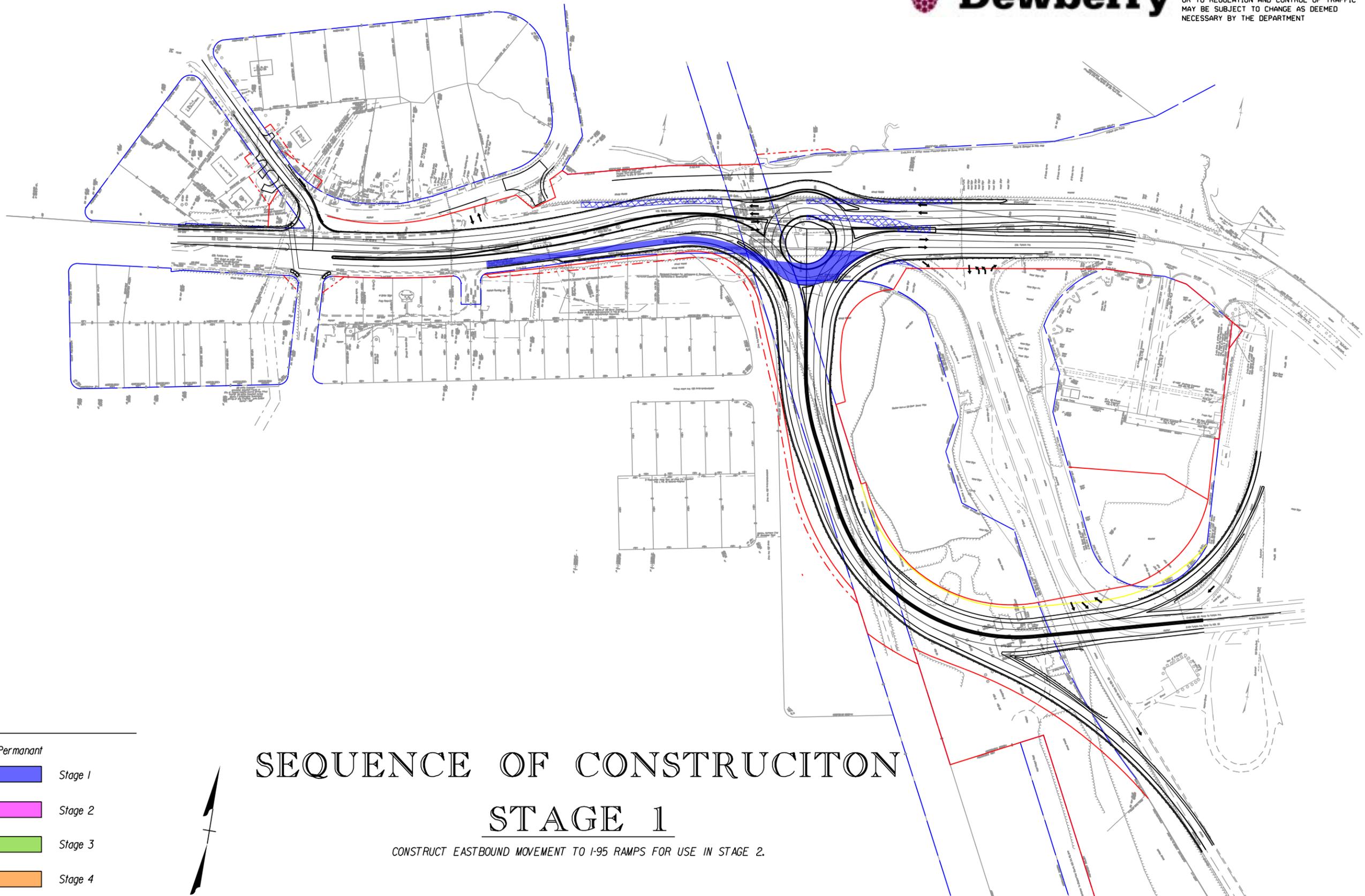
THESE PLANS ARE UNFINISHED  
 AND UNAPPROVED AND ARE NOT  
 TO BE USED FOR ANY TYPE  
 OF CONSTRUCTION OR THE  
 ACQUISITION OF RIGHT OF WAY.



LIMITED ACCESS HIGHWAY By Resolution of Highway Commission  
 dated October 4, 1956

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-106-122, C-50J, R-20I	1C(1)

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



**LEGEND**

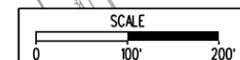
Temporary	Permanant	
		Stage 1
		Stage 2
		Stage 3
		Stage 4



# SEQUENCE OF CONSTRUCITON

## STAGE 1

CONSTRUCT EASTBOUND MOVEMENT TO I-95 RAMPS FOR USE IN STAGE 2.



PROJECT 0095-106-122 SHEET NO. 1C(1)

PROJECT MANAGER \_\_\_\_\_  
 SURVEYED BY, DATE \_\_\_\_\_  
 DESIGN BY *Dewberry* \_\_\_\_\_  
 SUBSURFACE UTILITY BY, DATE \_\_\_\_\_

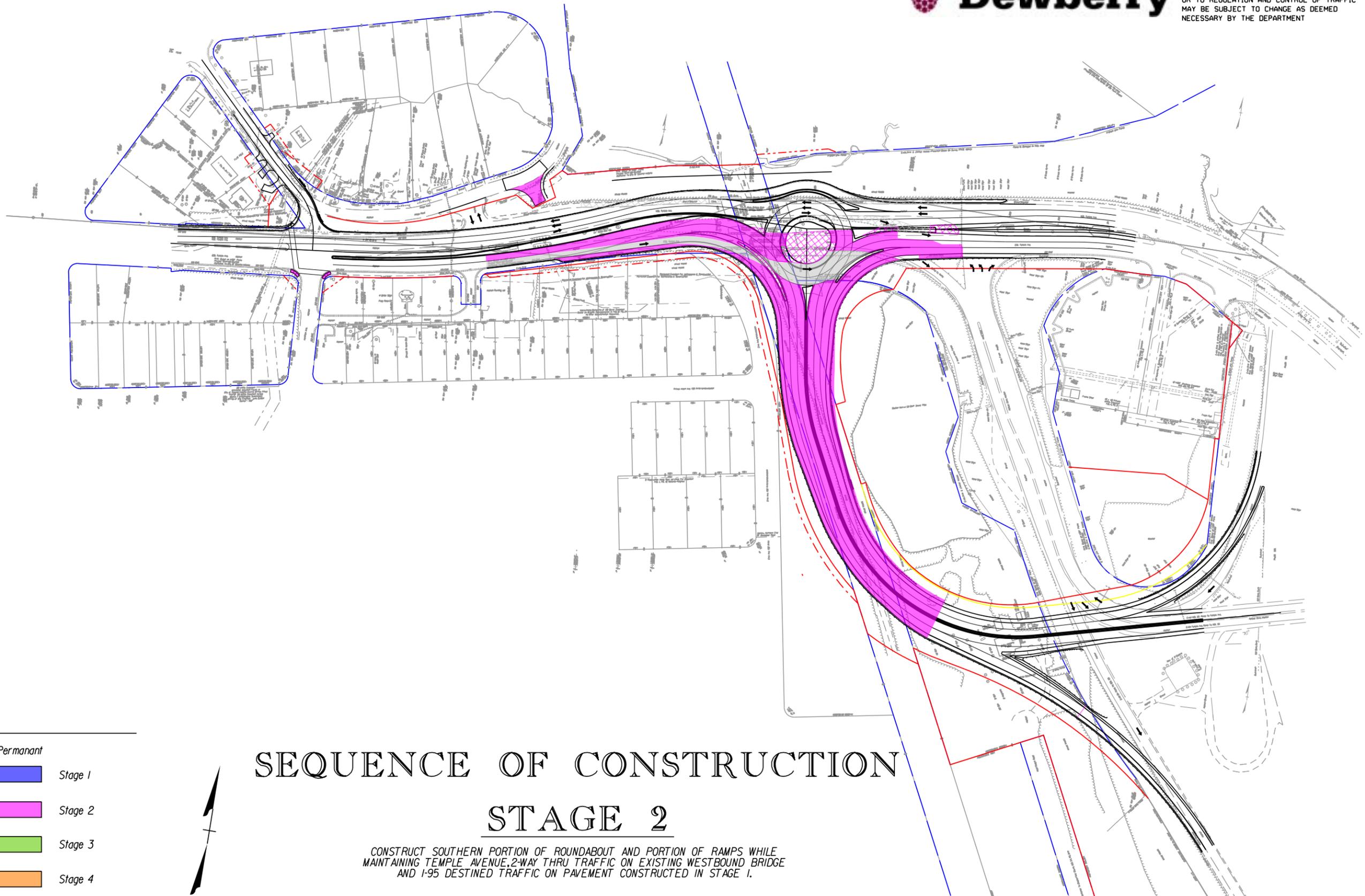
THESE PLANS ARE UNFINISHED  
 AND UNAPPROVED AND ARE NOT  
 TO BE USED FOR ANY TYPE  
 OF CONSTRUCTION OR THE  
 ACQUISITION OF RIGHT OF WAY.



