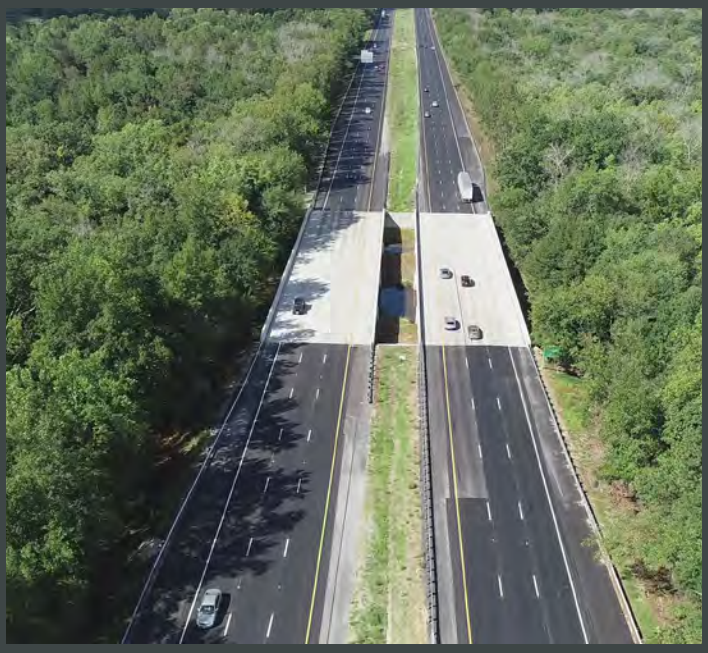
I-81 WIDENING MM 221 TO MM 225 TECHNICAL PROPOSAL VOLUME I

VIRGINIA DEPARTMENT OF TRANSPORTATION

January 20, 2023



State Project No.: 0081-007-013, B638, B639, B640, B641, B642, C501, D602, D603, P101, R201
Federal Project No.: NHPP-081-2(329)
Contract ID Number: C00116269DB116

kokosing
CONSTRUCTION COMPANY, INC.
6235 WESTERVILLE ROAD
WESTERVILLE, OH 43081

4.1 | Letter of Submittal

kokosing
CONSTRUCTION COMPANY, INC.
6235 WESTERVILLE ROAD | WESTERVILLE, OH 43081
PHONE 301.953.0900

4.1 | LETTER OF SUBMITTAL
ELECTRONICALLY VIA BID EXPRESS

January 20, 2023

Commonwealth of Virginia
Department of Transportation (VDOT)
Virginia Dept. of Transportation
1401 East Broad Street
Richmond, VA 23219

Attention: Joseph A. Clarke, PE, DBIA (APD Division)

RE: Request for Proposals | Design-Build | I-81 Widening MM 221 to MM 225 | Augusta County, VA | State Project No.: 0081-007-013, B638, B639, B640, B641, B642, C501, D602, D603, P101, R201 | Federal Project No.: NHPP-081-2(329) | Contract ID Number: C00116269DB116

Dear Joseph:

4.1.1 Kokosing Construction Company, Inc. (Kokosing), 6235 Westerville Road, Westerville, OH 43081 is the legal entity who will execute the contract with Virginia Dept. of Transportation (VDOT).

4.1.2 Kokosing hereby declares that it is our intent, 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, Kokosing hereby declares that the offer represented by the Technical and Price Proposals will remain in full force and effect for one hundred twenty (120) days after the date the Price Proposal is actually submitted to VDOT.

4.1.4 Point of Contact	Secondary Point of Contact	4.1.5 Kokosing Principal Officer
Ryan Gorman, PE, DBIA Regional Vice President of Alternative Delivery Kokosing Construction Co. 16500 Happy Hill Road South Chesterfield, VA 23834 804-400-4521 Cell 804-520-9810 Fax rgorman@kokosing.biz	Steve Marincic, PE Sr. Area Manager Kokosing Construction Co. 4 Southgate Road Arlington, VA 22204 614-332-9965 Cell 301-953-0384 Fax swm@kokosing.biz	Gregory A. Hamilton, PE, DBIA Regional Sr. Vice President Kokosing Construction Co. 12001 Guilford Road Annapolis Junction, MD 20701 614-207-0716 Cell gah@kokosing.biz

4.1.6 Final Completion Date: May 21, 2027 **4.1.7** Unique Milestone Date: November 24, 2026

4.1.8 An executed Proposal Payment Agreement (Attachment 9.3.1) is in the Appendix.

4.1.9 Certification Regarding Debarment Forms (Attachments 11.8.6(a) and (b)) are signed and in the Appendix.

4.1.10 Kokosing is committed to achieving a 6% DBE participation goal for the entire value of the contract.

4.1.11 Kokosing confirms that all commercial and professional registration requirements set forth in our Statement of Qualifications, including, but not limited to those requirements of the Virginia State Corporation Commission (SCC) and the Virginia Department of Professional and Occupational Regulations (DPOR) are complete and accurate and Kokosing, and business entities on our team, remain in good standing with all applicable regulatory bodies and are eligible to provide the services required on the Project.

Sincerely,

KOKOSING CONSTRUCTION COMPANY, INC.

Gregory A. Hamilton, PE, DBIA
Regional Sr. Vice President

4.2 | Offeror's Qualifications

4.2 OFFEROR'S QUALIFICATIONS

4.2.1 SOQ ACCURACY CONFIRMATION STATEMENT

CONFIRMATION STATEMENT: The Kokosing | RDA Team (Kokosing Team) received approval from Virginia Department of Transportation (VDOT) to replace Kyle LaClair with Scott Clark as the Utility Manager and Rick DeLong, PE, with Bobby Hester, PE, as a Roadway Engineer on 12/19/2022 in accordance with Part 1, Section 11.4. Please see the revised organizational chart below. Apart from these changes and the added Deputy positions allowed by the RFP, the Kokosing Team hereby confirms the remaining information contained in our Statement of Qualifications (SOQ) is true and accurate.

ORGANIZATIONAL CHART & NARRATIVE: **Figure 4.2.1-1** is our updated SOQ Organizational Chart. Changes or additions to personnel have been marked in red.

Deputy Key Personnel: As permitted in the Request for Proposal (RFP), we have added the following Deputy Key Personnel who are designated with a ★ on the updated Organizational Chart:

- **Deputy Design-Build Project Manager** | Jeff Walton (Kokosing) reports to the Design-Build Project Manager (DBPM) Steve Marincic. Jeff has over 37 years of experience and worked his way through the ranks from Foreman to Superintendent to Construction Manager to Project Manager. He excels in drainage, grading, highway, and bridge construction on both design-bid-build projects as well as alternative delivery projects.
- **Deputy Design Manager** | Rick DeLong, PE (RDA), reports to the Design Manager (DM) Darell Fischer, PE, DBIA. Rick brings nearly 30 years of interstate design experience which includes managing and leading design-build (DB) and design-bid-build projects on interstates I-81, I-64, I-395, and I-495. Additionally, Rick resides in Fishersville, less than 10 miles away from both the Staunton District office and the Project site, bringing an increased level of corridor familiarity and responsiveness to the Department.

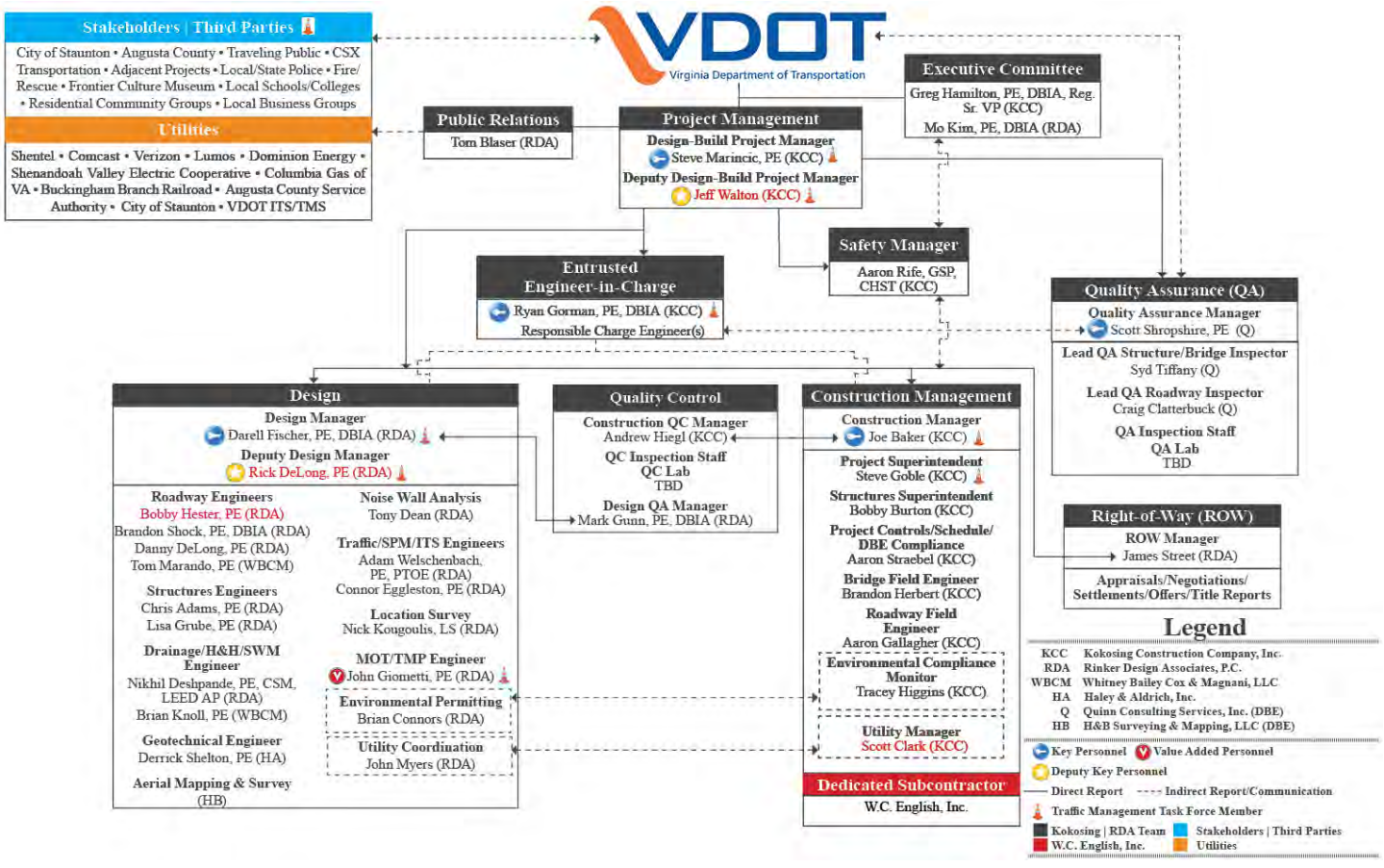


Figure 4.2.1-1: Organizational Chart

4.3 | Design Concept

4.3 DESIGN CONCEPT

The Kokosing Team's design concept for the widening of I-81 from MM 221 to MM 225 (the Project) is a collaboration of our design and construction teams. Our DB Team members are recognized as leaders for completing some of VDOT's most challenging DB projects, and we will partner with VDOT to successfully deliver this Project. As presented herein, we are providing a design concept that meets or exceeds the Project's intended scope of work and provides benefit to the Department and end users by:

- ✓ Providing a safe work zone for the traveling public and construction team members
- ✓ Limiting potential risks for stakeholders
- ✓ Limiting traffic disruptions
- ✓ Improving the effectiveness of construction operations
- ✓ Addressing and resolving current maintenance and inspection issues
- ✓ Providing long-term asset performance and durability

The Kokosing Team has developed a design concept that meets or exceeds all requirements listed in the RFP Technical Requirements including, providing a concept that requires no additional right of way (ROW) from what was shown in the RFP plans and does not require additional Design Exceptions and/or Design Waivers (DE/DW) beyond those identified or included in the RFP.

In developing our design concept, our Team has identified and incorporated modifications and optimizations to the RFP plans which provides value added benefits to the Department, including:

- ✓ Optimized alignment to better align with the existing crown while still meeting the required lane and shoulder width requirements, reducing median widening costs
- ✓ Incorporated spline grades to reduce variable depth build-up and better fit geometry to the mobile LIDAR surface, resulting in an average 2 to 3-in. lowering of the I-81 profile, which reduces cost and schedule
- ✓ Minimize the amount to cross slope correction which reduces cost, schedule, and impacts to the traveling public during construction
- ✓ Optimized the proposed storm sewer network to reduce significant quantities of pipe and minimize construction and future maintenance costs
- ✓ Incorporated retaining walls to eliminate environmental impacts by eliminating box culvert extensions
- ✓ Optimized locations of stormwater management (SWM) facilities to reduce environmental impacts
- ✓ Reduced future maintenance costs with our proposed bridge design elements

Throughout our concept design development, the Kokosing Team has maintained a focus on achieving VDOT's goals for the I-81 Improvement Program, including:

	SAFETY: Our Design Concept ensures a high standard of safety is provided, not only for the end user once the Project is constructed, but for the traveling public and construction workers during construction.
	QUALITY: Minimization of long-term maintenance is an important consideration in our Team's Design Concept development. Quality is a key factor for the service life of the final improvements. We have made it a top priority to our design program; the QC and QA teams working with construction will ensure a top-quality final product.
	DELIVERY: We recognize the commitment VDOT has made to elected officials and the public to deliver the I-81 Improvement Program on time. Our Team is committed to expediting design, reviews, approvals, and construction.
	COST: Throughout the development of our Design Concept, our Team has considered and implemented numerous cost-saving measures wherever possible, without compromising safety or quality.

Our Team's key proposed optimizations and design features related to achieving the above are highlighted on the next page in **Figure 4.3.1-1 Design Concept Overview** and further described on the following pages. Additionally, they are called out in our Conceptual Roadway and Structure plans in Volume II.

