TECHNICAL PROPOSAL—VOLUME I

Original
Copy 1 of 10

Design-Build
I-95 at Temple Avenue
Interchange Improvements

Colonial Heights, Virginia

From: 0.041 Mi. West of Hamilton Avenue
To: 0.069 Mi. East of Existing I-95 Ramp

State Project No.: 0095-106-122

Federal Project No.: NH-095-1(328)

Contract ID No.: C00085623DB74

November 7, 2014

Submitted to:

VDOT
Virginia Department of Transportation

Prepared by:

CORMAN CONSTRUCTION | AMT

4.1 Letter of Submittal

CORMAN CONSTRUCTION

12001 Guilford Road
Annapolis Junction, MD 20701

Tel: 410-792-9400 Balt
Tel: 301-953-0900 DC
Fax: 301-953-0384

November 7, 2014

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

RE: Design Build I-95 at Temple Avenue Interchange Improvements / State Project No.: 0095-106-122 / Federal Project No.: NH-095-1(328) / Contract ID#: C00085623DB74 / Letter of Submittal

Dear Mr. Stevenson:

4.1.1 Corman Construction, Inc. (Corman) 12001 Guilford Road, Annapolis Junction, MD 20701 is the legal entity who will execute the contract with VDOT. Corman hereby submits the following:

- Ten copies of our Technical Proposal, one which bears original signatures on the Letter of Submittal
- One CD-ROM containing the entire proposal in a single cohesive Adobe PDF file and Schedule.

4.1.2 Corman intends, if selected, to enter into a contract with VDOT for the project per the RFP.

4.1.3 Pursuant to Part 1, Section 8.2, Corman hereby declares that the offer represented by the Technical and Price Proposals will remain in full force and effect for 120 days after the date the Technical Proposal is actually submitted to VDOT (11/7/14).

4.1.4 Point of Contact	4.1.5 Principal Officer
Jo Ellen Sines, DBIA **Vice President Project Development** Corman Construction, Inc. 12001 Guilford Road Annapolis Junction, MD 20701 410-792-9400 Telephone / 301-953-0384 Fax jsines@cormanconstruction.com	**Arthur C. Cox, III** **Vice President** Corman Construction, Inc. 12001 Guilford Road Annapolis Junction, MD 20701 410-792-9400 Telephone ccox@cormanconstruction.com

4.1.6 Final Completion Date: 11/10/17

4.1.7 Proposal Payment Agreement (Attachment 9.3.1) has been signed and is in the Appendix.

4.1.8 Certification Regarding Debarment Form(s) Primary Covered Transactions (Attachment 11.8.6(a) and **Certification Regarding Debarment Form(s) Lower Tier Covered Transactions (Attachment 11.8.6(b)** have been signed and are in the Appendix.

Sincerely,

CORMAN CONSTRUCTION, INC.

Arthur C. Cox, III, Vice President

4.2 Qualifications

4.2 QUALIFICATIONS

4.2.1 The information and statements made in our SOQ remain true and accurate in accordance with Part 1, Section 11.4. The organization chart and narrative as provided in our SOQ is wholly incorporated into this technical proposal by reference. As previously approved by VDOT, changes to our Organization chart below include: Chris Rutkai, P.E. as Construction Manager, Jason Dodge, CHST as Safety Manager and Aaron Straebel as Utility Manager.

4.2.2 ORGANIZATIONAL CHART

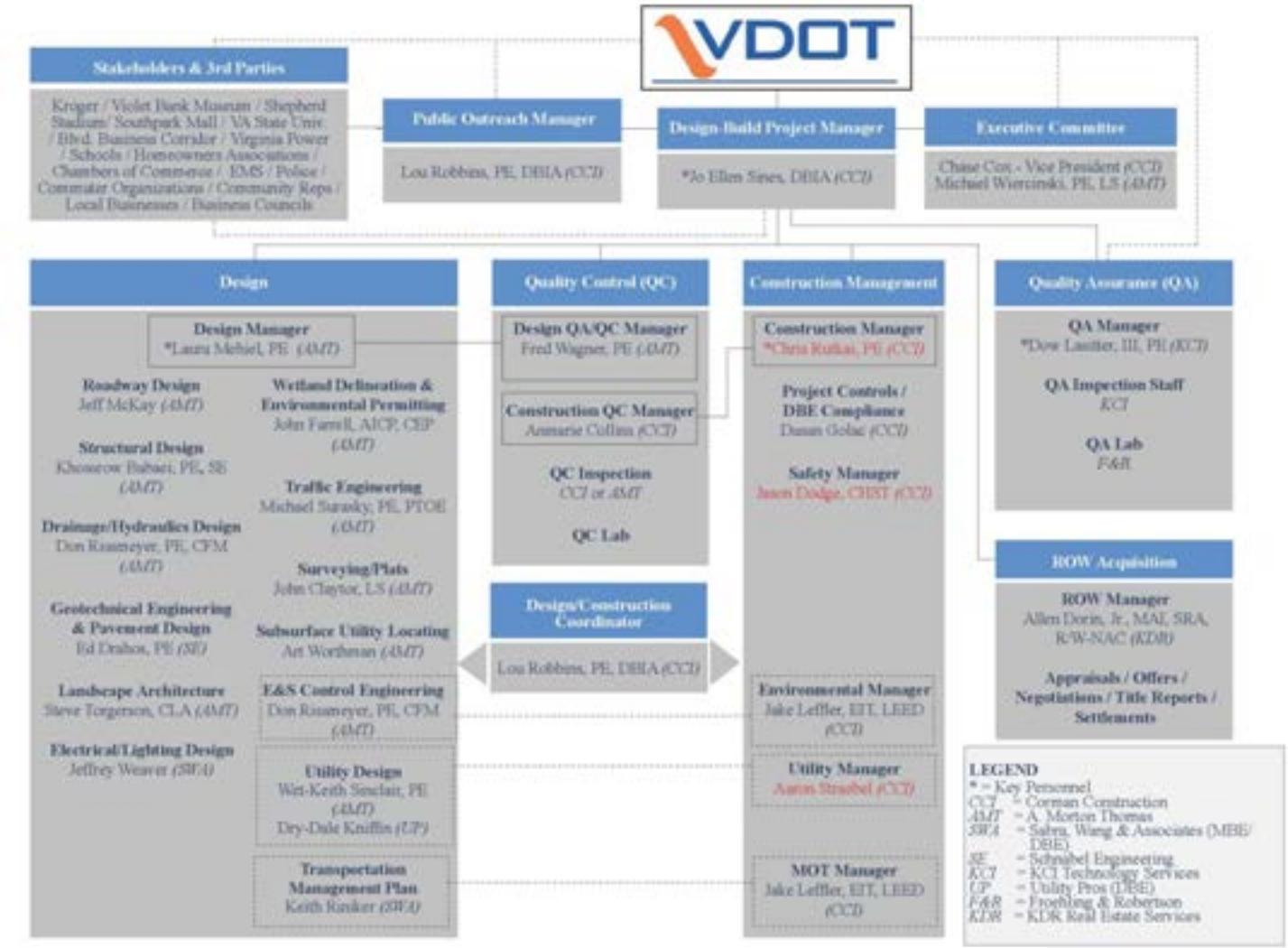


Figure 1: Organizational Chart

4.3 Design Concept

4.3 DESIGN CONCEPT

4.3.1 CONCEPTUAL ROADWAY PLANS

Design exceptions or waivers are not required, except as listed in the RFP. Listed below are our significant enhancements to VDOT's RFP Concept Plans:

SIGNIFICANT ENHANCEMENTS WITHIN CORMAN DB TEAM'S CONCEPT DESIGN:

1.	**Horizontal Alignments:** Modified Temple Avenue westbound by-pass lane geometry to accommodate WB-67 design vehicle.
2.	**Typical Section:** Reduced pavement width of I-95 ramps in multi-lane sections to conform to AASHTO standards for turning roadways. This provides additional horizontal clearance between the I-95 ramp retaining wall and the existing pond. Extended MS-1 median strip between westbound by-pass lane and westbound through lane from roundabout to just east of the Hamilton Ave./Ridge Road intersection to prevent weaving into the Hamilton Ave. left turn lanes. Added asphalt curb under guardrail to shoulder sections in high fills to reduce slope erosion and facilitate storm drainage.
3.	**Vertical Alignment:** Lowered roundabout approximately 5 feet resulting in less roadway embankment, shorter retaining walls, and reducing the risk of settlement.
4.	**Retaining Walls:** Shortened the height of retaining walls by lowering the proposed roadway grades at the roundabout and I-95 ramps. The retaining wall along the north side of Temple Ave. was extended to avoid impacts to the 24" ARWA water main and stream, and to minimize encroachment into the Old Town Creek floodplain.
5.	**Minimizing Environmental Impacts:** Avoided impacts to stream and minimized encroachment into the Old Town Creek floodplain by extending retaining wall along the north side of Temple Ave. Eliminated RFP proposed SWM basin behind the Hardees/Kangaroo service station. This area may contain contaminated soils as identified in the RFP.
6.	**Stormwater Management:** Utilized the existing pond as the stormwater management facility for the project. Our concept includes a minimum 10' wide bench adjacent to the proposed I-95 ramps to prevent seepage and provide maintenance access, a new riser structure and outfall pipe under the existing I-95 ramps, 3:1 basin slopes, and additional capacity to capture and treat stormwater runoff from the adjacent residential neighborhood located southwest of the roundabout. Currently the neighborhood stormwater runoff drains along the west side of the CSX railroad bed and crosses Temple Ave. via a 30"CMP where it discharges into a tributary of Old Town Creek. Our concept eliminates the Temple Ave. crossing and redirects the untreated neighborhood runoff into the project stormwater facility.
7.	**Maintenance of Traffic:** Developed Sequence of Construction Plan which allows the existing intersection and traffic signal to remain in full service until roundabout construction is complete. This eliminates the need for temporary signalization and reduces the number of traffic shifts during construction which can confuse drivers. Our MOT/SOC concept also maintains two through lanes on Temple Ave. in each direction for the majority of the construction phase.
8.	**Utilities:** Avoided impacts to the 24" ARWA water main by extending the retaining wall in both directions along the north side of Temple Ave.

Table 1: Significant Enhancements within Corman DB Team's Concept Design

Roadway Geometry: The proposed geometric improvements to Temple Avenue and the I-95 ramps will be designed in accordance with VDOT Road Design Manual (RDM), Appendix A. Within the project limits, Temple Avenue is classified as an Urban Minor Arterial roadway (VDOT Std. GS-6) with a 40 mph design speed. The I-

95 northbound and southbound ramps are classified as Urban Interstate Ramps (VDOT Std. GS-R) with proposed design speeds of 35 mph. The proposed intersection of the realigned ramps and improved Temple Avenue is being constructed as a dual lane roundabout with right turn bypass lanes on two of the approaches and a bypass lane on the Temple Avenue westbound approach. The design speed of the roundabout and associated bypass lanes is 25 mph.

Temple Avenue's existing vertical alignment is substandard and does not provide adequate stopping sight distance (SSD) for the crest vertical curve over the existing railroad bed. Heavy traffic volumes on Temple Avenue and ramps often result in traffic backing up onto I-95 during peak hours. The existing I-95 northbound ramp yield condition at the intersection of the I-95 southbound and northbound exit ramps is problematic as well with extended queues on the northbound exit ramp and unsafe conditions as drivers accelerate from a stopped condition to find an opening in the heavy southbound ramp traffic. ***BENEFITS:*** **Removing this yield condition, constructing the dual-lane roundabout and lowering Temple Avenue over the railroad bed and providing adequate SSD will alleviate the unsafe conditions at this location.**

Roadside Design: Temple Avenue will be constructed with a combination of CG-6 curb and gutter and 8' paved shoulder sections. The I-95 ramps will be constructed only with shoulder sections. In fill areas where guardrail is required, Standard GR-2 guardrail will be installed at the face of curb in curbed sections and 10' from the edge of travel way in shoulder sections (6' for I-95 ramp left shoulders). In high fill areas with open shoulders and guardrail, asphalt curb under guardrail (Standard MC-4) will be used to prevent slope erosion and channel stormwater runoff to adequate outfall locations. Where there are MSE retaining walls, fixed object attachments will be used to connect the guardrail to the concrete barrier. Recoverable slopes will be provided within clear zone areas where there is no guardrail. Fill slopes will generally be 2:1 behind guardrail or flatter as needed based on grading requirements.

Pavement Design: The Corman DB Team assumes that pavement sections are per the RFP and Addendum #1. During the Scope Validation period, subsurface investigations will verify the VDOT pre-bid assumptions and revised pavement designs will be provided, if required.

Design Coordination with Kroger Development: It is Corman DB Team's understanding that a portion of the work shown on the RFP plans may be constructed by the Kroger development depending on the phasing of their project. Per VDOT's direction, our concept plan and approach to the Temple Avenue project assumes the Kroger development will NOT be in place prior to the VDOT project. The Corman DB Team's concept stands alone and can be constructed as shown in our Technical Proposal. Since only a single left turn lane exists today at the Hamilton Avenue intersection, a pavement striping modification would need to be made to reflect a single left turn lane in lieu of the dual left turns shown on the concept plans. The Corman DB Team is committed to working with VDOT, City of Colonial Heights, and Kroger after award to make changes to our proposal to accommodate the Kroger Development.

Noise Walls: Findings of the Preliminary Noise Analysis Technical Report (May 2013) and the final Noise Abatement Design Report (October 2013) indicate that noise mitigation measures are not required based on the RFP plans. Should *"substantial"* (as defined in RFP, Sec. 2.4.8) roadway geometric changes occur between the RFP plans and the Corman DB Team's final plans, a revised NADR will be prepared and submitted to the Department. Our Conceptual Roadway Plans in Volume II are not substantially different from the RFP concept plans and, therefore, do not include any noise mitigation measures.

Retaining Walls: Proposed MSE retaining walls are shown at three individual locations on our Concept Plans. **Wall No. 1** is located along the east side of the Ridge Road entrance to minimize fill slope encroachment and maintain driveway access to the Harris Property; **Wall No. 2**is located along the north side of Temple Avenue and the roundabout and is proposed to avoid stream impacts, avoid relocation of the ARWA 24" water

transmission main, minimize right-of-way and easement needs, minimize impacts to the Old Town Creek floodplain, and reduce embankment requirements; and **Wall No. 3** is located along the east side of the I-95 exit ramps and is proposed to avoid impacts to the existing pond/proposed SWM facility on the Goddard Property. We provided a table in Section 4.4.3 of our proposal that provides additional information regarding these three proposed retaining walls.

During final design, other walls may be added or Walls No. 1 through 3 modified to reduce or avoid impacts to environmentally-sensitive areas, existing utilities or certain properties. A concrete barrier with an MB-7F shape will be installed along the top of each wall and VDOT standard guardrail/fixed-object attachments will be installed at the end of each wall to protect motorists from the approaching fill slopes and blunt end of each concrete barrier. The Corman DB Team proposes to use VDOT approved MSE walls for the three retaining walls shown in our proposal.

Public Utilities: The Corman DB Team accounted for relocation costs and schedule durations for the anticipated utility impacts as shown on the Concept Plans and further detailed in Section 4.4.1. Our Team will design and construct the required relocations/adjustments of wet utilities and VDOT communication facilities.

Stormwater Management Design Concept: The Corman DB Team's stormwater management (SWM) approach follows VDOT Standards, Specifications and RFP requirements. Our proposed concept is to utilize and expand the existing pond located on the Goddard property as the only project SWM facility. Conversion of the existing pond to a regulated SWM facility would include excavation to increase storage capacity, a minimum 10' wide bench adjacent to proposed roadway embankments, 3:1 or flatter side slopes, and a new riser structure and outfall pipe under the existing I-95 ramps to the existing drainage ditch on the east side of the ramps. We evaluated this pond from a geotechnical and stormwater management design standpoint and determined that these improvements will meet or exceed Part IIC of the VSMP regulations. This project is grandfathered under the "old" technical criteria for stormwater management design which includes the use of Performance-based methodology for water quality requirements and MS-19 criteria for outfall channel adequacy. Our approach includes treating the off-site runoff from the adjacent neighborhood southwest of the roundabout. Currently the stormwater runoff from this neighborhood drains along the west side of the abandoned CSX railroad bed to a 30" CMP under Temple Avenue, where the untreated runoff discharges into a tributary of Old Town Creek. ***BENEFITS:***

1. ***Our concept intercepts this off-site runoff prior to crossing under Temple Avenue and redirects it through a culvert under the proposed I-95 ramps into the proposed SWM facility for treatment. This also allows for the old existing 30" CMP (which we suspect is in poor condition) under Temple Avenue to be abandoned and plugged.***
2. ***Our concept eliminates the ROW taking for the RFP concept plan basin behind the Kangaroo service station and Hardees which we suspect may be contaminated. This also reduces future VDOT maintenance costs in that only one pond is now required.***
3. ***The existing pond is stagnant, has poor water quality, and serves as a breeding ground for mosquitoes. These conditions would be improved by converting the pond to a stormwater facility which would provide continuous replenishment and movement of water during a storm event.***

Storm Drainage Systems and Culvert Design: The Corman DB Team will inspect existing inlets, pipes, culverts, and BMPs and recommend cleaning or repairs as necessary. The storm drainage system design will include the required drainage descriptions, storm sewer profiles, and any special drainage details. Storm system design will be performed per VDOT Drainage Manual, Chapters 6 and 9. Culvert crossings will be designed per Chapters 6 and 8.

Open drainage channels design will meet MS-19 requirements for adequate receiving channels. Natural channels will convey the runoff from a two-year storm under post-developed conditions without overtopping the banks or eroding. Manmade ditches/channels will convey the 10-year storm event without overtopping and prevent erosion during a two-year storm. Ditch lining requirements based on flow velocity will be designed per Chapter 7 of the Drainage Manual.

Design calculations for stormwater management, storm drainage systems, culverts and ditches/channels will be provided along with the plans for review at the milestone submittals.

Erosion and Sediment Control: The Corman DB Team will design erosion and sediment control measures per VDOT Drainage Manual, Chapter 10 and pertinent I&IMs. The Erosion and Sediment Control (E&SC) Plan will be multi-phased comprised of stabilized construction entrances at all construction egress locations. Temporary silt fence will be placed along the project perimeter and at proposed toe of fill slopes. Storm drainage structures and culvert inlet ends, both existing and proposed, will be treated with an inlet protection device to protect downstream waterways. Proposed SWM facilities will be used as temporary sediment basins during construction, where feasible, although additional temporary sediment traps are anticipated. E&SC Plans will go through an internal quality control review for constructability and to ensure proposed temporary measures are contained within existing or proposed right-of-way or temporary/permanent easements. The VDOT approved E&SC Plans will be included in the project SWPPP and maintained on-site during construction.

Environmental Permitting: The Corman DB Team determined that permits will be required from multiple agencies and agency coordination may reveal additional required permits. The following table identifies the required or anticipated environmental permits/approvals we will need to secure prior to construction.

ANTICIPATED ENVIRONMENTAL PERMITS

Permit/Approval	Jurisdictional/Approval Agency	Approximate Review Period	Comments
NW Permit 6	USACE	45 days	For geotechnical drilling activities in wetlands and un-named tributaries of Old Town Creek.
NW Permit 23	USACE	45 days	For construction projects with stream and/or wetland impacts that have an approved Categorical Exclusion (CE).
VWP Permit (if required)	VDEQ	45 days	For Linear Transportation Projects proposed within, under, or over un-named tributaries to Old Town Creek or other regulated sub-aqueous bed.
Virginia Stormwater Management Program(VSMP) Permit	VDEQ	90 days	For stormwater discharge from construction activities.
Erosion & Sediment Control Plan Approval	VDOT	3 weeks	For Erosion &Sediment Control plan approval and implementation per VDOT Standards and Specifications.
Stormwater Management Plan Approval	VDOT	3 weeks	For SWM Plan approval per VDOT Standards and Specifications.
Landscape Plan Approval	VDOT in coordination with City of Colonial Heights	Landscaping Plan to be	Coordination with City of Colonial Heights.

		developed during final design.	
Floodplain Study Approval	VDOT / FEMA	3 weeks	For fill material placed in 100-year floodplain of Old Town Creek.

Table 2: Anticipated Environmental Permits

Our Team will investigate and coordinate permit requirements by jurisdictional authorities early in design. One-on-one or agency-wide permit scoping / pre-application meetings will be held onsite with agency representatives to discuss issues, preliminary impacts, avoidance / minimization measures, schedules and permit issuance timeframes. Productive pre-application agency meetings lead to faster application regulator reviews because they know what to expect. Faster reviews are key to keeping the project on schedule. These meetings will continue as necessary throughout construction.

Our permitting representatives will discuss and lay out the permitting schedule for agency comment and response, then adjust as necessary. Face-to-face, proactive meetings positions the Team to understand and address agency concerns / issues early on in design. Recognizing limited agency staff resources, our Team will plan meetings with clearly-defined agendas and action items so they are kept to a minimum. We will request interagency meetings when multiple, potentially conflicting, issues are at stake. During the permitting and plan design process, the Team will focus on minimizing environmental risks to VDOT.

Floodplain Study: The Corman DB Team determined that construction of the proposed roundabout will result in minor quantities of fill material being placed in the 100-year floodplain of Old Town Creek along the north side of Temple Avenue. We do not anticipate that a CLOMR or LOMR will be required, however, there needs to be a floodplain study during design to document a "no-rise" condition. Hundred year floodplains were documented as *"Not Present"* in the Categorical Exclusion (CE) prepared by VDOT. Our proposal includes the preparation of this minor floodplain study. We do not anticipate that the results of the floodplain study will necessitate another Public Hearing, however, it is recommended that VDOT update the CE and secure approval from FHWA to reflect the correct condition. The FEMA floodplain map for the project area and the potential area of impact based on our concept plan is shown in **Figure 2:**

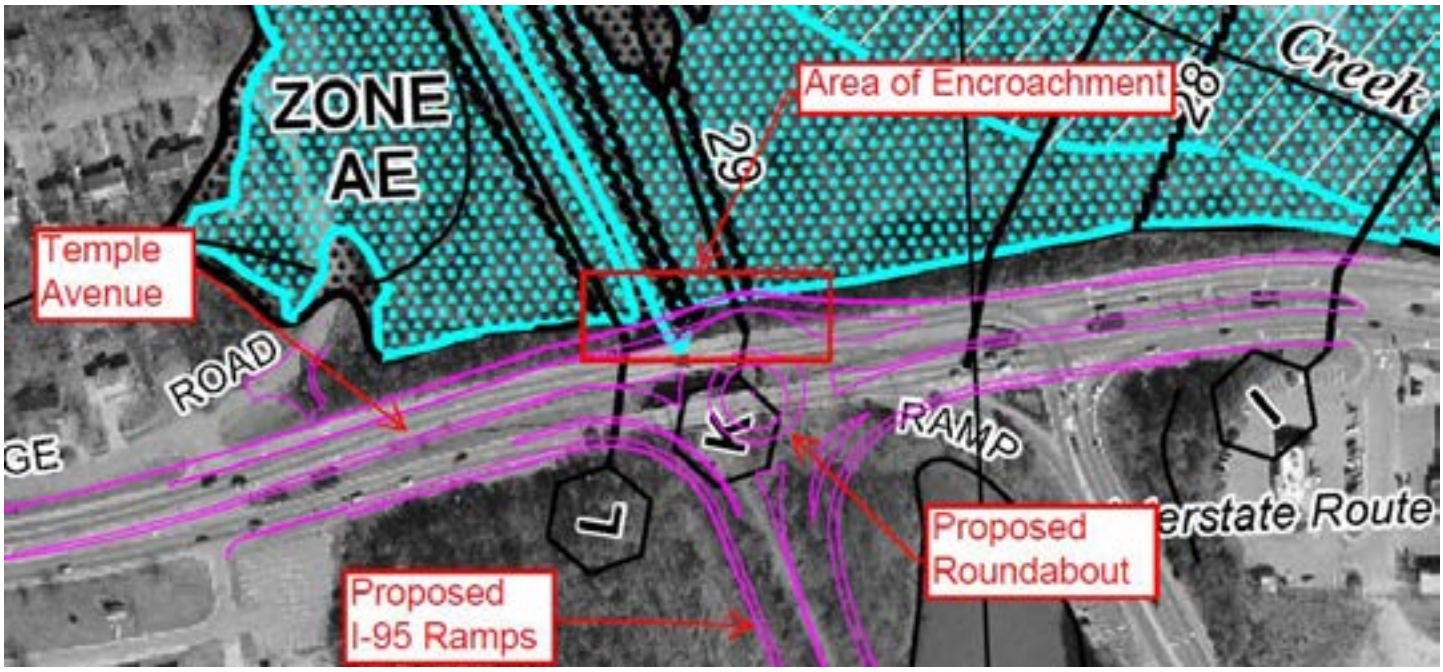


Figure 2: FEMA floodplain map

Signing and Pavement Markings, Traffic Signals, Lighting and Landscaping Design

Signing and Pavement Markings: An inventory will be taken of existing signs within the project limits. Impacted existing signs and adjacent roadway signs requiring relocation and/or revisions due to the project will be upgraded and/or replaced. GuidSIGN software will be used to design the sign panels. The signing plans will be at one inch = 50 feet scale and show proposed sign messages, sign designations, sizes, structure type, and location. Sign supports will be standard VDOT sign structures. A schedule of pavement markings, any delineation devices and signs (existing to be removed/relocated and proposed), and sign elevations with the sign supports will be in the final plans.

Roundabout signing will be prepared per the *MUTCD* and *NCHRP Report 672 Roundabouts–An Informational Guide.* Advanced roundabout guide signs, intersection lane control signs for roundabouts, advanced warning signs, regulatory signs, object markers, and advanced street name signs will be provided on the approaches.

Pavement marking materials will be per the RFP. Permanent edge, center, and skip lines will be Type B Class I thermoplastic, except for I-95, which will be Type B, Class VI. Snow-plowable raised pavement markers will be installed on the proposed I-95 ramps and replaced on Temple Avenue where previously installed per the RFP.