LIMITED ACCESS HIGHWAY By Resolution of Highway Commission  
 dated October 4, 1956

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-106-122, C-501, R-201	1C(2)

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



**LEGEND**

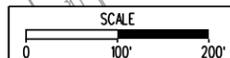
Temporary	Permanant	
		Stage 1
		Stage 2
		Stage 3
		Stage 4
		Previous Stages



# SEQUENCE OF CONSTRUCTION

## STAGE 2

CONSTRUCT SOUTHERN PORTION OF ROUNDABOUT AND PORTION OF RAMPS WHILE  
 MAINTAINING TEMPLE AVENUE, 2-WAY THRU TRAFFIC ON EXISTING WESTBOUND BRIDGE  
 AND I-95 DESTINED TRAFFIC ON PAVEMENT CONSTRUCTED IN STAGE 1.



PROJECT 0095-106-122 SHEET NO. 1C(2)

PROJECT MANAGER \_\_\_\_\_  
 SURVEYED BY, DATE \_\_\_\_\_  
 DESIGN BY *Dewberry* \_\_\_\_\_  
 SUBSURFACE UTILITY BY, DATE \_\_\_\_\_

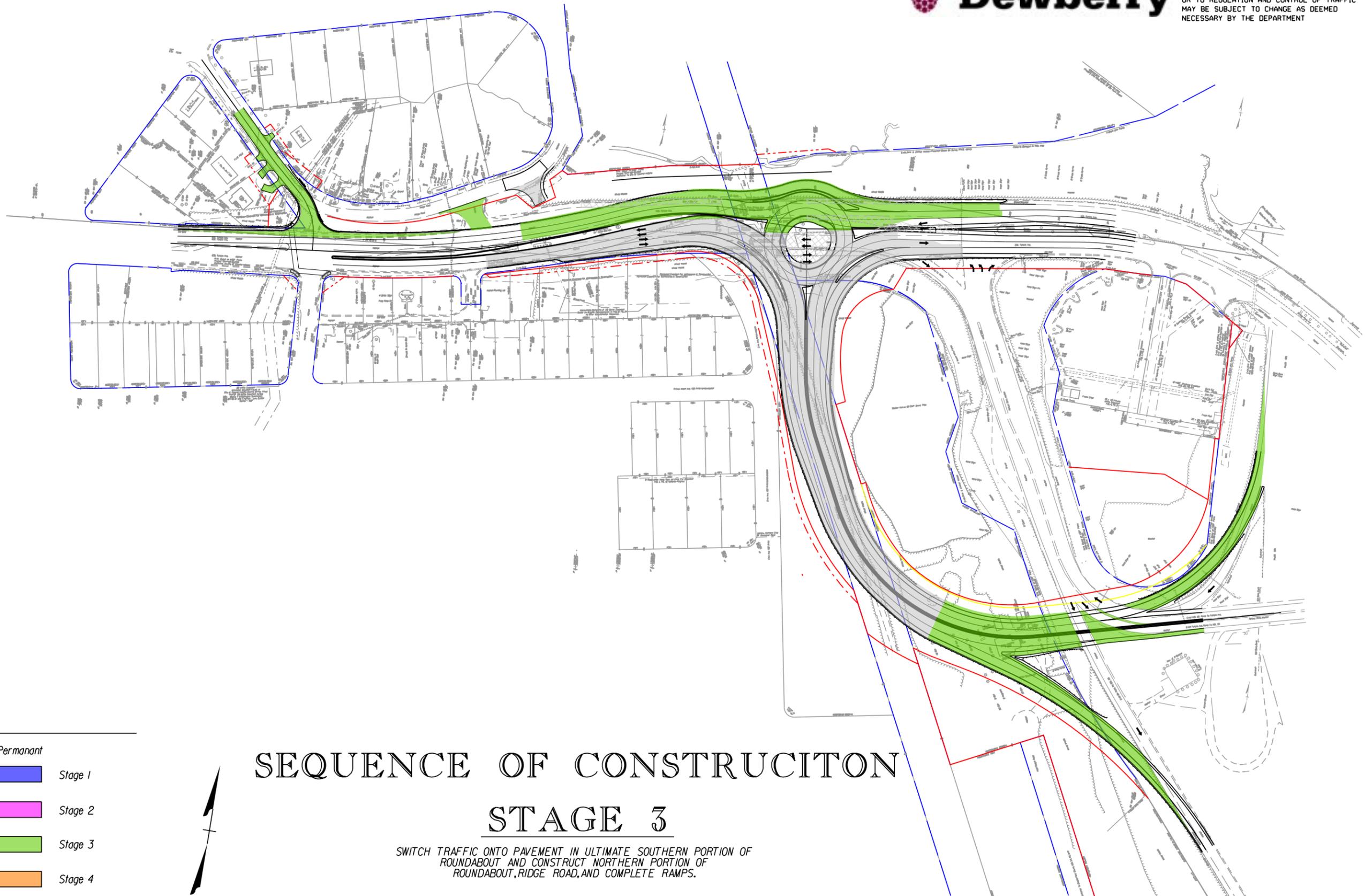
THESE PLANS ARE UNFINISHED  
 AND UNAPPROVED AND ARE NOT  
 TO BE USED FOR ANY TYPE  
 OF CONSTRUCTION OR THE  
 ACQUISITION OF RIGHT OF WAY.



LIMITED ACCESS HIGHWAY By Resolution of Highway Commission  
 dated October 4, 1956

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-106-122, C-501, R-201	1C(3)

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



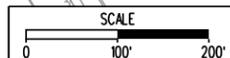
**LEGEND**

Temporary	Permanant	
		Stage 1
		Stage 2
		Stage 3
		Stage 4
		Previous Stages

# SEQUENCE OF CONSTRUCTION

## STAGE 3

SWITCH TRAFFIC ONTO PAVEMENT IN ULTIMATE SOUTHERN PORTION OF  
 ROUNDABOUT AND CONSTRUCT NORTHERN PORTION OF  
 ROUNDABOUT, RIDGE ROAD, AND COMPLETE RAMPS.