4.3 DESIGN CONCEPT

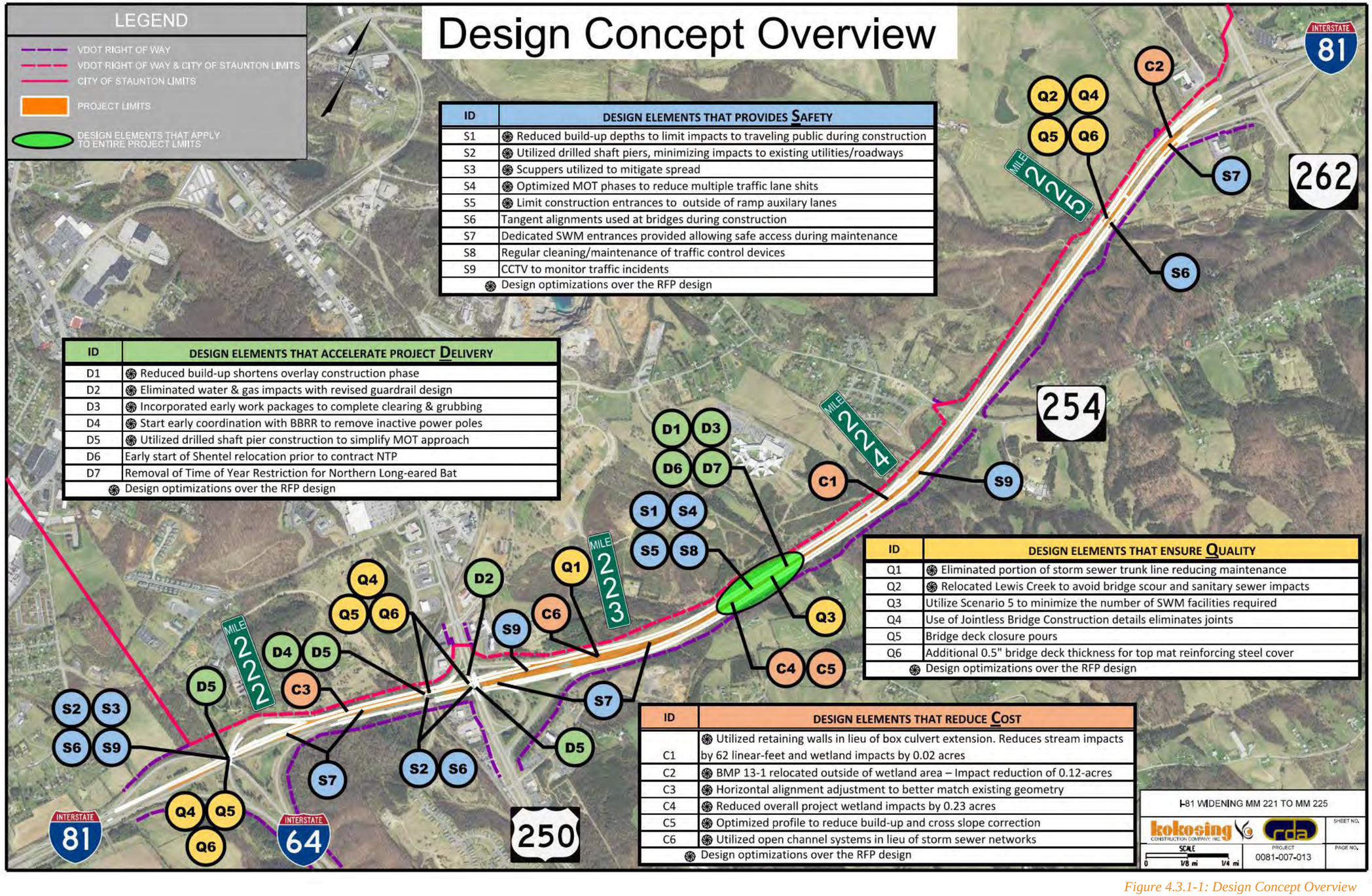


Figure 4.3.1-1: Design Concept Overview

4.3 DESIGN CONCEPT

4.3.1 CONCEPTUAL ROADWAY PLANS

For I-81 furnish descriptions and conceptual plans indicating:

The Kokosing Team's Conceptual Roadway Plans are provided in Volume II of our Technical Proposal. We have developed our design to meet or exceed all design requirements in the RFP. No additional DE/DW to the VDOT/AASHTO standards are required beyond what is identified in the RFP. Our conceptual design includes the VDOT provided DE/DW's for reduced shoulder widths to avoid additional impacts to existing structures and a DE/DW will be pursued by the Kokosing Team for cross slope and superelevation design as indicated in the RFP. The design is contained within the proposed ROW limits shown in the RFP Conceptual Plans. **Figure 4.3.1-1** identifies incorporated design optimizations. Details of these optimizations, and other design features, are further described in the subsections below and depicted in Volume II.

(a) General Geometry Including Horizontal Curve Data and Associated Design Speeds, the Number and Widths of Lanes and Shoulders: Our design provides three general-purpose lanes, northbound (NB) and southbound (SB) divided by an open median, and satisfies the requirements listed in **Table 4.3.1-1**. Our Conceptual Roadway Plans include detailing for horizontal curve data and associated design speeds, the number and width of lanes and shoulders, superelevations (meeting TC-5.11R for the design speed), and improvements to acceleration/deceleration ramps within the Project limits.

TABLE 4.3.1-1: ROADWAY GEOMETRY

Roadway	Geometric Design Standard	Design Speed	Number and Width of Lanes (each Direction)	Roadway Shoulder Width	Paved Shoulder Width	Bridge Shoulder Width
I-81 (Between I-64 and Route 250)	GS-INT	70 MPH	3/12'	12'	10'	12'
I-81 (Between Route 250 and Route 262)	GS-INT	70/75 MPH	3/12'	12'	10'	12'
Augusta Woods Drive	GS-8	25 MPH	N/A	N/A	N/A	N/A
Route 250 (Jefferson Hwy)	GS-5	50 MPH	N/A	N/A	N/A	N/A

(b) Horizontal Alignments: After reviewing the horizontal alignments for I-81 and interchange ramps provided in the RFP Conceptual Plans, we recognize the goal of an economical widening while staying within the existing ROW. Plus, the environmentally responsible thought process that went into setting the horizontal alignment to reduce impacts to the outside of I-81, our concept uses the same methodology. Utilizing crown and lane shifts allows for minimal impacts to the outside shoulder, primarily limited to updating the guardrail. We optimized the alignment to better align with the existing crown through the curve centered at Station 3060+00 while still meeting the lane and shoulder width requirements which helps to reduce construction duration and cost.

TABLE 4.3.1-2: MAXIMUM GRADE

Alignment	Maximum Grade
I-81 NB	3.1%
I-81 SB	2.9%
Ramp 1 (I-81 SB to I-64 EB)	2.3%
Rt 250 Ramp A	4.3%
Rt 250 Ramp C	1.7%
Rt 250 Ramp F	0.7%
Rt 250 Loop D	4.2%
Rt 262 Ramp A	1.1%
Rt 262 Ramp C	1.5%
Augusta Woods Drive	7.4%
Rt 250 (Jefferson HWY)	1.7%

(c) Maximum Grade for All Segments and Connectors: Our Team evaluated the RFP vertical alignment and compared it to the existing surface of I-81, utilizing the additional mobile LIDAR data VDOT completed. As shown in **Table 4.3.1-2**, our conceptual design meets the RFP requirements for maximum vertical grade.

4.3 DESIGN CONCEPT

Tapping into our extensive experience developing interstate widening/reconstruction designs, we created reports to evaluate areas requiring significant asphalt build-up to correct cross-slopes throughout the Project. As a result, we determined where to use spline grades to reduce variable depth build-up and more closely develop geometry to match the mobile LIDAR surface, resulting in an average 2-3" lowering of the I-81 profile. This optimization reduces cost and schedule. Similar to our mainline I-81 approach, profiles for each affected interchange ramp were developed to reduce variable depth asphalt overlays and additional grading.

(d) Typical Sections of The Roadway Segments to Include Ramps, Retaining Walls and Bridge Structures:

Roadway: We started the typical section evaluation by preparing a spreadsheet to evaluate the existing cross slopes, grade breakover between lanes, and vertical difference between the existing crown and proposed profile elevation. This determined where the existing cross slopes required slope correction and led to a proprietary meeting topic discussed with VDOT regarding the extensive cross slope correction required for the Project. The Kokosing Team provided VDOT a copy of the Excel evaluation and roll plot shown below in **Figure 4.3.1-2**. This led to an Addendum to revise the RFP criteria for cross slope correction and reduced the number of lane-miles requiring correction by 68%, providing cost and schedule savings for the Project. A combination of existing and new design cross slopes is used where the proposed crown of I-81 is shifted from the existing crown, thereby minimizing the amount of cross slope correction which reduces cost, schedule, and impacts to the traveling public during construction.

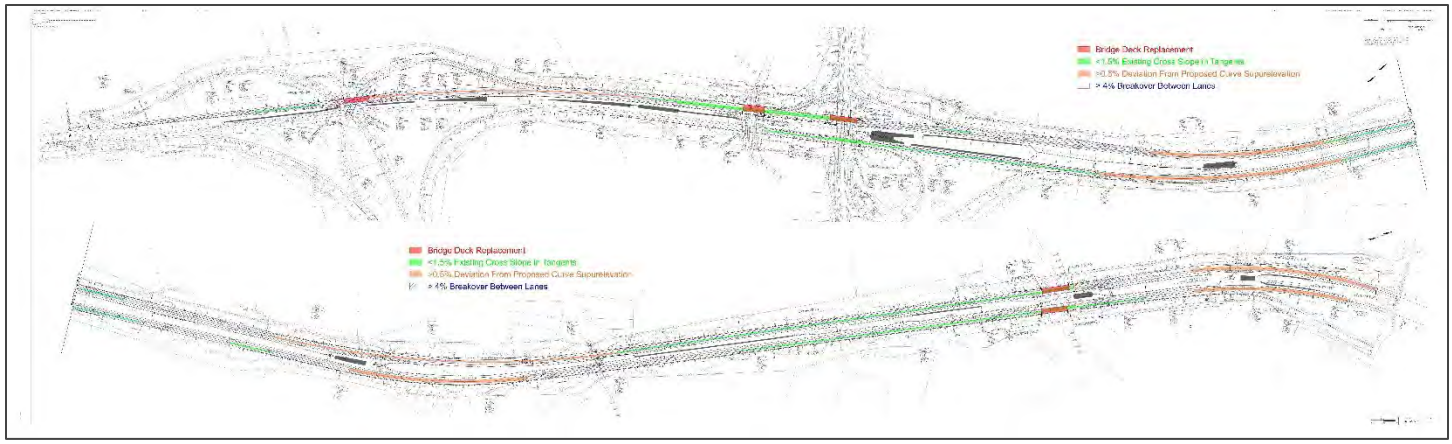


Figure 4.3.1-2: Kokosing Team's Cross Slope Evaluation Roll Plot

Cross slope correction is being proposed where:

1. The proposed profile is required to be built up above 3-in.
2. The existing cross slope is less than 1% in tangent locations
3. The average existing superelevation is not within 1% of the design superelevation per the RFP
4. There is greater than a 6% breakover between existing or proposed travel lanes
5. Where existing cross slope is used, we will prepare a Design Waiver for approval

As shown in **Figure 4.3.1-3** on the following page, the majority of the Project will incorporate the minimum 2-in. mill and fill depth to the existing travel lanes, except for the right (outside) lane of I-81 NB between Stations 2221+00 to 2236+00 and I-81 SB between Stations 3088+50 to 3103+50 which will be milled to a depth of 5-in. and 4.5-in. respectively, as per the RFP.

4.3 DESIGN CONCEPT

Standard CS-4B or GS-13 slope grading is used along the Project corridor for the inside/median slopes. However, where fill heights exceed 7.5-ft. and where there are fixed objects or other hazards SWM ponds, headwalls, fill retaining walls, etc.), guardrail is proposed along with a 2:1 fill slope. Where guardrail is not required along the outside of NB and SB I-81, a 4:1 slope or flatter is used. Safety slopes are utilized which also accommodates improved access for inspection, mowing and maintenance activities.

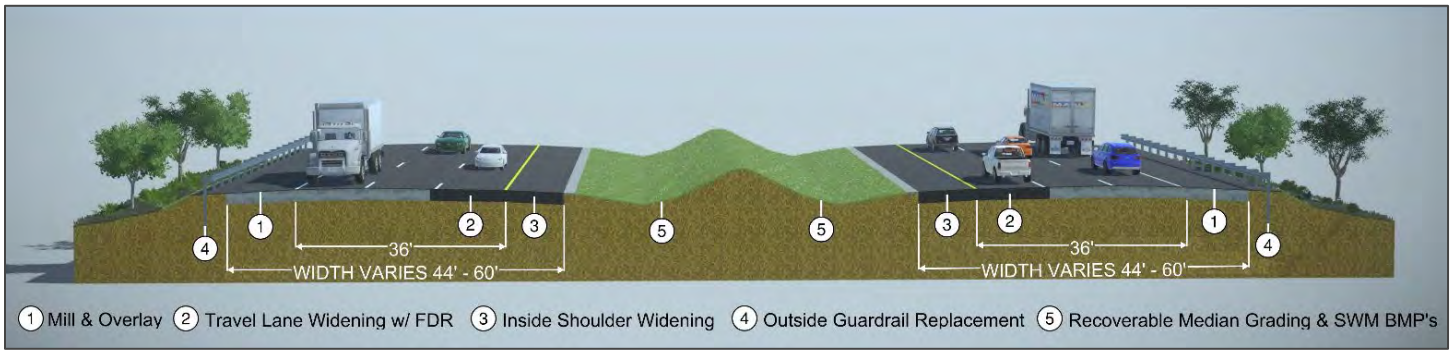


Figure 4.3.1-3: I-81 Typical Section

Ramps: Single-lane ramps have a minimum 16-ft. to 18-ft. travel lane, with a 10-ft. paved, 6-ft. graded right shoulder and a 4-ft. paved, 6-ft. graded left shoulder. Ramp reconstruction is minimized by using spline grade profiles to tie into the mainline in conjunction with mill and overlay of the existing ramps (see typical sections in Volume II) resulting in reduced construction duration and cost.

Retaining Walls: To minimize stream/wetland impacts, we propose two retaining walls in the I-81 median which eliminates extending the existing triple box culvert at approximately Station 2162+00 and approximately 62 LF of permanent stream and 0.02 acres of wetland impacts improving future maintenance access by leaving the box culverts open at each end making them accessible from both the outside and the median. The type of wall will be from VDOT's approved list. See Section 4.3.1(e) below for additional information.

Structures: The permanent bridge typical consists of three 12-ft. thru-lanes and two 12-ft. shoulders, unless otherwise specified in the approved Design Waivers or Exceptions. Cross slopes for the bridge replacements are 2%. Typical sections conform to Volume V, Part 2, Chapter 6 of the VDOT Structures & Bridge Manuals and match the roadway plans and lane configuration requirements.

(e) Conceptual Hydraulic and Stormwater Management Design: Drainage and SWM facilities are contained within the proposed ROW/easement limits shown in the RFP Conceptual Plans. Our SWM design for water quality uses VDOT's Scenario 5 based on I&IM 195.13 which is discussed further in the Stormwater Management – Water Quality section:

Hydraulic Design: Our hydraulic design accommodates widening I-81 using primarily open drainage systems where possible which reduces inspection and maintenance while minimizing disturbance of environmentally sensitive natural resources and improving public acceptance. As mentioned in Section 4.3.1(d) above, the triple box culvert extension is eliminated by adding retaining walls along northbound and southbound I-81 in the median. This design optimization reduces construction costs, avoids impacts to streams (62 LF) and wetlands (0.02 acres), eliminates proposed storm sewer tying into the box culvert, and improves future maintenance access (see **Figure 4.3.1-4**).

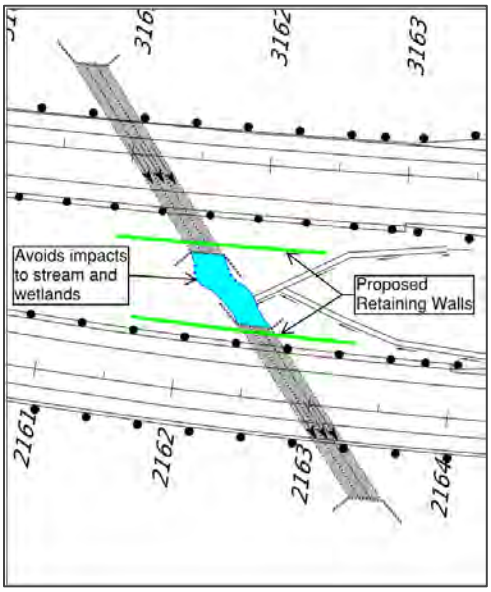


Figure 4.3.1-4: Box Culvert Extension Elimination

4.3 DESIGN CONCEPT

We have successfully performed this innovative concept on previous VDOT Design-Build Interstate widening projects. **Figure 4.3.1-5** is a picture from our I-64 Widening MM 200 to MM 205 project.

Figure 4.3.1-5: Box Culvert Extension Elimination on a Similar VDOT Project

In addition, our unique design concept allows a large portion of the proposed storm sewer trunk line to be eliminated. **Figure 4.3.1-6** shows how we optimized the proposed storm sewer network to reduce significant quantities of pipe and minimize construction duration, cost, and future maintenance costs. We will maintain existing drainage divides to the maximum extent feasible. To facilitate construction and control costs, key existing cross culverts and storm sewer pipes are reused and/or rehabilitated as required. Where existing pipes are reused, we will extend the pipes to facilitate the roadway widening. Proposed drainage systems include storm drain inlets, storm sewer pipe, culverts, and ditches to remove runoff from the proposed roadway. Inlets are located to prevent spread into the travel lanes in the permanent condition and to prevent spread greater than 1-ft. into the travel lanes in the temporary condition, improving traveling public safety during storm events. We analyzed spread in the temporary condition and provided temporary shoulder widths to accommodate. In areas that do not have sufficient shoulder width to meet temporary spread, additional inlet structures or other accommodations are added to ensure no more than 1-ft. of encroachment of stormwater on the travel lanes during construction for a 4-in. per hour storm intensity.