Proposed overhead signs will be illuminated per the RFP. Sign lighting shall be designed and constructed per VDOT *Traffic Engineering Design Manual*, Section V – Roadway Lighting, Chapter 4, Section 4.5.1, VDOT *Road and Bridge Standards,* VDOT *Road and Bridge Specifications,* Section 705, and the MUTCD. Overhead sign structures will be located as generally shown on Sheet 8 of our Concept Plan. Our proposal also includes the complete replacement of the overhead signs and sign structure along I-95 at the beginning of the proposed southbound exit ramp improvements. The replacement of this structure is reflected on our Concept Plan.

Traffic Signals: Roundabout construction allows for the existing traffic signal at the intersection of the I-95 ramps and Temple Avenue to be removed. This signal will remain in place and operational until all traffic movements have been switched to the proposed configuration. Signal heads may be shifted on the existing span wires during construction for MOT phasing. Replacing the existing traffic signal at the intersection of Temple Avenue and Hamilton Avenue / Ridge Road is also included in our proposal per the RFP, Sec. 2.9.2. Traffic signalization at this intersection will be designed per the 2009 MUTCD, 2011 Virginia Supplement to the 2009 MUTCD and VDOT's Traffic Engineering Design manual.

Lighting: Roadway lighting will be compliant with the RFP, Sec. 2.9.5. Per the RFP Q&A document dated October 30, 2014, lighting is required along Temple Avenue between the existing Temple Ave. / I-95 ramps intersection and the Temple Avenue / Hamilton Avenue intersection and includes lighting of the proposed roundabout. Sheet 8 of our Concept Plan includes a preliminary layout of the proposed roadway lighting.

Signalized intersection lighting at Hamilton Avenue will be achieved by installing luminaires on luminaire arms attached to signal poles at the intersection. Electrical wiring will be installed from the electrical service point through a conduit and junction box system independent from the traffic signals and will not pass through the traffic signal controller cabinet. The minimum conduit size will be 2", unless larger conduit is required to maintain a conduit fill capacity of 25% or less.

Franchised (leased) roadway lighting owned and maintained by Dominion Virginia Power will be relocated or replaced in kind where impacted by construction and will be coordinated with Dominion and the City of Colonial Heights. Any private lighting impacted by construction will be coordinated with the respective property owner through the right-of-way process.

Landscaping Design: Landscape plans will be designed by a Virginia licensed Landscape Architect to meet VDOT guidelines and RFP requirements. Landscaping and context-sensitive requirements include plantings within the roundabout and a textured-colored surface for the roundabout concrete truck apron and raised concrete medians/islands less than 6 ft. wide. The design team will use durable, aesthetically-pleasing native and adaptive plant species that are low maintenance. As an additional safety measure, low-level plantings will be installed at the roundabout to screen headlight glare of oncoming traffic. ***Significant design considerations to be coordinated between the Landscape Architect and roadway design team at the roundabout will be sight distance and clear zone requirements.***

> ***COORDINATION:***
> ***Significant design considerations to be coordinated between the Landscape Architect and roadway design team at the roundabout will be sight distance and clear zone requirements.***

Transportation Management Plan: The Corman DB Team will prepare a Type C Transportation Management Plan (TMP) per the RFP for proposed improvements and will document how to manage traffic during construction. MOT plans will be a part of the TMP and show all construction phases and how the Corman DB Team will safely move traffic through the work zone. **See Section 4.5.2.**

4.4 Project Approach

4.4 PROJECT APPROACH

4.4.1 UTILITIES: Our Utility Team has longstanding relationships and frequently works with the utility companies anticipated on this project, including Verizon Virginia, Inc., Comcast, Dominion Virginia Power, and Columbia Gas. In fact, many utility team members are past employees of these organizations and know the policies, procedures, and personnel. Our team's solid experience includes several Corman / VDOT projects, including Design-Build Route 1 Widening near Ft. Belvoir, Design-Build I-64 Widening in Short Pump, VA, and Design-Build Fall Hill Widening in Fredericksburg Virginia. This knowledge is invaluable on our past and current projects in obtaining records, suggesting alternate design, our layout, and expedition. Our utility coordination approach is a well-defined and effective four-stage process based upon our experience with VDOT and the affected utilities.

The Corman DB Team proposes to relocate and/or adjust as necessary the City of Colonial Heights 6" AC water main under Ridge Road as generally shown on our Concept Plan. The new Ridge Road entrance profile requires that a significant amount of fill material and a retaining wall be placed on top of the existing water main between Temple Avenue and the Ridge Road tie-in point. Due to the age of the existing water main and the proposed fill, our Team will evaluate the need to install a new 6" water main along Ridge Road in this location.

The City of Colonial Heights 8" sanitary sewer mains will also be evaluated in the Ridge Road entrance area. Where the existing 8" main passes under the proposed MSE wall, a sleeve will be considered as an alternative to relocation, if feasible. The condition of the 8" main within the limits of the Ridge Road reconstruction will be evaluated to ensure that it will not be adversely impacted as a result of the additional fill material. If deemed not suitable to withstand the additional fill, it will be replaced. Additional adjustments to City-owned wet utilities within the project limits are included in our Utility Matrix located on our Concept Plans.

Progress was made during the pre-award phase in identifying potential utility conflicts and determining if they can be avoided, mitigated through design changes, or must be relocated. We contacted utilities / providers that currently have facilities within the work area. Meetings generated discussions about their utilities, specific features, utility maps, as-built drawings, and relocation criteria, where applicable. Each anticipated utility impact has been evaluated and is summarized in the Utility Matrix shown on our Concept Plan. Our Team understands the importance of identifying these potential impacts early-on and developing mitigation strategies for each one. Our proposed sequence of Utility Engineering is described below:

Utility Coordination, Adjustments, Relocation, and Mitigation

Stage 1 – Initial Coordination During Proposal Phase

- Developed a Utility Matrix listing known and potential utilities and utility providers within the project limits of disturbance *(noting there may be more than one provider for a particular utility in some cases);*
- Obtained utility facilities maps drawings of the facilities in the area of interest;
- Identified utility point of contact(s);
- Held Informational Meeting with critical utilities having facilities within the project limits;
- Obtained additional information e.g., as-built drawings with profiles, elevation data, materials, procedures for managing relocations from design through construction and acceptance.
- Identified current work being performed by the utilities within or near the project boundaries to identify potential conflicts with proposed road designs.

Stage 2 – After Notice to Proceed: Concept Development / Design Phase

- Convert the Utility Matrix into a Utility Project Management Plan to prioritize, define, schedule, and manage the design and construction of each task;

- Immediately initiate Miss Utility services, utility designation services, and test pits (vacuum / excavate) supported by the Corman DB Team's survey location documentation capability, to pinpoint the exact location and material for each utility. Precise utility location data is maintained in a Master Utility Database and then transferred to the roadway and structural design plans;
- As roadway and structural design plans are developed, coordinate with the Utility Design Team. It is expected that in some locations, multiple utility relocations may be in proximity to each other. The Corman DB Team will manage scheduling, materials, traffic control, outages, and all other relocation elements to minimize public disruption in the work area;
- These designs are refined with the hard data from the utility database, defines conflicts and identifies potential conflicts;
- Within 45 days of Notice to Proceed, our Utility Team meets with VDOT's Regional Utilities Office to review what is required with each utility relocation submittal. Preparation includes reviewing relative concerns to be addressed;
- Within 120 days of Notice to Proceed, submit a Preliminary Utility Status Report identifying utilities within the project limits, conflicts and proposed resolutions, time impacts, cost responsibilities, and supporting documentation on preliminary UT-9's for each utility;
- Conduct a UFI per phase to discuss the project with all utility owners for that phase. There will be a UT-9 Form for each utility owner to resolve any questions about relocations, including cost responsibilities;
- Submit utility relocation plans, certified by the Corman DB Team, to VDOT for approval prior to starting any relocation.

Stage 3 – Accomplish Relocations / Conflict Resolutions

The Corman DB Team will provide the utility easement corridor as designed and approved by the utility companies to facilitate a pathway for the relocated utilities. Upon completion of the utility easement corridor, the utilities will be released to complete their relocations. Utility companies will then be expected to expedite their relocations into this corridor, or in the case of water and sewer relocation and design, will be by Corman and its designers. Relocation timelines, schedules, and expectations for completion will be determined prior to commencement of this stage of the project and communicated to the project taskforce. Scheduled outages and service affecting events will also be determined and scheduled throughout the relocation process. Temporary road closures during the relocation phase will be managed and controlled by the Corman DB Team in conjunction with the utilities and their contractors. We will coordinate resolving any relocation conflicts during the relocation process and provide as-built documents.

Stage 4–Final Completion: The Corman DB Team certifies to VDOT that conflicts were resolved, relocations accomplished, and as-builts completed and submitted per VDOT and utility owner requirements. The Corman DB Team will coordinate with the utility companies to provide CE-7 (remain in place permits) as required by VDOT.

Mitigation: The best plan of attack on unexpected utility delays is planning, documentation, communication and scheduling to mitigate potential construction schedule impacts. This means assigning a Corman DB Team lead person responsible for the entire utility process. This person will also be responsible to jump start physically identifying and precisely locating surface and subsurface utilities along the project limits after Notice to Proceed.

As per our Organization chart, Keith Sinclair, PE will lead wet utility efforts coordinating with Dale Kniffin for dry utilities and our Construction Utility Manager Aaron Straebel. They will band together to mitigate utility impacts during design and construction and the team will use our Four-Stage Process to get the job done.

HANDS ON: The Corman DB Team has already met the utilities identified and contacted ALL known utilities in the corridor, integrating data into our Conceptual Plans and Schedule.

The next step is coordinating with the utility companies to resolve issues, eliminate uncertainty of possible conflicts, and develop relocation plans and schedules for confirmed conflicts. Relocation schedules are integrated into the Project Master Planning Program and CPM Schedule. Additional mitigation tactics include overtime and overlapping relocation work of several utility companies, as well as working on several phases simultaneously to maintain the completion schedule.

Discovering an unknown utility within the project limits can cause a major impact on schedule and cost. Our Utility Team will be on the hunt for unknown utilities through initial field walks searching for telltale signs, such as unmarked valves or pull boxes, cleared tree lines or long narrow strips of replaced asphalt. If anything surfaces, additional research and exploration will be conducted prior to the plan submittal. "No Conflict" letters will be obtained from additional utility providers who may have facilities within the limits of construction to attempt to avoid unknown utility delays.

Our Construction Sequencing in Section 4.5.1 identifies possibilities for concurrent work and offers the advantage that unexpected utility conflicts discovered in one area will not affect progress in other priority areas.

The Corman DB Team will apply due diligence during the initial stages of construction when it is most probable that facilities will be impacted. If or when additional impacts are noted, we will cease operations until an impact assessment is completed and take immediate action to integrate any additional relocation into the Master Scheduling Plan, using slack time and/or other accelerations to mitigate adverse schedule impacts.

The project's timely completion relies on rapidly agreeing on utility relocation schemes, acquisitions of the utility easements, and actual utility relocations. The timely acquisition of the ROW easements for the utility relocations are most critical for completing the project on time. Knowing this, Design/Construction Coordinator Lou Robbins will focus on this through bi-weekly joint ROW / Utility Task Force meetings to get the job done. The Utility Matrix provided in our Concept Plan displays the extent of the utility relocations, many of which require new easements.

DEDICATION: Our DBPM will instruct the QC staff early on that there job supersedes keeping records and testing materials, includes the traditional duties of a VDOT inspector, and being assertive if anything is non-compliant.

4.4.2 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC): The Corman DB Team's QA/QC approach creates a partnership between the project's designers, contractor's field staff, QC inspectors/testers, and QA staff. Forming this partnering environment with a proactive QC testing *and* inspection program and an adequate QA is key to a robust QA/QC Plan. It is in every stakeholder's interest that the QC is proactive and effective to: 1) reduce contractor or designer rework; 2) limit required QA efforts to perform the QC for the team; 3) limit VDOT's need to assign valuable resources; and, 4) assure VDOT of a well-maintained, safe construction site with design criteria and construction and materials meeting specifications. *Our DBPM will instruct the QC staff early on that their job supersedes keeping records and testing materials, includes the traditional duties of a VDOT inspector, and being assertive if anything is non-compliant.* Knowing if any work items are not performed properly early sparks immediate correction while minimizing cost and schedule impacts.

Our QA/QC program will be per *VDOT's Minimum Requirements for Quality Assurance and Quality Control on Design Build and Public-Private Transportation Act Projects, January 2012.* A Corman DB Team QA/QC program unique element is establishing a review and coordination effort to incorporate requirements and

commitments in the CE into the design and construction. Our Lead Environmental Manager reviews each design submittal, provides documentation that it meets all requirements, and visits the site during construction to verify the design's intent is adhered to during construction.

During our initial Partnering meeting, VDOT, utilities, local jurisdictions, and other stakeholders discuss and resolve *"rocks in the road"* to achieve quality goals. Including quality in the agenda has proven successful on our past projects.

Design QA/QC: To kick-off QA/QC prior to design, the Design Manager, Lead Discipline Engineers and Design QA/QC Manager establishes and provides criteria and checklists for each design element to staff engineers. They perform an audit to ensure correct standards are followed, checklists are used, and the work is documented. Regular "*All Hands*" meetings, stressing the importance of quality in the design, keep the required quality culture in check. It is also a forum for Lead Construction and Design firm principals to offer lessons learned on past DB projects and perspectives on the role quality plays in project success.

The key to project success is an integrated QA/QC process that includes the QC staff, designers, contractors, and the design team's quality control checkers. During design, plans are reviewed, not only by the design QC staff, but by the construction and QC staff for constructability and ease and efficiency of resulting means and methods. This especially holds true for the impact the design will have on MOT. Items such as, material delivery / storage, workforce accessibility, field office, and crane and other equipment placement will be reviewed to minimize traffic impacts. Plan review checklists will be prepared during the constructability reviews and comment sheets will be rechecked for the action taken prior to the plans being issued for construction**.** VDOT Form LD-436 will be filled out and submitted along with the plans for each milestone design submittal. ***Special attention will be given to the adequacy of temporary drainage and potential sight distance impacts resulting from temporary traffic controls during construction.***

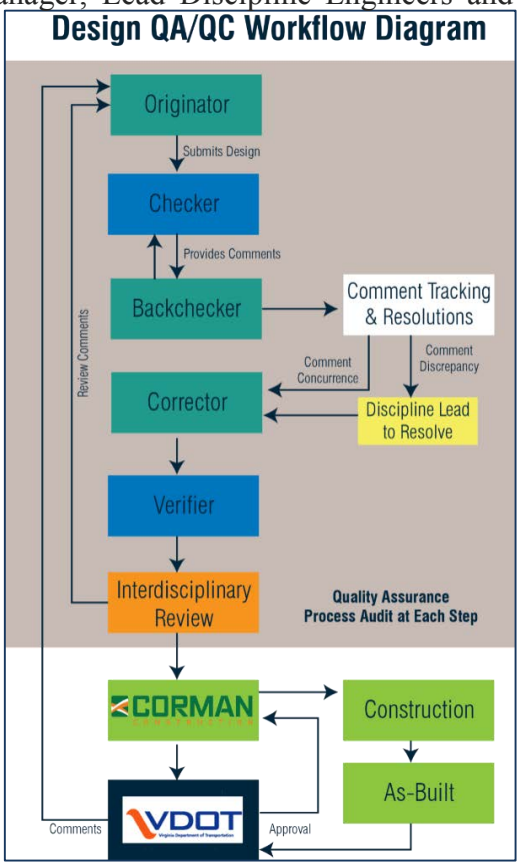


Figure 3: Design QA/QC Flow Chart

The mission is to provide quality designs and plans in the fast-paced delivery of a design-build project. The key that drives success is effective communication among everyone involved with the design, including the construction team. QA/QC design procedure goals:

- Design features that are safe and meet VDOT design guidelines and requirements;
- Conform to the standards and reference documents in RFP, Part 2, Section 2.1.1;
- Design infrastructure that meets requirements, are constructible, durable, economical, and minimize maintenance;
- Meet the design schedule, budget, and construction staging requirements;
- Minimize design costs by working efficiently and avoiding rework;
- Provide an organized and indexed set of design calculations, including design criteria and assumptions;
- Minimize VDOT and other agency reviews.

Checking Design Deliverables: It is essential that design deliverables show complete and clear fabrication and construction requirements / details. The Design QA/QC Manager will develop and implement a QA/QC Plan. Processes and procedures will be enforced and documented to minimize VDOT reviews.

Design Preparation: Design deliverables will be prepared under the Lead Discipline (roadway, structural, drainage, geotechnical, etc.) Engineers. Weekly meetings led by the Design/Construction Coordinator will be held throughout the design phase and include the Design Manager, Lead Discipline Engineers, QC staff, Construction Manager and key construction team member representatives, such as the fabricator and erector. VDOT is welcome to participate. These meetings reduce design and VDOT review times by coordinating design and construction requirements during the design process, not just at scheduled milestones.

Checking design deliverables come in the form of drawings and calculations. Review starts within the discipline before the deliverable is reviewed by the Design QA & QC Lead, Design Manager, etc. Reviewing each deliverable follows the steps outlined below. At the end of each step, the checkprint stamp is signed. A stamp is required on each plan sheet for the drawings and on the cover sheet of each set of calculations.

➔ ***Originator:*** Prepares the deliverable to be checked and is accountable for its accuracy and adequacy per design code requirements. It is not intended that the Originator rely on the checking process to complete the deliverable.

➔ ***Checker:*** Independent of the Originator and checks the deliverable. Reviews every aspect, including input for design programs that are a part of the calculation set. Marks up the stamped deliverable set with comments and returns it to the Originator. This individual is a senior staff member with the appropriate experience to check the design of the discipline that they are reviewing.

➔ ***Back-checker:*** Reviews the checked deliverable, confirms the items marked for revision are justifiable, and that corrections noted are appropriate. The Back-checker is also the Originator. If the Back-checker disagrees with a Checker's correction, they must resolve it prior to the next step. If it cannot be resolved, the Lead Discipline Engineer or Design Manager resolves it.

➔ ***Corrector:*** Addresses comments marked on the checkprint (original deliverable). This individual can be either the Originator or a CAD Technician.

➔ ***Verifier:*** Reviews the corrected deliverable against the checkprint and verifies the corrections marked on the plan sheet or calculation sheet have been properly addressed. The Verifier is also the Checker.

➔ ***Interdisciplinary Review:*** Once the design deliverable is checked, the Design Manager organizes the Lead Discipline Engineers (roadway, structural, drainage, utilities, etc.) to review the submittal. Concurrently, the Construction Manager and QC group reviews the submittal for constructability. If there are comments from the Interdisciplinary Review, the checking procedure starts from the beginning for the affected portions of the deliverable.

➔ ***Quality Assurance:*** The Design QA/QC Manager audits and ensures the quality control checking process is being followed by the design team. In addition to the QA/QC design process outlined above, the Design QA/QC Manager and the Design Manager may direct a design peer review on a specific discipline by a senior technical team member. Comments from this peer review will also be addressed by following the quality control checking process.

➔ ***Contractor Review:*** As a final deliverable review prior to submitting to VDOT, Corman again reviews the plans for constructability, conformance to anticipated means and methods and completeness of comment responses.

➔ ***Submit to VDOT:*** The Lead Discipline Engineer signs a form for each milestone deliverable that QC efforts are compliant and transmits it to the Design Manager who signs off on it with the QA/QC Manager. Final deliverables are now ready to be signed and sealed by the Lead Discipline Engineer (a Virginia PE) and the DBPM submits it to VDOT for review and/or approval. VDOT (or other reviewing agency) reviews the design and submits comments to the Corman DB Team. The Team then responds by addressing comments by incorporating changes into the design for the next milestone submittal. This continues throughout the design phase until final plans are submitted to VDOT and approved for construction.

Design changes during construction will be reviewed using the same process as the original design. Changes, such as field-authorized design changes and nonconformance evaluations, will be maintained in a database or marked up and dated on a set of "Approved for Construction" plans to track revisions and update the as-built documents.

Records: The Lead Engineer verifies that quality control procedures were performed for the individual disciplines. The Design QA/QC Manager and the Design Manager are responsible for Quality Assurance. Copies of each submittal, including revisions, will be kept throughout the project. The Design Manager maintains final design records of the forms and checkprints in the project files.

The Design QC's role in evaluating design includes reviewing computations, technical accuracy, and conformance to contract documents, form, content and coordination with other disciplines, including roadway, traffic, geotechnical and construction. The Design QA process evaluates whether the designers assessed the design parameters appropriately, applied the correct analyses, and that the designs are by qualified personnel. Design QA will also ensure that the proposed solution meets contract requirements and required contract work is completed by applying skill and experience. The Design QA/QC Plan will include discipline-specific design checklists, in addition to VDOT Form LD-436, at all major milestone submissions. Constructability reviews will be by the Construction Manager who will take into account how the phasing of construction activities affect maintenance of traffic. The Design QC Plan will include the contractor as an integral part of the design quality process.

> ***TEAMWORK: The Design QC Plan will include the contractor as an integral part of the design quality process.***

One Unique Design QA/QC Element: ***Phased bridge demolition and subsequent fill placement operation over the abandoned railroad bed.*** This involves close coordination with the structural, geotechnical, roadway and TMP design and construction staff to deliver an economical and constructible project while maintaining heavy traffic within the work zone. Frequent coordination of multiple design disciplines is the goal of a robust Design QA/QC program. Due to the complexity of the bridge demolition, retaining wall, high fill, staged construction and potential embankment settlement issues, the Design QA Manager will assign senior engineering staff with extensive VDOT design experience within each discipline to guide specific QA/QC roles. Khossrow Babaei, SE, PE will be the Design QA for the bridge demolition plan and retaining wall design. He is a former VDOT NoVA District Structure and Bridge Project Manager who recently joined AMT as Associate-in-charge of their Bridge and Structures group. Mr. Babaei will work closely with the Team's Geotechnical Engineer, Ed Drahos, PE, on items related to retaining wall foundations and potential embankment settlement issues due to soft/unsuitable in-place materials.

Mr. Babaei will review the bridge demolition plan, load rating calculations and retaining wall design alternatives for compliance with the RFP, S&B I&IM's, VDOT Road & Bridge Specifications and Special Provisions/Copied Notes. He will provide over-the-shoulder reviews of the design process and plan development early on and at critical points of design and plan development. To ensure all bridge demolition

and retaining wall related elements are reviewed, a project-specific checklist will be used to document QC reviews and QA approvals throughout design.

The phased bridge demolition and retaining wall/embankment construction is the main driver of the proposed sequence of construction, which in turn dictates how traffic will be maintained during construction within the project limits. Coordinating these disciplines during design takes multiple interactions and close coordination between the roadway and structures groups, geotechnical engineer, TMP engineer and construction staff. Mr. Babaei is well versed in bridge demolition requirements, load rating calculations and retaining wall design and will catch and resolve potential conflicts or discrepancies between the disciplines early-on.

Construction QA/QC: No matter how accurate the design is, its implementation during construction determines success. Effective and aggressive Quality Control, supported by management, will drive the project toward success from VDOT and the community's perspectives, as well as the contractor's profit perspective. This takes pre-planning and effective communication. Prior to construction, while design is still in progress, the DBPM, CM, QC Manager and QAM will hold a lessons learned planning forum. ***Based upon their collective judgment, they will identify the 20% of work tasks that will cause 80% of the quality challenges.*** Specific inspection and testing plans (ITPs) will be developed for those critical items and distributed to the Foremen, QC Inspectors, and QA staff to use as a guide in performing and inspecting the work. Based upon past history and shared experiences, additional witness and hold points above those required by VDOT will be identified and then enforced in the field by the DBPM, CM and QC Manager and their staff. Documents releasing work at each witness / hold point are identified on the ITPs and documented for review by the QAM or VDOT, as appropriate. Our goal is to perform work *"right the first time"* and if issues are identified, determine the root cause and then correct it.

One goal of the project-specific QA/QC Plan is to minimize the effort VDOT must expend performing QA or QC. For an item, such as maintenance of traffic, this can be accomplished through structured QA/QC procedures that include comprehensive preparatory meetings, routine inspections, using prepared checklists, thorough QA/QC documentation, and following a communications plan with procedures for stakeholder notifications, incident management, and emergency response.

Our current Staffing Plan assigns an onsite QC Manager supplemented by experienced QC inspector(s) to meet operation needs. For example, during paving, VDOT specifications require a minimum of two qualified inspectors per paving operation. For this project, we envision one to two QC full-time inspectors onsite for the majority of the project. All will be VDOT certified for the work they are inspecting. If paving, MOT set ups, or bridge demolition are at night and concurrent daytime work is also required, the number of inspectors would be adjusted to meet actual field needs. Arrangements with a testing laboratory and back-up lab will be made should issues arise in performing field and laboratory testing. Each will hold certifications to perform material testing on VDOT projects. Other QC issues encountered on past design-build projects with Contractor-led QC follow. ***We will address these past Lessons Learned on this project as follows to limit additional VDOT involvement. WE WILL NOT PERMIT:***

- Inadequate/unqualified inspection staff and poor QC staff management;
- A lack of upper management support for QC or QA staff actions;
- The QC staff to concentrate on material testing vs. inspection of the actual work;
- Ineffective MOT (vehicle, pedestrian, bicycle) with allowable lane closure restrictions and involvement of the designers slip;
- A *less-than-stellar* Contractor Safety Program;
- Improper coordination between the field and office staff (including designers);

- Inadequate coordination with the QA staff in scheduling oversight;
- Poor maintenance / protection of completed work (e.g. underdrains);
- Lack of follow-up inspections and punch lists, and;
- Incomplete or late QA/QC ***documentation.***

Project Document Control and Maintenance: The QA and QC teams will follow VDOT's Design-Build QA/QC Guide, VDOT's Construction Manual and Materials Manual, among others for document control. The QAM monitors the QC team in preparing and submitting records daily, including daily work, inspection and material test reports. A master set of QA documents (hard and electronic) with submittal, RFI, and photo logs, is maintained by the QAM at the field office with preparatory meeting minutes, completed QA and QC inspection checklists / test reports, Materials Notebook entries and corresponding materials tests reports, invoices, and TL weigh sheets. A customized tracking log will monitor information.