PROJECT 0095-106-122 SHEET NO. 1C(3)

PROJECT MANAGER \_\_\_\_\_  
 SURVEYED BY, DATE \_\_\_\_\_  
 DESIGN BY *Dewberry* \_\_\_\_\_  
 SUBSURFACE UTILITY BY, DATE \_\_\_\_\_

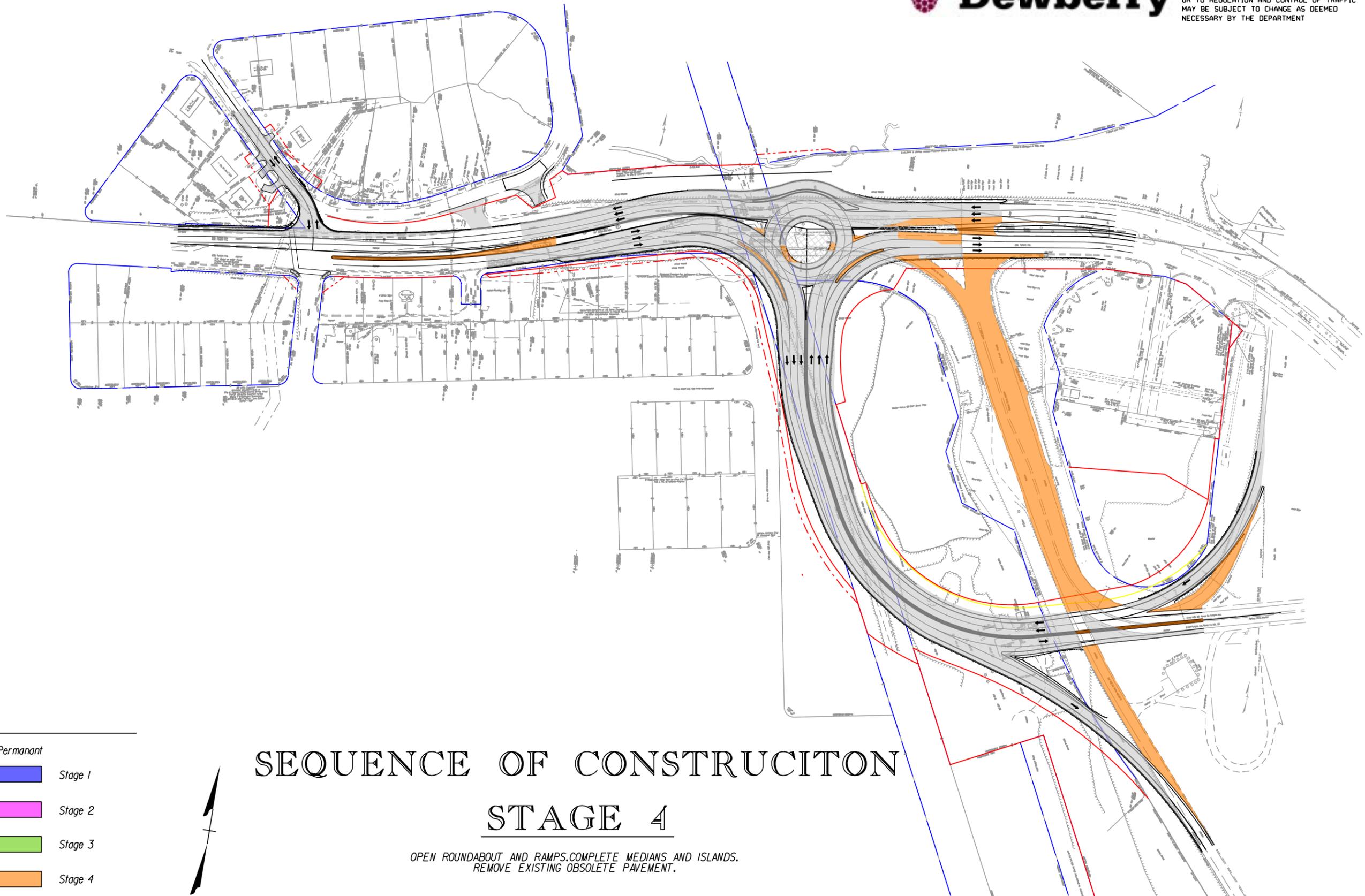
THESE PLANS ARE UNFINISHED  
 AND UNAPPROVED AND ARE NOT  
 TO BE USED FOR ANY TYPE  
 OF CONSTRUCTION OR THE  
 ACQUISITION OF RIGHT OF WAY.



LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-106-122, C-50J, R-20I	1C(4)

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



**LEGEND**

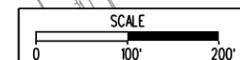
Temporary	Permanant	
		Stage 1
		Stage 2
		Stage 3
		Stage 4
		Previous Stages



# SEQUENCE OF CONSTRUCTION

## STAGE 4

OPEN ROUNDABOUT AND RAMPS. COMPLETE MEDIANS AND ISLANDS.  
 REMOVE EXISTING OBSOLETE PAVEMENT.



PROJECT 0095-106-122 SHEET NO. 1C(4)

PROJECT MANAGER Shirley Contracting Company, LLC  
 SURVEYED BY, DATE \_\_\_\_\_  
 DESIGN BY Dewberry  
 SUBSURFACE UTILITY BY, DATE \_\_\_\_\_

# TYPICAL SECTIONS

Temple Avenue  
 Urban Minor Arterial GS-6  
 Design Speed = 40 mph

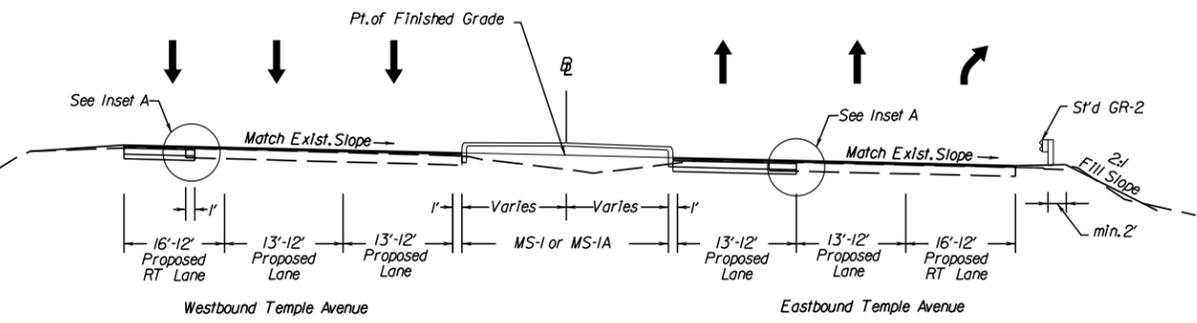
THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.



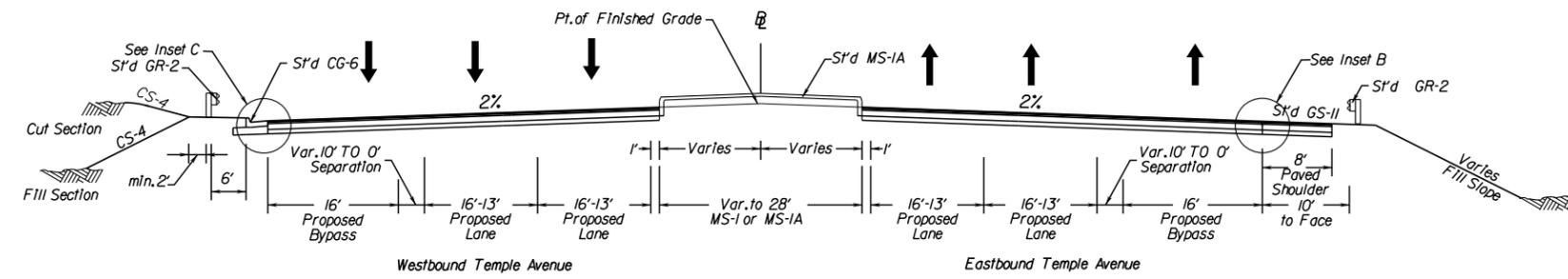
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-106-122, C-501, R-201	2A