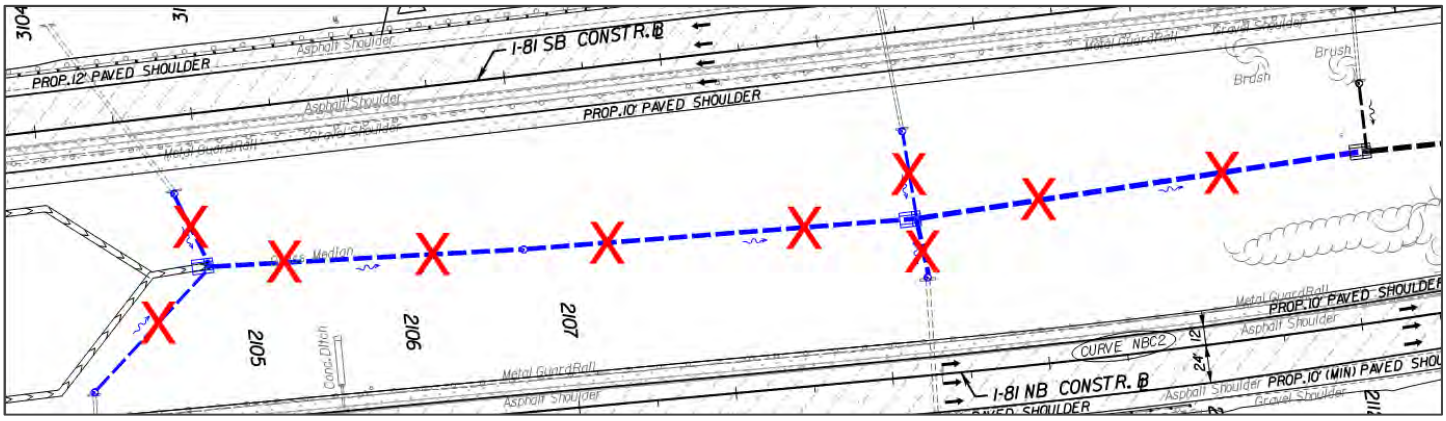


Figure 4.3.1-6: Proposed Storm Sewer Elimination

Water Quality: Our Team's SWM design achieves compliance with Part IIB of the technical requirements enumerated within the VSMP regulations and the Construction General Permit. In accordance with IIM-LD-195.13 requirements for Erosion & Sediment Control and Stormwater Management Plans for VDOT Projects, Scenario 5 will be utilized to enable VDOT to exclude areas of existing impervious surface from the SWM requirements which optimizes the design and reduces long-term maintenance costs for VDOT. This exclusion of existing impervious area within the Project's LOD achieves water quality compliance with the Best Management Practice (BMP) facilities shown in the Volume II Conceptual Roadway Plans. Additionally, BMP 13-1 shown on Sheet 13 of the Volume II Roadway Conceptual Plans has been relocated away from the existing wetlands to avoid impacts in this area. The overall wetland impact reduction due to this shift is 0.12 acres.

4.3 DESIGN CONCEPT

The Project is within the Christians Creek-Barterbrook Branch (PS09) and Lewis Creek (PS06) HUC Boundaries. **Table 4.3.1-3** provides disturbed areas and phosphorus removal broken down by HUC. **Table 4.3.1-4** provides proposed BMP facilities along with the achieved phosphorus removal. Our SWM design concept is optimized to maximize use of purchased credits and minimize use of on-site facilities resulting in reduced maintenance and inspection costs for VDOT. Our design uses 6-lbs. per year of previously purchased nutrient credits, plus an additional 0.41-lbs. per year to decrease on-site BMP facilities. The proposed BMP facilities do not require additional ROW beyond what is shown in the RFP Conceptual Plans. BMP facility access roads have been optimized to provide safe and efficient access consisting of either an authorized cross-over with an adjoining equipment access path or a shoulder pull-off. Authorized cross-over locations with adjoining BMP access are designed using the Custom Design Vehicle in the RFP. BMP types and applications are designed as per VDOT Part IIB BMP Design Manual of Practice requirements. VDOT Standard EC-2 will be installed on the bottom and side slopes of the BMP facilities that receive vegetation. The following types and locations of BMP facilities are not allowed per the RFP and therefore are NOT proposed as part of our SWM design: permeable pavement, constructed wetlands, underground engineered systems, infiltration practices, non-standard BMPs, and BMPs with permanent pools located within the I-81 median.

TABLE 4.3.1-3: DISTURBED AREA, REQUIRED PHOSPHORUS REMOVAL, AND ON-SITE/OFF-SITE SPLIT BY HUC

Hydrologic Unit Code	Disturbed Area	Required Phosphorus Removal	On-Site Removal (BMP)	*Off-Site Removal (Nutrient Credit)
Christians Creek-Barterbrook Branch (PS09)	44.93 Acres	18.60-lbs/year	14.86-lbs/year (80%)	3.74-lbs/year (20%)
Lewis Creek (PS06)	23.63 Acres	11.03-lbs/year	8.36-lbs/year (76%)	2.67-lbs/year (24%)

** The first 6-lbs of Nutrient Credit will be provided by VDOT (per the RFP)*

BMP optimization allows for a wetland impact reduction of 0.12 acres.

Water Quantity: Our drainage design concept optimizes each outfall to take full advantage of stormwater management features needed for water quality so that both quality and quantity compliance are achieved in an optimized fashion, reducing future maintenance and inspection costs for VDOT. Points of discharge from ROW were evaluated for outfall adequacy. Extended detention basins are used to mitigate water quantity impacts within their respective outfalls. Other outfalls are either eliminated or have a reduced drainage area where feasible in order to achieve compliance. In addition to standard water quantity compliance, the outfall to Buckingham Branch Railroad was evaluated to meet additional outfall requirements, including no net increase to the railroad for major storm events. Our outfall analysis is summarized in **Table 4.3.1-4** to address water quality and quantity. Sheet flow is analyzed to ensure that post-construction sheet flow does not exceed pre-construction volumes leaving the ROW.

TABLE 4.3.1-4: PROPOSED BMP FACILITIES

Stream	HUC	Quantity Control	BMP Facility Type	Phosphorus Removed
Tributaries to Christians Creek	PS09	N/A	Grass Channels	3.43 lb./year
		N/A	Level 1 Bioretentions	8.95 lb./year
		Stormwater Detention	Level 1 Extended Detentions	2.48 lb./year
Tributaries to Lewis Creek	PS06	N/A	Grass Channels	3.00 lb./year
		N/A	Level 1 Bioretentions	5.36 lb./year

4.3 DESIGN CONCEPT

Hydrologic and Hydraulic Analysis (H&HA): Our Team will perform H&HA, including scour analysis, for major bridge and culvert crossings that have a total 100-year discharge greater than 500 cfs as per the RFP and VDOT Drainage Manual. **Table 4.3.1-5** lists the anticipated locations where an H&HA is required. For top quality construction and to prevent future scour issues at the widened pier and existing sanitary sewer line, Lewis Creek will be relocated between the proposed widened piers of the I-81 NB bridge, as shown in **Figure 4.3.1-7**, providing a major benefit over what was in the RFP plans by minimizing future maintenance concerns.

TABLE 4.3.1-5: H&HA SUMMARY

Stream	Station	Structure	Approximate Drainage Area	Approximate 100- Year Discharge
Tributary to Christians Creek	2045+50	Double 5'x7' Box	352 Acres	636-cfs
Tributary to Christians Creek	2162+00	Triple 6'x6' Box	1,037 Acres	1,240-cfs
Lewis Creek	2219+50	Three-Span Bridge	12,800 Acres	5,800-cfs

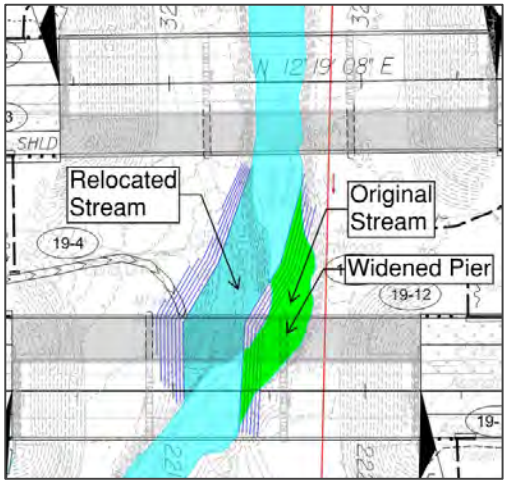


Figure 4.3.1-7: Relocated Lewis Creek

Erosion and Sediment (E&S) Control: Our drainage design concept has been developed with all due consideration given for the required E&S controls required during construction. The E&S controls concept includes a multi-phase plan that matches the construction phasing illustrated in the Maintenance of Traffic (MOT) plans. Where temporary/permanent stabilization can be a challenge due to steep slopes, we will implement the following strategies and continuously monitor these areas throughout construction for stabilization:

Our E&S Control Plan is developed to prevent and/or contain sediment on-site using BMPs including silt fence, temporary sediment traps and basins, rock check dams, and inlet and outlet protection. Slope interrupters will be used for slopes 3:1 or steeper and 25-ft. or more in length. To the extent possible, permanent SWM basins will be installed prior to the start of construction to be used as temporary sediment basins and then subsequently converted to their final permanent configuration once all upstream areas are stabilized.

(f) Proposed Right of Way Limits (i.e. Shown as an Overlay of the Offeror's Proposed Right of Way Limits and VDOT'S RFP Conceptual Right of Way Limits, Highlighting the Differences Between the Two): Our Team has contained construction limits within the ROW shown on the RFP plans.

(g) Proposed Utility Impacts: The Team has reviewed the RFP Conceptual Plans for all known utilities and has been in contact with each utility owner. We have optimized our design to clear conflicts with several facilities which is discussed more in Section 4.4.2. We are ready to continue working with each utility company immediately following the Notice of Intent to Award to coordinate relocations to allow an earlier start of construction.

During design, we will verify and build upon utility designations and locations included with the RFP attempting to mitigate potential conflicts to a no-impact-status. Our Team's diligent utility coordination and management will ensure utility relocations are completed on or ahead of schedule. Utility impact locations are shown in **Table 4.3.1-6** and mitigation measures are detailed in Section 4.4.2.

TABLE 4.3.1-6: UTILITY IMPACTS (HIGH LEVEL SUMMARY)

Utility Company	Location	Impact Status	Prior Rights
Segra	Route 250	Impacted	NO

(h) Noise Barrier Locations: Per the RFP and VDOT's preliminary noise analysis, there are no proposed noise

abatement measures required for the Project. We will complete the Final Noise Analysis Design Report (FNADR) during final design and recognize that noise barriers can be deemed feasible and reasonable during the final design analysis.

(i) Any Other Key Project Features:

Intelligent Transportation Systems (ITS): ITS is a key Project feature for traveling public safety and maintaining the schedule. Continuous operation of the ITS facilities, including closed-circuit television (CCTV) cameras and detection equipment, is critical to swift responses from emergency services, advance notices to the public and clearing the roadway if there is a crash. Portable CCTV cameras will be placed per the RFP and in cooperation with VDOT, and remotely operable from the VDOT Traffic Operations Center (TOC). A DB Team member will be available to assist with response and clearing an incident. The CCTV camera at MM 222.6 north of US 250 will need to be relocated further due to the construction of the bio retention pond as associated grading. This camera is in a critical location and relocation will be managed to provide continuous operation. As construction progresses, any conflict with the existing equipment will be mitigated utilizing temporary equipment relocations to assure continuous operation, including temporary CCTV cameras and additional infrastructure as may be required.

Weather Station: Our Team recognizes the existing weather station located in the median just north of the US 250 crossing is in conflict with the proposed SB widening. Our design will shift the weather station and associated service connections east to clear the conflict.

Signing: Signing is a critical element for this Project to ensure the traveling public is properly guided to their route and maintaining traffic flow. Overhead sign structures provide critical guidance through the complex interchange of I-81, I-64 and US 250. Maintenance of this guidance during construction is critical to avoid any distractions or confusion. New permanent signage will be provided to update the existing to include foundation, overhead structures, sign panels and messaging as needed.

Buckingham Branch Railroad (BBRR): Per the RFP, crash walls will be added to B639 existing Pier 2 and integrated with the proposed Pier 2 walls. The minimum horizontal clearance from the centerline of BBRR track and the crash wall at existing Pier 2 is 17-ft. and 7⅝-in. The minimum horizontal clearance from the centerline of BBRR track and the crash wall at proposed Pier 2 is 18-ft. and 4⅜-in.

Bridge Pier Protection System (BPPS): BPPS will be installed at I-81 under westbound (WB) I-64, Ramp 1, WB Route 250, and I-81 under New Hope Road. There will be minor shoulder reconstruction at Ramp 1 and Route 250 to facilitate the standard BPPS construction. A shoulder design exception will be used for I-81 under WB I-64 and New Hope Road to install BPPS without impacting the existing piers.

4.3.2 CONCEPTUAL STRUCTURAL PLANS

For I-81 provide a description and structural concept for the bridge structures, retaining walls and major drainage structures proposed.

The Kokosing Team's approach to bridge design is to provide a solution that meets/exceeds the RFP requirements. We will use VDOT approved, reliable, durable, long-lasting materials, such as low permeability concrete and corrosion resistant reinforcing (CRR), for safe and dependable structures that reduce long-term maintenance and increase long-term asset performance. The five bridges being widened and/or rehabilitated were constructed with steel rolled beams and VDOT standard PCB type prestressed concrete beams. The existing structures facilitate standard phased construction techniques, satisfy minimum vertical clearance requirements, and produce low-maintenance results. Substructure elements and foundation types were selected either to match existing elements or increase constructability by reducing excavation in congested areas. Drilled shafts are being utilized at all new pier locations to avoid utility and roadway impacts; an example is shown on the next page in **Figure 4.3.2-1**.

4.3 DESIGN CONCEPT

The structure designs meet or exceed the RFP and relevant design specifications, including VDOT and AASHTO requirements. They follow AASHTO LRFD Bridge Design Specifications, 8th Edition with the VDOT modifications. The foundation's analysis and design follow the Additional Criteria in the RFP (Attachment 2.3). Our designs and details incorporate VDOT bridge deck design requirements, such as 20psf construction tolerances and 15psf future wearing surface (FWS) as per IIM-S&B-80.

The Kokosing Team will submit for approval Stage I Bridge Plans and reports that specify the type of structure, size, location, and details to clearly identify the requirements and elements for construction that are beneficial to the Project. Our bridge structures do not contain any elements of segmental construction, post-tensioning, timber, or fracture-critical members. No steel pile bents are used. Upon VDOT's approval, we will proceed to final designs and Stage II plans in conformance with timelines presented in the Project schedule.

We evaluated the bridge deck drainage for the widened structures for the final conditions, including the 20% increase in design storm intensity required by Part 2, Chapter 33 of the VDOT Structure and Bridge Manual due to the anticipated effects of future climate change.