One Unique Construction QA/QC Element: The Corman DB Team evaluated the critical construction risks identifying the 20% of the tasks that represent 80% of the risk. The analysis identified construction of the bridge, retaining walls, utility relocation and MOT most likely to cause the majority of the risk.

We predict MOT to be the major risk factor on this 20% list having the most impact to VDOT and the public if not performed properly. Ineffective MOT can cause tie-ups and congestion to motorists resulting in unfavorable traffic reports and delays. Corman learned firsthand on the successful Design-Build Hampstead Road project how to handle traffic control when incorporating new roundabouts into existing conditions on heavily-traveled commuter highways and on side roads through local neighborhoods. ***On our recent Design-Build Zion Crossroads project, we introduced Virginia's first diverging diamond interchange, a non-typical traffic pattern, with minimal impact. Lessons learned, which included implementation / driving videos of the new traffic feature, will be instrumental in educating the public in navigating the new roundabout.*** On this project, we will apply this and other advantages to manage high volumes of suburban commuter / commercial traffic through tight, congested construction zones with a high percentage of older drivers.

This risk can be managed by first developing a detailed TMP. The Corman DB Team will develop a Maintenance of Traffic (MOT) and Sequence of Construction (SOC) Plan with a major focus on the safe passage of vehicular, pedestrian, and bicycle traffic and maintaining access for residents and businesses during each construction phase.

Access to destination points, such as Fort Lee and Southpark Mall, major roadways, such as Route 1/301 and I-95, and residential neighborhoods and businesses along the Temple Avenue corridor will be affected during construction of proposed improvements. Raising public awareness of traffic pattern changes will begin early on and throughout the project. The Team's mitigation strategy includes developing the TMP early in the design phase with a public outreach campaign to lay the ground work in communicating traffic pattern and access changes. With the roundabout construction/bridge demolition taking place in multiple phases, the TMP must outline the steps in providing continuous traffic flow throughout the corridor during construction. Jake Leffler (MOT Manager), Keith Riniker (TMP Manager) and Lou Robbins (Public Outreach Manager), are the leaders who will bring awareness to the thousands of affected motorists of the impending changes and duration of impacts likely to be faced. We envision partnering with VDOT, the City of Colonial Heights, the Chamber of Commerce, Fort Lee, Southpark Mall, Kroger, homeowner associations and other local businesses to develop construction sequencing, MOT alternatives and suggestions which generate the most effective means in minimizing impacts and getting the word out on planned

AWARENESS: As part of the approved project-specific QA/QC Plan, a Preparatory Inspection Meeting will be held for Maintenance of Traffic at each traffic switch.

improvements.

Our QA/QC Team must verify that contractor and subcontractor personnel closely follow the approved Traffic Management Plan. Traffic controls are checked that they are set up per the applicable contractual versions of the *Manual of Uniform Traffic Devices (MUTCD)* and the *Virginia Work Area Protection Manual (VWAPM).* Confusing and poorly executed traffic control leads to congestion and delays through the project area, which impacts driver safety and construction. It is important that access through the construction limits, as well as access to and from the new Kroger, are not adversely impacted. We must also be aware of the non-typical, non-rush hour periods to and from many commercial establishments and the associated seasonal peaks. ***As part of the approved project-specific QA/QC Plan, a Preparatory Inspection Meeting will be held for Maintenance of Traffic at each traffic switch.*** This meeting is classified as a hold point in the schedule and representatives of the design-build contractor, subcontractor(s), quality control and quality assurance managers and inspectors must attend. Department representatives and other stakeholders, such as EMS, police, hospital, and other affected public services, will be invited and encouraged to participate, as these meetings are intended to facilitate a dialogue between all stakeholders.

Our QA/QC approach to the unique construction element of MOT on I-95 and Temple Avenue would start during the development of the project-wide TMP in the early stages of design. Our Construction MOT Team will review the initial MOT Plan based upon their expertise on past projects, such as the Telegraph Road Interchange on the Virginia portion of the Capital Beltway, I-70 Design Build in Frederick, Maryland or the Design-Build Zion Crossroads project in Virginia where we modified our TMP several times during design to account for changing traffic situations throughout the construction phasing. Through meetings with the owner, police, and local representatives, we developed TMP plans for the different construction stages for MOT flows through the active construction site.

During construction, the QA/QC Inspection Team will be certified as Intermediate Work Zone Safety Supervisors to carefully monitor adherence to the Traffic Management Plan (TMP) by assigning a lead QC Inspector to work with the Team's designated Certified Work Zone Traffic Coordinator. The Quality Assurance Inspector, working in concert with the QAM, will monitor the Contractor and QC inspection staff for adherence to the TMP. Monitored/inspected TMP elements include:

- ✓ Project Phasing;
- ✓ Temporary Traffic Control Plans;
- ✓ Motorist, Pedestrian and Bicyclist Considerations;
- ✓ Daily Lane and Shoulder Closure Standards / Set Ups;
- ✓ Coordination with adjacent construction projects or special events;
- ✓ Coordination with other stakeholders, including EMS responders, police, local schools, and transit agencies;
- ✓ Equipment and Materials Storage;
- ✓ Temporary Signing, Marking, and Signals, including TCB and temporary pavement striping;
- ✓ Public Communications; and
- ✓ Incident Management.

QC Inspectors will regularly drive the work zone to confirm that the Temporary Traffic Control (TTC) devices are per plan and operating properly. These inspections will take place after any temporary MOT devices are set up for daily activities and at the end of each work day to confirm the work zone is safe and no unnecessary signage remains in place. Inspectors will also check that devices are clean and have the proper retro-

reflectivity. There will be additional inspections when traffic patterns change or in the case of severe weather that can potentially impact devices and/or markings.

4.4.3 GEOTECHNICAL: Our team will identify and mitigate geotechnical risks through a well-planned and executed subsurface exploration and knowledgeable application of geotechnical design and analysis practices, and an integrated team approach to construction methods. The majority of the geotechnical analysis will be required for the settlement and stability of the cuts and fills to widen the existing roadway and ramps and at the bridge removals, ability of subgrade to support the new pavements, excavation of temporary sediment traps, SWM ponds, and foundations for new retaining walls. Other construction items requiring geotechnical input during design are:

- Overhead signs, traffic signal and lighting pole foundations;
- Stormwater drainage/SWM installations and utility/ITS installations or relocations;
- Pavement sections and underdrain pipe installation.

During construction, the Geotechnical Engineer will be on site to observe, approve, and guide the following:

- Removal of topsoil and unacceptable overburden, re-use of excavated materials and undercut of roadway sections or at wall foundations;
- Suitability of subgrade for new roadway and retaining walls and the need for undercut or soil modification;
- Geotechnical considerations for the enlarged SWM basin;
- Compaction of borrow fills and trench backfills;
- Construction of traffic signal, overhead sign structure, and lighting pole foundations.

The DBPM, CM, and QC and QA Managers will be authorized to ask the Geotechnical Engineer to visit the site and evaluate any issues that arise. Having the Geotechnical Engineer or representative visit the site at pre-determined hold points helps discover issues before they become major problems.

Local Geology: The Corman DB Team reviewed the information provided in the Geotechnical Data Report (GDR) prepared by VDOT for this project and the 1979 boring data provided with the Westbound Route 144 (Temple Avenue) Bridge over Seaboard Coastline Railroad as-built drawings. Based on this information, it appears that the subsurface conditions on site include the following:

- Existing fill soils are present in the existing Temple Avenue Bridge approach embankments to the bridges over the abandoned Seaboard Coastline Railroad. In addition, fill soils are present within the embankment that supported the former railroad;
- Natural alluvial clays are present to depths up to about 19 ft. below the Temple Avenue Bridge approach embankments, and are generally soft to medium stiff. It is likely these soils extend laterally beyond the footprints of the existing embankments;
- Natural alluvial sands are present to depths of up to about 30 ft. below grade in the area of the proposed relocated ramps, and are generally loose to firm.
- Natural residual sand and weathered rock materials underlie the alluvial clay below the Temple Avenue Bridge approach embankments, and are generally firm to dense.

Ground water was observed at shallow depths of about 2 to 4 ft. within the alluvial soils below the Temple Avenue Bridge approach embankments, and was at depths of about 15 to 20 ft. in the proposed ramp areas. The Corman DB Team also observed standing water in low-lying areas along the north and south sides of the

eastbound Temple Avenue Bridge approach embankments and along the west side of the abandoned railroad embankment. The soils below the standing water are expected to be wet and soft, and potentially unsuitable.

Geotechnical Risks and Mitigation Measures: The Corman DB Team knows, and is prepared to address, the geotechnical issues discussed above, as well as other unknown geotechnical issues that may arise during design and construction. Geotechnical issues currently known to exist are as follows:

- **Unsuitable Soils Below Embankments:** Unsuitable soils are anticipated as discussed above;
- **Settlement of Embankments:** Due to the presence of soft alluvial clay, settlement of this layer due to the weight of the embankment is anticipated. Depending on the magnitude and time-rate of settlement, it is possible that prefabricated vertical drains and/or surcharges may be needed to mitigate settlement.
- **Stability of Embankment Slopes:** If the soft alluvial clay is left in place and not improved, low factors of safety could occur. Depending on the calculated factors of safety, it is possible that these soils will have to be removed or improved in place to improve stability.
- **External Stability of Retaining Walls:** If the soft alluvial clay is left in place and not improved, low factors of safety could occur. Depending on the calculated factors of safety, it is possible that these soils will have to be removed or improved in place to improve stability.

To mitigate these risks, Ed Drahos, our Geotechnical Engineer, will work closely with the Corman DB Team to evaluate and verify that the proposed construction means and methods do not impact the existing structures, pavements, and utilities. He will:

- ✓ Evaluate and verify that new slopes have the required factors of safety. Perform triaxial shear strength testing on residual soils and use results to perform global slope stability analyses.
- ✓ Perform additional coring and CBR testing during the Scope Validation Period to confirm the existing pavement sections and subgrade conditions, and verify the proposed mill and build up thickness and locations.
- ✓ Perform pavement condition index surveys and provide patching estimates during the Scope Validation Period to identify and document areas that require full-depth patching.
- ✓ Include detailed notes on the construction and project special provisions to address earthwork, E&S control, pavement subgrades and structure installations.
- ✓ Reduce geotechnical risks by verifying that the geotechnical and pavement recommendations are properly interpreted and incorporated into the construction documents. The Geotechnical Engineer will review construction documents and verify recommendations have been properly interpreted and assumptions, forming the basis of our recommendations, are still valid.
- ✓ Identify early the best method to handle the expected unsuitable soils below the new embankments where the bridge is to be removed and the existing 20 +/- foot fill placed. Due to the presence of soft alluvial clay, settlement of this layer from the weight of the new embankment is anticipated. The embankments may settle over time if this material is not removed, modified or pre-consolidated.
- ✓ Review the stability of embankment slopes. If the soft alluvial clay is left in place and not improved, low factors of safety could occur. Depending on the calculated factors of safety, it is possible that these soils will have to be removed or improved in place to improve stability.

- ✓ Evaluate the external stability of retaining walls. If the soft alluvial clay is left in place and not improved, low factors of safety could occur. Depending on the calculated factors of safety, it is possible that these soils will have to be removed or improved in place to improve stability.

Stormwater Management Basins: To prevent the possibility of stormwater infiltration into the proposed roadway embankments, a minimum 10' wide bench will be provided between the stormwater basin and the proposed roadway fill slopes.

Retaining Walls: **Table 3** summarizes the retaining walls:

WALL NO.	BEGIN STATION END STATION	APPROX. LENGTH (FT)	WALL TYPE	APPROX. MAX. HEIGHT (FT)
1	RIDGE RD 10+75 RIDGE RD 11+30	55	MSE	10
2	TEMPLE AVE 200+75 TEMPLE AVE 206+75	600	MSE	26
3	I-95 RAMP 112+60 I-95 RAMP 114+60	200	MSE	16

Table 3: Retaining Walls

GEOTECHNICAL RISKS AND MITIGATION MODIFIED FOR THIS PROJECT

Risk	Mitigation
UNSUITABLE SOILS BELOW EMBANKMENTS	✓ Review current subsurface information associated with subgrade characterization. ✓ Perform additional shallow subsurface exploration and laboratory testing to better define areas of unsuitable subgrade material. ✓ Geotechnical Engineer assesses subgrade material based on boring and test data. ✓ Select mitigation measures based on safety, performance and cost.
EMBANKMENT SETTLEMENT	✓ Review each slope area for configuration and currently available subsurface information. ✓ Perform additional subsurface exploration and special field and laboratory testing to evaluate subsurface conditions at each site. Testing includes consolidation tests and possibly in-situ dilatometer soundings. ✓ Perform settlement analyses per accepted VDOT procedures to evaluate magnitude and time-rate of settlement. ✓ Select mitigation measures based on site limitations, safety, performance, and cost.
EMBANKMENT STABILITY	✓ Review each slope area for configuration and currently available subsurface information. ✓ Perform additional subsurface exploration and special field and laboratory testing to evaluate subsurface conditions at each site. Testing includes triaxial tests and possibly in-situ dilatometer soundings. ✓ Perform stability analyses per accepted VDOT procedures to evaluate stability conditions for the slopes. ✓ Select mitigation measures based on site limitations, safety, performance, and cost.

Table 4: Geotechnical Risks and Mitigation Modified for this Project

4.5 Construction of the Project

4.5 CONSTRUCTION OF THE PROJECT

4.5.1 SEQUENCE OF CONSTRUCTION: We have divided the project into five phases to facilitate construction as shown and described on the graphic on **Page 23**. Phase 1 is construction of the new eastbound Temple Avenue travel lanes and new ramps from Temple Avenue to the I-95 southbound onramp; Phase 2 encompasses the middle area of Temple Avenue and westbound lane construction; Phase 3 constructs the northern portion of Temple Avenue and the new Ridge Road entrance; and Phases 4 and 5 include the steps to finish the I-95 ramp construction and implement the new traffic pattern.

Scheduling and Coordination: As with any design-build project, it is vital to understand and communicate the schedule clearly and effectively to the entire Team, including stakeholders. The Corman DB Team is proficient in updating and reviewing schedules to develop strategies, stay ahead of the curve, and even beat the CPM schedule. Led by our Construction Manager, Daily Coordination Meetings, Weekly Schedule Meetings, 30-day 60-day and 90-day look-ahead Schedule Meetings, and Schedule Review Meetings will be conducted with field supervision and QA/QC staff present. The three-week look-ahead schedules will include detailed QC inspection and testing needs. Subcontractors will be involved in the weekly scheduling meetings. These regimented forums plan the following work day, week, and month and ensures critical schedule items are followed. It also gives us ample time, if needed, to fine tune or add resources to keep the job progressing.

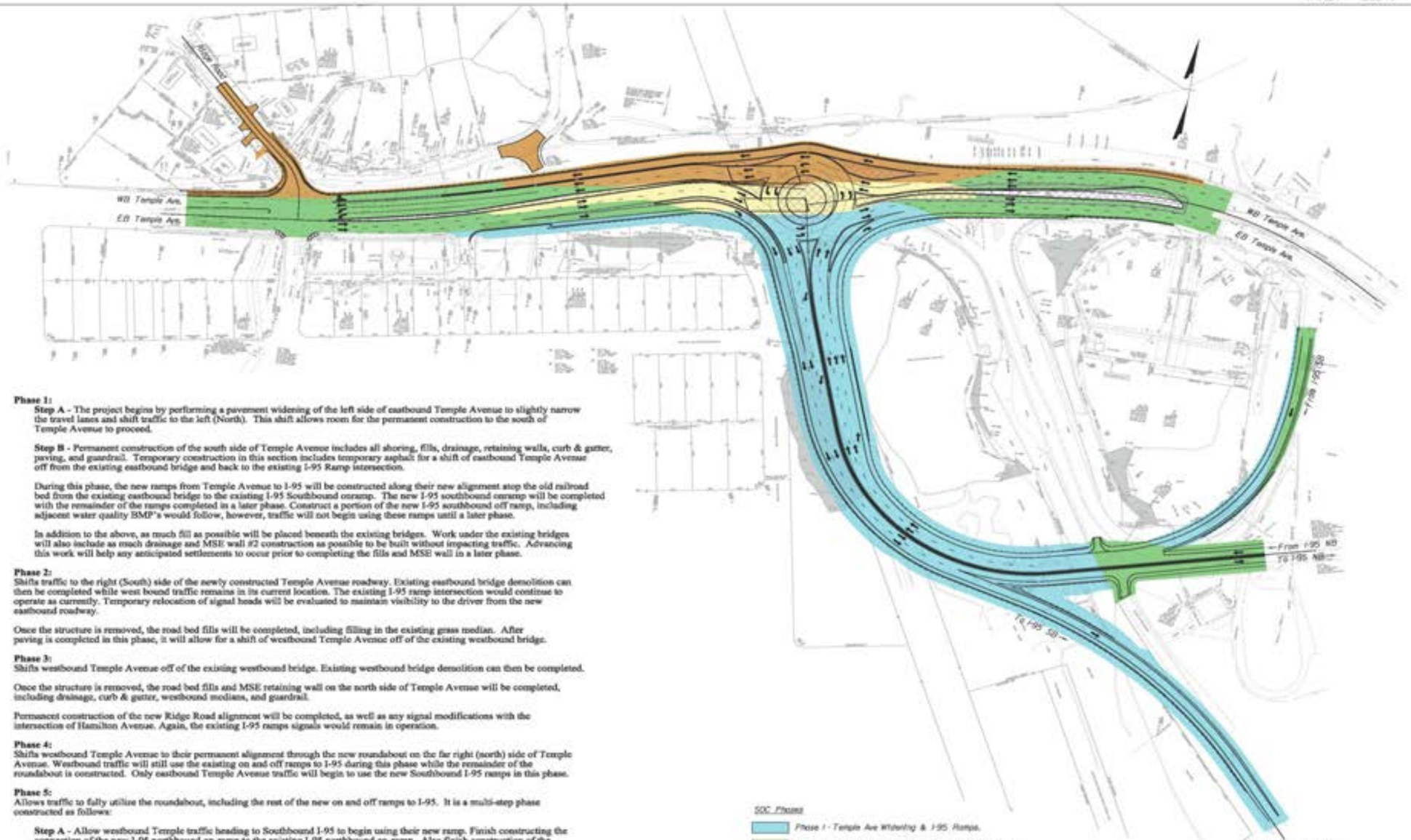
We anticipate our staging and storage areas would be located with the project's ROW, potentially at the site of the proposed residential demolition. Construction is scheduled to take place with multiple crews at multiple locations simultaneously to complete the work and minimize public disruption. With this sequencing of construction and additional crews, the Corman DB Team proposes to meet the Final Completion date of November 10, 2017. As described below in the TMP, our phasing has considered public safety and convenience in the planned MOT Plan. This includes potential impacts to public transportation, signing throughout the work area, and mitigating adverse impacts to motorists.

4.5.2 TRANSPORTATION MANAGEMENT PLAN: The project requires a Transportation Management Plan (TMP) Type C and will follow the Project Management Process (PMP). Our Team will work with VDOT to develop the TMP, including three major components: Temporary Traffic Control (TTC) Plans, Public Communications (PC) Plan, and Transportation Operations (TO) Plan. An important part of the TMP is an extensive public information program to inform the public of changes in traffic patterns and major impact activities. This will require close coordination with VDOT and other key stakeholders as summarized at the end of this section. During design development, the Corman DB Team will establish an MOT Task Force that meets weekly to address traffic conditions and our construction sequence. An added value to our Team, Lou Robbins, PE, DBIA, will hold the dual roles of Design/Construction Coordinator and Public Outreach Manager. This assures a 360 degree TMP perspective and brings together design and construction to communicate to motorists and residents regarding constructability and design requirements.

Maintenance of Traffic: MOT phasing is shown graphically on **Page 24.** This three phase MOT plan's relationship to our five phase Sequence of Construction plan is detailed on the graphic. ***Note that except for temporary, short duration, intermittent lane closures, two lanes in each direction are maintained on Temple Avenue at all times. This exceeds the RFP's MOT requirements which allows the reduction of Temple Avenue to one lane eastbound during the demolition and embankment phases.***

CONVENIENCE: Note that except for temporary, short duration, intermittent lane closures, two lanes in each direction are maintained on Temple Avenue at all times. This exceeds the RFP's MOT requirements which allows the reduction of Temple Avenue to one lane eastbound during the demolition and embankment phases.

VDOT Virginia Department of Transportation



Phase 1:

Step A - The project begins by performing a pavement widening of the left side of eastbound Temple Avenue to slightly narrow the travel lanes and shift traffic to the left (North). This shift allows room for the permanent construction to the south of Temple Avenue to proceed.

Step B - Permanent construction of the south side of Temple Avenue includes all shoring, fills, drainage, retaining walls, curb & gutter, paving, and guardrail. Temporary construction in this section includes temporary asphalt for a shift of eastbound Temple Avenue off from the existing eastbound bridge and back to the existing I-95 Ramp intersection.

During this phase, the new ramps from Temple Avenue to I-95 will be constructed along their new alignment atop the old railroad bed from the existing eastbound bridge to the existing I-95 Southbound onramp. The new I-95 southbound onramp will be completed with the remainder of the ramps completed in a later phase. Construct a portion of the new I-95 southbound off ramp, including adjacent water quality BMP's would follow, however, traffic will not begin using these ramps until a later phase.

In addition to the above, as much fill as possible will be placed beneath the existing bridges. Work under the existing bridges will also include as much drainage and MSE wall #2 construction as possible to be built without impacting traffic. Advancing this work will help any anticipated settlements to occur prior to completing the fills and MSE wall in a later phase.

Phase 2:
Shifts traffic to the right (South) side of the newly constructed Temple Avenue roadway. Existing eastbound bridge demolition can then be completed while west bound traffic remains in its current location. The existing I-95 ramp intersection would continue to operate as currently. Temporary relocation of signal heads will be evaluated to maintain visibility to the driver from the new eastbound roadway.

Once the structure is removed, the road bed fills will be completed, including filling in the existing grass median. After paving is completed in this phase, it will allow for a shift of westbound Temple Avenue off of the existing westbound bridge.

Phase 3:
Shifts westbound Temple Avenue off of the existing westbound bridge. Existing westbound bridge demolition can then be completed.

Once the structure is removed, the road bed fills and MSE retaining wall on the north side of Temple Avenue will be completed, including drainage, curb & gutter, westbound medians, and guardrail.

Permanent construction of the new Ridge Road alignment will be completed, as well as any signal modifications with the intersection of Hamilton Avenue. Again, the existing I-95 ramps signals would remain in operation.

Phase 4:
Shifts westbound Temple Avenue to their permanent alignment through the new roundabout on the far right (north) side of Temple Avenue. Westbound traffic will still use the existing on and off ramps to I-95 during this phase while the remainder of the roundabout is constructed. Only eastbound Temple Avenue traffic will begin to use the new Southbound I-95 ramps in this phase.

Phase 5:
Allows traffic to fully utilize the roundabout, including the rest of the new on and off ramps to I-95. It is a multi-step phase constructed as follows:

Step A - Allow westbound Temple traffic heading to Southbound I-95 to begin using their new ramp. Finish constructing the connection of the new I-95 northbound on-ramp to the existing I-95 northbound on-ramp. Also finish construction of the transition of northbound I-95 ramp to Temple Avenue.

Step B - Allow eastbound and westbound Temple Avenue traffic to begin using the new ramp to I-95 northbound. Also allow northbound I-95 traffic to begin using the new Temple Avenue off ramp. Finish constructing the tie-in of I-95 southbound to Temple Avenue off ramp.

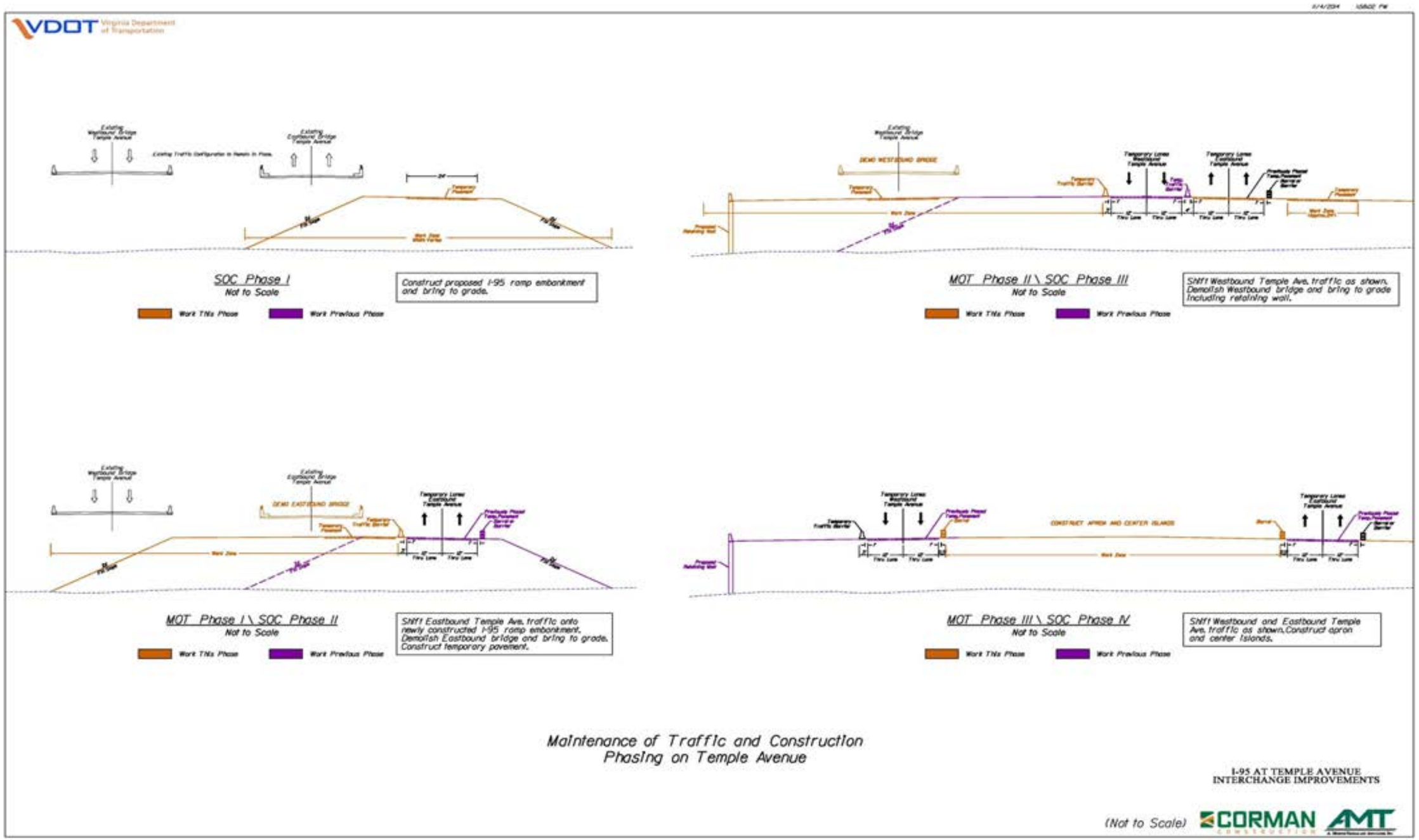
Step C - Allow traffic from I-95 southbound to begin using the new Temple Avenue off ramp. All ramp changes are now complete.