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

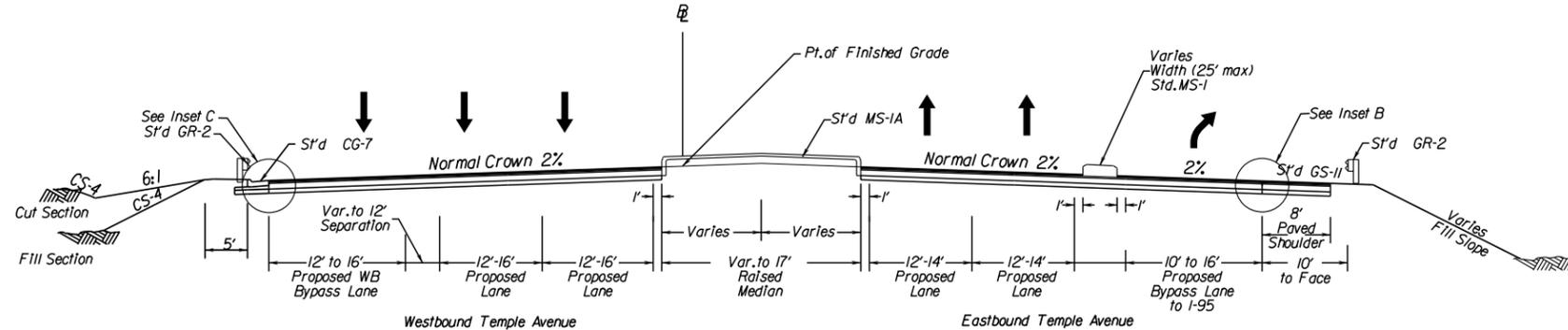
Temple Avenue - East  
 Station 14+00.00 to Station 16+50.00



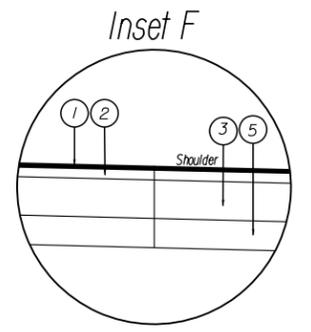
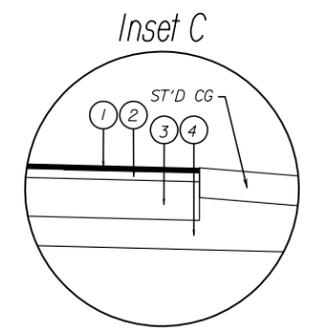
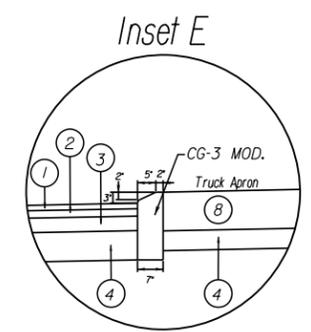
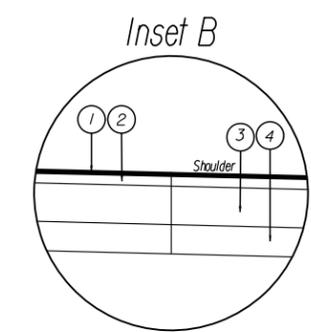
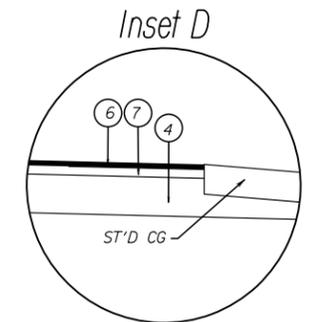
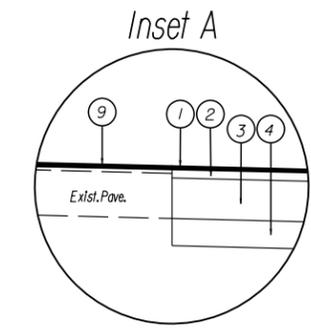
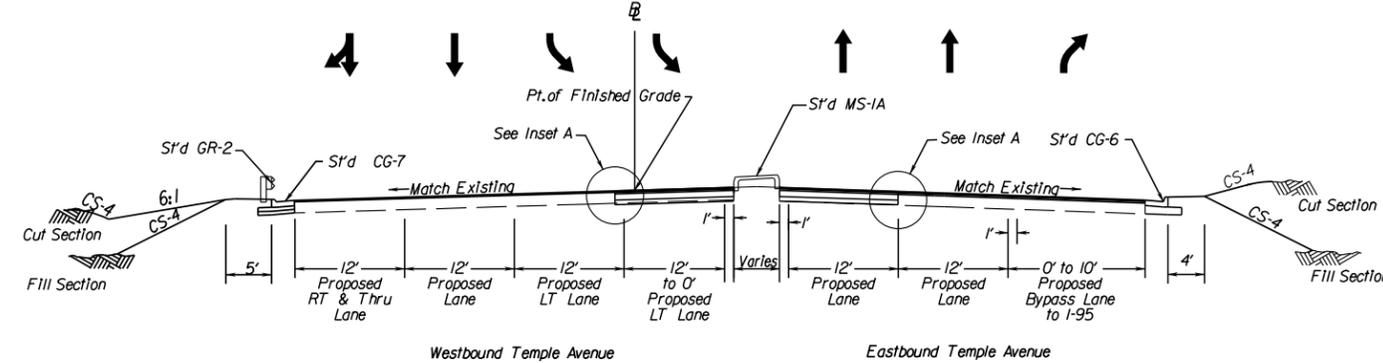
Temple Avenue - East  
 Station 11+00.00 to Station 14+00.00



Temple Avenue - West  
 Station 18+00.00 to Station 22+50.00 Connection with Roundabout



Temple Avenue - West  
 Station 10+00.00 to Station 18+00.00



- ① 2.0" of Asphalt Concrete Type SM-12.5D
- ② 3.0" of Asphalt Concrete Type IM-19.0D
- ③ 5.0" of Asphalt Concrete Type BM-25.0D
- ④ 6.0" of Aggregate Base Material Type I No. 21B
- ⑤ 10.0" of Aggregate Base Material Type I No. 21B
- ⑥ 1.5" of Asphalt Concrete Type SM-12.5D
- ⑦ 2.0" of Asphalt Concrete Type IM-19.0D
- ⑧ 10.0" of Jointed Plain/Continuously Reinforced Concrete Pavement
- ⑨ Mill 2.0" of Existing Pavement and replace with min. 2.0" of Asphalt Concrete Type SM-12.5D

Minimum CBR of 10 for all FILL material.