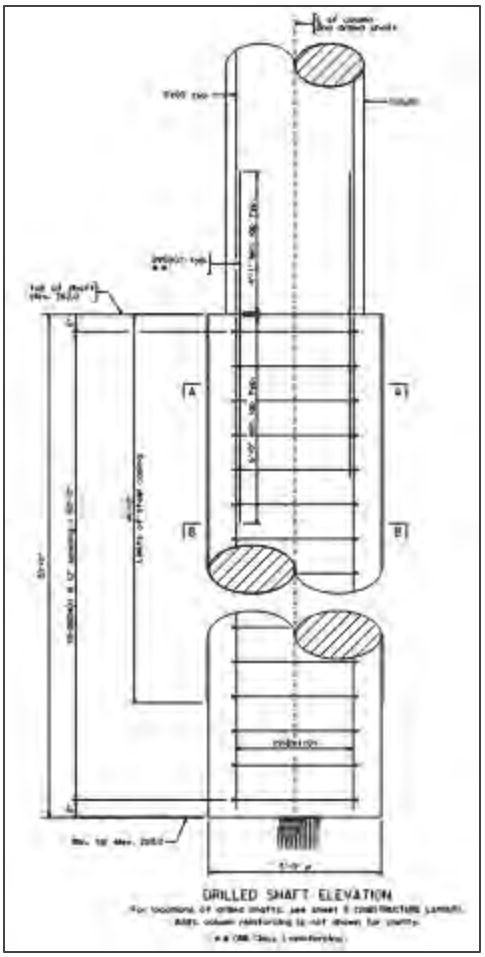


Figure 4.3.2-1: Example Drilled Shaft

To enhance safety of the traveling public and to meet the temporary stormwater spread requirement of no more than 1-ft. into the travel lanes during construction, temporary drainage scuppers are installed in the existing decks to be replaced at B638 and B642, and permanent drainage scuppers are installed in the widened portions of B638, B640, B641, and B642. See an example temporary scupper detail in **Figure 4.3.2-2**. The proposed permanent scuppers are not required in the final lane configuration, but will facilitate safer maintenance by allowing lanes to be shifted closer to the barriers in the future, if necessary, without violating the temporary stormwater spread of 1-ft. into the lanes. We also evaluated and adjusted the sequence of construction (SOC) to eliminate temporary drains in the existing decks at B639, B640, and B641 and eliminated permanent scuppers in the widened portion of B639 reducing Project and future maintenance costs and saving time in the Project schedule.

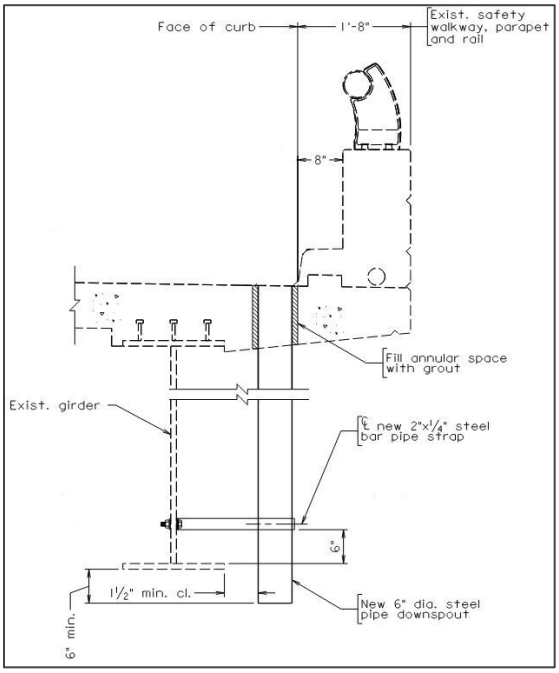


Figure 4.3.2-2: Example Temporary Scupper Detail

All bridges will receive the new standard BPB-4 concrete parapets, except B638, which will receive a modified BPB-4 concrete parapet on the north side due to the flyover bridge. The outside of bridge B640's west-facing parapet will receive an architectural treatment that simulates coarse stone. One 2-in. diameter conduit will be provided in each new bridge parapet, without junction boxes, to accommodate future utilities.

Existing and new beams (steel and concrete) will be designed to be composite with the cast-in-place concrete deck slab. New structural

steel beams and diaphragm connections are designed to avoid using any fatigue prone details which provides for increased long-term asset performance and reduced future maintenance.

Bridges are designed to use the preferred deck slab extension at abutments in the existing and newly-widened portions. Deck slab extensions are considered a jointless detail that protects the beam ends and substructure from corrosive deck drainage runoff, improving the structure's longevity and reducing future maintenance. Any joints over the piers and abutments will be eliminated by using VDOT's flexible link slab details (see **Figure 4.3.2-3**). Eliminating the unnecessary expansion joints improves durability by preventing the intrusion of corrosive deck water runoff and simplifies required bridge inspections and maintenance.

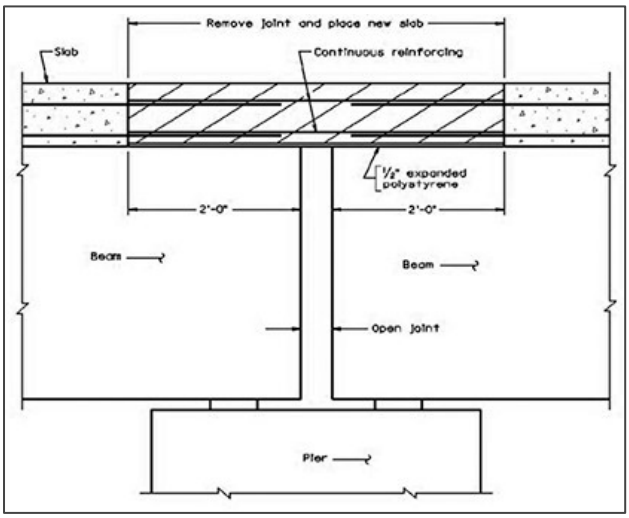


Figure 4.3.2-3: VDOT Flexible Link Slab

Our design includes the addition of an extra 0.5-in. of deck thickness to VDOT Structure and Bridge Division's standard deck thickness requirements as per the RFP. The additional 0.5-in. of concrete will be added to the minimum cover for the top mat of deck slab reinforcing steel.

Existing approach slabs are removed and replaced with new buried approach slabs which will be constructed full width. There will be drainage above and below the buried approach slabs for the full width of the bridge. Existing abutment weep holes will be cleaned and grouted closed with non-shrink grout.

Throughout construction of the bridge widenings, two through lanes will be provided at all times except B639, where the US 250 on-ramp will be maintained.

A summary of the characteristics of the five bridges to be widened and rehabilitated are in **Table 4.3.2-1.**

TABLE 4.3.2-1: WIDENING BRIDGE STRUCTURES

Location	Approx. Length (ft.)	Proposed Spans	Girder Type	Clearance	Width (ft.)	Abutment Type
B638 - I-81 SB-over Ramp 1	210	3	Steel	16'-6"	56.83	Deck Slab Extension
B639 - I-81 SB-over Augusta Woods Drive and Buckingham Branch Railroad	176	3	Steel	16'-6" (Augusta Woods Drive) 22'-5" (BB RR)	75.33	Deck Slab Extension
B640 - I-81 SB-over Route 250	224.67	4	Steel	18'-1" (EBL Rte. 250) 17'-10" (WBL Rte. 250)	63.33	Deck Slab Extension
B641 - I-81 SB-over Lewis Creek	227.83	3	Concrete (PSB)	N/A	63.33	Deck Slab Extension
B642 - I-81 NB-over Lewis Creek	212.83	3	Concrete (PSB)	N/A	63.33	Deck Slab Extension

Our Team will repair and rehabilitate all bridges in accordance with the quantities in the RFP. We will perform our own inspection for each one and develop a comprehensive list of all repairs to be completed. Final repair quantities will be confirmed with VDOT representatives. As required in the RFP documents, Ultrasonic Impact Treatment (UIT) will be performed on existing steel beams along the toe of fillet welds at the ends of cover plates. Our Team understands that the UIT will be performed when the existing beams are under normal dead load and

will take this into consideration when determining the SOC and schedules.

The RFP identified repair quantities for the five bridges are summarized in **Tables 4.3.2-2** and **4.3.2-3**:

TABLE 4.3.2-2: SUBSTRUCTURE BRIDGE REPAIR QUANTITIES B638, B639, B640, B641, & B642 (5 STRUCTURES)

Item	Units	Quantity
Crack Repair, Type B (Epoxy Injection)	LF	285
Concrete Substructure Surface Repair	SY	161
Waterproofing – Epoxy Resin Type EP-3B/EP-3T	SY	15
Embedded Galvanic Anode	EA	2814

TABLE 4.3.2-3: SUPERSTRUCTURE BRIDGE REPAIR QUANTITIES B638, B639, B640, B641, & B642 (5 STRUCTURES)

Item	Units	Quantity
Replace Bearing	EA	228
Jacking and Blocking Beam	EA	228
Beam End Repair	EA	50
Concrete superstructure surface repair	SY	5
Ultrasonic Impact Treatment	EA	102
Recoat Existing Structure, System B	LS	1
Environmental and Worker Protection	LS	1
Disposal of material, Type B	LS	1

Bridge Widenings and Deck Replacements at I-81 SB (B641) and I-81 NB (B642) over Lewis Creek: The existing NB and SB bridges at this water crossing are respectively 210-ft. and 225-ft. long and are three simple-span prestressed beam structures. The design width of both bridges will be 60-ft. face-to-face of the parapets accommodating three 12-ft. travel lanes and 12-ft. wide inside and outside shoulders. Abutments are widened approximately 22-ft. to the median with new deck slab overhang abutments supported on steel piles matching the existing substructures. We will repair the existing beams and replace existing bearings with new reinforced elastomeric bearings to match the ones for the new beams. We will also provide new beams that match the existing beams for the new widened section of the bridges. The existing decks will be removed and reconstructed to include installation of new standard BPB-4 parapets (see the exhibit bridge plans in Volume II).

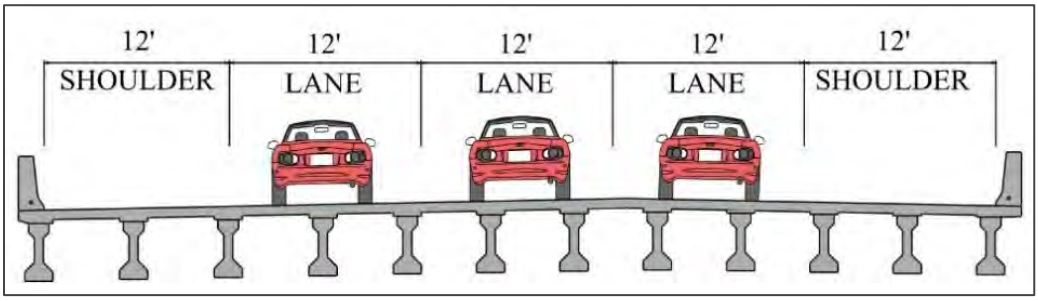


Figure 4.3.2-4: I-81 NB (B642) Over Lewis Creek
**Note this is the NB bridge being shown; SB would be similar*

For B642, the stream will be relocated to avoid the Pier 2 Foundation. Relocating the stream improves constructability of the new pier and reduces future maintenance by reducing scour concerns both at the pier foundation and the sanitary sewer line just north of Pier 2. See **Figure 4.3.2-5** for the existing scoured condition and **Figure 4.3.2-6** for the relocated stream to solve the scour issue.

Figure 4.3.2-5: Lewis Creek Existing Scoured Condition

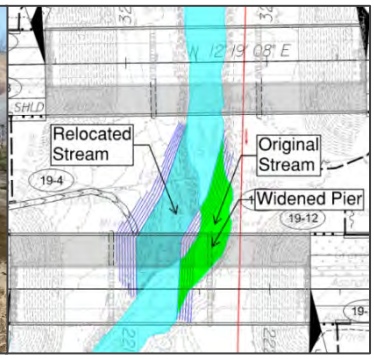


Figure 4.3.2-6: Relocated Lewis Creek

4.3 DESIGN CONCEPT

Bridge Widening and Deck Replacement at I-81 SB over Ramp 1 (B638): The existing SB bridge at Ramp 1 is approximately 210-ft. long and consists of three simple-span steel girders. The bridge design width will be 53.67-ft. face-to-face of parapets accommodating three 12-ft. lanes, a 9.33-ft. outside shoulder, and an 8.17-ft. inside shoulder. The abutments are widened approximately 20-ft. to the median with new deck slab overhang abutments supported on steel piles matching the existing substructures. Beams will be repaired as required and existing bearings will be replaced with new reinforced elastomeric bearings to match the ones for the new beams. The existing deck will be removed and reconstructed to include installation of new standard BPB-4 parapets. The BPB-4 barrier on the east side will be increased in height to protect the existing hammerhead pier supporting the I-64 flyover ramp. The overall height will be 4.5-ft. and the length will be based on VDOT's requirements for pier protection.

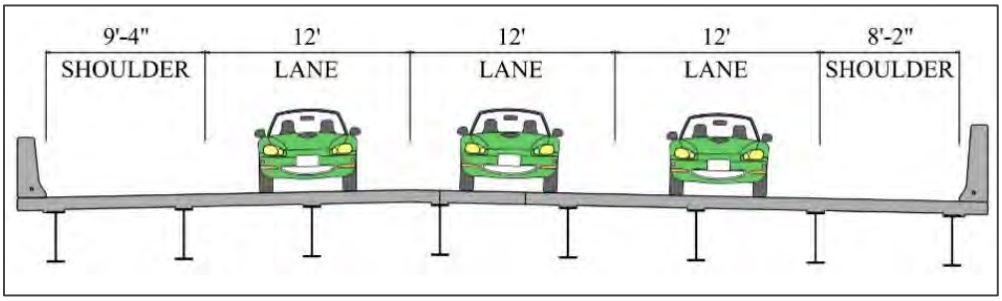


Figure 4.3.2-7: I-81 SB over Ramp 1 (B638)

Bridge B638 is designated a Type B hazardous structure (lead paint) in accordance with VDOT Road and Bridge Specifications, Section 411. Dismantling, removing or exposure to hazmat material portions of the structure will be in accordance with Section 413 of the Specifications.

A minimum of 16.5-ft. vertical clearance is provided over Ramp 1 (See the exhibit bridge plans in Volume II).

Bridge Widening and Deck Replacement at I-81 SB over Augusta Woods Drive and Buckingham Branch Railroad (BBRR) (B639): The existing I-81 SB bridge over Augusta Woods Drive and BBRR is approximately 176-ft. long and consists of three simple-span steel beams. The bridge design width will be 72-ft. face-to-face of parapets accommodating four 12-ft. lanes, and 12-ft.-wide inside and outside shoulders. The abutments are widened approximately 21-ft. to the median with new deck slab overhang abutments supported on steel piles matching the existing substructure. Beams will be repaired as required and bearings replaced with new reinforced elastomeric bearings to match the ones for the new beams. The existing deck will be removed, replaced, and reconstructed to include installation of the new standard BPB-4 parapets.

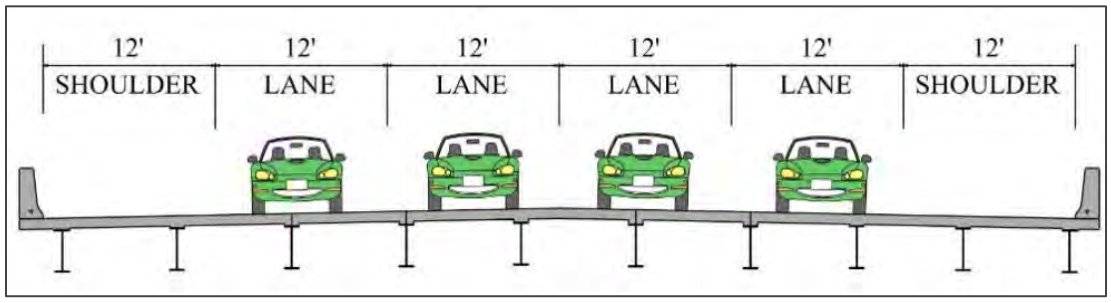


Figure 4.3.2-8: I-81 SB over Augusta Woods Drive and Buckingham Branch Railroad (B639)

Per RFP requirements, we will construct the proposed Pier 2 and retrofit the existing Pier 2 with integral crash walls along the railroad track to protect the bridge from a potential derailment impact. The minimum horizontal clearance from the centerline of BBRR track and the crash wall at existing Pier 2 is 17-ft.-7⅝-in. and at the new widened Pier 2 section a minimum of 18-ft.-4⅜-in.

The existing soil nail wall along Augusta Woods Drive in front of the south abutment will not be disturbed, undermined, or compromised due to construction activities unless approved by VDOT.

Bridge B639 is designated a Type B hazardous structure (lead paint) in accordance with VDOT Road and Bridge Specifications, Section 411. Dismantling, removing or exposure to the hazmat material portions will be in accordance with Section 413 of the Specifications.

4.3 DESIGN CONCEPT

There will be a minimum of 16.5-ft. vertical clearance over Augusta Woods Drive and a minimum of 22.42-ft. vertical clearance over BBRR (See the exhibit bridge plans in Volume II).