Step D - Remove the remainder of the existing ramps no longer being used, including the existing signalization at Temple Avenue.

CONCEPTUAL
SEQUENCE OF CONSTRUCTION

I-95 AT TEMPLE AVENUE
INTERCHANGE IMPROVEMENTS

CORMAN CONSTRUCTION AMT


VDOT Virginia Department of Transportation
SOC Phase I
Not to Scale
Construct proposed I-95 ramp embankment and bring to grade.
Work This Phase
Work Previous Phase
MOT Phase II \ SOC Phase III
Not to Scale
Shift Westbound Temple Ave. traffic as shown. Demolish Westbound bridge and bring to grade including retaining wall.
Work This Phase
Work Previous Phase
MOT Phase I \ SOC Phase II
Not to Scale
Shift Eastbound Temple Ave. traffic onto newly constructed I-95 ramp embankment. Demolish Eastbound bridge and bring to grade. Construct temporary pavement.
Work This Phase
Work Previous Phase
MOT Phase III \ SOC Phase IV
Not to Scale
Shift Westbound and Eastbound Temple Ave. traffic as shown. Construct apron and center islands.
Work This Phase
Work Previous Phase
Maintenance of Traffic and Construction
Phasing on Temple Avenue
I-95 AT TEMPLE AVENUE
INTERCHANGE IMPROVEMENTS
(Not to Scale)
CORMAN
AMT

Traffic Management Plan: As part of the TMP, Work Zone Impact Assessment will be developed to optimize traffic operations during construction and minimize motorist disruption and delays. Traffic analysis for MOT conditions will be performed in advance of the work and modified as conditions warrant. As necessary, we will perform an operational analysis for the different MOT conditions.

- Signal Timing Changes
- Short-Term Lane Closures
- Incident Management

MOT Plan and work zone details and sequence will be per the *Virginia Work Area Protection Manual* and MUTCD.

Lane and Road Closure Restrictions: Lane and road closures will follow the restrictions in the RFP, Sec. 2.11.2.

Holiday Restrictions: Work will not be performed within the Project limits on holidays listed in RFP, Sec. 2.11.3.

Temporary Detours: None are anticipated at this time.

Time-of-Day Restrictions: Time-of-day restrictions per RFP Sec. 2.11.2 will be followed for lane closures.

Flagging: Flagging is anticipated during the placement of MOT devices, selected utility relocations, intersection construction, paving, and temporary lane closures.

Minimum Lane Widths: Minimum travel lane widths will be 12 ft. on I-95, including the ramps, and 11 ft. on all other roadways within the Project area.

Work Zone Speed Reductions: Speed limit reductions within the work zone shall be in accordance with TE-350, and be reviewed and approved by the Central Regional Traffic Engineer. A Work Zone Speed Analysis prepared by a Professional Engineer licensed and registered in the Commonwealth of Virginia shall be completed and provided to the VDOT Project Manager.

Incident Management: The Corman DB Team will coordinate with VDOT to develop protocols to implement Incident Management, not only within the project limits, but also within regional influence of the area. We will develop an Emergency Contact List and plans to address different incident scenarios. This includes strategically-placed VMS to assist motorists, alternative routes and procedures for emergency lane closures or hazard protection. This prepares our Project Team to react quickly to any incident affecting motorists traveling through the project.

Transportation Management Plan Deliverables: Our phased construction plans, including Transportation Management Plans (TMPs) and Maintenance of Traffic (MOT) drawings, will be prepared in an integrated, multi-disciplinary manner, with significant construction team involvement. The TMP/MOT Design Team will receive critical input from construction professionals on access needs, haul routes, staging areas, and construction durations. They will also address pedestrian access and safety. Our construction phasing plan has also taken into consideration earthwork balance, pre-consolidation of embankments, and intra-site access.

Our MOT Plans provide for and address construction components, including drainage facilities (temporary and permanent), utilities, sound walls, retaining walls, bridges, stormwater management, and erosion and sediment control.

Transportation Management Plan Stakeholders: The Corman DB Team understands the importance of keeping stakeholders informed on the progress and potential impacts. There are three key components to our outreach program:

1. **BEING HEARD:** Include stakeholders when preparing TMP and Traffic Control plans for input on important stakeholder issues, such as access to properties and hospital emergency response considerations.
2. **COLLABORATION:** Forming an MOT Task Force, which will include select stakeholders and VDOT, to collaborate on MOT issues, such as upcoming traffic switches, public notifications, and other items that have an impact on traffic flow and access.
3. **TEAMWORK:** A close working relationship between VDOT and the Corman DB Team for a continuous and cooperative dissemination of information to stakeholders.

Major stakeholders, their role, and the key anticipated risks or impacts to them, are shown on **Table 5:**

MAJOR STAKEHOLDERS

STAKEHOLDER	ROLE	IMPACTS DURING CONSTRUCTION
VDOT	Owner	Work zone safety; coordination with adjacent projects; traffic backups or inadequate public outreach, and impacts to adjacent historic or environmental resources.
FHWA	Funding and Project Oversight	Work zone safety; coordination with adjacent projects; traffic backups or inadequate public outreach, and impacts to adjacent historic or environmental resources.
FEMA	Oversight of Floodplain Impacts	Minor encroachment of Temple Avenue embankment into the Old Town Creek floodplain.
City of Colonial Heights	Local Jurisdiction	Coordination with adjacent projects (Kroger); traffic backups or inadequate public outreach, dust and noise, impacts to adjacent City owned property, adjacent historic or environmental resources.
Petersburg Area Transit (PAT)	Local Transit Agency	Changes in traffic patterns.
City Fire, Rescue & EMS	Emergency Responders	Emergency response routes impacted by construction or temporary lane closures.
State and Local Police	Emergency Responders, assist in MOT and TMP implementation	Emergency response routes impacted by construction or temporary lane Closures, work hours and assistance required during lane closures and /or rolling slowdowns.
City School District and Private Schools	Student Transport	Bus routes impacted by construction.
Traveling Public (Commuter & Local)	User of the Facility – Route Impacted	Bus routes (PAT) impacted by construction or temporary lane closures; travel time through work zone impacted by reduced speeds and/or back-ups.
Local Homeowner Associations	Represent Local Communities	Routes impacted by temporary lane closures; travel time through work zone impacted by reduced speeds and/or back-ups; dust and noise.
Other Contractors Working in the Area	Adjacent Contractors	Coordination of scheduling construction on other area projects, including Kroger site.
Utility Companies	Maintain / Operate Utilities Within or	Accessibility to facilities and relocations through work zones; impacts on response time to outages.

	Across Corridor	
Business Organizations	Represent Local Business	Accessibility to facilities through work zone and travel time through work zone impacted by reduced speeds and/or back-ups.
Southpark Mall and Local Businesses	Major Local Destination Points	Accessibility to/from Southpark Mall and surrounding shopping area through work zone and travel time through work zone impacted by reduced speeds and/or back-ups.
Virginia State University	Local University	Accessibility to/from University through work zone and travel time through work zone impacted by reduced speeds and/or back-ups.
Fort Lee	Local U.S. Army Base	Accessibility to/from Fort Lee through work zone and travel time through work zone impacted by reduced speeds and/or back-ups.

Table 5: Major Stakeholders

4.6 DBE

4.6 DISADVANTAGED BUSINESS ENTERPRISES

The Corman DB Team is committed to achieving a 12% DBE participation goal for the entire value of the contract. The following summary of our DBE Subcontractor Participation Plan narrates how we will achieve this goal during design and construction:

Strategies to Meet/Exceed the Goal: Our DB Team encompasses highly regarded DBE/WBE members, including Sabra, Wang & Associates and Utility Pros. Although they were selected based on their premium work and abilities, they will also assist the Corman DB Team in achieving the 12% DBE participation goal through their designated project roles.

Corman DB Team members always maintain a substantial database of DBE firms qualified to work on our projects. Outreach is continuous as a way to connect with additional qualified DBE firms. Corman DB Team members routinely meet and exceed the DBE requirements on projects. ***So much so, that the Maryland Washington Minority Contractors Associations awarded Corman Construction as "Prime Contractor of the Year for Minority Business" in 2011.***

The Corman DB Team will modify Corman's standard Local DBE Subcontracting Plan to meet the requirements and challenges of the 12% participation goal for this project. The following checklist specifies ways we solicit DBE firms during pre-construction:

- Publish Proposal Notifications/Bid Notices in local / minority newspapers 30 and 10 days prior to bid;
- Post Bid Notices 30 days and every subsequent Tuesday prior to bid on the Department of Minority Business Enterprise website in search of registered DBE and SWAM contractors and vendors.
- Post plans and specifications on our FTP site for subcontractors to view;
- Based on available scopes of work, identify potential DBE firms from our company DBE Firm Database;
- The Corman DB Team's Estimating Assistants will reach out to identify DBE firms, respond to inquiries, and furnish requested information;
- Maintain a spreadsheet with DBE subcontractor/supplier contact information and correspondence;
- Validate qualifications of certified DBE subcontractors/suppliers applicable to specific requirements.

During Price Proposal development, we prepare comprehensive lists for DBE participation. In addition to our standardized DBE solicitations, our estimating staff reaches out to DBE subcontractors / suppliers and educates them on jobsite opportunities. Face-to-face meetings are often held with DBE firms where we explain the project, accommodate their concerns and needs, and provide opportunities within their scope of work.

COMMITMENT: The Corman DB Team commits to achieving a 12% DBE participation goal for the entire value of the contract.

We also track our DBE participation. This creates an awareness to maintain and/or increase our efforts to successfully meet the goals. As the bid date approaches, design and construction DBE participation goals are evaluated and finalized to meet them.

During design and construction, the project team monitors DBE participation for compliance with the required goal.

PAGES 29-36, 11 x 17
DESIGN CONCEPT GRAPHICS
ARE IN VOLUME II
AS REQUIRED

4.7 Proposal Schedule

4.7 PROPOSAL SCHEDULE

4.7.1 PROPOSAL SCHEDULE

The Corman DB Team has thoroughly evaluated the RFP documents, visit the site, attended pre-proposal meetings, participated in proprietary meeting discussions, and had working sessions among our construction and design teams. Through this progression, we developed a simplified solution to deliver the project through our Sequencing Plan. This narrative explains how we will deliver a positive experience to VDOT and the involved stakeholders. The project completion date is as shown in the RFP, which is November 10, 2017.
The proposal schedule is included in this section.

Project Milestones

Notice of Intent to Award Date	December 19, 2014
CTB Approval/Notice to Award	January 21, 2015
Notice to Proceed	February 25, 2015
Substantial Completion of Design	December 30, 2015
Mobilization	December 30, 2015
Final Completion of Project:	November 10, 2017

Work Breakdown Structure

The schedule integrates design and construction into a Work Breakdown Structure (WBS) as shown below:

Level 1: **Schedule Milestones**–Overall schedule review of progress.

Level 2: **Environmental Permitting**

Level 3: **Scope Validation Period**–Includes verification of utilities, geotechnical investigations and conceptual pavement designs, and spot checking the survey and base maps.

Level 4: **Design**–Includes preliminary, detailed, and final design cycles with time allocated for engineering services, plan development, QA/QC reviews, VDOT, and other regulatory agency plan reviews and approvals and ROW plans. This section includes a second level of WBS structure to group design by construction work areas.

Level 5: **Right of Way Acquisition**-Includes title research, appraisals, offers and negotiations.

Level 6: **Utility Relocations**–Includes activities for the UFI meetings, finalizing UT-9 Forms, preparation of the preliminary engineering estimates, utility relocation design by the our team and utility owners, identify utility easements, approval of P & E estimates, utility design approvals, and utility relocations.

Level 7: **Construction**–Includes all components of roadway construction, as well as maintenance of traffic, temporary pavement for MOT, erosion & sediment controls, stormwater management, noise wall

construction, bridge demolition and construction, signals, ditches/drainage, lighting, and roadside improvements. QA/QC witness and hold points are incorporated in this section. The section has WBS second and third levels which segment the construction by work areas. Public Relations are included in the general section of this phase.

WORK BREAKDOWN STRUCTURE

LEVEL 1	LEVELS 2 & 3
Phase 01	**Project Milestones**
Phase 02	**Environmental Permitting**
Phase 03	**Scope Validation Period**
Phase 04	**Design** 4.1 Roadway 30% 4.2 Roadway 60% 4.3 Roadway Final 4.4 Ready for Construction (RFC) Design 4.5 ROW Plans 4.6 Design Support During Construction/As-Built Drawings
Phase 05	**Right-of-Way Acquisition**
Phase 06	**Utility Relocations** 6.1 Dominion Virginia Power 6.2 City of Colonial Heights Water & Sewer 6.3 Comcast 6.4 Verizon
Phase 07	**Construction** 7.1 General Conditions 7.2 Public Involvement 7.3 Pre-Construction Submittals 7.4 Phase 1 Step A & B 7.5 Phase 2 7.6 Phase 3 7.7 Phase 4 7.8 Phase 5 Steps A thru D 7.9 Closeout

Table 6: Work Breakdown Structure

Calendars

Three project calendars were used in the schedule and include:

1. **"5 Day Workweek with Basic Holidays"** – Based on five working days per week and is used for construction activities and includes holiday restrictions and anticipated weather days.

2. **"Calendar Days"**–Based on seven days per week and is used for plan review periods and Environmental Permitting activities.

Design Phase
Includes preparation, QA/QC reviews, and submissions of Intermediate, Final, and Ready for Construction design stages of the roadway design process. Included are 21-day review activities for VDOT review periods. Included to support the plan preparation is survey coordination and mapping, geotechnical investigations, and utility designations. Activities are included for geotechnical investigations, reports and a 45-day period for VDOT's review of the geotechnical report prior to submitting the final roadway package.

The design phase will begin immediately upon Notice of Intent to Award to begin work advancing the concept plans to the intermediate stage. It is expected to have Ready for Construction plans on December 14, 2015. Design effort is on the critical path.

Environmental Permitting
Activities have been incorporated for the full project-wide concept SWM/E&SC Plan, Complete Wetland Delineation, Confirm Jurisdictional Determinations, Virginia Water Protection (VWP) Permit, Individual or Nationwide Wetland Permit and the VSMP Permit.

This portion of the schedule should not impact the project's critical path.

Right-of-way Acquisition
There are approximately 13 parcels that include fee taking, permanent, temporary, and utility easements. VDOT will be providing ROW acquisition services for Parcels 003, 004 and 012 within 60 days of NTP. A separate design package will be prepared for the ROW plans. The ROW process will advance during preparation of the 60% plans so that appraisals can be provided to VDOT for approval as soon as the 60% plans have been approved. ROW acquisition is on the critical path.

Utility Relocations
The utility relocations are sequenced to match the required work operations. A UFI meeting will be held as early as practical to advance this process. Due to the extent of the utility relocations, in each phase there will be some concurrent construction and utility relocation work within the same proximity. Utility relocations are not on the critical path.

Construction
Construction is scheduled to begin immediately once the roadway plans are approved, starting with setting out advance warning signs. Construction is anticipated to be in three major phases (2, 3, and 4) and two minor phases (1 and 5).

4.7.2 PROPOSAL SCHEDULE NARRATIVE

Plan to Execute the Work
We plan to complete the design prior to commencing construction, perform the construction in five phases and complete the project on or before the Final Completion Date of November 10, 2017.

Schedule Overview

Notice of Intent to Award:	December 19, 2014
Design Activities:	December 2014 – December 2015
Construction:	December 2015 – November 2017
Final Completion:	November 10, 2017

Construction

We divided the project into logical segments of work for efficient and effective MOT. We then combined and sequenced the work to maximize resources, reduce schedule duration, and progress the work while maintaining constant traffic flow through the work zones. A sequence of construction graphic is shown on **Page 23 .**

Construction will be in five phases as follows:

PHASE 1:

Step A -The project begins by performing a pavement widening of the left side of eastbound Temple Avenue to slightly narrow the travel lanes and shift traffic to the left (North). This shift allows room for the permanent construction to the south of Temple Avenue to proceed.

Step B -Permanent construction of the south side of Temple Avenue includes all shoring, fills, drainage, retaining walls, curb & gutter, paving, and guardrail. Temporary construction in this section includes temporary asphalt for a shift of eastbound Temple Avenue off from the existing eastbound bridge and back to the existing I-95 Ramp intersection.

During this phase, the new ramps from Temple Avenue to I-95 will be constructed along their new alignment atop the old railroad bed from the existing eastbound bridge to the existing I-95 Southbound onramp. The new I-95 southbound onramp will be completed with the remainder of the ramps completed in a later phase. Construct a portion of the new I-95 southbound off ramp, including adjacent water quality BMP's would follow, however, traffic will not begin using these ramps until a later phase.

In addition to the above, as much fill as possible will be placed beneath the existing bridges. Work under the existing bridges will also include as much drainage and MSE wall #2 construction as possible to be built without impacting traffic. Advancing this work will help any anticipated settlements to occur prior to completing the fills and MSE wall in a later phase.

PHASE 2: Shifts traffic to the right (South) side of the newly constructed Temple Avenue roadway. Existing eastbound bridge demolition can then be completed while west bound traffic remains in its current location. The existing I-95 ramp intersection would continue to operate as currently. Temporary relocation of signal heads will be evaluated to maintain visibility to the driver from the new eastbound roadway.

Once the structure is removed, the road bed fills will be completed, including filling in the existing grass median. After paving is completed in this phase, it will allow for a shift of westbound Temple Avenue off of the existing westbound bridge.

PHASE 3: Shifts westbound Temple Avenue off of the existing westbound bridge. Existing westbound bridge demolition can then be completed.

Once the structure is removed, the road bed fills and MSE retaining wall on the north side of Temple Avenue will be completed, including drainage, curb & gutter, westbound medians, and guardrail.

Permanent construction of the new Ridge Road alignment will be completed, as well as any signal modifications with the intersection of Hamilton Avenue. Again, the existing I-95 ramps signals would remain in operation.

PHASE 4: Shifts westbound Temple Avenue to their permanent alignment through the new roundabout on the far right (north) side of Temple Avenue. Westbound traffic will still use the existing on and off ramps to I-95 during this phase while the remainder of the roundabout is constructed. Only eastbound Temple Avenue traffic will begin to use the new Southbound I-95 ramps in this phase.

PHASE 5: Allows traffic to fully utilize the roundabout, including the rest of the new on and off ramps to I-95. It is a multi-step phase constructed as follows:

> **Step A –**Allow westbound Temple traffic heading to Southbound I-95 to begin using their new ramp. Finish constructing the connection of the new I-95 northbound on-ramp to the existing I-95 northbound on-ramp. Also finish construction of the transition of northbound I-95 ramp to Temple Avenue.
>
> **Step B –**Allow eastbound and westbound Temple Avenue traffic to begin using the new ramp to I-95 northbound. Also allow northbound I-95 traffic to begin using the new Temple Avenue off ramp. Finish constructing the tie-in of I-95 southbound to Temple Avenue off ramp.
>
> **Step C-**Allow traffic from I-95 southbound to begin using the new Temple Avenue off ramp. All ramp changes are now complete.
>
> **Step D –**Remove the remainder of the existing ramps no longer being used, including the existing signalization at Temple Avenue.

It is during this phase we recommend a public meeting to describe the new permanent traffic patterns and how to drive the new roundabout safely.

Construction is scheduled to take place with multiple crews with much of the work constructed simultaneously. Weekly scheduling and supervisory meetings with the Construction Manager, Project Engineer, Construction QC Manager, QAM, superintendents, foreman, and engineers will be held to establish the three-week schedules. These schedules include detailed QC inspection and testing needs. Subcontractors will be involved in weekly scheduling meetings.

Design

As our team studied the project schedule, it was apparent that there is a time advantage to advance the bridge and utility designs. This is made possible by design work beginning upon Notice of Intent to Award. During the Scope Validation Period, we will verify utilities and conceptual pavement designs, start geotechnical investigations, and spot check the survey and base maps. We assumed 30%, 60% and RFC submissions and allotted a 21-day review cycle for major plan submissions in the CPM schedule. The maintenance of traffic, as well as the required SWM Report, and E&S permitting plans will advance concurrently with the roadway design. ROW plans may be prepared based upon 30% roadway plans, if utility easements are set at that time. Over-the-shoulder reviews will be conducted throughout design to keep VDOT informed of decisions made as the design is being developed.

Critical Path

The Critical Path is shown in red on the attached schedule. The critical path flows through the preparation of the final roadway plan submissions, utility UT9s, ROW, and most all construction activities. At approval of the 30% design, the UFI meeting will be held, UT9 Forms distributed and design of the utility relocations will start. If possible, utility easements will be set on the 30% roadway plans, as we did on our Design-Build Route 1 widening project. During the utility design, the remainder of the roadway design will be completed. Utility relocations will start as soon as possible. Phase 1 of the roadway work will start upon release of the RFC plans. Upon completion of Phase 1, Phases 2 through 5 will follow.

Managing the Schedule and the Project

Open and honest communication leads to effective coordination. The construction schedule is the primary means for the Corman DB Team to communicate the construction plan to the team and stakeholders. It includes planned means and methods, sequencing, resourcing and timing. The schedule provides the framework for planning and scheduling the day-to-day work. Established activity durations become the basis for setting production goals. The schedule also serves as the yardstick to monitor and measure progress and is a tool for identifying the impact of unexpected events or conditions and for revising the construction plan to mitigate delay impacts.

The schedule will be constantly reviewed and maintained to avoid slippage, as well as impacts discussed as part of the monthly partnering process, and finalize mitigation and recovery solutions should they be needed. Systems to manage the design and construction sequencing will be clear and concise and include:

- Weekly design/construction scheduling and coordination meetings during the design phase
- Weekly construction scheduling meeting during the construction phase
- Utility relocation tracking sheets during the design and construction phases
- ROW progress tracking spreadsheets (if needed) during the design and construction phases
- Review and approval tracking spreadsheets of design element submittals
- Shop drawings status tracking sheets
- Material submittals and delivery schedules
- Non-conformance logs by QC and QA for design and construction
- RFI logs
- Monthly internal project review meetings by the Corman DB Team's Executive Review Committee
- Monthly progress/partnering meetings with the major stakeholders, including VDOT, the Corman DB Team's designers, major subcontractors/vendors and local businesses. Affected utilities will also be invited for the current stage of work.

At the internal weekly meetings, issues/concerns will be identified utilizing the above tracking aids and action items identified and assigned to person who can resolve it. Three-week, 30-day and 60-day "look-ahead schedules" will be prepared and discussed to analyze schedule and quality impacts. Similar information will be discussed and action items assigned at the Monthly Progress/Partnering meetings with key stakeholders. Other stakeholders may be invited for anticipated issues during upcoming schedule activities.
The Executive Review Committee will meet monthly, typically one week prior to the Monthly Progress/Partnering meeting, to review actual progress and identify resources (manpower, equipment and materials) for upcoming scheduled items. Should issues be identified, resolutions and recovery strategies can be

agreed upon prior to the monthly meeting so the Corman DB Team can inform stakeholders of potential issues and solutions.

Tracking sheets, submittal logs, and meeting action item lists, along with all other tracking and correspondence, will be contained in Viewpoint (a project management database system) which allows integration with the schedule.

Managing the Design and Construction Schedule

Meeting design milestones is key to successful design-build projects. The Corman DB Team will use performance evaluation tools, mainly the earned value method, to track progress of our design consultants and other team members. This provides the design status to the management team as the job progresses. Constructability reviews are crucial and will be performed by all parties to avoid schedule delays of field design changes. At the regularly scheduled project control meeting, the individual discipline manager (whether it be design or field) will report on his group's progress and how it fits into the overall CPM schedule.

Keeping the CPM as the "big picture" and using the three-week look ahead for the details has proven successful. The Construction Manager (CM) and Design Manager will review, maintain, and update the schedules as the work progresses. Three-week schedules (TWS) will be updated weekly at a scheduling/planning meeting. The overall CPM schedule will be updated weekly and used as the long-range planning tool. The "approved schedule" will be updated by the CM and project engineer, provided to VDOT monthly prior to the monthly progress/partnering meetings, and include a detailed narrative, performance evaluation charts, photos, etc.

The Corman DB Team has proven management systems that keep the project on track:

- **Weekly** scheduling and supervisory meetings with the Construction Manager, Design Manager, Construction QC Manager, QAM, superintendents, foreman, and engineers to establish the two-week schedules, which include detailed QC testing needs.
- **Weekly** site meetings during construction include the design team, public relations, and utility coordination until design work is complete and as needed for the remainder of construction.
- **Bi-weekly** onsite progress meetings include all relevant parties to review schedule progress, design issues, QA/QC matters, unresolved construction issues, safety performance, administration issues, and general project management matters.
- **Monthly Progress/Partnering Meetings** are held by the DBPM, as well as all other project meetings. The DBPM will develop and review the schedule and work closely with the Public Relations Manager to implement the public outreach plan. When construction starts, the DBPM coordinates construction through the CM and holds monthly progress meetings to review progress, conflicts, safety, and quality. The Corman DB Team will keep minutes of meetings and distribute to stakeholders within 48 hours.
- **During Construction,** design engineers will remain available to discuss and meet about field changes that may occur during construction.