Not to Scale

PROJECT	SHEET NO.
0095-106-122	2A

PROJECT MANAGER Shirley Contracting Company, LLC  
 SURVEYED BY, DATE \_\_\_\_\_  
 DESIGN BY Dewberry  
 SUBSURFACE UTILITY BY, DATE \_\_\_\_\_

# TYPICAL SECTIONS

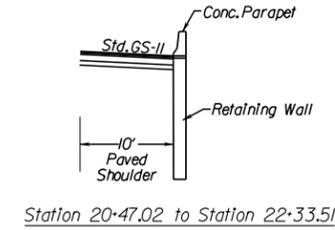
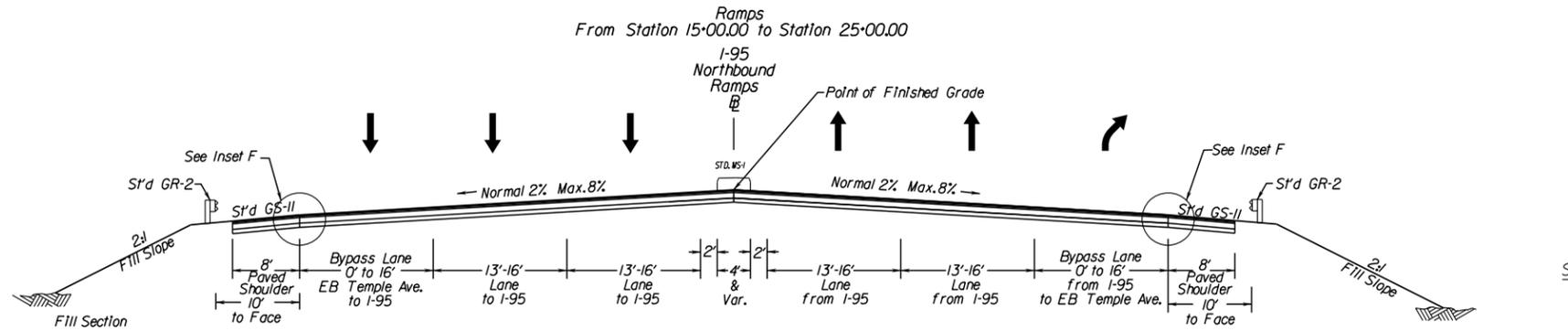
THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.



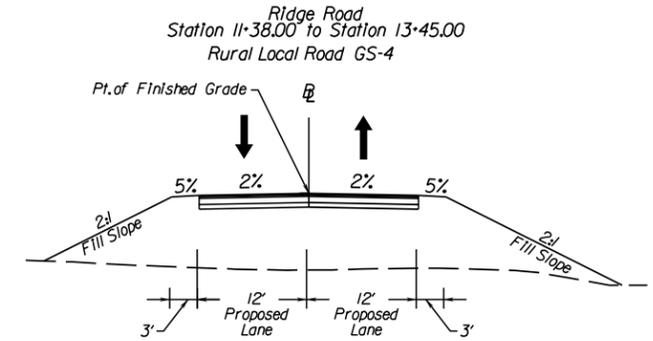
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-106-122, C-501, R-201	2B

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

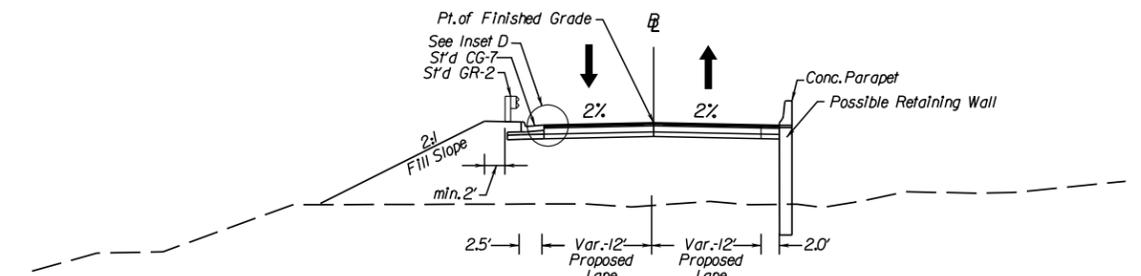
I-95 Ramps  
 Interchange Ramp GS-R  
 Design Speed 35 mph



Ridge Road  
 ADT (2011) < 400 vpd  
 Design Speed = 20 mph

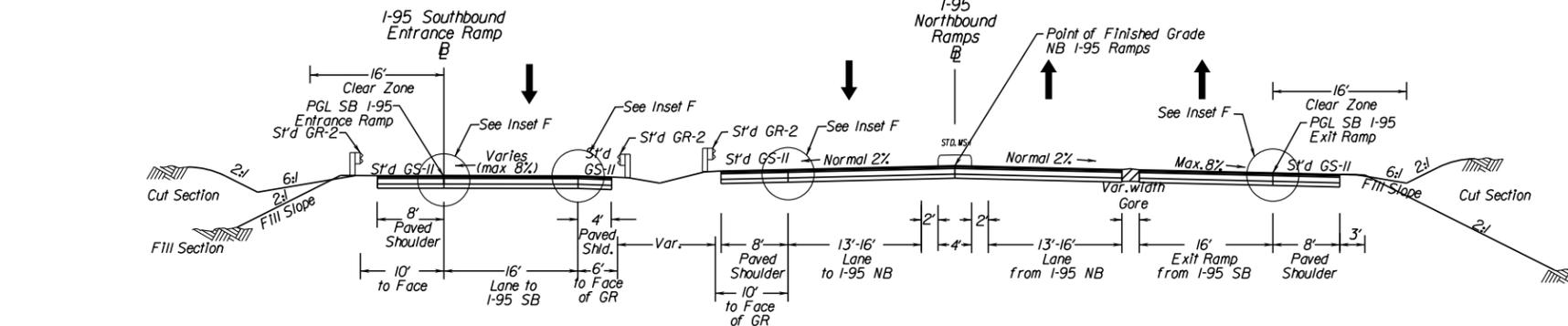


Ridge Road  
 Station 10+50.00 to Station 11+38.00  
 Urban Local Road GS-8



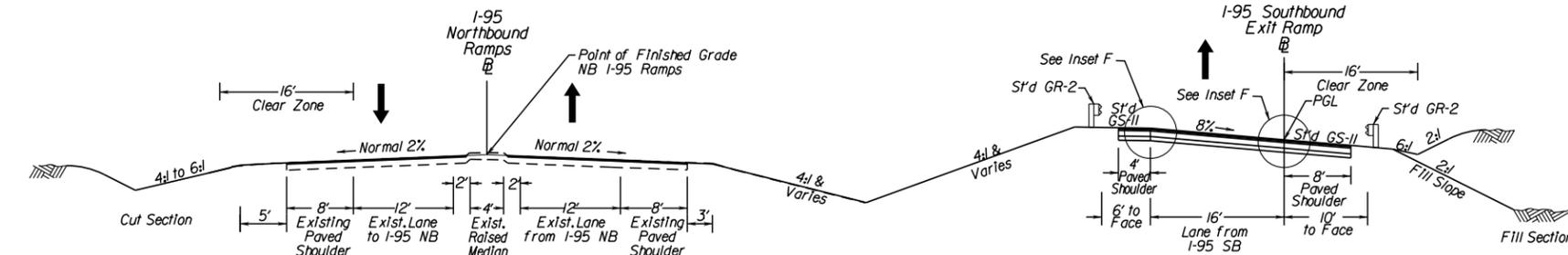
Southbound Entrance Ramp  
 From Station 10+00.00 to Station 17+00.00

Ramps  
 From Station 13+00.00 to Station 15+00.00



NB Ramps  
 From Station 11+50.00 to Station 13+00.00

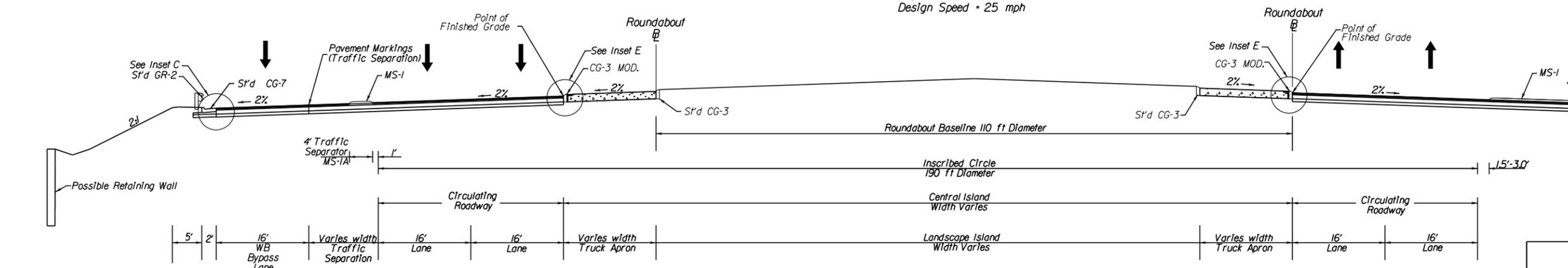
Southbound Exit Ramp  
 From Station 10+00.00 to Station 14+50.00