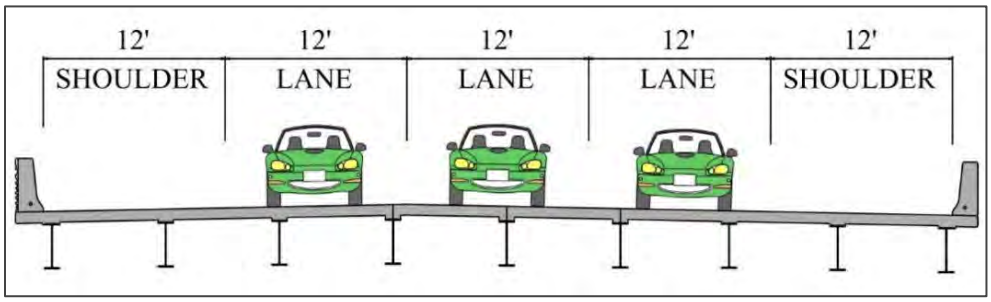


Figure 4.3.2-9: I-81 SB over Route 250 (B640)

Bridge Widening and Deck Replacement at I-81 SB over Route 250 (B640): The existing SB bridge at Route 250 is approximately 225-ft. long and consists of four simple-span steel beams. The design bridge width will be 60-ft. face-to-face of parapets accommodating three 12-ft. lanes, and 12-ft. wide inside and outside shoulders. The abutments are widened approximately 21-ft. to the median with new deck slab overhang abutments supported on steel piles matching the existing substructures. Beams will be repaired as necessary, and bearings will be replaced with new reinforced elastomeric bearings to match the ones for the new beams. The existing deck will be removed and reconstructed including adding new standard BPB-4 parapets. The outside of the west-facing parapet and terminal walls will receive an architectural treatment that simulates coarse stone and a concrete surface color coating.

Bridge B640 is designated a Type B hazardous structure (lead paint) in accordance with VDOT Road and Bridge Specifications, Section 411. Dismantling, removing, and exposure to hazmat material portions will be in accordance with Section 413.

There will be a minimum of 18.08-ft. vertical clearance over Route 250 WB lane and a minimum of 17.83-ft. vertical clearance over the EB lane (See the exhibit bridge plans in Volume II).

4.4 | Project Approach

4.4 PROJECT APPROACH

The Kokosing Team consists of highly qualified, seasoned design and construction personnel, subject matter specialists, and subconsultants who will provide VDOT the expertise to manage and control design and construction activities. A rigorous Design Quality program will be implemented as described in **Section 4.4.4**. Our approach minimizes VDOT's role to an oversight function and continuously advances the Project from milestone to milestone; having diligently planned for and managed the schedule, risk, and cost throughout design and construction. We will work with VDOT and the stakeholders to maintain open and frequent lines of communication using down-to-basics work sessions that address concerns and needs. Our past performance with this program has successfully delivered a DB process that foresees potential issues, mitigates risk, and facilitates success.

4.4.1 ENVIRONMENTAL MANAGEMENT

Describe the approach to environmental management for the Project, including but not limited to planned efforts during design and construction to avoid/minimize Project impacts to environmental resources.

Our Team recognizes the importance of a comprehensive, environmentally conscious approach to navigate the Project's unique characteristics. Our experience and familiarity with environmental challenges on VDOT projects throughout the Commonwealth provides us the knowhow to not only circumvent pitfalls but uphold commitments during design and construction. We assembled a multifaceted Environmental Management Plan (EMP) which includes oversight by our Environmental Compliance Manager (ECM), Mr. Brian Conners, to foster a streamlined process and a compliant Project from start to finish.

Under our ECM's leadership, our diverse group of environmental professionals brings a comprehensive, environmentally conscious approach to the Project to ensure compliance.

OUR APPROACH: We will set up individual meetings with each permitting agency to review the Project's scope and schedule. We will also conduct combined meetings with permitting agencies to confirm permit and jurisdiction requirements, attain buy-in, and promote interagency coordination. These meetings give us a platform to present value-added designs for agency consideration, as well as vet modifications to avoid any discrepancy with the NEPA commitments, permit requirements, or time-of-year restrictions.

As stated, our staff executes an EMP, subject to VDOT review, that organizes and identifies inspection personnel and frequencies, highlights permit commitments and constraints, distinguishes time-of-year restrictions, and facilitates coordination between the ECM, CM, and reviewing/inspecting agencies. It includes Project contacts, records of past inspections, and identifies key milestones, such as restoring areas temporarily impacted. Our ECM consults with our design engineers to keep within the existing Project footprint eliminating NEPA re-evaluation and/or additional studies.

Key benefits of our approach to this Project include:

- Reducing 0.23-acres of wetland impacts by shifting BMP 13-1 and incorporating retaining walls into the design at the triple box culverts
- Saving 62 LF of costly stream channel and wetlands at the proposed triple box culvert location
- Placing SWM facilities in the median to avoid expensive impacts to wetland/stream features along the outside shoulders
- Using a comprehensive EMP and an attentive ECM to foster cohesion between construction and compliance
- Conducting frequent inspections at environmentally sensitive areas to stay compliant

Our environmental team's thorough understanding of the design impacts results in faster and more effective solutions such as acquiring mitigation credits and navigating time-of-year restrictions. Our environmental

management strategy responsibly places SWM facilities inside the median, greatly lowering the risk of breaching the established Project footprint and decreases temporary/permanent wetland impacts to the numerous and more expensive features outside of the roadway. This reduces Project costs and expedites the mitigation acquisition process.

AVOIDING/MINIMIZING PROJECT IMPACTS: Throughout the design phase, the Kokosing Team works in unison to minimize design impacts on environmental resources and threatened and endangered species. We recognize the paramount necessity of securing environmental permits as soon as possible and remaining compliant throughout the Project's lifespan.

Our ECM produces an Environmental Constraints Map to illustrate the recognized environmental conditions and sensitive areas that, if encroached upon, could impose excessive costs and burdens on the Project. It identifies USACE and VDEQ approved Waters of the U.S. features that we consider throughout design preparations to lower Project costs. Time-of-year restrictions, respective to each species, are also represented. This map is a proven and effective communication resource and mechanism that precludes overall risk and potential delays. It also provides design and construction disciplines with an inventory of sensitive environmental areas to avoid to the maximum extent feasible.

The Project's design reflects diligent coordination between the ECM and engineers to ensure impacts remain within Nationwide Permit 23 (for approved Categorical Exclusions) thresholds of ½-acre of wetlands and 1,000-lf of stream channel. Reducing permanent impacts lowers mitigation costs and minimizes the Project's environmental footprint.

An example of our environmental stewardship is our decision to construct two retaining walls at the existing triple box culverts in lieu of extending the culvert within the median. Aside from the maintenance benefits, such as increased access to the culverts, the stream/wetland areas between the two culverts are not impacted. This saves approximately 0.02 acres of wetland area and eliminates 62-lf of ecologically valuable and costly stream impacts.

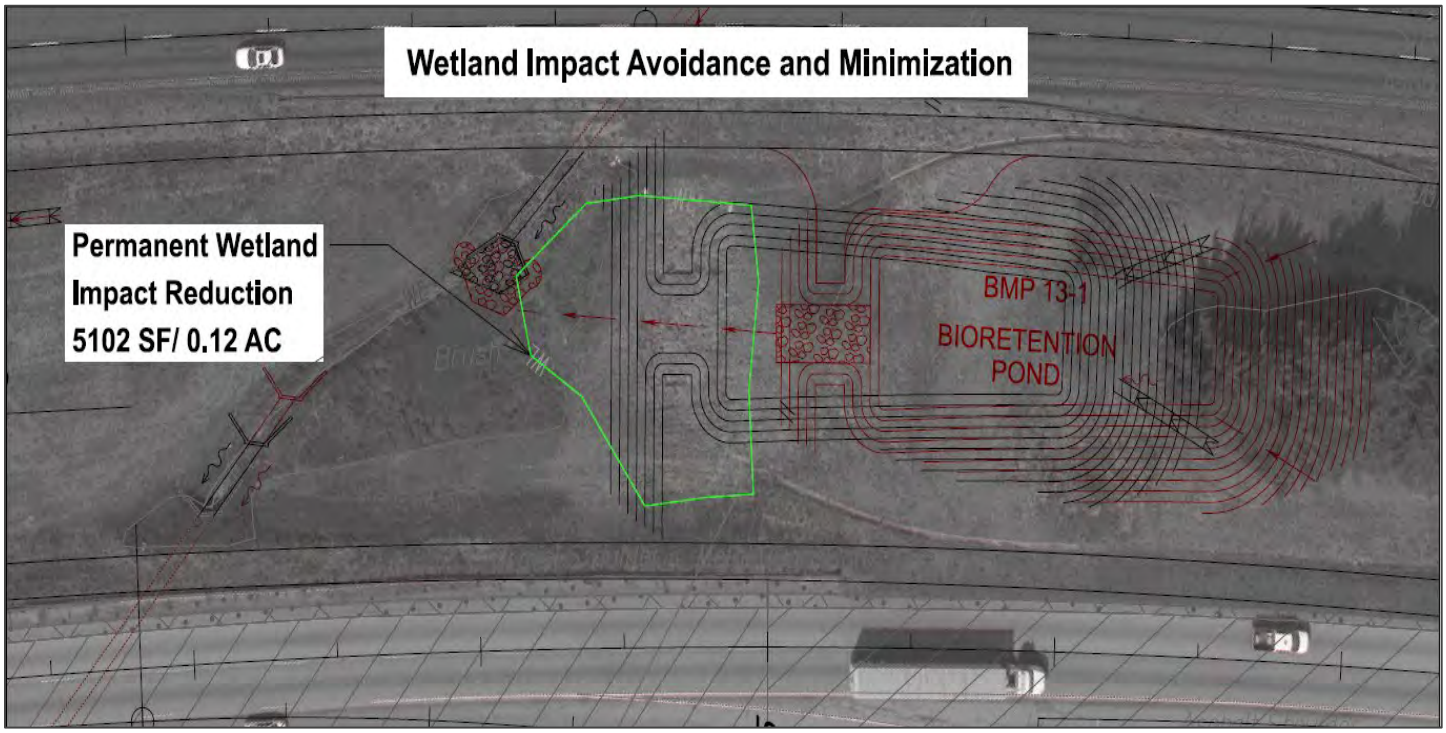


Figure 4.4.1-1: Wetland Impact Avoidance and Minimization

Our design further minimizes wetland impacts in the median by relocating BMP 13-1 (see **Figure 4.4.1-1**) from

its position shown in the RFP Conceptual Plans to an area outside of the wetland feature. Impacts are now minimized to a conveyance ditch and culvert extension resulting in significantly reducing impacts by 0.12-acre.

Regarding the stream relocation at Lewis Creek, the proposed pier construction for the I-81 NB bridge over Lewis Creek will directly impact/block the creek channel. The Kokosing Team is permanently relocating a portion of the creek away from the pier and its construction area. This pre-construction relocation allows the upstream and downstream sections of Lewis Creek to remain unimpacted during and after construction vs. a temporary cofferdam which would heavily impact flow and stream characteristics during and after construction. Most importantly, the new pier widening must be positioned in the middle of the creek to match the existing bridge, blocking the channel, and inviting significant erosion during high flow conditions. This short creek relocation enhancement reduces future ecological impacts while working in the area and following completion of all construction.

As summarized in **Table 4.4.1-1**, our wetland impacts stand at a 0.23-acre reduction from the ones in the Categorical Exclusion document. Our design has reduced wetland impacts from 0.38-acres to 0.15-acres. These efforts will be favorable in the eyes of regulatory agencies and is an example of our environmental integrity during the permit application and review process.

TABLE 4.4.1-1: KEY ENVIRONMENTAL BENEFITS

Key Environmental Benefit	Description
Overall Wetland Impact Reduction	Wetland impacts reduced my 0.23-acres with our Avoidance and Minimization efforts
Relocation of BMP 13-1	BMP 13-1 relocated outside of wetland area – Wetland impact reduction of 0.12-acre
Retaining Walls at Existing Triple Box Culvert	Construction of retaining walls reduces stream impacts by 62-lf and wetland impacts by 0.02 acres

Describe the approach and potential solutions for addressing recognized environmental conditions/areas of concern within the Project footprint.

ADRESSING ENVIRONMENTAL CONDITIONS/AREAS OF CONCERN WITHIN THE PROJECT FOOTPRINT: Our ECM will anticipate and identify concerns and obligations early in the design process. We will maintain our conscientious approach to the identified areas of concern and simultaneously coordinate (formally and informally) with regulating agencies for a transparent, compliant, and successful undertaking. The EMP will use the USFWS Information for Planning and Consultation (IPaC) tool for an updated understanding of any threatened or endangered species concerns or developments in federal protection throughout the Project. In addition, we have preemptively researched the availability of wetland and stream mitigation within the Project's HUC to streamline our approach to permit compliance and expediting construction. Furthermore, our staff has already spoken with the Department of Agricultural and Consumer Services to educate ourselves with the Spotted Lanternfly Quarantine requirements. We understand the required training, how training and certifications are obtained, and how certified personnel train other construction staff to combat the spread of this invasive species. This has led to a better understanding of the updated quarantined areas and how the Project will accommodate these regulations.

The Team's environmental staff is well-versed in the VDOT Preliminary Bat Inventory Guidelines for Bridges and Buildings requirements and will inform VDOT immediately if any bat species, or indication of their presence, is found on any of the Project's bridges, and as a result, adhere to the implementation of associated Time of Year Restriction. After NTP while inspecting and confirming no bats are present on the bridges, we will determine if economical exclusionary measures can be installed and will coordinate accordingly with regulatory agencies and VDOT. The above-mentioned considerations and constraints will be explicitly conveyed to construction staff to eliminate any potential compliance or scheduling issues.

4.4 PROJECT APPROACH

To comply with the "Programmatic Agreement for Project Level Air Quality Analyses for Carbon Monoxide", we will take precautions to limit the emissions of volatile organic compounds and nitrogen oxides, including quality housekeeping with volatile products, meeting/exceeding label precautions, and limiting machinery and vehicle idling. Our ECM will prepare a Type I Noise study as per the NEPA document to avoid further coordination efforts, plus ensure no expansion of ROW from the RFP Conceptual Plans to prevent the need for NEPA re-evaluation outside of the original study area.

FIELD COORDINATION: Throughout construction, the clear and evident demarcation of environmentally sensitive areas will negate the risk of unwarranted or accidental impacts. Sensitive areas, such as wetlands, streams, and pertinent threatened and endangered species' habitats, will be delineated with colored flagging tape and/or blocked by orange safety fence. Through the ECM, construction staff are instructed how and when particular resources are authorized to be impacted and restored. Additional project-specific environmental commitments will be communicated by the ECM to keep daily operations compliant. There will be frequent inspections by qualified personnel to safeguard against unpermitted impacts and potentially punitive actions by the VDEQ. The Kokosing Team will have on hand a Corrective Action Plan to quickly resolve any compliance deficiencies. Our ECM keeps a record of compliance inspections and administers the EMP throughout every facet and milestone of the Project. Pre-construction meetings are conducted prior to any activity that may affect environmentally sensitive areas. Our ECM will be present at the initiation of any hold points that include work which may affect threatened and endangered species, environmental commitments, and jurisdictional areas. Work will adhere to the Virginia E&S Handbook and Regulations. As part of the Project QC plan, these E&S designs are reviewed by a VDEQ Certified Plan Reviewer team member and the construction staff. C-107 compliance checks are completed by construction staff twice a week and after rain events to stay compliant with E&S controls.

Demonstrate that all aspects of environmental management are well integrated into the Project schedule so as to minimize the possibility of delays.

PROJECT SCHEDULE AND ENVIRONMENTAL PERMITTING INTEGRATION: Since securing environmental permits and approvals on time are a principal component in maintaining the Project schedule, we have incorporated them as hold points where they must be in place before impacts to jurisdictional features can commence. To accelerate this process, we are leveraging our relationships with agency representatives and our experience to acquire permits.