This project will be administered using our Viewpoint Project Management System, which manages the project lifecycle, including design plans, contract management, RFI control, change orders, submittal/transmittal control, meetings, QA/QC documents, issue logs and lists, and more. It will help ensure that the project is administered timely to prevent schedule delays. Viewpoint offers secure remote access by all appropriate

stakeholders via the web. It is designed to give Corman, designers, VDOT, subcontractors, utilities, and vendors access to the project data they need, when they need it, 24/7.

Schedule Recovery

The experience the Corman DB Team gained in working on similar projects will be critical to the timeliness of resolving design and construction hurdles as they occur. The Corman DB Team has successfully managed design on other jobs that enables critical activities, such as utility relocations and environmental permitting, to be prioritized and monitored with the overall design and construction progress accordingly. We prides ourselves in solving construction and design issues rapidly without sacrificing quality. We will aggressively manage the project, allowing VDOT to minimize its management and inspection resources. Should any item on the CPM Schedule show unacceptable progress – *for any reason* – a schedule recovery strategy will be developed and implemented immediately with VDOT's concurrence.

Subcontractor Scheduling

Subcontractors will be selected based on quality performance per schedule requirements and will be involved in schedule meetings to understand project expectations well in advance.

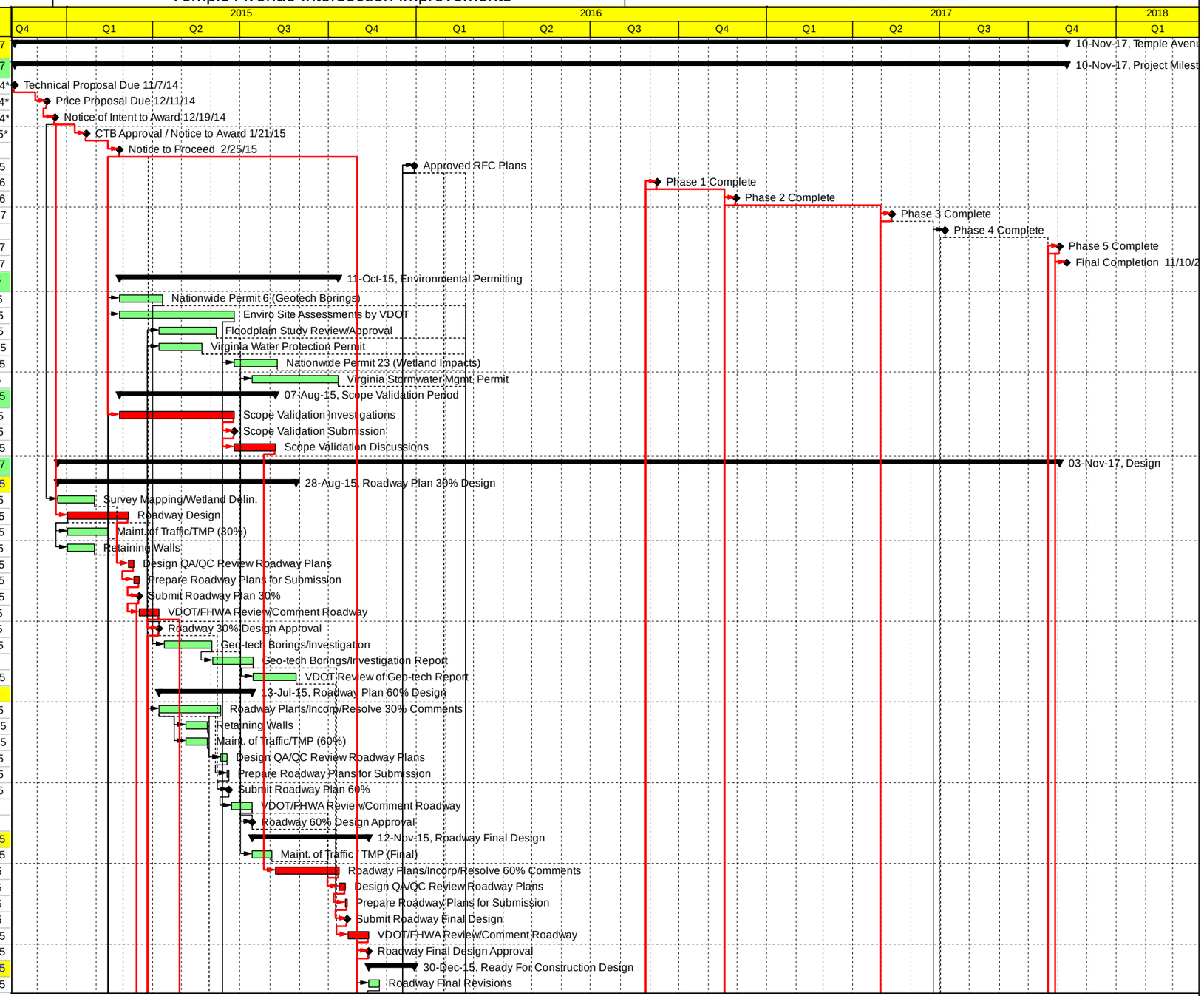
Resource Availability

In the event additional resources are needed to mitigate delays, Corman has a large pool of resources to draw from, including crews, equipment, subcontractors, suppliers, and professional expertise. The Construction Manager will have a direct relationship with Corman's Operations Manager and Executive Team, who will intervene immediately on the project's behalf to supply supplemental manpower and equipment to maintain schedules. Kevin Kern, Corman South's Operations Manager, will be involved in oversight operations of the project. He has served in this capacity for over 20 years and has earned the respect of local agencies, including VDOT, for completing jobs on or ahead of schedule. Mr. Kern's specialty is mitigating delays with alternate methods and adding shifts or providing additional resources as demands change.

Our team is committed to providing VDOT a completed project by November 10, 2017.

Proposal Schedule — Temple Avenue Intersection Improvements — 03-Nov-14 12:15

Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
Temple Avenue V3.0		784	0	07-Nov-14	10-Nov-17
Project Milestones		784	0	07-Nov-14	10-Nov-17
T100	Technical Proposal Due 11/7/14	0	0		07-Nov-14*
T110	Price Proposal Due 12/11/14	0	0		11-Dec-14*
T120	Notice of Intent to Award 12/19/14	0	0		19-Dec-14*
T130	CTB Approval / Notice to Award 1/21/15	0	0		21-Jan-15*
T140	Notice to Proceed 2/25/15	0	0	25-Feb-15*	
T150	Approved RFC Plans	0	22		30-Dec-15
T160	Phase 1 Complete	0	0		08-Sep-16
T170	Phase 2 Complete	0	0		30-Nov-16
T180	Phase 3 Complete	0	0		12-May-17
T190	Phase 4 Complete	0	7		06-Jul-17
T200	Phase 5 Complete	0	0		03-Nov-17
T210	Final Completion 11/10/2017	0	0		10-Nov-17
Environmental Permitting		163	104	25-Feb-15	11-Oct-15
P110	Nationwide Permit 6 (Geotech Borings)	45	55	25-Feb-15	10-Apr-15
P120	Enviro Site Assessments by VDOT	120	62	25-Feb-15	24-Jun-15
P140	Floodplain Study Review/Approval	60	61	07-Apr-15	06-Jun-15
P130	Virginia Water Protection Permit	45	76	07-Apr-15	22-May-15
P160	Nationwide Permit 23 (Wetland Impacts)	45	208	25-Jun-15	08-Aug-15
P150	Virginia Stormwater Mgmt. Permit	90	31	13-Jul-15	11-Oct-15
Scope Validation Period		117	0	25-Feb-15	07-Aug-15
S100	Scope Validation Investigations	120	0	25-Feb-15	24-Jun-15
S110	Scope Validation Submission	0	0		25-Jun-15
S120	Scope Validation Discussions	30	0	25-Jun-15	07-Aug-15
Design		749	5	22-Dec-14	03-Nov-17
Roadway Plan 30% Design		180	37	22-Dec-14	28-Aug-15
DRW300	Survey Mapping/Wetland Delin.	25	25	22-Dec-14	29-Jan-15
DRW310	Roadway Design	45	0	02-Jan-15	06-Mar-15
DRW320	Maint. of Traffic/TMP (30%)	30	15	02-Jan-15	12-Feb-15
DRW330	Retaining Walls	20	25	02-Jan-15	29-Jan-15
DRW340	Design QA/QC Review Roadway Plans	5	0	06-Mar-15	12-Mar-15
DRW350	Prepare Roadway Plans for Submission	3	0	12-Mar-15	17-Mar-15
DRW360	Submit Roadway Plan 30%	0	0		17-Mar-15
DRW370	VDOT/FHWA Review/Comment Roadw	21	0	17-Mar-15	07-Apr-15
DRW380	Roadway 30% Design Approval	0	0		07-Apr-15
DRW390	Geo-tech Borings/Investigation	35	38	13-Apr-15	01-Jun-15
DRW400	Geo-tech Borings/Investigation Report	30	38	02-Jun-15	14-Jul-15
DRW410	VDOT Review of Geo-tech Report	45	53	14-Jul-15	28-Aug-15
Roadway Plan 60% Design		69	18	07-Apr-15	13-Jul-15
DRW600	Roadway Plans/Incorp/Resolve 30% C	45	17	07-Apr-15	10-Jun-15
DRW610	Retaining Walls	15	27	05-May-15	27-May-15
DRW620	Maint. of Traffic/TMP (60%)	15	27	05-May-15	27-May-15
DRW640	Design QA/QC Review Roadway Plans	5	17	10-Jun-15	17-Jun-15
DRW650	Prepare Roadway Plans for Submission	2	17	17-Jun-15	19-Jun-15
DRW660	Submit Roadway Plan 60%	0	17		19-Jun-15
DRW670	VDOT/FHWA Review/Comment Roadw	21	24	22-Jun-15	13-Jul-15
DRW680	Roadway 60% Design Approval	0	18		13-Jul-15
Roadway Final Design		87	0	13-Jul-15	12-Nov-15
DF2070	Maint. of Traffic / TMP (Final)	15	48	13-Jul-15	03-Aug-15
DF2000	Roadway Plans/Incorp/Resolve 60% C	45	0	07-Aug-15	12-Oct-15
DF2080	Design QA/QC Review Roadway Plans	5	0	12-Oct-15	19-Oct-15
DF2090	Prepare Roadway Plans for Submission	2	0	19-Oct-15	21-Oct-15
DF2170	Submit Roadway Final Design	0	0		21-Oct-15
DF2120	VDOT/FHWA Review/Comment Roadw	21	0	22-Oct-15	12-Nov-15
DF2160	Roadway Final Design Approval	0	0		12-Nov-15
Ready For Construction Design		34	16	12-Nov-15	30-Dec-15
RFC3010	Roadway Final Revisions	7	15	12-Nov-15	23-Nov-15



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

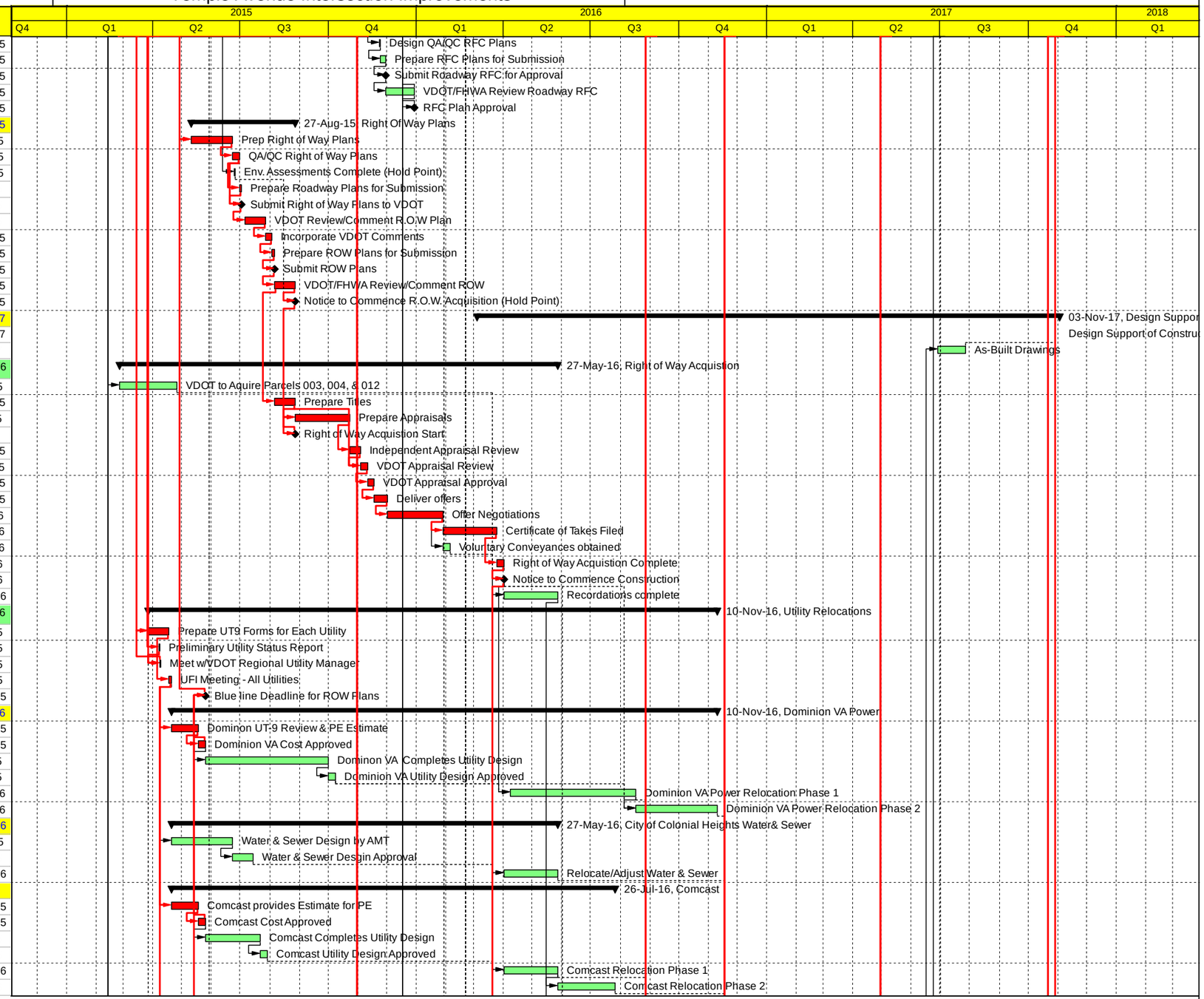
CORMAN CONSTRUCTION

Proposal Schedule

Temple Avenue Intersection Improvements

03-Nov-14 12:15

Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
RFC3020	Design QA/QC RFC Plans	1	15	23-Nov-15	24-Nov-15
RFC3030	Prepare RFC Plans for Submission	2	15	24-Nov-15	30-Nov-15
RFC3040	Submit Roadway RFC for Approval	0	15		30-Nov-15
RFC3050	VDOT/FHWA Review Roadway RFC	21	15	30-Nov-15	30-Dec-15
RFC3060	RFC Plan Approval	0	16		30-Dec-15
Right Of Way Plans		78	0	11-May-15	27-Aug-15
ROW100	Prep Right of Way Plans	30	0	11-May-15	23-Jun-15
ROW110	QA/QC Right of Way Plans	5	0	23-Jun-15	30-Jun-15
ROW330	Env. Assessments Complete (Hold Poi	1	43	25-Jun-15	25-Jun-15
ROW120	Prepare Roadway Plans for Submission	2	0	30-Jun-15	02-Jul-15
ROW130	Submit Right of Way Plans to VDOT	0	0		02-Jul-15
ROW140	VDOT Review/Comment R.O.W Plan	21	0	06-Jul-15	27-Jul-15
ROW150	Incorporate VDOT Comments	5	0	27-Jul-15	03-Aug-15
ROW160	Prepare ROW Plans for Submission	3	0	03-Aug-15	06-Aug-15
ROW170	Submit ROW Plans	0	0		06-Aug-15
ROW180	VDOT/FHWA Review/Comment ROW	21	0	06-Aug-15	27-Aug-15
ROW190	Notice to Commence R.O.W. Acquisitio	0	0		27-Aug-15
Design Support During Construction/As Built Drawi		435	5	04-Mar-16	03-Nov-17
DAB100	Design Support of Construction	424	0	04-Mar-16	03-Nov-17
DAB110	As-Built Drawings	20	75	28-Jun-17	27-Jul-17
Right of Way Acquistion		327	16	25-Feb-15	27-May-16
ROW195	VDOT to Aquire Parcels 003, 004, & 012	60	341	25-Feb-15	25-Apr-15
ROW200	Prepare Titles	15	0	06-Aug-15	27-Aug-15
ROW220	Prepare Appraisals	40	0	27-Aug-15	23-Oct-15
ROW210	Right of Way Acquistion Start	0	0	27-Aug-15	
ROW230	Independent Appraisal Review	8	0	23-Oct-15	04-Nov-15
ROW240	VDOT Appraisal Review	5	0	04-Nov-15	11-Nov-15
ROW250	VDOT Appraisal Approval	5	0	11-Nov-15	18-Nov-15
ROW260	Deliver offers	8	0	18-Nov-15	02-Dec-15
ROW270	Offer Negotiations	40	0	02-Dec-15	29-Jan-16
ROW280	Certificate of Takes Filed	40	0	29-Jan-16	25-Mar-16
ROW290	Voluntary Conveyances obtained	5	40	29-Jan-16	05-Feb-16
ROW300	Right of Way Acquistion Complete	5	0	25-Mar-16	01-Apr-16
ROW310	Notice to Commence Construction	0	0		01-Apr-16
ROW320	Recordations complete	40	15	01-Apr-16	27-May-16
Utility Relocations		424	14	27-Mar-15	10-Nov-16
U130	Prepare UT9 Forms for Each Utility	15	0	27-Mar-15	17-Apr-15
U100	Preliminary Utility Status Report	1	0	07-Apr-15	08-Apr-15
U110	Meet w/VDOT Regional Utility Manager	1	0	08-Apr-15	09-Apr-15
U120	UFI Meeting - All Utilities	1	0	17-Apr-15	20-Apr-15
U140	Blue line Deadline for ROW Plans	0	0		26-May-15
Dominion VA Power		408	14	20-Apr-15	10-Nov-16
UR1010	Dominon UT-9 Review & PE Estimate	20	0	20-Apr-15	18-May-15
UR1020	Dominion VA Cost Approved	5	0	18-May-15	26-May-15
UR1030	Dominon VA Completes Utility Design	90	138	26-May-15	01-Oct-15
UR1040	Dominion VA Utility Design Approved	5	138	01-Oct-15	08-Oct-15
UR1050	Dominion VA Power Relocation Phase 1	90	12	08-Apr-16	17-Aug-16
UR1060	Dominion VA Power Relocation Phase 2	60	12	17-Aug-16	10-Nov-16
City of Colonial Heights Water& Sewer		289	133	20-Apr-15	27-May-16
UR1090	Water & Sewer Design by AMT	45	309	20-Apr-15	23-Jun-15
UR1100	Water & Sewer Desgin Approval	21	447	23-Jun-15	14-Jul-15
UR1110	Relocate/Adjust Water & Sewer	40	127	01-Apr-16	27-May-16
Comcast		331	91	20-Apr-15	26-Jul-16
UR1240	Comcast provides Estimate for PE	20	0	20-Apr-15	18-May-15
UR1250	Comcast Cost Approved	5	0	18-May-15	26-May-15
UR1260	Comcast Completes Utility Design	40	242	26-May-15	22-Jul-15
UR1270	Comcast Utility Design Approved	5	242	22-Jul-15	29-Jul-15
UR1280	Comcast Relocation Phase 1	40	70	01-Apr-16	27-May-16
UR1290	Comcast Relocation Phase 2	40	87	27-May-16	26-Jul-16



Actual Work | Critical Remaining Work | Summary
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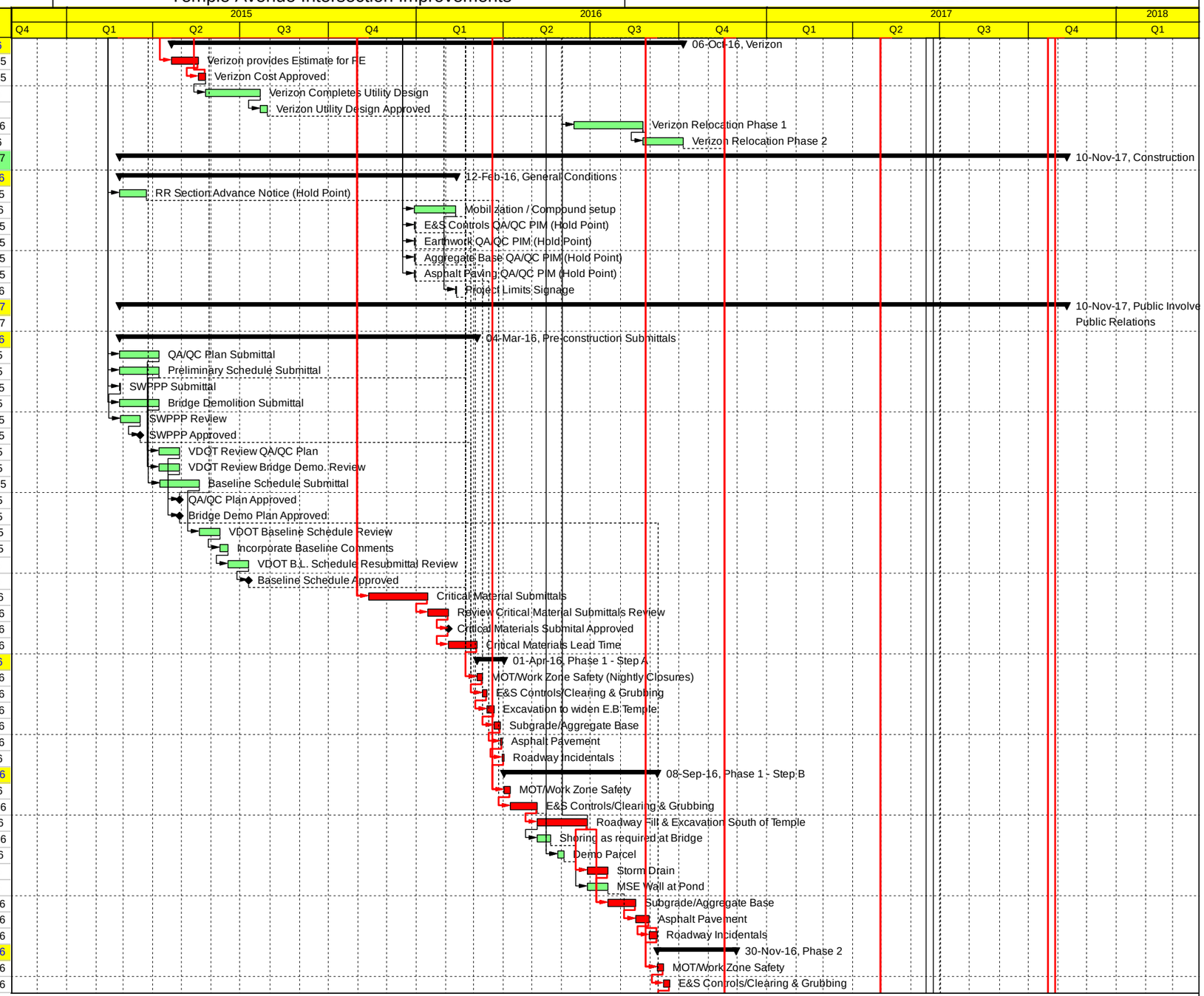
CORMAN CONSTRUCTION