Westbound Temple Avenue

Temple Avenue Roundabout  
 Design Speed = 25 mph

Eastbound Temple Avenue



Not to Scale

PROJECT	SHEET NO.
0095-106-122	2B

PROJECT MANAGER \_\_\_\_\_  
 SURVEYED BY, DATE \_\_\_\_\_  
 DESIGN BY *Dewberry* \_\_\_\_\_  
 SUBSURFACE UTILITY BY, DATE \_\_\_\_\_

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REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-106-122, C-501; R-201	3

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

- LEGEND**
- Denotes Prop. New Pavement
  - Denotes Existing Pavement
  - Denotes Prop. Paved Shoulder (8' Typ. Unless Otherwise Noted)
  - Difference Between Required ROW/Easement From RFP Plans And Proposed Design Concept
  - Denotes Milling and Overlay
  - Denotes Demolition of Pavement

- - - - dot - dot - dashed lines denote Temporary Easements
- - - - dot - dashed lines denote Permanent Easements
- solid lines denote Right of Way

- C — Denotes Construction Limits in Cuts
- F — Denotes Construction Limits in Fills

Note: Additional Utility Easements may be required.

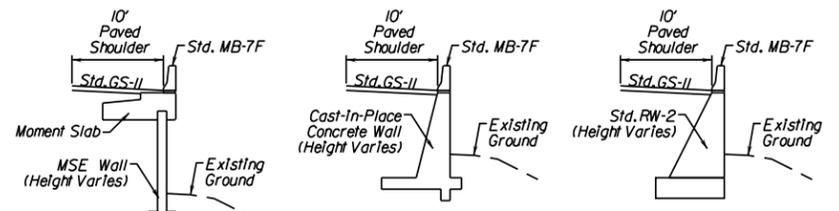
**Utility Owners**

**Water:**  
 Appomattox River Water Authority  
 21300 Chesdin Road  
 Petersburg, Virginia 23803  
 Contact: Chris Dawson  
 Telephone: 804-590-1145

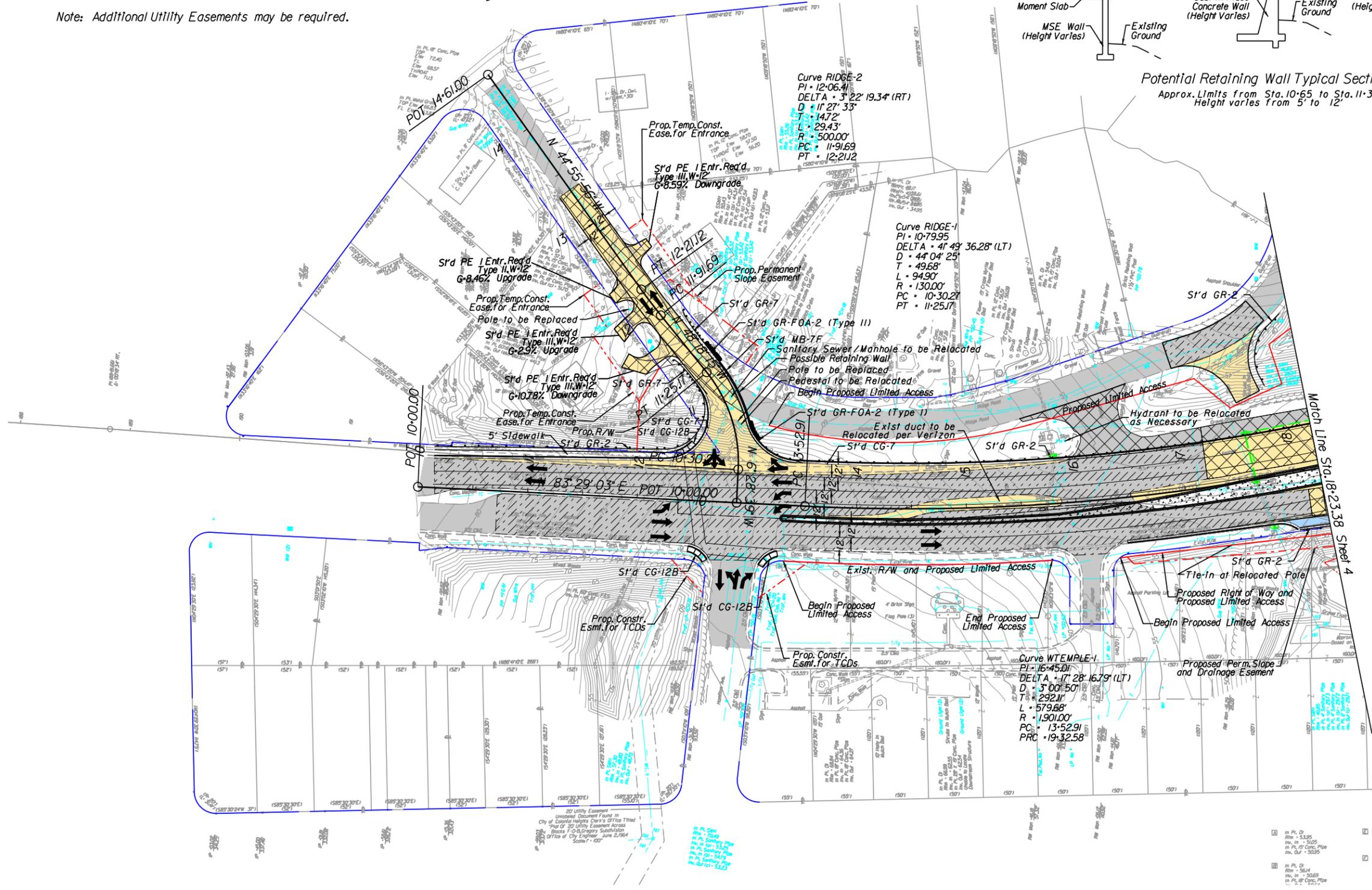
**City of Colonial Heights**  
 Department of Public Works  
 P.O. Box 3401  
 Colonial Heights, Virginia 23834  
 Contact: Brian Ashley  
 Telephone: 804-520-9336

**Gas:**  
 Columbia Gas  
 1809 Coyote Drive  
 Chester, Virginia 23836  
 Contact: Phillip Coleman  
 Telephone: 804-768-6439

**Telephone:**  
 Verizon  
 2600 Brittons Hill Road  
 Richmond, Virginia 23230  
 Contact: Ken Gilbert  
 Telephone: 804-772-5963



Potential Retaining Wall Typical Sections  
 Approx. Limits from Sta. 10+65 to Sta. 11+30  
 Height varies from 5' to 12'



in P.L. D Rev. = 5.155 in P.L. S Rev. = 5.125 in P.L. C Rev. = 5.025	in P.L. I Rev. = 1 in P.L. S Rev. = 5.125 in P.L. C Rev. = 5.025
in P.L. D Rev. = 5.154 in P.L. S Rev. = 5.025 in P.L. C Rev. = 5.025	in P.L. D Rev. = 5.154 in P.L. S Rev. = 5.025 in P.L. C Rev. = 5.025

PROJECT MANAGER \_\_\_\_\_  
 SURVEYED BY, DATE \_\_\_\_\_  
 DESIGN BY *Dewberry* \_\_\_\_\_  
 SUBSURFACE UTILITY BY, DATE \_\_\_\_\_