Upon receiving Notice to Proceed (NTP), our ECM commences fieldwork, such as stream assessment and scoring via the Unified Stream Methodology to start deriving mitigation ratios. We move immediately into agency correspondence and coordination and introduce the continued collection of environmental information into our Environmental Constraints Map for each discipline to consider in their respective design. Once the design has sufficient detail regarding temporary/permanent impacts, grading, and drainage, we submit a Joint Permit Application (JPA) and deliverables to VMRC, USACE, and VDEQ to verify compliance and coverage under Nationwide Permit 23. We submit the JPA as soon as possible to quell any concerns or unexpected issues from the agencies. To permit projects efficiently, a comprehensive and thorough JPA package is critical and ensures the Project schedule is maintained. Our ECM is continually conscious of the overall and special conditions outlined in the federal Nationwide Permit. We will adhere to all conditions, such as countersinking pipes and culverts, ensuring no substantial disruptions of aquatic life, monitor nonimpacted areas, and restore temporary impacts to preexisting conditions within 30 days of completion, among a multitude of BMPs to be environmentally responsible.

The Kokosing Team has a firm understanding of the time-of-year restrictions currently associated with the Loggerhead Shrike, active migratory bird nests, and any unpredicted bat encounters on bridges. Our construction schedule has the April 1st - July 31st time-of-year restriction built in it for clearing and grubbing due to the state

threatened Loggerhead Shrike. When creating the Project Schedule, we will account for the possible time-of-year restrictions associated with migratory bird nests (namely Barn Swallow) on bridges HTRIS 01791, HTRIS 01853, and HTRIS 01854. Surveys will determine if there are live nests, thus meriting the time-of-year restriction.

To further bolster our approach and solutions for addressing environmental conditions and any unidentified issues, our environmental staff stays in contact with VDOT environmental personnel to maintain protocols. To offset the potential scarcity in the stream and wetland mitigation market for the Project area, we will be in contact with multiple mitigation banks early and often to obtain Letters of Credit Availability, stay current on credit inventory, and be apprised of anticipated credit releases. We also have relationships with firms that specialize in permittee responsible mitigation in the event that no mitigation can be purchased from any banking source. Our EMP includes updated threatened and endangered species coordination and supporting documentation throughout Project milestones as preferred by VDOT. This ensures recently added species or habitat are not overlooked. Considering our staff's expertise and proficiency, our ECM and Compliance Plan maintains an unobstructed path to an environmentally conscious, compliant, and successful Project.

4.4.2 UTILITIES

Describe the approach for utility coordination, adjustments, and relocations.

Ten utility owners are present throughout the Project alignment, primarily at interchanges, along with a handful of utility crossings of the mainline and a Shentel fiber line that runs within the median of the Project mainline.

Key benefits of our utility approach are:

- Early coordination with utility companies to reduce Project impacts
- Strategic construction sequencing to keep utilities off the Critical Path, minimizing potential schedule delays
- Our experience, knowledge, capability, and authorization to design relocation solutions for utility owners, mitigating schedule delays and risk

APPROACH FOR UTILITY COORDINATION, ADJUSTMENTS, AND RELOCATIONS: Our Team's approach to utility coordination, adjustments, and relocations is to develop a design that minimizes conflicts and relocations that pose a risk to the Project schedule and cost. Furthermore, we engage utility owners early in the design phase and maintain communication throughout the Project. By avoiding utilities to the maximum extent possible, we reduce costs, minimize schedule risk, and expedite the start of construction. This approach is RDA's standard practice and has been successfully implemented when teamed with Kokosing on several DB projects, including VDOT's Military Highway and Route 29 Solutions, the Harry Nice Bridge, and Glebe Road Bridge.

We have reviewed the Conceptual Plans and the utility data provided with the RFP. Coordination with each impacted utility company has occurred, along with researching available records to develop our conceptual plans and schedule. Our Team leverages the information gathered from working with the utility companies to provide VDOT with a comprehensive approach to minimizing utility impacts on the Project. Regarding the conflicts that are unavoidable, we will tap into our design and construction experience with those utility companies and assist them with their relocation design to speed up progress and ensure they are out of conflict and will sequence construction phasing to minimize schedule dependency on utility relocations. We put this strategy to the test on VDOT's Route 29 Solutions bundle with Dominion Power and avoided relocating over 90% of their facility along Route 29 as compared to what was shown in the RFP Concept Plans. Our Team is also experienced working with utility owners and betterment requests that arise as part of the relocation process. Should betterments be requested, we can react accordingly to have them integrated into the design and construction to minimize Project delays.

4.4 PROJECT APPROACH

Our utility coordination team has over 100 years of experience in utility planning, design, conflict resolution, relocations, inspection, and construction coordination. We are well versed with the VDOT Utility Manual and Utility Coordination Process as outlined in **Figure 4.4.2-1.** We understand the important milestone of approved Plan and Estimates (P&Es) and the need for ROW availability (if required) for utility relocations to commence. We also have experience managing requested betterments, identifying long lead utility tasks, and managing utility owners within the schedule. Our Lead Utility Coordinator, Mr. John Myers, is a former VDOT Regional Utility Coordinator who over the course of his career has developed strong relationships with each utility company that have facilities along this corridor.

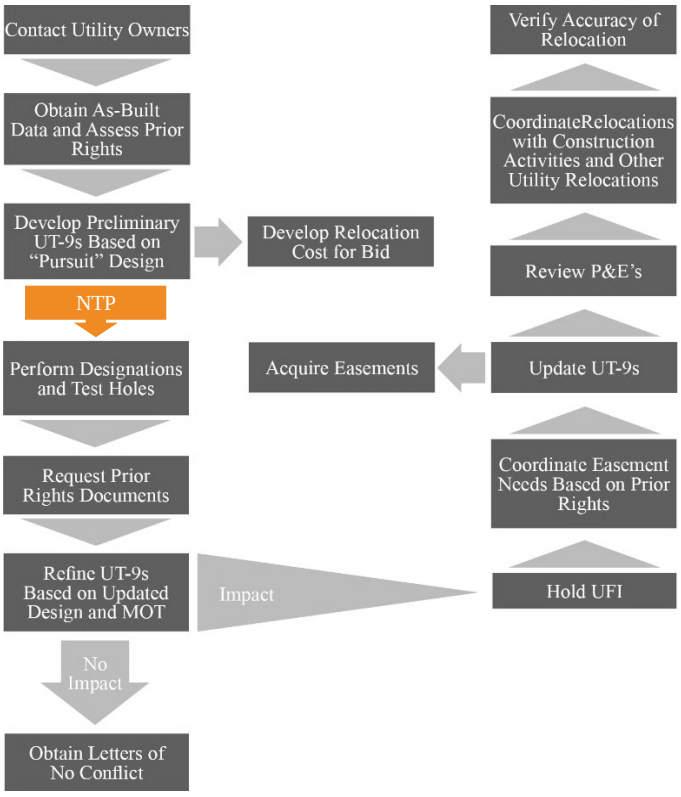


Figure 4.4.2-1: Utility Coordination Process

Our utility coordination team includes a 30+ year power company retiree; a former gas company project manager; a 20+ year experienced designer for Verizon; and utility company certified designers in water and sewer facilities, electric power systems, and gas facilities. Our Team routinely prepares relocation and new build design work for Dominion Energy and many of the communications and fiber optic companies around the Commonwealth, including those impacted by this Project. To expedite each utility owner's design and ensure their relocations are out of conflict with our Project, and each other, we will develop preliminary alignments for each impacted utility owner.

Identify which utilities the Offeror believes to be in conflict with the design, as well as potential solutions for accommodating those utilities.

UTILITY CONFLICTS: Based on our coordination with utility owners and our analysis of available information, we identified potential utility conflicts in the Project area using utility designations, as well as record information provided with the RFP. Further modifications to the design will be implemented following supplemental utility designation and test pits to be performed after NTP.

We also identified unavoidable utility conflicts. The sequence of those utility relocations will be coordinated with utility owners to minimize schedule risk. Since these utility conflicts are generally unavoidable with the proposed roadway widening and bridge work, we identified them so they can be addressed as early as possible in the Project schedule to not delay any proposed construction.

Shentel has facilities that run through the entire Project median according to the RFP designation and is in conflict. At the pre-proposal utility meeting they stated they had begun relocating their lines outside the limits of disturbance (LOD) and have plans to complete the relocation through the rest of the project. During discussions in the meeting, the Kokosing Team suggested VDOT allow Shentel to continue their relocations so that they can be completed prior to the Project being awarded rather than wait until the Project started. VDOT and Shentel were able to coordinate this approach and Addendum 2 provided Sheltel's plans and schedule. Upon NTP, we will confirm with Shentel that the rest of their utilities have been relocated.

Shenandoah Valley Electric Cooperative has two crossings, but our design is able to accommodate their facilities without requiring relocations.

4.4 PROJECT APPROACH

Dominion Energy has two crossings, but our design is able to accommodate their facilities without requiring relocations.

Buckingham Branch Railroad has an aerial power line running parallel to their tracks. Working with them during this pursuit, it was identified this line is abandoned and they will remove the poles before work starts on the Project (see **Figure 4.4.2-2**). Upon NTP, we will confirm in the field that the poles have been removed.

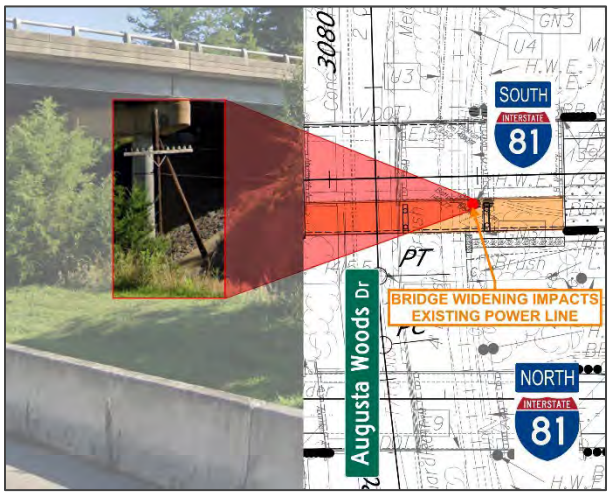


Figure 4.4.2-2: Buckingham Branch Poles

Verizon has multiple crossings but our design is able to accommodate their facilities without having to relocate them based on the provided designation. After NTP we will confirm their locations by test holing and if deviations that put them in conflict, we will move toward an adjustment in place vs. a relocation.

Columbia Gas has one line crossing I-81 and a 4-in. gas line along Route 250. The 4-in. line originally shown in conflict with the proposed guardrail has been resolved by way of our optimizing our design (see **Figure 4.4.2-3**) to eliminate the conflict. The crossing of I-81 is clear of conflict.

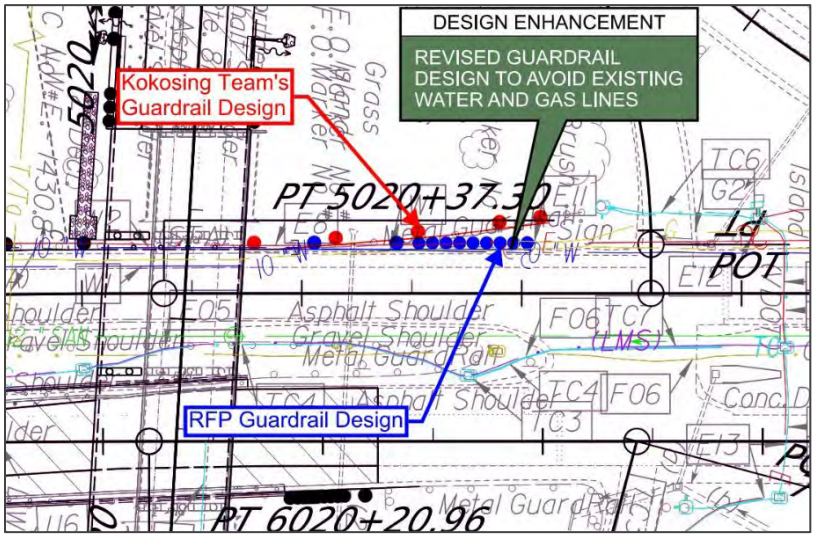


Figure 4.4.2-3: Route 250 Water and Gas Line Conflict Avoidance

Comcast has two aerial crossings through the Project which our design can accommodate without requiring relocation.

City of Staunton has water and sewer facilities crossing at several locations throughout the Project. The section of 10-in. water shown in conflict in the RFP plans with proposed guardrail has been resolved by optimizing the guardrail alignment in our design (see **Figure 4.4.2-3**).

Augusta County has water and sewer crossings at a few locations in the Project. Our optimized design is able to accommodate the 12-in. along Route 250 without requiring relocation. Our optimized design is able to accommodate the 30-in. sewer at the Lewis Creek without relocation however an existing creek scour condition has put the line at risk of failure. Our Team's innovating stream diversion design will solve the existing scour issue and ensure future stability. The Kokosing Team will perform CCTV inspection of the pipe and provide matting above the pipe to safely distribute the construction loads and protect the line.

Segra has three fiber optic (FO) cables crossing the Project. Two lines on Route 250, a 24FO and 96FO; the 24FO resource sharing cable conflicts. We are planning for a relocation for the lines on US 250 however during test holing if we are able to confirm adequate slack we will lift and lay to clear the conflict. The third 10FO line is in a Verizon conduit along the railroad tracks and appears to be clear of conflict.

4.4 PROJECT APPROACH

Discuss mitigation strategies to offset the potential impacts of utility relocations exceeding estimated timeframes or unidentified/ non-located utilities being discovered during construction.

MITIGATION STRATEGIES TO AVOID IMPACTS: The key to executing the utility conflict resolution process is communication and cooperation between the utilities and the Kokosing Team. We continually track and communicate with the companies involved throughout the design and construction phases. Through our extensive project experience coordinating utility relocations, we have developed a tracking matrix and spreadsheets similar to the information reported in the RUMS system that is updated regularly and allows us to look ahead to prepare for the upcoming stages of design, review, and approval cycles. This formal tracking begins at the Utility Field Inspection meeting and accounts for all activities to include easement requests, relocation package submissions, construction activities, and the target completion date for each utility. These measures better facilitate coordination and planning for companies to work in sequence where needed on the Project.

Mitigation of utility impacts are divided into four major strategies:

1. **Avoiding/minimizing conflicts**
2. **Implementing a proven utility relocation process**
3. **Unmarked/unknown utilities**
4. **Resolving field conflicts**

Together, they minimize utility risk regarding cost and schedule. Our approach to addressing these strategies is provided below:

1. **Avoiding/Minimizing Conflicts:** When evaluating each potential utility conflict, we first determine if the design can be adjusted to avoid it. We assess all elements of design including adjusting roadway grades, modifying storm sewer system layouts and drainage structure types, and/or adjusting ditch grades, etc. The second option, if standard separations from design elements to existing utilities cannot be provided, we work with the utility owner to evaluate whether a protect-in-place measure such as encasement is possible. The third option is to minimize the utility adjustment vs. a full relocation. This approach is often acceptable to communications providers who prefer to “lift & lay” their existing utility out of conflict where there is slack. Only after thoroughly exploring these options, we proceed with relocating the utility.
2. **Implementing a Proven Utility Relocation Process:** Our second strategy is to implement the standard VDOT utility relocation process. However, a key part of our approach is self-performing much of the design work that is typically the responsibility of the utility owners so that we control the process. Our Team has experienced specialists who are approved designers for various utilities. They have backgrounds in electrical, telecommunications, and gas design to assist utility owners with expediting the process. To minimize schedule risk and ensure the utility designs are coordinated and constructible, we prepare and provide plans with alignments to the utility owners for their final concurrence. This has been extremely effective as it greatly reduces the design effort required by the utility owners and allows us to better control our schedule.