Proposal Schedule

Temple Avenue Intersection Improvements

03-Nov-14 12:15

Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
Verizon		383	39	20-Apr-15	06-Oct-16
UR1300	Verizon provides Estimate for PE	20	0	20-Apr-15	18-May-15
UR1310	Verizon Cost Approved	5	0	18-May-15	26-May-15
UR1320	Verizon Completes Utility Design	40	232	26-May-15	22-Jul-15
UR1330	Verizon Utility Design Approved	5	232	22-Jul-15	29-Jul-15
UR1340	Verizon Relocation Phase 1	50	10	13-Jun-16	24-Aug-16
UR1350	Verizon Relocation Phase 2	30	37	24-Aug-16	06-Oct-16
Construction		707	0	25-Feb-15	10-Nov-17
General Conditions		252	40	25-Feb-15	12-Feb-16
GC160	RR Section Advance Notice (Hold Point)	21	264	25-Feb-15	25-Mar-15
GC100	Mobilization / Compound setup	30	15	30-Dec-15	11-Feb-16
GC120	E&S Controls QA/QC PIM (Hold Point)	1	49	30-Dec-15	31-Dec-15
GC130	Earthwork QA/QC PIM (Hold Point)	1	52	30-Dec-15	31-Dec-15
GC140	Aggregate Base QA/QC PIM (Hold Poi	1	57	30-Dec-15	31-Dec-15
GC150	Asphalt Paving QA/QC PIM (Hold Point)	1	62	30-Dec-15	31-Dec-15
GC110	Project Limits Signage	1	15	11-Feb-16	12-Feb-16
Public Involvement		707	0	25-Feb-15	10-Nov-17
PI100	Public Relations	689	0	25-Feb-15	10-Nov-17
Pre-construction Submittals		267	144	25-Feb-15	04-Mar-16
PC110	QA/QC Plan Submittal	30	48	25-Feb-15	07-Apr-15
PC100	Preliminary Schedule Submittal	30	163	25-Feb-15	07-Apr-15
PC220	SWPPP Submittal	1	249	25-Feb-15	25-Feb-15
PC120	Bridge Demolition Submittal	30	356	25-Feb-15	07-Apr-15
PC230	SWPPP Review	21	358	25-Feb-15	18-Mar-15
PC240	SWPPP Approved	0	249		18-Mar-15
PC130	VDOT Review QA/QC Plan	21	69	07-Apr-15	28-Apr-15
PC140	VDOT Review Bridge Demo. Review	21	512	07-Apr-15	28-Apr-15
PC170	Baseline Schedule Submittal	30	163	08-Apr-15	19-May-15
PC150	QA/QC Plan Approved	0	47		28-Apr-15
PC160	Bridge Demo Plan Approved	0	355		28-Apr-15
PC180	VDOT Baseline Schedule Review	21	238	19-May-15	09-Jun-15
PC190	Incorporate Baseline Comments	7	164	10-Jun-15	18-Jun-15
PC200	VDOT B.L. Schedule Resubmittal Revi	21	238	18-Jun-15	09-Jul-15
PC250	Baseline Schedule Approved	0	165		09-Jul-15
PC210	Critical Material Submittals	40	0	12-Nov-15	13-Jan-16
PC260	Review Critical Material Submittals Re\	21	0	13-Jan-16	03-Feb-16
PC270	Critical Materials Submital Approved	0	0		03-Feb-16
PC280	Critical Materials Lead Time	30	0	03-Feb-16	04-Mar-16
Phase 1 - Step A		20	0	04-Mar-16	01-Apr-16
1A120	MOT/Work Zone Safety (Nightly Closur	5	0	04-Mar-16	10-Mar-16
1A130	E&S Controls/Clearing & Grubbing	3	0	10-Mar-16	15-Mar-16
1A140	Excavation to widen E.B Temple	5	0	15-Mar-16	22-Mar-16
1A150	Subgrade/Aggregate Base	5	0	22-Mar-16	29-Mar-16
1A160	Asphalt Pavement	2	0	29-Mar-16	31-Mar-16
1A170	Roadway Incidentals	1	0	31-Mar-16	01-Apr-16
Phase 1 - Step B		114	0	01-Apr-16	08-Sep-16
1B100	MOT/Work Zone Safety	5	0	01-Apr-16	08-Apr-16
1B110	E&S Controls/Clearing & Grubbing	20	0	08-Apr-16	06-May-16
1B130	Roadway Fill & Excavation South of Ter	35	0	06-May-16	27-Jun-16
1B140	Shoring as required at Bridge	10	25	06-May-16	20-May-16
1B120	Demo Parcel	5	15	27-May-16	03-Jun-16
1B150	Storm Drain	15	0	27-Jun-16	19-Jul-16
1B160	MSE Wall at Pond	15	20	27-Jun-16	19-Jul-16
1B170	Subgrade/Aggregate Base	20	0	19-Jul-16	17-Aug-16
1B180	Asphalt Pavement	10	0	17-Aug-16	31-Aug-16
1B190	Roadway Incidentals	5	0	31-Aug-16	08-Sep-16
Phase 2		59	0	08-Sep-16	30-Nov-16
2100	MOT/Work Zone Safety	5	0	08-Sep-16	15-Sep-16
2110	E&S Controls/Clearing & Grubbing	5	0	15-Sep-16	22-Sep-16



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

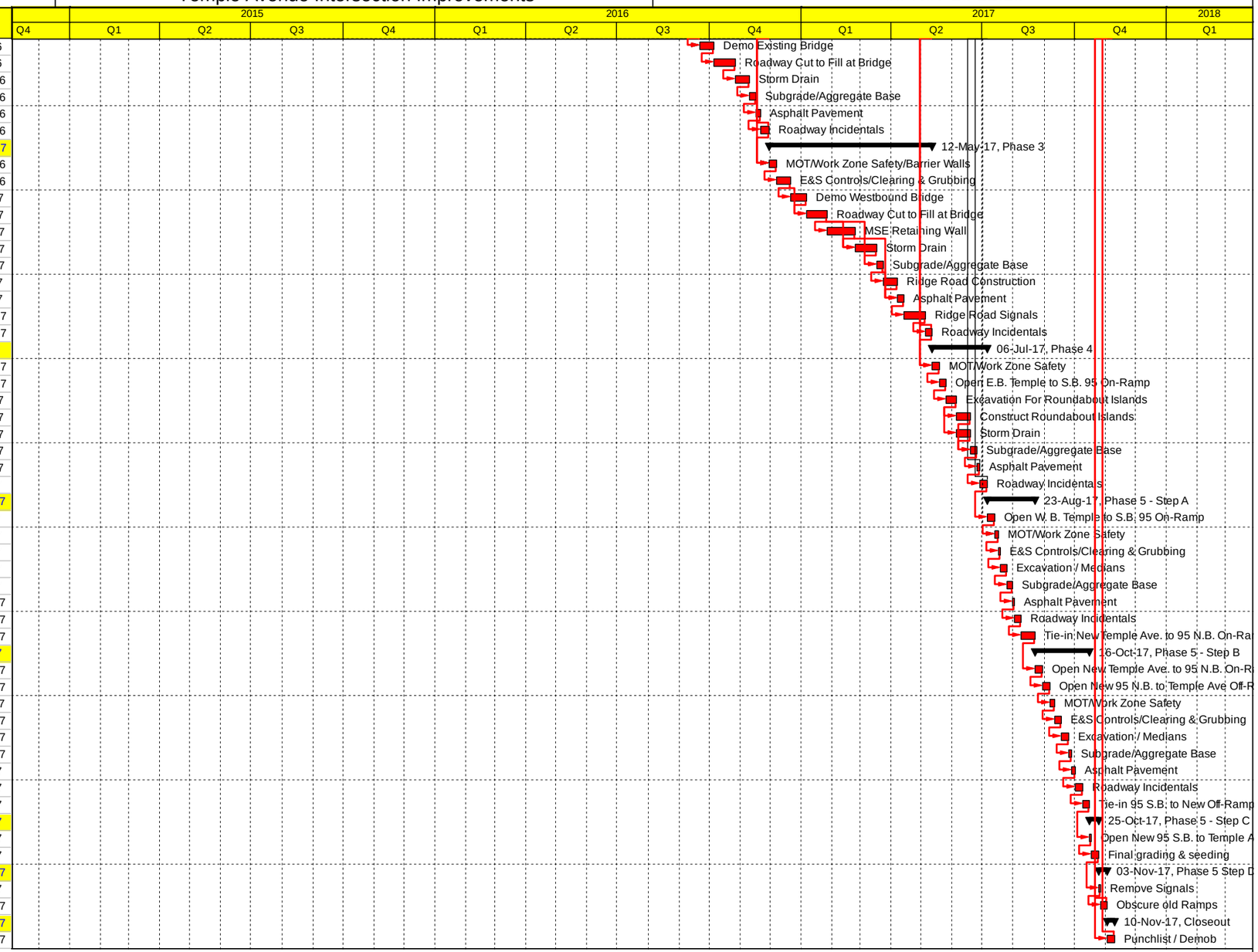
CORMAN CONSTRUCTION

Proposal Schedule

Temple Avenue Intersection Improvements

03-Nov-14 12:15

Activity ID	Activity Name	Original Duration	Total Float	Start	Finish
2120	Demo Existing Bridge	10	0	22-Sep-16	06-Oct-16
2130	Roadway Cut to Fill at Bridge	15	0	06-Oct-16	27-Oct-16
2140	Storm Drain	10	0	27-Oct-16	10-Nov-16
2150	Subgrade/Aggregate Base	5	0	10-Nov-16	17-Nov-16
2160	Asphalt Pavement	2	0	17-Nov-16	21-Nov-16
2170	Roadway Incidentals	5	0	21-Nov-16	30-Nov-16
Phase 3		117	0	30-Nov-16	12-May-17
3100	MOT/Work Zone Safety/Barrier Walls	5	0	30-Nov-16	07-Dec-16
3110	E&S Controls/Clearing & Grubbing	10	0	07-Dec-16	21-Dec-16
3120	Demo Westbound Bridge	10	0	21-Dec-16	06-Jan-17
3130	Roadway Cut to Fill at Bridge	15	0	06-Jan-17	27-Jan-17
3140	MSE Retaining Wall	20	0	27-Jan-17	24-Feb-17
3150	Storm Drain	15	0	24-Feb-17	17-Mar-17
3160	Subgrade/Aggregate Base	5	0	17-Mar-17	24-Mar-17
3170	Ridge Road Construction	10	0	24-Mar-17	07-Apr-17
3180	Asphalt Pavement	5	0	07-Apr-17	14-Apr-17
3190	Ridge Road Signals	15	0	14-Apr-17	05-May-17
3200	Roadway Incidentals	5	0	05-May-17	12-May-17
Phase 4		39	0	12-May-17	06-Jul-17
4100	MOT/Work Zone Safety	5	0	12-May-17	19-May-17
4110	Open E.B. Temple to S.B. 95 On-Ramp	5	0	19-May-17	26-May-17
4120	Excavation For Roundabout Islands	5	0	26-May-17	05-Jun-17
4130	Construct Roundabout Islands	10	0	05-Jun-17	19-Jun-17
4140	Storm Drain	10	0	05-Jun-17	19-Jun-17
4150	Subgrade/Aggregate Base	5	0	19-Jun-17	26-Jun-17
4160	Asphalt Pavement	2	0	26-Jun-17	28-Jun-17
4170	Roadway Incidentals	5	0	28-Jun-17	06-Jul-17
Phase 5 - Step A		34	0	06-Jul-17	23-Aug-17
5A110	Open W. B. Temple to S.B. 95 On-Ramp	5	0	06-Jul-17	13-Jul-17
5A120	MOT/Work Zone Safety	2	0	13-Jul-17	17-Jul-17
5A130	E&S Controls/Clearing & Grubbing	2	0	17-Jul-17	19-Jul-17
5A140	Excavation / Medians	5	0	19-Jul-17	26-Jul-17
5A150	Subgrade/Aggregate Base	3	0	26-Jul-17	31-Jul-17
5A160	Asphalt Pavement	2	0	31-Jul-17	02-Aug-17
5A170	Roadway Incidentals	5	0	02-Aug-17	09-Aug-17
5A180	Tie-in New Temple Ave. to 95 N.B. On-F	10	0	09-Aug-17	23-Aug-17
Phase 5 - Step B		38	0	23-Aug-17	16-Oct-17
5B110	Open New Temple Ave. to 95 N.B. On-F	5	0	23-Aug-17	30-Aug-17
5B120	Open New 95 N.B. to Temple Ave Off-R	5	0	30-Aug-17	07-Sep-17
5B130	MOT/Work Zone Safety	2	0	07-Sep-17	11-Sep-17
5B140	E&S Controls/Clearing & Grubbing	5	0	11-Sep-17	18-Sep-17
5B150	Excavation / Medians	5	0	18-Sep-17	25-Sep-17
5B160	Subgrade/Aggregate Base	3	0	25-Sep-17	28-Sep-17
5B170	Asphalt Pavement	2	0	28-Sep-17	02-Oct-17
5B180	Roadway Incidentals	5	0	02-Oct-17	09-Oct-17
5B190	Tie-in 95 S.B. to New Off-Ramp	5	0	09-Oct-17	16-Oct-17
Phase 5 - Step C		7	0	16-Oct-17	25-Oct-17
5C110	Open New 95 S.B. to Temple Ave. Off-R	2	0	16-Oct-17	18-Oct-17
5C120	Final grading & seeding	5	0	18-Oct-17	25-Oct-17
Phase 5 Step D		7	0	25-Oct-17	03-Nov-17
5D180	Remove Signals	2	0	25-Oct-17	27-Oct-17
5D190	Obscure old Ramps	5	0	27-Oct-17	03-Nov-17
Closeout		5	0	03-Nov-17	10-Nov-17
O100	Punchlist / Demob	5	0	03-Nov-17	10-Nov-17



Actual Work | Critical Remaining Work | Summary
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CORMAN CONSTRUCTION

Virginia Department of Transportation

Appendix

Appendix

CORMAN CONSTRUCTION | AMT

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

11/7/14

DATE

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.

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Technical Proposal Checklist and Contents	Attachment 4.0.1.1	Section 4.0.1.1	no	Vol. I, pgs. 50-52
Acknowledgement of RFP, Revisions, and/or Addenda	Attachment 3.6 (Form C-78-RFP)	Sections 3.6, 4.0.1.1	no	Vol I, pg. 49
Letter of Submittal	NA	Sections 4.1		
Letter of Submittal on Offeror's letterhead	NA	Section 4.1.1	yes	Vol I, pg. 1
Offeror's official representative information	NA	Section 4.1.1	yes	Vol I, pg. 1
Authorized representative's original signature	NA	Section 4.1.1	yes	Vol I, pg. 1
Declaration of intent	NA	Section 4.1.2	yes	Vol I, pg. 1
120 day declaration	NA	Section 4.1.3	yes	Vol I, pg. 1
Principal Officer information	NA	Section 4.1.5	yes	Vol I, pg. 1
Final Completion Date	NA	Section 4.1.6	yes	Vol I, pg. 1
Proposal Payment Agreement or Waiver of Proposal Payment	Attachment 9.3.1 or 9.3.2	Section 4.1.7	no	Vol I, pgs. 53-56
Certification Regarding Debarment Forms	Attachment 11.8.6(a) Attachment 11.8.6(b)	Section 4.1.8	no	Vol. I, pgs. 57-64

ATTACHMENT 4.0.1.1

I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Offeror's Qualifications	NA	Section 4.2		
Confirmation that the information provided in the SOQ submittal remains true and accurate or indicates that any requested changes were previously approved by VDOT	NA	Section 4.2.1	yes	Vol. I, pg. 2
Organizational chart with any updates since the SOQ submittal clearly identified	NA	Section 4.2.2	yes	Vol. I, pg. 2
Revised narrative when organizational chart includes updates since the SOQ submittal	NA	Section 4.2.2	yes	Vol. I, pg. 2
Design Concept	NA	Section 4.3		
Conceptual Roadway Plans and description	NA	Section 4.3.1	yes	Vol. II, pgs. 29-36 Vol. I, pgs. 3-9
Project Approach	NA	Section 4.4		
Utilities	NA	Section 4.4.1	yes	Vol. I, pgs. 10-12
Quality Assurance/ Quality Control (QA/QC)	NA	Section 4.4.2	yes	Vol. I, pgs. 12-19
Geotechnical	NA	Section 4.4.3	yes	Vol. I, pgs. 19-21

ATTACHMENT 4.0.1.1

I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Construction of Project	NA	Section 4.5		
Sequence of Construction	NA	Section 4.5.1	yes	Vol. I, pgs. 22 & 23
Transportation Management Plan	NA	Section 4.5.2	yes	Vol. I, pgs. 22 & 24-27
Disadvantaged Business Enterprises (DBE)	NA	Section 4.6		
Written statement of percent DBE participation	NA	Section 4.6	yes	Vol. I, pg. 28
DBE subcontracting narrative	NA	Section 4.6	yes	Vol. I, pg. 28
Proposal Schedule	NA	Section 4.7		
Proposal Schedule	NA	Section 4.7	no	Vol. I, pgs. 37-39, 45-48
Proposal Schedule Narrative	NA	Section 4.7	no	Vol. I, pgs. 39-44
Proposal Schedule in electronic format (CD-ROM)	NA	Section 4.7	no	CD-ROM

ATTACHMENT 9.3.1
PROPOSAL PAYMENT AGREEMENT

THIS PROPOSAL PAYMENT AGREEMENT (this "Agreement") is made and entered into as of this **7th** day of **November, 2014**, by and between the Virginia Department of Transportation ("VDOT"), and **Corman Construction, Inc.** ("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] **Corman Construction, Inc.**

By: _____

Name: Arthur C. Cox, III

Title: Vice President

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.

	11/7/14	Vice President
Signature	Date	Title

Corman Construction, 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.

October 30, 2014

Signature Date

Principal and Chief Financial Officer

Title

A. Morton Thomas and Associates, 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.

Signature	Date	Title
	10/28/2014	Principal

Sabra, Wang & Associates, 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.

Edward G. Drahos	October 24, 2014	Senior Vice President
Signature	Date	Title

Schnabel Engineering Consultants, 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.

Mary C Weeks 10/3/2014 Vice President, Greater Mid Atlantic Region

Signature Date Title

KCI Technologies, 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.

Tanya A. Howe 10/27/14 President
Signature Date Title

Utility Professional Services, 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.

Signature	10/27/14 Date	President & COO 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.

	10/24/14	PRESIDENT
Signature	Date	Title

KDR REAL ESTATE SERVICES
Name of Firm

VDOT
Virginia Department of Transportation

CORMAN CONSTRUCTION | AMT

Design-Build
I-95 at Temple Avenue
Interchange Improvements

Colonial Heights, Virginia

From: 0.041 Mi. West of Hamilton Avenue
To: 0.069 Mi. East of Existing I-95 Ramp

State Project No.: 0095-106-122

Federal Project No.: NH-095-1(328)

Contract ID No.: C00085623DB74

November 7, 2014

Submitted to:

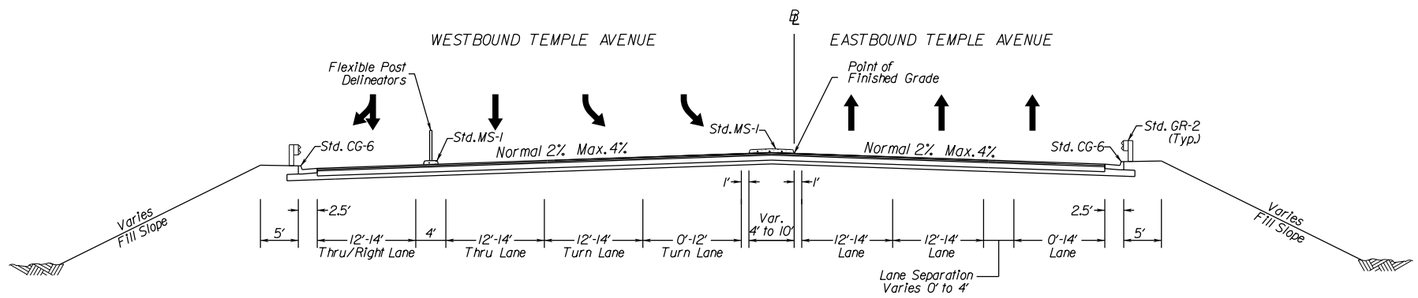
VDOT Virginia Department of Transportation

Prepared by:

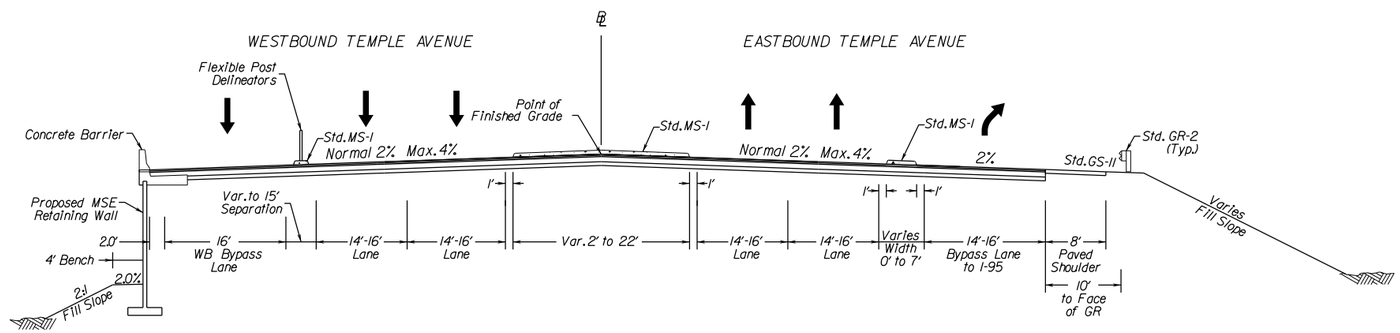
CORMAN CONSTRUCTION | AMT

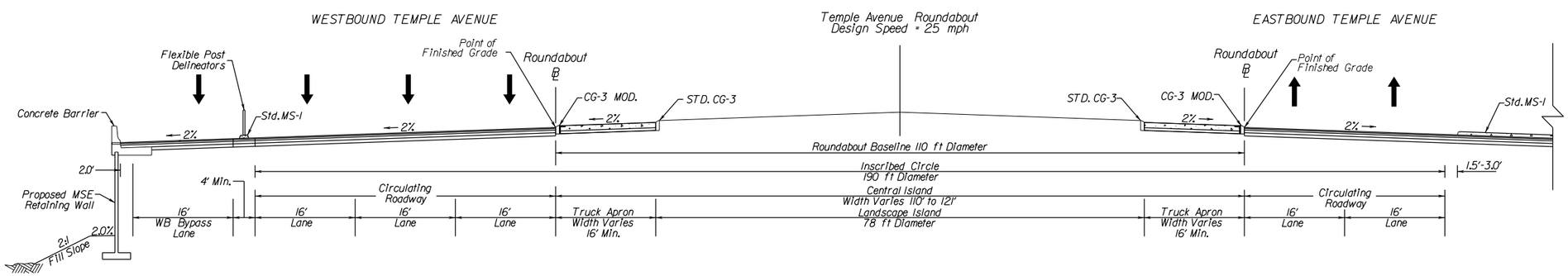
VDOT Virginia Department of Transportation

Temple Avenue
Design Speed = 40 mph
Station 195+50.00 to Station 200+75.00

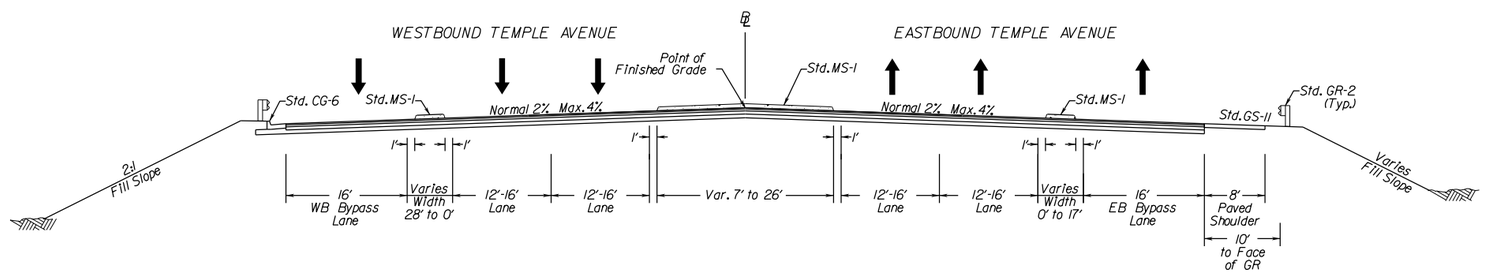


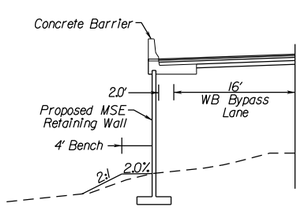
Temple Avenue
Design Speed = 40 mph
Station 200+75.00 to Station 203+50.00 connection with Roundabout





Temple Avenue
Design Speed = 40 mph
Station 205+50.00 to Station 208+00.00





Temple Ave
From Station 200+75 LT
to Station 206+75 LT

Temple Ave.- New Pavement and Pavement Widening

2.0" of Asphalt Concrete Type SM-12.5D @ 220 lbs/SY
3.0" of Asphalt Concrete Type IM-19.0D @ 330 lbs/SY
5.0" of Asphalt Concrete Type BM-25.0D @ 550 lbs/SY
6.0" of Aggregate Base Material Type I No. 21B

Include Std. UD-4 edgedrains or daylight Aggregate Base Mat'l. TY. I No. 21B for all pavement typicals.

Temple Ave.- Mill and Overlay (See Plans for Locations)

Mill min. 2.0" of Existing Pavement and resurface with Asphalt Concrete Type SM-12.5D @ 220 lbs/SY

Roundabout Concrete Apron

10" Jointed Plain or Continuously Reinforced Concrete Pavement
6.0" of Aggregate Base Material Type I No. 21B

CONCEPTUAL TYPICAL SECTIONS

I-95 AT TEMPLE AVENUE
INTERCHANGE IMPROVEMENTS

SHEET 1 OF 8

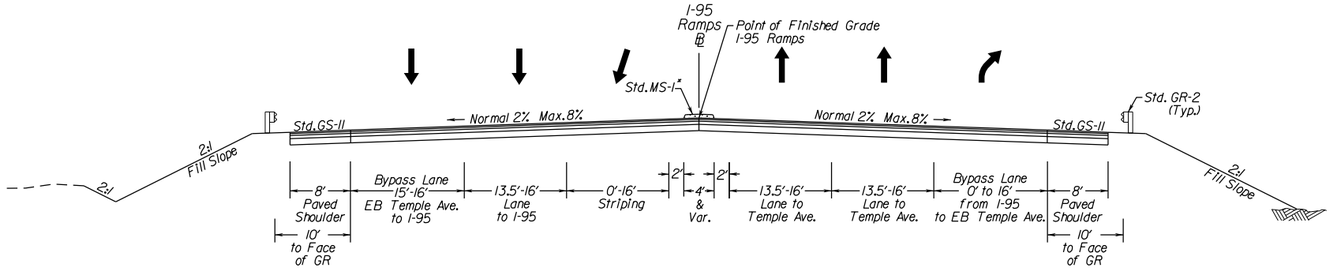
NOT TO SCALE

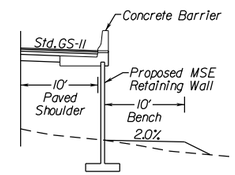
CORMAN CONSTRUCTION AMT A. Morton Thomas and Associates, Inc.