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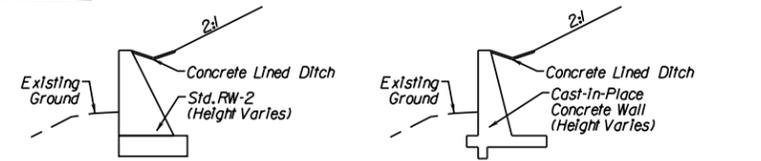
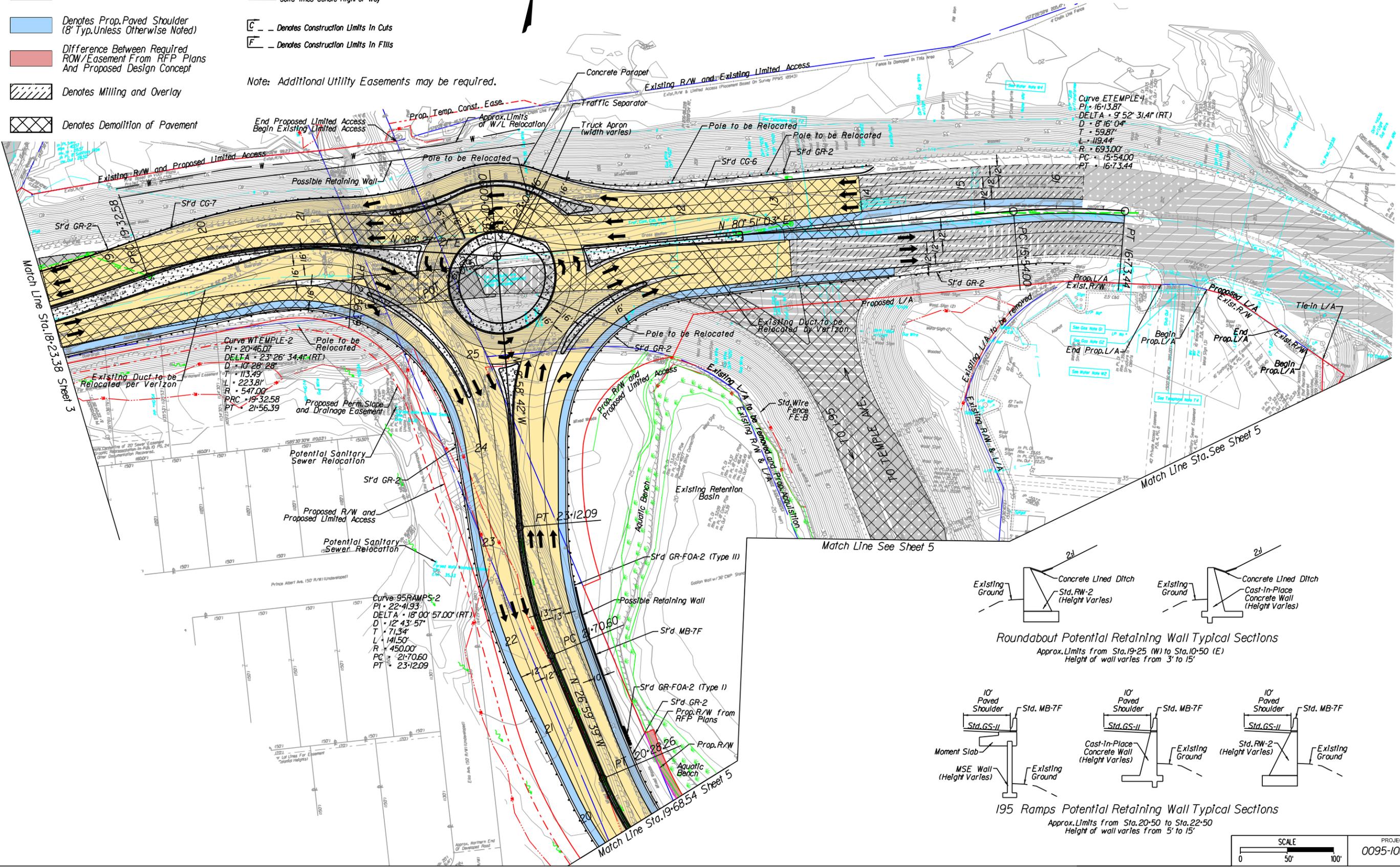


REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-106-122, C-501, R-201	4

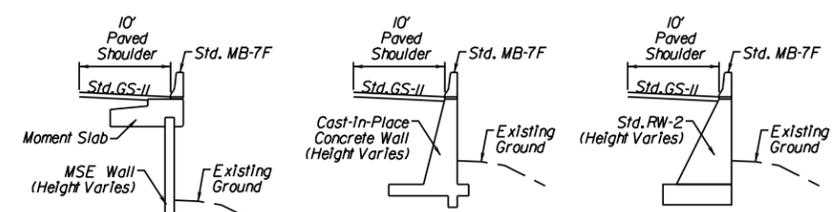
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  - Denotes Construction Limits in Fills

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Roundabout Potential Retaining Wall Typical Sections  
 Approx. Limits from Sta. 19+25 (W) to Sta. 10+50 (E)  
 Height of wall varies from 3' to 15'



195 Ramps Potential Retaining Wall Typical Sections  
 Approx. Limits from Sta. 20+50 to Sta. 22+50  
 Height of wall varies from 5' to 15'

PROJECT MANAGER Shirley Contracting Company, LLC  
 SURVEYED BY, DATE \_\_\_\_\_  
 DESIGN BY Dewberry  
 SUBSURFACE UTILITY BY, DATE \_\_\_\_\_

1"=10'  
 1"=50'  
 SCALE

THESE PLANS ARE UNFINISHED  
 AND UNAPPROVED AND ARE NOT  
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 ACQUISITION OF RIGHT OF WAY.