   Having our Team perform much of the engineering for the utility relocations, it gives us more control over the timely submittal of the relocation packages. As construction begins, field personnel take over tracking the relocations, as well as any communication with the utility companies’ field supervisors. Progress meetings are bi-weekly with all involved utilities on site. If it is apparent a utility is falling behind schedule, meetings are held more often to partner on solutions to recover any lost time. Additionally, having utility team members in the same offices as the roadway and structural engineers improves coordination, rather than subcontracting to a third party.
3. **Unmarked/Unknown Utilities:** We will have our utility team review the Project site for cleared areas that may contain unmarked utilities. Signs of undesignated public and private utilities often exist, such as

pavement cut repairs, drops from existing poles, overhead lines, junction boxes, pedestals, manholes, and handholes not captured in designation. These signs can help lead to discovery of the unmarked/unknown utility so that it can be properly dealt with prior to becoming a construction impact.

4. **Resolving Field Conflicts:** Our experience in resolving field issues and finding quick cost-effective solutions to complicated relocations is our strong point. Our Construction Utility Manager engages with the Design Utility Manager immediately upon award and works in unison with the utilities to ensure constructability and timeliness for the Project schedule. Overseeing the utility relocations provides foresight on any possible issues and positions us to overcome them. One common challenge during construction is the discovery of unidentified utilities. If encountered, Mr. Myers will immediately organize a meeting with the construction team and all utility owners to determine ownership and develop an expedited plan to avoid or relocate. During these situations, the established relationships between RDA, Kokosing, and the utility owners is key in developing solutions that do not affect the schedule or increase construction costs.

Demonstrate that the utility coordination, adjustments, and relocations are well integrated into the Project sequencing as to minimize the possibility of schedule delays.

INTEGRATION INTO PROJECT SEQUENCING AND SCHEDULE: Kokosing fully integrates utilities into the Project Schedule as the rule, not the exception (see **Figure 4.4.2-4**). We have developed the Project Schedule allowing adequate time for utility coordination efforts, design, approvals and authorizations, easement acquisition, utility owner material procurement, and the sequential relocation of utilities. The durations we have used for utility relocations have been extended where possible beyond the actual planned durations to build contingency into the overall schedule.

Activity ID	Planned Duration	Activity Name	Start	Finish
UTILITY COORDINATION				
Utility Coordination				
B1120	120	Develop & Submit Utility Status Report	07-Apr-23	04-Aug-23
B1050	14	Preliminary UFI Plans to Utilities	01-Oct-23	14-Oct-23
B1300	1	Utility Field Inspection	05-Nov-23	05-Nov-23
Utility Relocations				
Shentel				
B1330	30	Design P&E	06-Nov-23	05-Dec-23
B1440	2	Submit P&E to RDA	06-Dec-23	07-Dec-23
B1480	14	RDA to review P&E	08-Dec-23	21-Dec-23
B1550	2	Submit P&E to VDOT	22-Dec-23	23-Dec-23
B1580	21	VDOT Approve for Authorization	24-Dec-23	13-Jan-24
A1100	60	Relocation (If not complete by NOIA)	15-Jan-24	25-Apr-24
Segra				
B1340	30	Design P&E	06-Nov-23	05-Dec-23
B1450	2	Submit P&E to RDA	06-Dec-23	07-Dec-23
B1490	14	RDA to review P&E	08-Dec-23	21-Dec-23
B1560	2	Submit P&E to VDOT	22-Dec-23	23-Dec-23
B1590	21	VDOT Approve for Authorization	24-Dec-23	13-Jan-24
A1110	30	Relocation	15-Jan-24	05-Mar-24

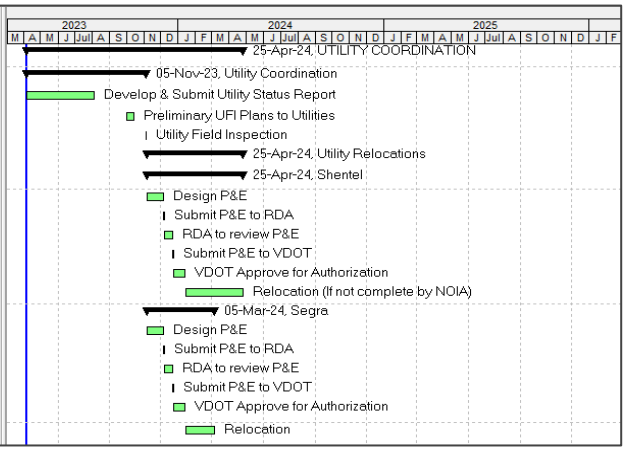


Figure 4.4.2-4: Integration of Utility Coordination into Project Sequencing and Schedule

Throughout the design and construction phases, Mr. Myers monitors each utility owner's progress and reports this information to the DBPM. This keeps the Project Team apprised of the status of utility relocations and allows for monitoring of the overall Project schedule and utility risk.

4.4.3 GEOTECHNICAL

Describe the Offeror's approach to identifying and mitigating geotechnical risks through knowledgeable application of geotechnical design and analysis practices and construction methods.

Our Team has reviewed the information provided in the RFP and the Geotechnical Data Report (GDR), researched geologic maps, publicly available data, and reviewed our records of projects completed in the vicinity of the proposed widening. Our experience along the I-81 corridor gives us a thorough understanding of potential risks and design challenges that may be encountered during design and construction. As a result, we have developed a comprehensive geotechnical design and construction approach that results in a low-risk, safe, and efficient design

that minimizes the long-term maintenance requirements, supports the construction sequencing, reduces traffic impacts, and improves safety.

Our geotechnical design team has been engaged during the proposal design development and throughout the Project, including scope validation, final design, and construction. This includes the performance of supplemental explorations and testing to evaluate pavements, embankments, fill slopes, soil and rock cuts, culverts, bridge and wall structures, SWM facilities, standalone poles, overhead signs, and minor structures. Explorations are prioritized to support the early design elements and construction sequence. Data collected from supplemental subsurface investigation is used to confirm design parameters and construction methods. Our design concepts and construction activities also consider the inherent challenges associated with working around existing foundations and maintaining the use of existing structures.

SUBSURFACE CONDITIONS: Based on the information available in the GDR, the general soil and bedrock stratigraphy, from bedrock to surface, is as follows:

1. Bedrock in this formation predominately consists of shale and limestone, which was encountered beneath the ground surface at varying depths. Note that rock cores were only collected at the five bridge locations and anticipated cut slopes in the median. Shale was encountered at the SB bridges over Augusta Woods Drive/BBRR and Route 250. Limestone was encountered at the SB bridge over Ramp 1 and both NB and SB bridges over Lewis Creek.
2. The soil directly above bedrock is very dense, highly weathered rock, sometimes referred to as intermediate geo-material (IGM), including cobbles in some of the borings.
3. The residual soils underlying the site generally consist of silty sand, with lesser amounts of high plasticity silt, clay, clayey sand, and silty/clayey sand and gravel.
4. Soils of the alluvium strata were typically present above residual soils near the Lewis Creek Bridge. The alluvium soils consist of high plasticity silty and clay, low plasticity clay, and silty and clayey sand.
5. Above the residual and alluvium is existing fill material consisting of soils ranging from coarse grained gravels and sands to low plasticity silts and clays. Localized high plasticity silt and clay fill was encountered in the embankments for the SB bridge over Ramp 1, the north embankment for the SB bridge over BBRR, the north embankment for the SB bridge over Lewis Creek, and both embankments for the NB bridge over Lewis Creek. Fill thickness was greatest at existing bridge embankments and fill slopes.
6. Explorations on unpaved areas encountered topsoil to depths ranging from 1-in. to 3-in.
7. Surface materials at the existing travel lanes consist of 10.9- to 13.5-in. of asphalt pavement underlaid by a 12-in. to 16-in. layer of crushed stone base underlaid by fill materials (subgrade).

Groundwater was encountered during drilling at 14 of the bridge and critical slope boring locations at depths ranging from 2-ft. to 38-ft. beneath the ground surface. Bridge locations that encountered groundwater during drilling were the I-81 Bridge over Ramp 1 and the I-81 Bridge over Lewis Creek.

The pH and resistivity test results presented in the GDR indicate that a potentially corrosive environment exists at several bridge substructure locations in accordance with the guidelines presented in VDOT Structure and Bridge Manual.

KEY GEOTECHNICAL ISSUES: Based on conversations and coordination during our weekly meetings, we performed the following preliminary geotechnical analyses and evaluations using the information contained in the GDR:

- Karst subsurface conditions
- Settlement of embankment fills

4.4 PROJECT APPROACH

- Corrosion evaluation of steel piles, drilled shafts, and culverts
- Downdrag for new and existing piles at abutments
- Global stability for select cut and fill slopes
- Unsuitable soils delineation and remediation
- Axial resistance for driven piles and drilled shafts
- Temporary pavement design alternatives and shoulder strengthening calculations

Using the GDR information, Team discussions, and the results of preliminary geotechnical analyses, we have identified the key geotechnical risks. Our geotechnical design approach supports the Project team's design by identifying and managing geotechnical risks which could impact the construction schedule, sequencing, traffic, and safety. Design and construction solutions for potential risks are described below in **Table 4.4.3-1.**

TABLE 4.4.3-1 GEOTECHNICAL RISK AND MITIGATIONS

Geotechnical Condition	Risk/Impact	Mitigation Strategy
Karst Terrain	▪ The preliminary GDR notes karst potential based on geology and limestone rock was encountered in several borings. Karst conditions include the potential zones of variable weathering within bedrock which could affect deep foundation quantities and installation.	**Design** ▪ Closely monitor soil borings and rock coring for karst indications. ▪ Conduct a geophysical survey to supplement boring data at substructure locations where potential karst conditions exist. **Construction** ▪ Ensure bridge foundations reach competent rock
Corrosivity	▪ GDR corrosivity tests were performed at five (5) bridge locations where steel H-piles exist and exhibited soil pH and resistivity levels that indicated a potentially corrosive environment exists. ▪ GDR corrosivity tests performed for minor structures indicated moderate to severe corrosion potential that will impact pipes and culverts.	**Design** ▪ Conduct additional geotechnical investigations and corrosivity testing at all new deep foundation and bridge substructure units. **Construction** ▪ Incorporate sacrificial steel into the pile design and additional rebar concrete cover for drilled shafts based on corrosion potential. ▪ Select pipe types corresponding to corrosion potential in accordance with VDOT Standard PC-1.
Unsuitable Soils	▪ Unsuitable soils were identified within 3-ft. of subgrade at approximately 15% of test boring locations. These soils require either over-excavation and replacement or insitu stabilization with lime or cement.	**Design** ▪ Perform additional test borings and laboratory testing during final design to better define limits of unsuitable material. ▪ Perform laboratory testing to develop dosage rates for chemical stabilization (lime or cement). **Construction** ▪ Evaluate location and limits of unsuitable soils and determine whether over-excavation and replacement is feasible with respect to barrier location and construction sequencing or if chemical stabilization is required.

TABLE 4.4.3-1 GEOTECHNICAL RISK AND MITIGATIONS

Geotechnical Condition	Risk/Impact	Mitigation Strategy
Embankment Stability	▪ GDR provides limited shear strength data for existing fill slopes which could be marginal for global stability. ▪ Some sliver fills extend to culvert extensions and/or streams parallel to existing bridge approach embankments, where soft fill and alluvial soils can compromise stability and bearing.	**Design** ▪ Conduct shear strength testing, including peak and fully-softened shear strength, to incorporate in global slope stability analyses. **Construction** ▪ Perform local slope flattening or undercuts at the toe of slope to mitigate areas of slope instability.

SUBSURFACE INVESTIGATION: To address the risks identified above, following NTP, our Team will mobilize drill rigs to complete the subsurface exploration program within the Scope Validation Period. We will develop and execute our final design subsurface exploration program to supplement the geotechnical information provided in the GDR. The geotechnical explorations are performed to meet/exceed the requirements of Chapter 3 of the VDOT Manual of Instructions for Materials Division (MOI), AASHTO LRFD Bride Design Specifications, 8th Edition, 2017 and VDOT Modifications, and Section 700.05(c) of the 2020 VDOT Road and Bridge Specifications. Our Team supplements the available information using a phased subsurface exploration program as shown below:

- **Phase 1**: Subsurface explorations collect information in anomalous areas where karst is a concern, where there is corrosive soil, and where limits of unsuitable soils are uncertain. Subsurface information for schedule sensitive design items is also collected.
- **Phase 2:** Subsurface explorations supplement the Phase 1 explorations and satisfy the MOI requirements for foundations, retaining walls, noise barriers, culverts, embankments, and pavements. This phase begins prior to completing the Phase 1 investigation.

Explorations include test borings (with rock coring), pavement cores, and geophysical testing. Experienced geotechnical engineers and geologists monitor drilling activities full-time to identify changing conditions and allow for adjusting to exploration depths and locations. Where warranted due to karst conditions, geophysical testing is performed. Coring of existing pavements are performed as appropriate for widenings, with potential use of ground penetrating radar (GPR) to identify shoulder transitions. Samples recovered from test borings are tested in an AASHTO-accredited laboratory for moisture content, gradation, corrosivity, shear strength, consolidation, Proctor, California Bearing Ratio (CBR), and rock unconfined compressive strength.

GEOTECHNICAL ANALYSIS AND DESIGN: Following the collection of data from field explorations and laboratory testing, the proposed improvements are evaluated and analyzed in accordance with AASHTO LRFD, VDOT, and MOI requirements. Geotechnical Engineering Reports (GER) are prepared as per the MOI to provide recommendations and analysis for Project elements. Evaluations that have a greater chance of impacting design and construction are described below:

- **Bridge Abutment and Pier Foundations:** Design-phase exploration and testing supplement GDR data to support the planned geotechnical analyses and recommendations for foundation elements in accordance with the RFP. As noted above, there is additional corrosivity testing to confirm adequacy of the type and sizing of foundation elements presented on the concept plans. The RFP indicates moderate variability in existing pile length (> 10-ft.) at I-81 SBL over Ramp 1 Abutment B and I-81 SBL over Route 250. In consideration of the variability, steel H-piles with driving shoes are used to support abutment foundations without the need for karst mitigation techniques. Similarly, drilled shafts are used to support new pier foundations and Abutment A at I-81 SBL over August Woods Drive and BBRR.

4.4 PROJECT APPROACH

Design phase explorations and geophysical testing are performed during scope validation to evaluate the presence of karst conditions at the proposed bridge widenings. If karst conditions and/or greater variability is encountered, we evaluate the need for pre-drilling and grouting. Representative samples from the soils near the proposed piers foundations at Lewis Creek are sampled and tested for grain size analysis to determine D50 and D90 values. We then evaluate scour potential in accordance with Hydraulic Engineering Circular No. 18 with the results of the analysis used to evaluate scour for foundation design.

- **Retaining Walls:** Retaining walls are being used in the median of I-81 to reduce stream and wetland impacts as discussed in Section 4.3.1(d). They will require external (slope) stability and settlement evaluation. The available geotechnical data indicates the potential for deposits of highly plastic, fine-grained soils at the box culvert extension locations. If these soils are present adjacent to the proposed retaining walls, they could impact the external stability. This risk is evaluated in the design phase by collecting undisturbed samples and performing triaxial and direct shear tests to evaluate the short- and long-term strength of the material. Results are then used to refine our engineering analyses to determine the best wall type to construct.
- **Embankment Slopes:** Preliminary analyses indicate that some existing fill slopes may exhibit marginal global stability such as those between I-81 SB Station 3110+00 and Station 3117+00 where soft/loose soils and high groundwater exists at the toe of slope. We will sample and test foundation and embankment soils for consolidation and shear strength characteristics that are subsequently used in global stability and settlement analyses in accordance with the RFP. Where soft soils are encountered beneath embankments, over-excavation and replacement is used to remove unsuitable foundation soils. Proper benching and potential rework (moisture conditioning, blending, etc.) may be required for some sliver fills and free draining embankment material may be required in isolated areas. Cut slopes are sampled and evaluated according to the RFP.
- **Rock Cut Slopes:** Rock cut slopes are required in the median between Station 2203+50 and 2205+00, 2210+00 and 2212+50 NB, and 3150+00 and 3150+50 SB. GDR Test borings indicate that the cut slopes will encounter intermediate geomaterial and fractured Shaley Limestone, Shale, and Sandstone. Our preliminary evaluations indicate that the rock cut slopes have sufficient shear strength to be sloped at 2H:1V.
- **Unsuitable Soils:** Based on the laboratory testing and soil classification presented in the GDR, unsuitable soils were identified within 3-ft. of subgrade at approximately 15% of test boring locations. Most of these soils are defined as unsuitable due to high plasticity (elastic silts (MH) and fat Clay (CH)) and to a lesser degree due to high-moisture content. Five (5) California Bearing Ratio (CBR) tests were performed on bulks samples in the GDR and all exhibited CBR values less than 3, below the minimum requirement defined in the RFP. Delineation of high plasticity, soft, wet, and/or low CBR soils is needed to confirm that unsuitable materials are not located within 2-ft. of pavement subgrades. Over-excavation, moisture conditioning (drying and re-compaction), or chemical stabilization will be performed as required depending on construction sequencing and the extent of unsuitable material encountered.
- **Pavements:** Pavement sections are provided in the RFP. Results from the final design explorations and laboratory testing will be used to validate the pavement sections. Our evaluation also considers the cement content needed to meet the job mix design requirements where Full-Depth Reclamation (FDR) is required. Pavement patching along the I-81 NB and SB outside travel lanes is planned as indicated in the RFP. Buildups for cross-slope correction are planned as described in Section 4.3.1(d). Temporary pavements are required due to short duration MOT demands and will be designed in accordance with the RFP. GPR data indicate several areas along I-81 NB outside shoulders that are full depth and will not require

strengthening to support MOT demands. Where shoulder strengthening is required, our Team's preliminary pavement design has been performed assuming a subgrade CBR value of 5 to determine the required asphalt thickness.