VDOT Virginia Department of Transportation

TYPICAL SECTIONS

I-95 RAMPS
Interchange Ramp GS-R
Design Speed 35 mph
From Station 108+75.00 to Station 117+00.00

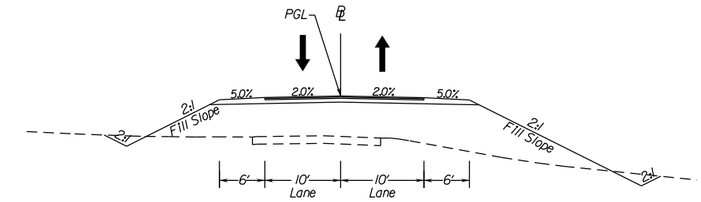




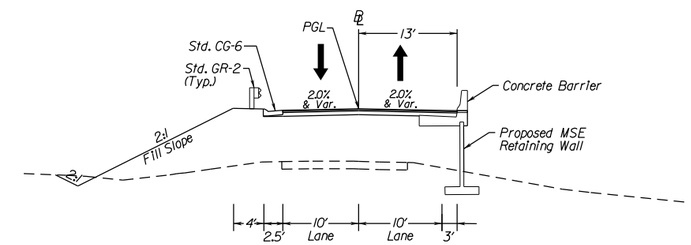
I-95 Ramps
From Station 112+60 RT to Station 114+60 RT

*Std. MS-1 with Flexible Delineators @ 20' Spacing

RIDGE ROAD
Rural Local Road GS-4
Design Speed 20mph
Station 11+38.00 to Station 13+45.00



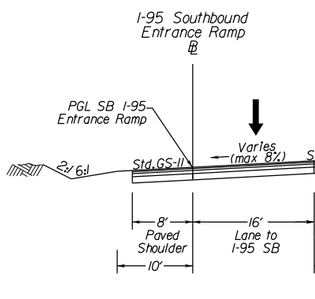
RIDGE ROAD
Urban Local Road GS-8
Design Speed 20mph
Station 10+50.00 to Station 11+38.00



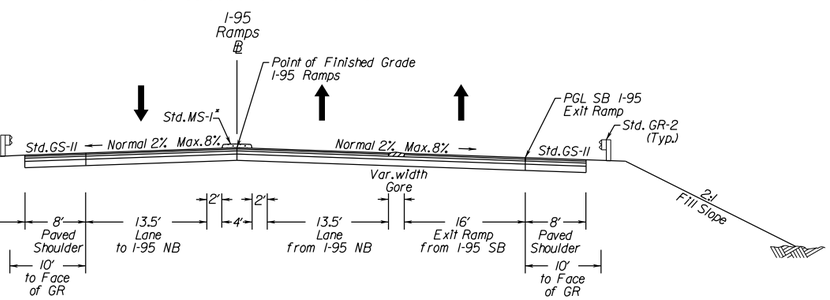
Ridge Road - New Pavement and Pavement Widening

1.5" of Asphalt Concrete Type SM-12.5D @ 165 lbs/SY
2.0" of Asphalt Concrete Type IM-19.0D @ 220 lbs/SY
6.0" of Aggregate Base Material Type I No. 21B
Include Std. UD-4 edgedrains or daylight Aggregate Base Mat'l. TY. I No. 21B for all pavement typicals.

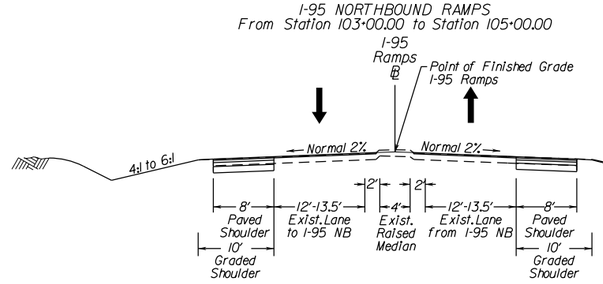
I-95 SOUTHBOUND ENTRANCE RAMP
From Station 105+00.00 to Station 108+75.00



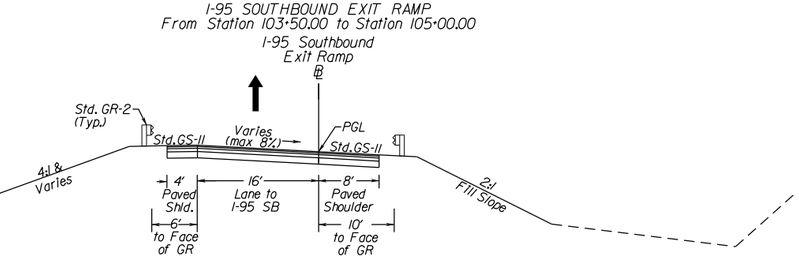
I-95 RAMPS
From Station 105+00.00 to Station 108+75.00



I-95 NORTHBOUND RAMPS
From Station 103+00.00 to Station 105+00.00



I-95 SOUTHBOUND EXIT RAMP
From Station 103+50.00 to Station 105+00.00



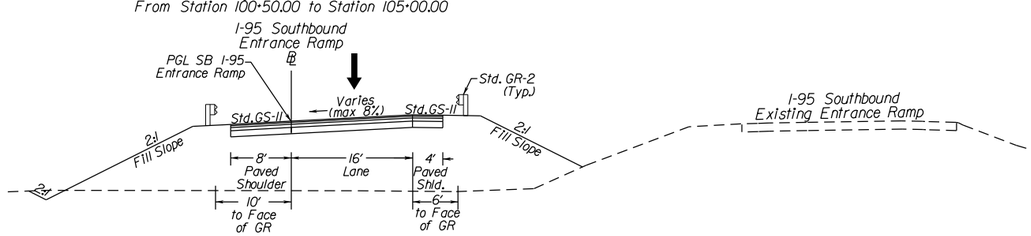
I-95 Ramps - New Pavement and Pavement Widening

2.0" of Asphalt Concrete Type SM-12.5D @ 220 lbs/SY
3.0" of Asphalt Concrete Type IM-19.0D @ 330 lbs/SY
5.0" of Asphalt Concrete Type BM-25.0D @ 550 lbs/SY
10.0" of Aggregate Base Material Type I No. 21B
Include Std. UD-4 edgedrains or daylight Aggregate Base Mat'l. TY. I No. 21B for all pavement typicals.

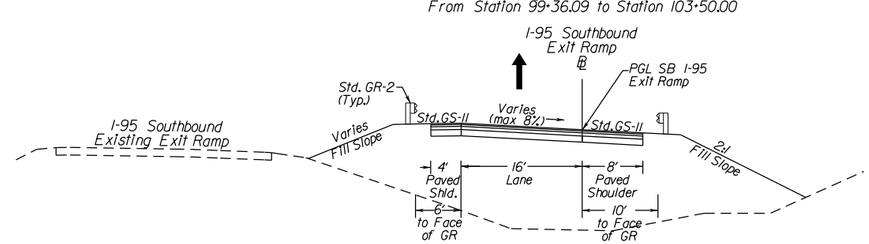
I-95 Ramps - Mill and Overlay (See Plans for Locations)

Mill min. 2.0" of Existing Pavement and resurface with Asphalt Concrete Type SM-12.5D @ 220 lbs/SY

I-95 SOUTHBOUND ENTRANCE RAMP
Interchange Ramp GS-R
Design Speed 35 mph
From Station 100+50.00 to Station 105+00.00



I-95 SOUTHBOUND EXIT RAMP
Interchange Ramp GS-R
Design Speed 35 mph
From Station 99+36.09 to Station 103+50.00



NOT TO SCALE

CONCEPTUAL TYPICAL SECTIONS

I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS

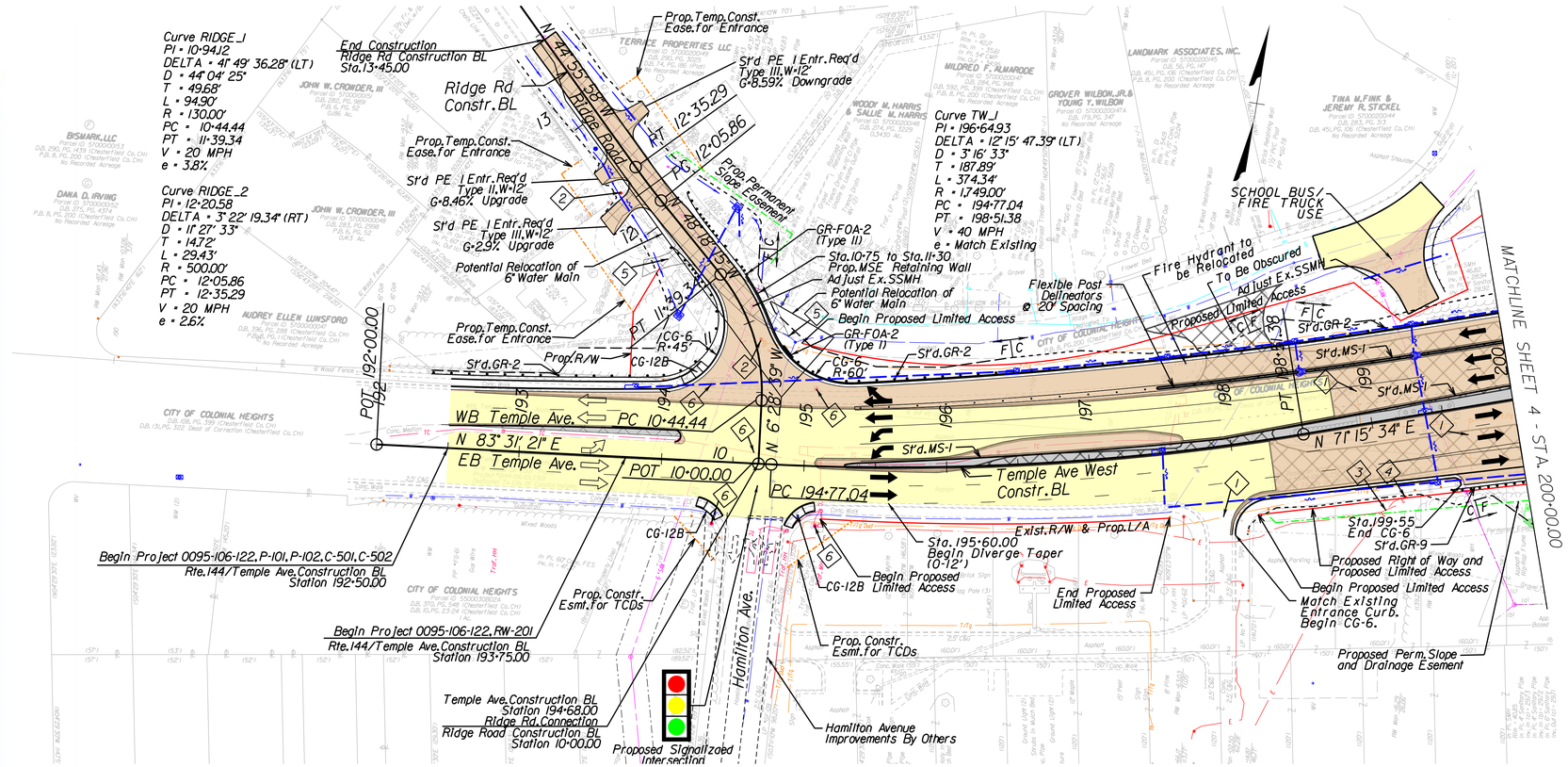
SHEET 2 OF 8

CORMAN CONSTRUCTION AMT A. Morton Thomas and Associates, Inc.

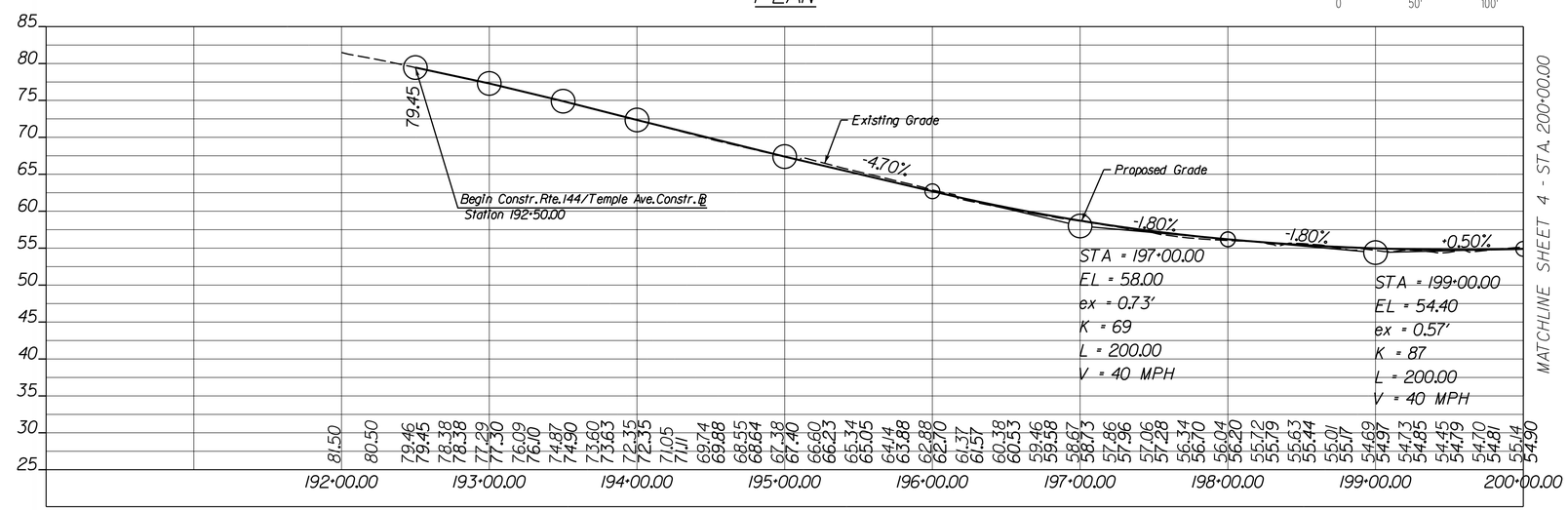
VDOT Virginia Department of Transportation

UTILITY MATRIX

STATION	UTILITY	UTILITY OWNER	CONFLICT YES/NO	CONFLICT DESCRIPTION	MITIGATION
Temp 197+30 to 213+35	4x4" MH & Ductbank	Verizon	Yes	Proposed roadway, bridge demolition	Relocate into new 4" conduits
Temp 194+60 to 199+60	UG Copper	Verizon	Yes	Proposed relocated intersection	Relocate
Ridge Rd 10+90 to 12+05	AE 600 Pair, 2 Poles, App Case, guys and anchors	Verizon	Yes	Proposed relocated intersection	Relocate to Relocated DVP Poles
Ridge Rd 12+05 to Tem 196+90	AE Coax	Comcast	Yes	Proposed relocated intersection	Relocate to Relocated DVP Poles
Temp 199+10	Pole GF46 DE with UG dips	Dominion	Yes	Proposed roadway	Relocate/Remove pole and UG service
Ridge Rd 12+05 to Tem 196+90	Poles GG13, GG14, GG45 and S/L	Dominion	Yes	Proposed relocated intersection	Relocate poles and OH service
Temp 200+00 to 207+40	Poles HG54, HG74, IG15, NT, IG57	Dominion	Yes	Proposed roadway	Relocate poles and equipment to new easement
Temp 201+05 to 206+75	3 span guy poles	Dominion	Yes	Proposed roadway	Remove guy poles and equipment
Temp 207+75 to 211+00	Street light poles, poles IG57, IG64, IG88 and JG18	Dominion	Yes	Proposed roadway	Remove light poles and equipment
Temp 211+50 to 214+50	2" gas line	Columbia Gas	No	None	None required
NB Ramp 106+50 to NB I-95	Pole JP10	Dominion	Yes	Proposed ramp	Relocate pole and equipment
SB Ramp 106+50	Pole NT	Dominion	Yes	Proposed ramp	Relocate pole and equipment
SB Ramp 107+50	Electric Meter	Dominion	Yes	Proposed ramp	House to be demo-Remove services
SB Exit Ramp 100+00	OH Sign Service	Dominion	Yes	Proposed Ramp	Reroute electrical service to new OH sign
SB Exit Ramp 104+80	Pole NT	Dominion	No	Proposed ramp	None required
NB Ramp 103+00 to 106+10	VDOT Traffic	VDOT	Yes	Proposed ramp	Remove service
NB Ramp 104+80	UG Service to cell tower	Verizon	No	Proposed ramp	None required
NB Ramp 106+00 to 107+50	UG cables to house	Verizon	Yes	Proposed ramp	House to be demo-Remove services
NB Ramp 106+00 to 107+50	UG service to pedestal	Verizon	Yes	Proposed ramp	House to be demo-Remove services
NB Ramp 103+45	VDOT ITS fiber optic	VDOT	No	None anticipated	Lower in place if required
SB Exit Ramp 99+00 to 102+50	VDOT ITS fiber optic	VDOT	No	None anticipated	Lower in place if required
NB Ramp 107+50 to 108+00	UG service to house	Comcast	Yes	Proposed ramp	House to be demo-Remove services
NB Ramp 115+00 and 116+60	8" Sanitary Sewer FM	Colonial Heights	Yes	Temple Ave. eastbound right turn by-pass lane	Adjust SS FM manholes to proposed grades
Ridge Rd 11+10	6" Sanitary Sewer	Colonial Heights	Yes	Proposed Ridge Road Entrance	Adjust SS manhole to proposed grade/sleeve SS under MSE wall
Ridge Rd 10+50 to exist. 6" main	8" AC Water Main	Colonial Heights	Yes	Proposed Ridge Road Entrance	Relocate portion in conflict with MSE wall
Ridge Rd 10+50 to 13+25	6" AC Water Main	Colonial Heights	Yes	Proposed Ridge Road Entrance	Relocate water main
Temp 197+80	Fire Hydrant	Colonial Heights	Yes	Temple Ave. westbound	Relocate hydrant to new turnaround



PLAN



TEMPLE AVE PROFILE

LEGEND:

- Existing Right of Way
- Existing Easement
- Proposed Right of Way
- Proposed Temp.Easement
- Proposed Perm.Easement
- Proposed Retaining Wall
- Gas Line
- Water Line
- Underground Telephone Cable
- Telephone Fiber Optic
- Underground Traffic Control
- Underground Fiber Optic
- Underground Power Cable
- Unknown Utility Line
- Denotes Relocate Fiber Optic/Manhole Duct Bank System
- Denotes Relocate Pole
- Denotes Remove/Relocate Power & Comm.
- Denotes Relocate O/H Power
- Provide New O/H Power
- Denotes Remove/Relocate Traffic Signal Infrastructure
- Denotes Remove Existing Light Pole
- Full Depth Pavement
- Mill & Overlay Pavment
- Demolition of Pavement
- Wetlands
- Denotes Proposed Truck Apron/ Stamped Concrete Median
- St'd. MS-1 Plain Concrete Median
- Denotes Construction Limits In Cut
- Denotes Construction Limits In Fill

CONCEPTUAL PLAN AND PROFILE

I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS

SHEET 3 OF 8

CORMAN CONSTRUCTION

AMT A. Morton Thomas and Associates, Inc.

VDOT Virginia Department of Transportation

Curve TW_2
PI = 202+51.76
DELTA = 14° 28' 47.39" (RT)
D = 9° 32' 57"
T = 76.22'
L = 151.63'
R = 600.00'
PC = 201+75.53
PT = 203+27.17
V = 40 MPH
e = N.C.

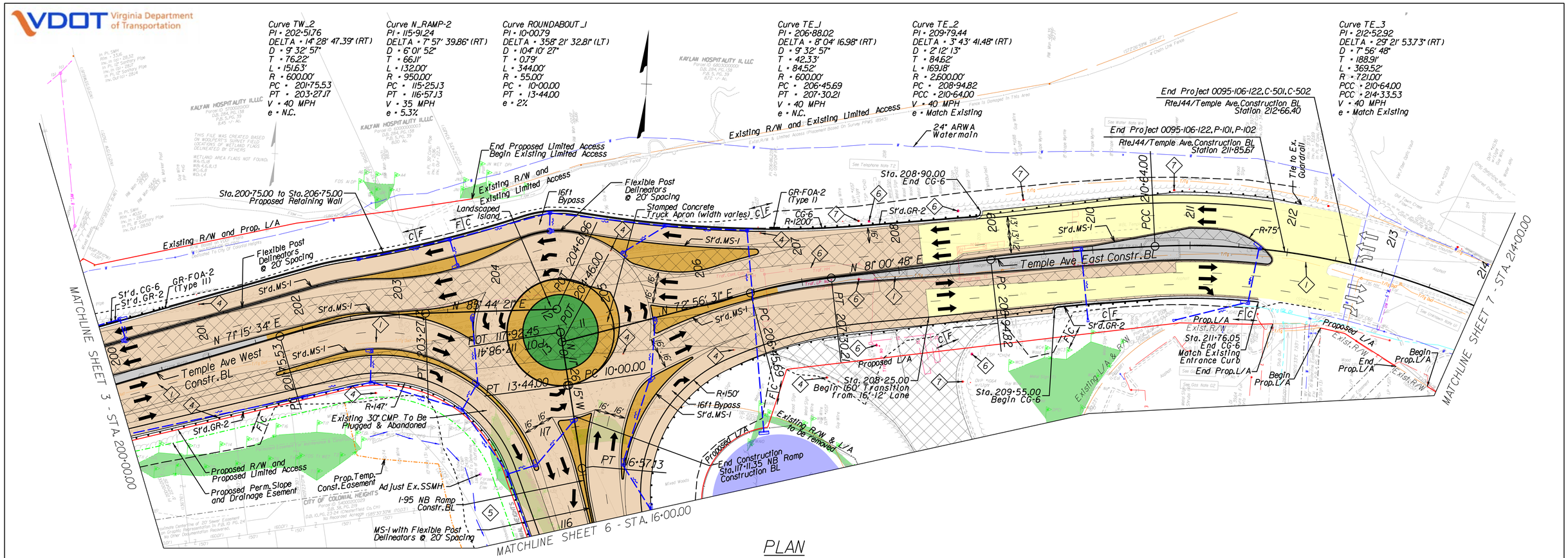
Curve N_RAMP-2
PI = 115+91.24
DELTA = 7° 57' 39.86" (RT)
D = 6° 01' 52"
T = 66.11'
L = 132.00'
R = 950.00'
PC = 115+25.13
PT = 116+57.13
V = 35 MPH
e = 5.3%

Curve ROUNDABOUT_1
PI = 10+00.79
DELTA = 358° 21' 32.81" (LT)
D = 104° 10' 27"
T = 0.79'
L = 344.00'
R = 55.00'
PC = 10+00.00
PT = 13+44.00
e = 2%

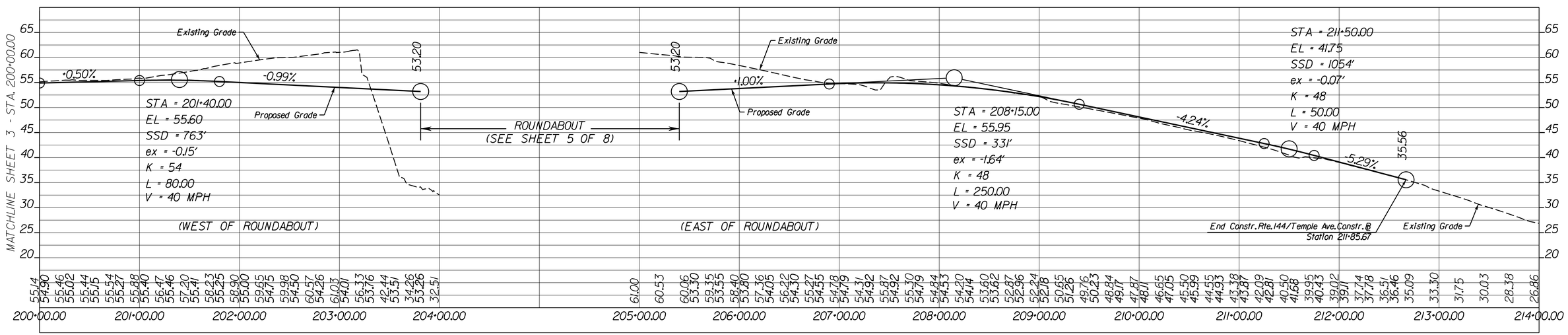
Curve TE_1
PI = 206+88.02
DELTA = 8° 04' 16.98" (RT)
D = 9° 32' 57"
T = 42.33'
L = 84.52'
R = 600.00'
PC = 206+45.69
PT = 207+30.21
V = 40 MPH
e = N.C.