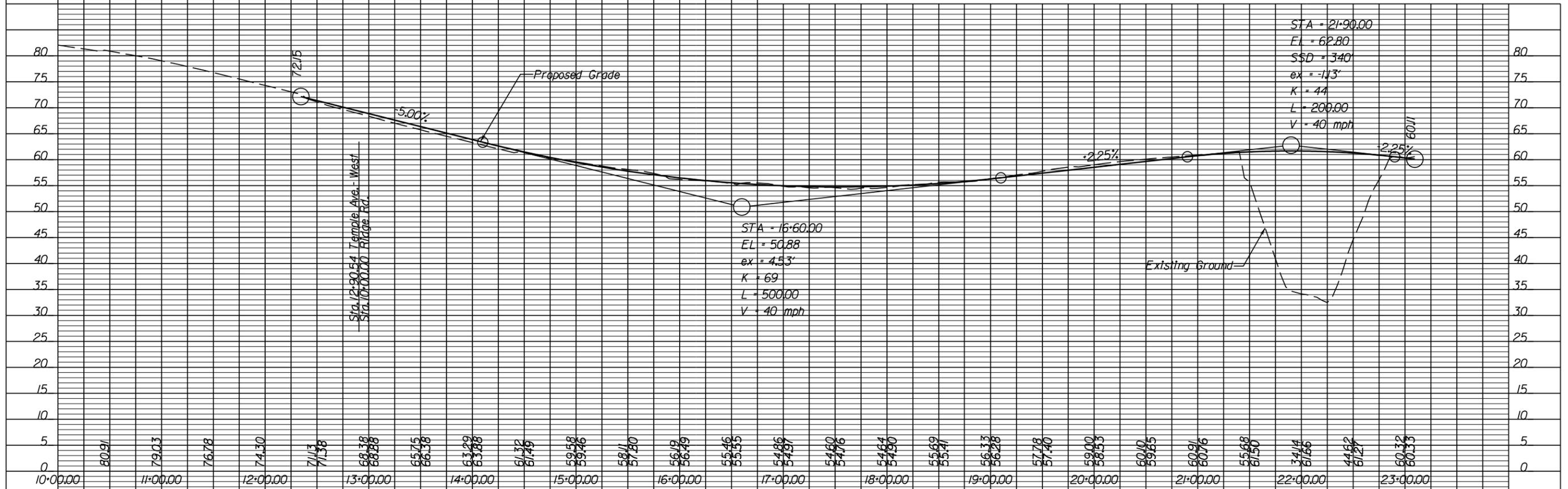


LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-106-122, C-501, R-201	4A

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

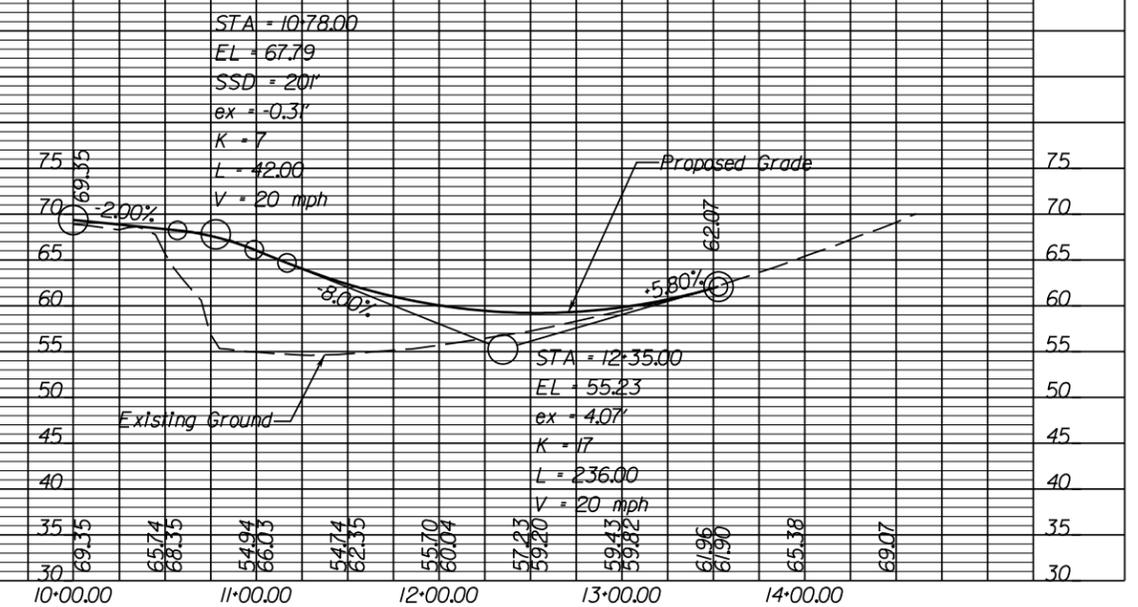
**TEMPLE AVENUE (RTE.144)**  
**Temple Ave Profile (West of Roundabout)**



**TEMPLE AVENUE (RTE.144)**  
**Temple Ave Profile (East of Roundabout)**



**Ridge Road / Brookedge Subdivision Entrance**



PROJECT MANAGER \_\_\_\_\_  
 SURVEYED BY, DATE \_\_\_\_\_  
 DESIGN BY *Dewberry* \_\_\_\_\_  
 SUBSURFACE UTILITY BY, DATE \_\_\_\_\_

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



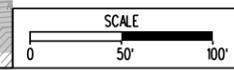
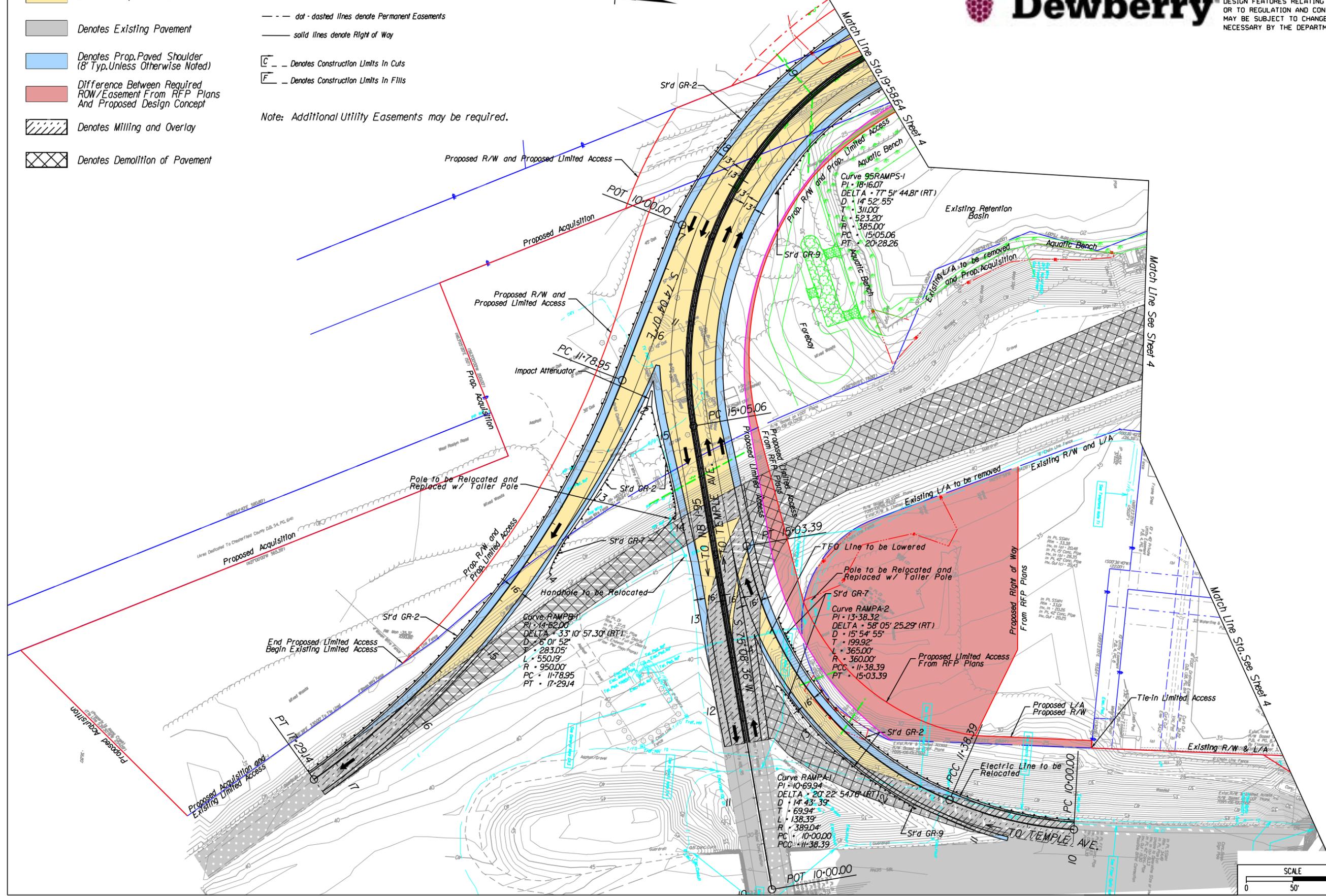
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-106-122, C-501, R-201	5

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PROJECT	0095-106-122	SHEET NO.	5
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PROJECT MANAGER Shirley Contracting Company, LLC  
 SURVEYED BY, DATE \_\_\_\_\_  
 DESIGN BY Dewberry  
 SUBSURFACE UTILITY BY, DATE \_\_\_\_\_

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REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	95	0095-106-122, C-501, R-201	5A

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