Curve TE_2
PI = 209+79.44
DELTA = 3° 43' 41.48" (RT)
D = 2° 12' 13"
T = 84.62'
L = 169.18'
R = 2,600.00'
PC = 208+94.82
PCC = 210+64.00
V = 40 MPH
e = Match Existing

Curve TE_3
PI = 212+52.92
DELTA = 29° 21' 53.73" (RT)
D = 7° 56' 48"
T = 188.91'
L = 369.52'
R = 721.00'
PCC = 210+64.00
PCC = 214+33.53
V = 40 MPH
e = Match Existing



PLAN



TEMPLE AVE PROFILE

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ROUNDABOUT AND I-95 NB RAMP PROFILES SEE SHEET 5

SCALE 0 50' 100'

CONCEPTUAL PLAN AND PROFILE

I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS

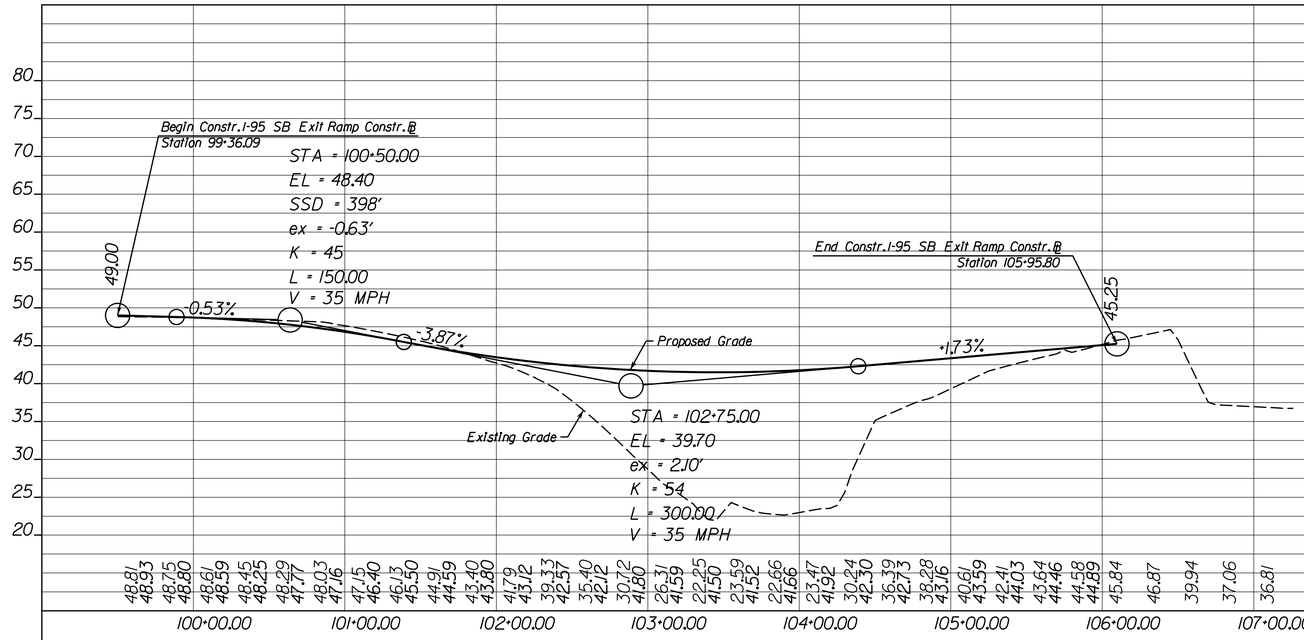
SHEET 4 OF 8

CORMAN CONSTRUCTION

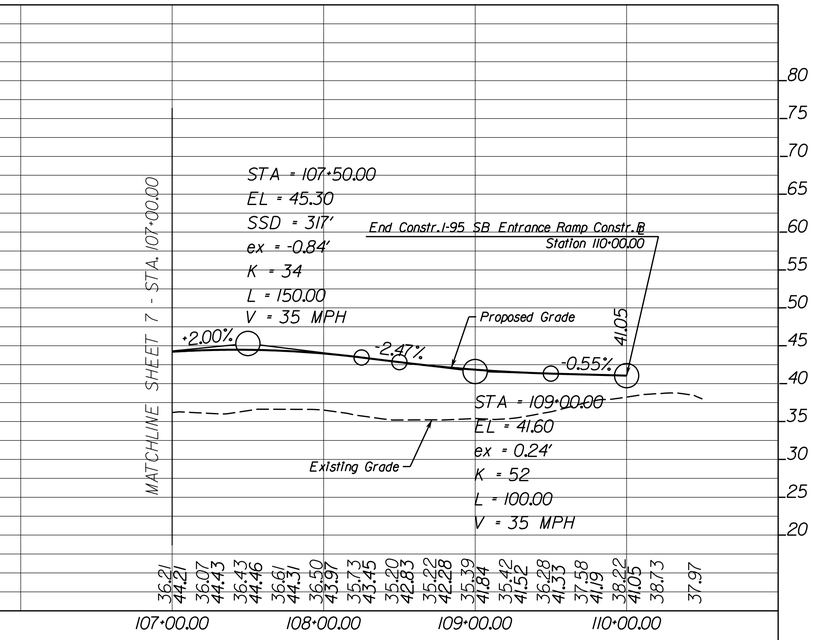
AMT A. Morton Thomas and Associates, Inc.

VDOT Virginia Department of Transportation

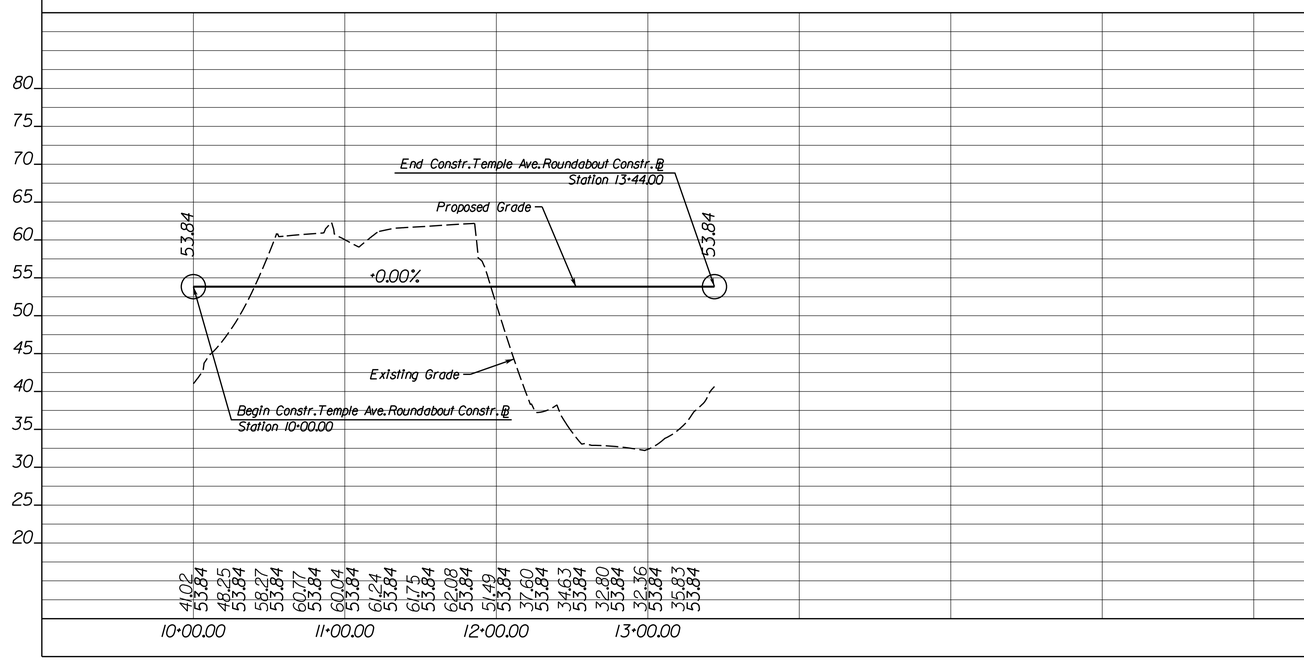
SB EXIT RAMP PROFILE



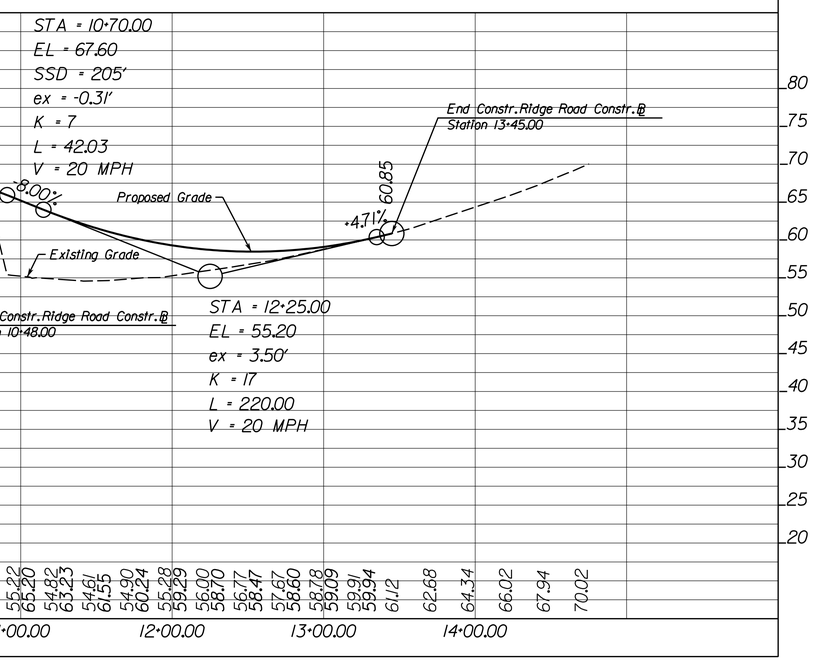
SB ENTRANCE RAMP PROFILE



ROUNDABOUT PROFILE



RIDGE ROAD PROFILE



CONCEPTUAL PLAN AND PROFILE

I-95 AT TEMPLE AVENUE
INTERSECTION IMPROVEMENTS

SHEET 5 OF 8

SCALE H=25', V=5'
0 50' 100'
0 1" 2"

CORMAN CONSTRUCTION

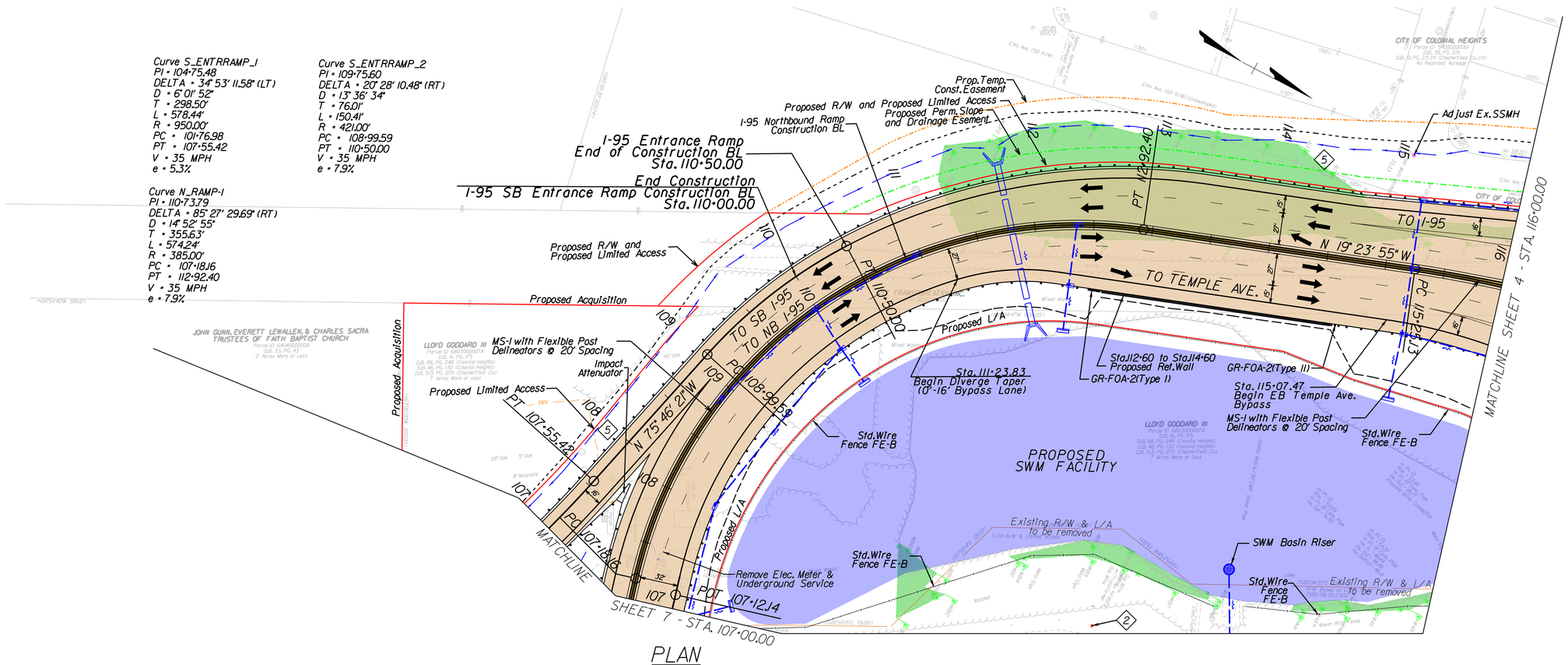
AMT A. MORTON THOMAS AND ASSOCIATES, INC.

VDOT Virginia Department of Transportation

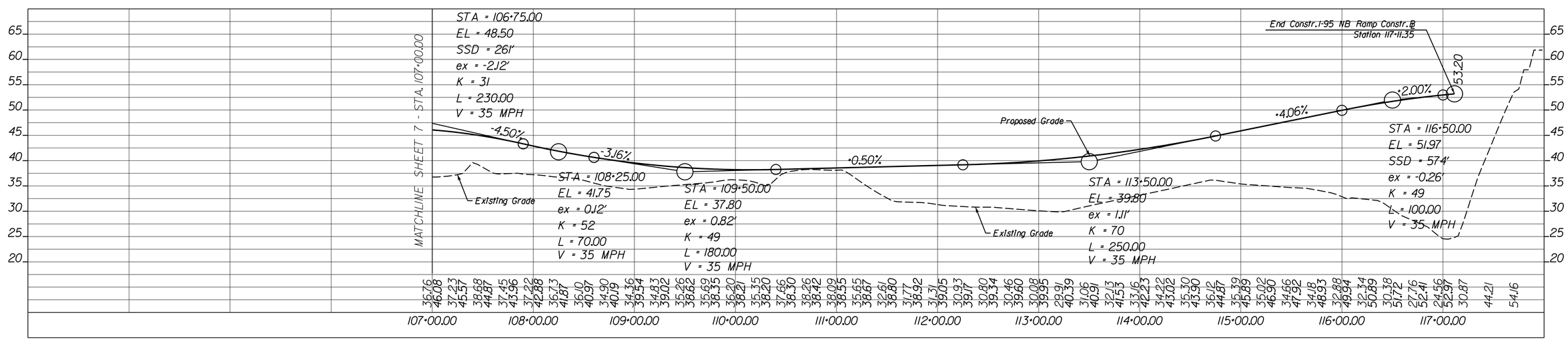
Curve S_ENTRRAMP_1
PI = 104+75.48
DELTA = 34° 53' 11.58" (LT)
D = 6° 01' 52"
T = 298.50'
L = 578.44'
R = 950.00'
PC = 101+76.98
PT = 107+55.42
V = 35 MPH
e = 5.3%

Curve S_ENTRRAMP_2
PI = 109+75.60
DELTA = 20° 28' 10.48" (RT)
D = 13° 36' 34"
T = 76.01'
L = 150.41'
R = 421.00'
PC = 108+99.59
PT = 110+50.00
V = 35 MPH
e = 7.9%

Curve N_RAMP-1
PI = 110+73.79
DELTA = 85° 27' 29.69" (RT)
D = 14° 52' 55"
T = 355.63'
L = 574.24'
R = 385.00'
PC = 107+18.16
PT = 112+92.40
V = 35 MPH
e = 7.9%



PLAN



NB EXIT RAMP PROFILE

LEGEND:

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FOR SB EXIT RAMP AND SB ENTRANCE RAMP PROFILES SEE SHEET 5

SCALE 0 50' 100'

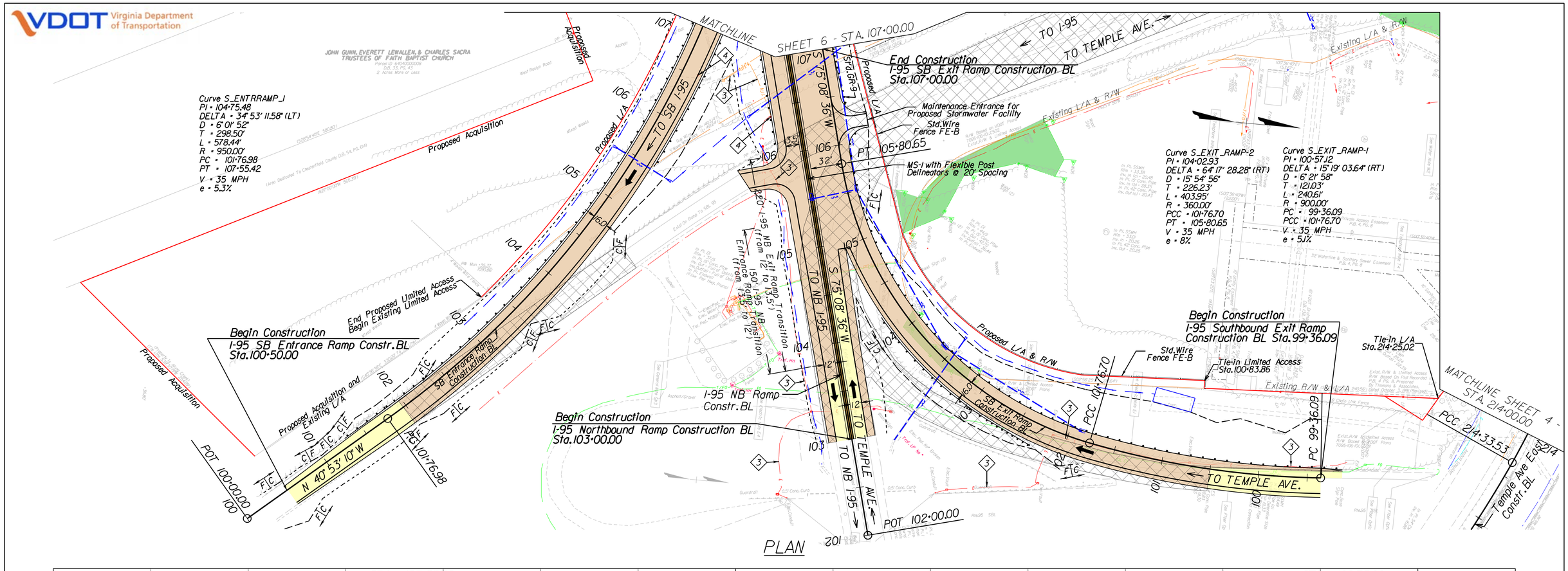
CONCEPTUAL PLAN AND PROFILE

I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS

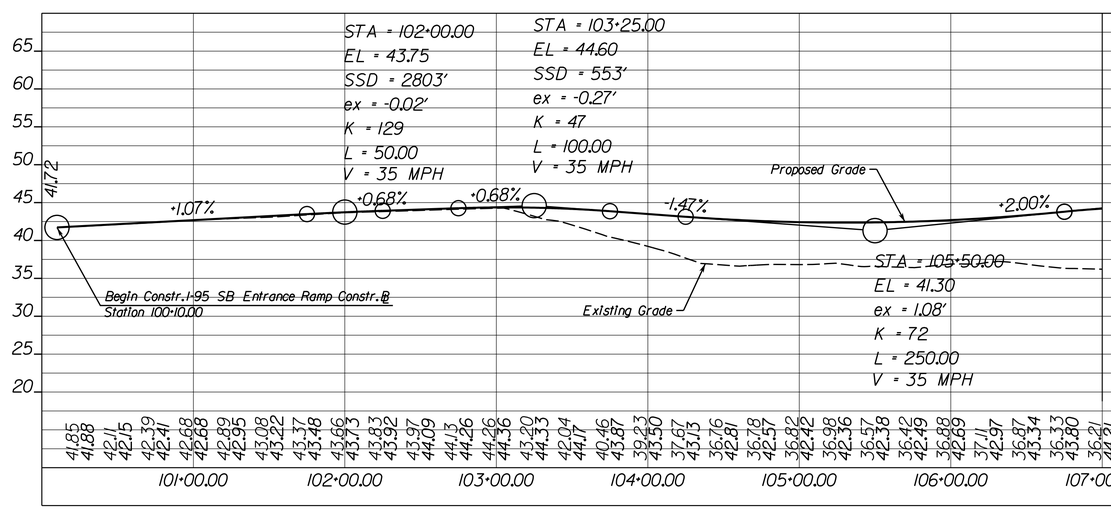
SHEET 6 OF 8

CORMAN CONSTRUCTION AMT A. MORTON THOMAS AND ASSOCIATES, INC.

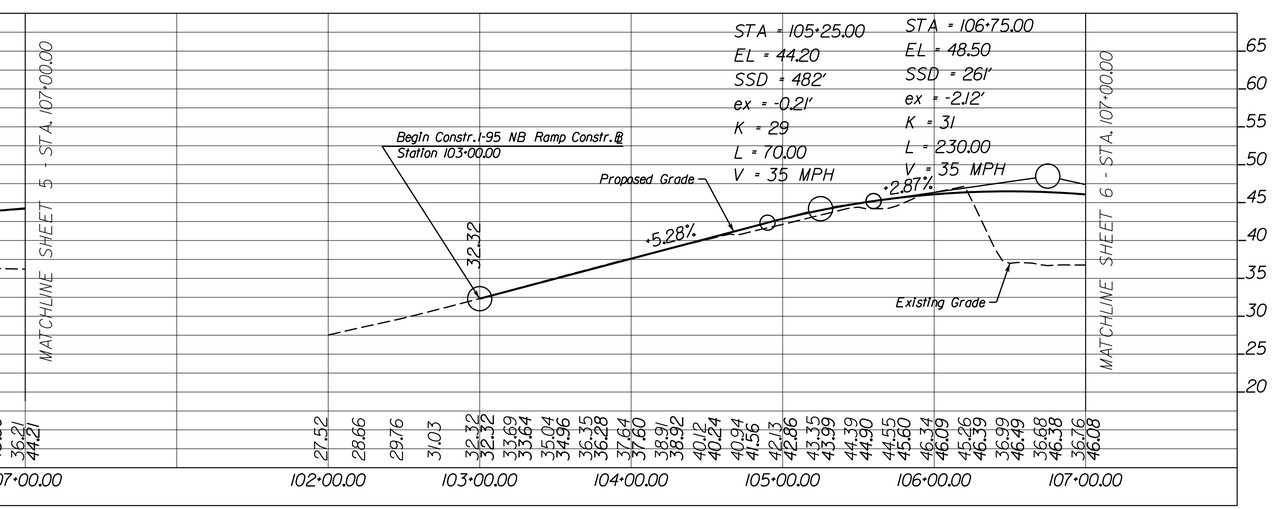
VDOT Virginia Department of Transportation



PLAN



SB ENTRANCE RAMP PROFILE



NB EXIT RAMP PROFILE

LEGEND:

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- Existing Easement
- Proposed Right of Way
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FOR SB EXIT RAMP AND SB ENTRANCE RAMP PROFILES SEE SHEET 5

SCALE 0 50' 100'

CONCEPTUAL PLAN AND PROFILE

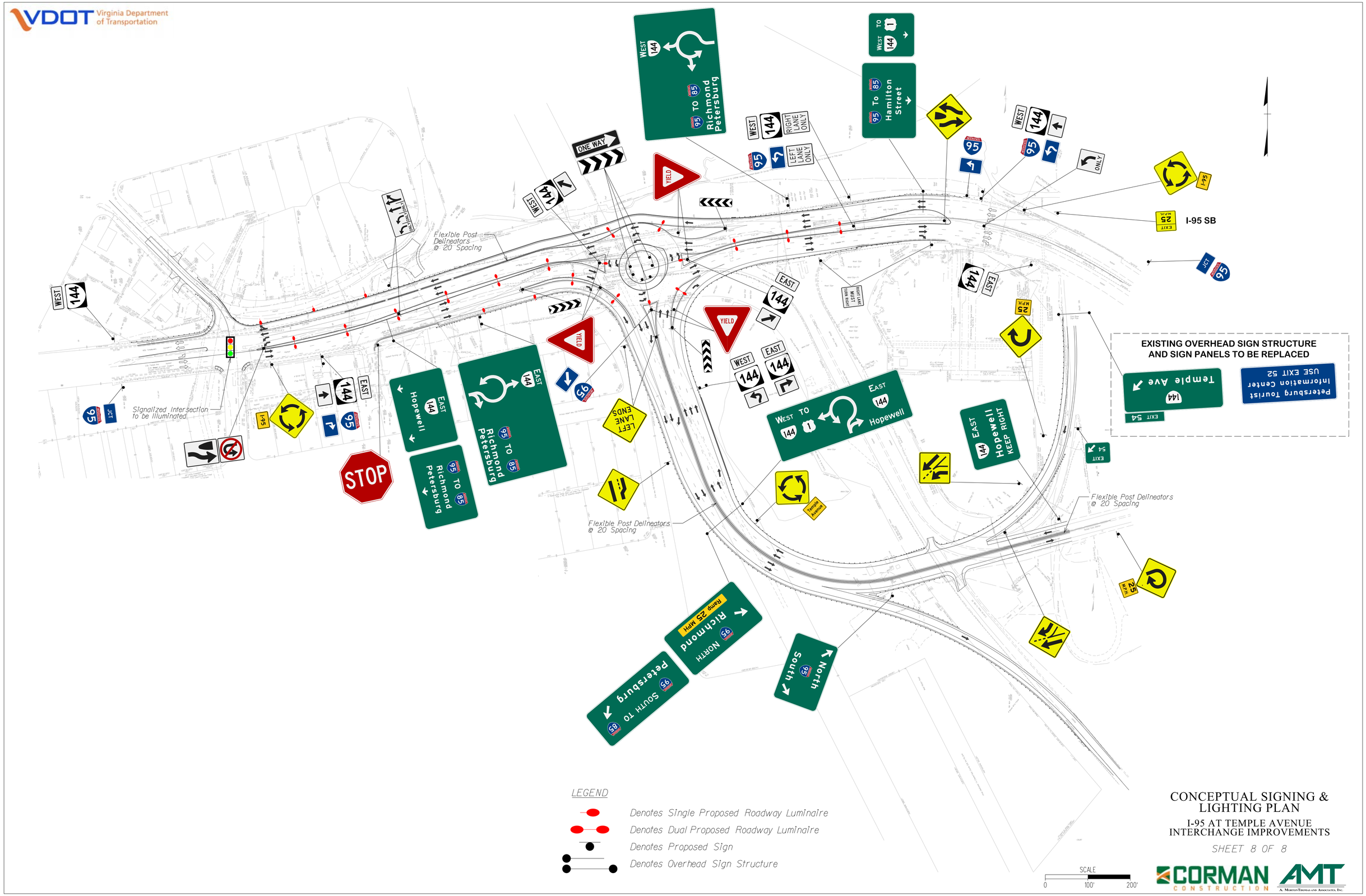
I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS

SHEET 7 OF 8

CORMAN CONSTRUCTION

AMT A. Morton Thomas and Associates, Inc.

VDOT Virginia Department of Transportation



CONCEPTUAL SIGNING & LIGHTING PLAN

I-95 AT TEMPLE AVENUE INTERCHANGE IMPROVEMENTS

SHEET 8 OF 8

CORMAN CONSTRUCTION

AMT A. Morton Thomas and Associates, Inc.

CORMAN CONSTRUCTION | AMT