- **Existing Foundations and Structures:** Geotechnical exploration and recommendations consider proximity to existing foundations and structures, including requirements for support of excavation (SOE), loading from adjacent fill, and vibrations. New foundation elements at bridges over Ramp 1, Augusta Woods Drive/Buckingham Branch Railroad, Route 250, and Lewis Creek must avoid conflicts with existing foundation elements. Monitoring programs are conducted in accordance with the VDOT Special Provision for Vibration Control and Monitoring of Existing Structures & Utilities During Construction.

WORKING IN THE VICINITY OF EXISTING FOUNDATIONS, MAINTAINING EXISTING STRUCTURES, AND MAINTAINING OR RECONSTRUCTING EXISTING SLOPES: Our Team has evaluated the proximity of new construction that impacts the existing structures and slopes. One example is the widening of the abutment foundations requires soil excavation directly adjacent to existing abutments and requires monitoring. Another example is the soil nail wall along Augusta Woods Drive which will need to be monitored during the bridge substructure widening. Lastly, monitoring will need to be performed to ensure that the existing sanitary sewer at Lewis Creek is not damaged during bridge foundation installation.

Our construction activities that trigger the need to monitor existing structures include excavation, pile driving, demolition, embankment fill placement, and retaining walls. We will assemble a qualified independent instrumentation and monitoring consultant team (IIMCT) to monitor the existing structures. Our IIMCT monitors structures in accordance with the Special Provisions for Instrumentation & Monitoring of Adjacent Structures and Facilities and Vibration Control and Monitoring of Existing Structures & Utilities During Construction. To ensure the integrity of these structures and prevent damage to adjacent properties, we will take the following precautions per the Special Provision to include:

- Joint meeting with VDOT, Kokosing, RDA, and IIMCT to develop a list of property, structures, and utilities that may be adversely impacted by construction activities
- Review existing as-builts and preconstruction surveys, including photographs, videos, and written documentation
- Develop geotechnical and structural instrumentation plans
- Survey control and condition assessments
- Periodic monitoring and surveys of adjoining structures during construction
- Vibration monitoring
- Tilt meter surveying

Our Team considers the effects of construction activities and the variable geologic conditions anticipated on the existing slopes. Impacts are minimized using a subsurface investigation program and avoiding excessive excavation at the toe of slope. We maintain the slopes in their existing condition, where feasible, with care to avoid undermining by diverting upland stormwater runoff and minimizing erosion. Routine inspections will ensure no damage occurs.

4.4 PROJECT APPROACH

4.4.4 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

Describe the Offeror's approach to QA/QC during design and construction including a description of anticipated QA and QC staffing levels required to meet the QA/QC requirements for the Project.

One of the most important aspects of a VDOT DB project is a successful implementation of the QA/QC program. To meet our mission and objectives, we assembled a Team of highly qualified and experienced professionals to ensure compliance with VDOT's Minimum Requirements for Quality Assurance and Quality Control on Design-Build and Public-Private Transportation Act Projects, dated July 2018. Quinn Consulting (Quinn) spearheads our Construction QA team under the leadership of Mr. Scott Shropshire, PE.

The Kokosing Team's QA/QC approach creates a partnership between VDOT, our field staff and QC inspectors/technicians, and Quinn's QA staff. Forming this relationship with a robust QA/QC testing and inspection program starts with a project-specific QA/QC Plan which will ensure the following:

- Reduce/eliminate contractor or designer rework
- Keep QA efforts focused and targeted
- Limit VDOT's need to assign valuable resources to review or inspect our work
- Assure VDOT of a well-maintained, safe construction site with construction/materials meeting specifications
- Minimize future maintenance
- Provide well-structured documentation that enables VDOT to review and accept the facilities
- Assure compliance with VDOT, local, and federal requirements

Below is our QA/QC approach for design and construction to achieve VDOT full acceptance of the facilities.

APPROACH TO QA/QC DURING DESIGN: Lead Designer RDA provides QC and QA at all levels of the Team's organization. They have a corporate Quality Management Plan (QMP) that involves every Team member, from the partners to the engineering technicians. Their corporate QMP, along with VDOT's Minimum Requirements for QA/QC on DB projects, is the basis for our project-specific Design Quality Management Plan (DQMP). Our DQMP defines the processes by which the design deliverables comply with the DB contract (including sound industry practice); the technical requirements; the approved QA/QC Plan; and specifications, special provisions, and standards, as well as law and government approvals. The Design Quality Assurance Manager is independent of the Design QC activities.

The design quality efforts will be audited by Mr. Ryan Gorman, PE, DBIA, the Entrusted Engineer-in-Charge (EIC). While the EIC's duties are independent of our QA/QC obligations, he will approve the Design Quality Plan prior to design starting for conformance to VDOT requirements. He will also audit that the quality reviews are being performed and documented in accordance with the approved plan.

The Design QC/QA consists of, but is not limited to the following:

- Plan details
- Design calculations
- Cross checking of work from other disciplines within our Team
- Environmental compliance
- Subconsultant design packages
- Constructability reviews by our Construction Team
- Extensive use of VDOT and other RDA developed checklists

4.4 PROJECT APPROACH

Our DQMP also:

- Incorporates a thorough understanding of the Project technical and execution requirements
- Identifies Team member roles/responsibilities throughout design and construction
- Defines the processes that provide efficient execution and documentation of the design quality
- Integrates the design and construction teams to leverage lessons learned and refine the design
- Ensures integration and oversight of our DM for compiling and sealing final documents of each work package
- Minimizes VDOT's design review efforts and provides quality design deliverables
- Allows Subconsultants to utilize the projects QA/QC plan or submit their own for approval by the DM

Our DQMP provides the framework by which RDA conducts their independent deliverable reviews. The design phase quality management process will be transparent to VDOT.

RDA follows this Nine-Step Review Process:

Step 1 **Originator:** Prepares the deliverable to be checked and is accountable for accuracy and adequacy per design code requirements. It is not intended that the Originator rely on the checking process to complete the deliverable.

Step 2 **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 is a senior staff member with the experience to check the design of the discipline they are reviewing.

Step 3 **Back-Checker:** Reviews the checked deliverable, confirms the items marked for revision are justifiable, and that corrections noted are appropriate. 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.

Step 4 **Corrector:** Addresses comments marked on the check print (original deliverable). This can be either the Originator or a CAD Technician.

Step 5 **Verifier:** Reviews the corrected deliverable against the check print and verifies corrections marked on the plan sheet or calculation sheet were addressed. The Verifier is also the Checker.

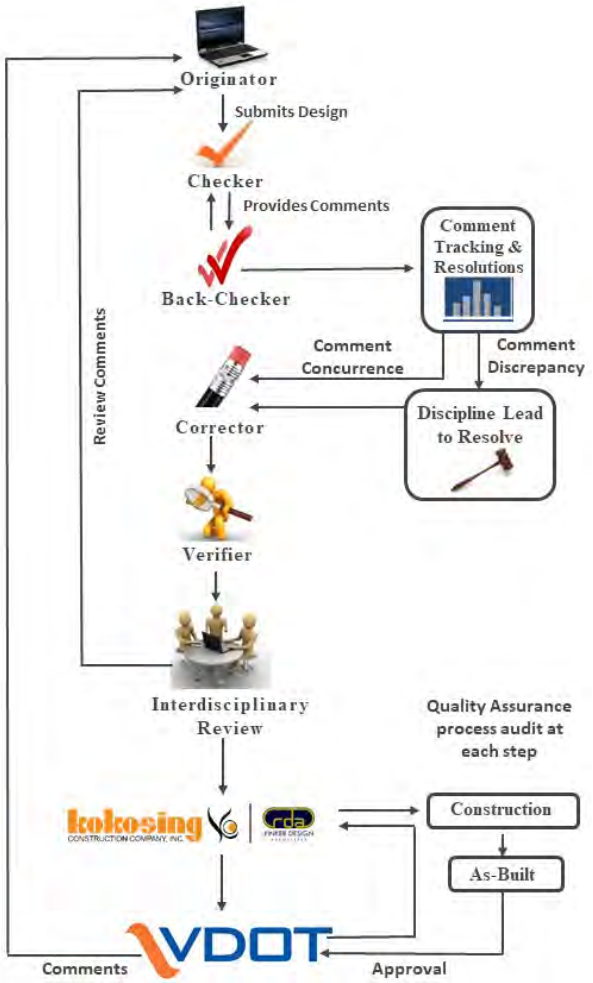


Figure 4.4.4-1: Design QA/QC Workflow Diagram

Step 6 **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.

Step 7 **Quality Assurance:** The Design QA/QC Manager audits and ensures the QC 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 DM may direct a design peer review on a discipline by a senior technical team member. Comments from this review will also be addressed by following the quality control checking process.

Step 8 **Contractor Review:** As a final deliverable review before submitting to VDOT, the Kokosing Team again reviews the plans for constructability, conformance to anticipated means and methods, and completeness of comment responses. This is led by EIC Ryan Gorman, PE, DBIA.

Step 9 **Submit to the Department:** The lead discipline engineer signs a form for each milestone deliverable that QC efforts are compliant and transmits it to the DM and the EIC 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 Kokosing Team. Comments are addressed by incorporating changes into the design for the next milestone submittal. This continues throughout design until final plans are submitted to VDOT and approved for construction.

APPROACH TO QA/QC DURING CONSTRUCTION:

Construction QC: Construction Quality Control Manager (QCM) Andrew Hiegl is responsible for construction QC and oversees the independent QC testing and inspection personnel. DBPM Steve Marincic, PE, directs the construction management effort. QC technicians and inspectors will possess the required VDOT certifications throughout the Project.

The QC function is to inspect and test the work as it progresses to control the level of quality being produced on the Project. The QC team measures these quality characteristics and inspects those activities that impact production when corrective action can be taken to prevent nonconforming materials or work. We will customize the construction portion of the QMP (CQMP) that follows VDOT Quality Requirements for Quality to maximize quality, which includes verifying approved materials and compliance construction processes. It covers VDOT's QC requirements and is organized in separate discipline and task sections for easy reference. The Contract and VDOT's referenced Quality Manual are used to identify minimum frequency of inspections and testing. Each definable feature of work is described with measures for quality and conformance with contract requirements. Requirements for preparatory meetings, startup and production meetings and frequency of inspections, sampling, and testing are identified.

Work plans are developed by the construction team for major activities with QC requirements. Formal preparatory meetings educate the field supervisors on work plans and are mandated for subcontracted work. Construction work is inspected by the QC inspection staff and onsite QC tests are performed by our technicians. Onsite material tests include proctors, Atterberg limits, sieve analysis, CBR values, bearing capacity, concrete compressive strength, mortar cubes, permeability, and soil classifications, among others.

Our QCM coordinates and meets with our CM and DBPM to discuss quality issues and implement any recommendations to address concerns, deficiencies and/or non-conformance issues. He provides timely daily reports and other information to the CM for review/action and follow up. For each test conducted he will provide QC testing reports within 24 hours (or next business day). These and other required items, such as non-

conformance reports (NCRs), deficiencies and punch lists, are tracked in logs maintained by the QCM in our SharePoint site where VDOT and the QAM can review at any time.

Our QCM, superintendents, project engineers, and surveyors assist and work with the CM, QAM, and VDOT for dimensional checks, verification of conformance of proposed materials, and submittal of material certifications. Inspectors will appropriate training and hold current material certifications when testing hydraulic cement concrete, asphalt concrete, soils and aggregate compaction, surface and slurry treatments, and pavement markings.

Included in our QMP is conformance to the many environmental constraints permitting agencies place on the Project. During construction, our inspectors will review compliance with the permitting constraints and requirements (limits of clearing, no work outside of LOD, installation and maintenance of E&S Controls, etc.).

Our QC process mandates following pre-activity checklists for every major task. For example, we use pre-pour checklists for concrete placement, roadway subgrade preparation, underdrain, grading, curb and drainage, and erosion controls and stabilization. To ensure conformance to the specifications, these checklists and work plans are reviewed in each preparatory meeting for each definable feature of work. Mandatory preparatory meetings are scheduled by the QAM and include the QCM, superintendent, foremen, project QC and safety personnel (VDOT is invited but are optional attendees). Defining/reviewing the acceptance criteria gets everyone focused on a common goal and facilitates teamwork.

Inspectors will document and, when applicable, photograph the work package, testing types, locations, inspections and results, weather conditions, communications, delays, MOT/safety issues, any deficiencies, or non-conforming work with corrective actions. Other documentation includes inspection checklists, materials testing reports, frequency of testing matrices, work zone checklists, E&S Control checklists, as-builts, updates for SWPPPs, and information for deficiency and non-conforming report logs.

Open and honest communication with the QAM and VDOT is maintained by invitations to weekly quality meetings during construction and preparatory meetings, access to our databases containing quality records (materials certifications and testing records, NCRs, quality issue logs, corrective action records, etc.), and offers to attend morning QC scheduling meetings to raise awareness of our daily plan to cover operations. Present at the weekly Quality meeting will be VDOT, QAM, DBPM, CM, lead inspectors and superintendents, QCM, and the lead QC inspector. Quality is a standing topic at progress meetings which includes a status report review of any NCRs, corrective actions taken, testing, and material records.

Three-week schedules are reviewed and updated at weekly scheduling and planning meetings and are used to forecast our design and field QC needs in a rolling timetable. This informs field, design, and QC personnel of their current duties. The QCM is an integral part of creating/updating the comprehensive and three-week schedules. By incorporating QC activities into the schedule, QC processes do not fall behind, lose their effectiveness or hinder construction progress.

Construction QA: QAM Mr. Scott Shropshire, PE, leads the Construction QA team with the primary role of confirming the work conforms to the approved plans and VDOT specifications by reviewing QC data and performing their own verification inspections and testing in accordance with the VDOT Quality Manual. He is responsible for the independent QA inspection and testing of materials used and work performed to include monitoring our QC program. Under his supervision, Quinn's inspectors carry out the inspection and testing activities of the QA program, including the following:

- Review work plans, reference documents, and the QA/QC Plan
- Confirm submittals, sources, and materials are approved
- Monitor the CPM and look-ahead schedules to determine (and perform) the frequency of tests

- Check calibration and condition of testing equipment
- Prepare daily diaries and logs, accept completed work, and document
- Maintain the materials notebook
- Schedule and lead preparatory meetings
- Monitor QC staff to confirm work coverage
- Coordinate laboratory testing
- Assist with coordinating witness and hold points
- Notify the QAM of any corrective measures
- Verify that unacceptable work is corrected

The QA staff verifies that QC functions are being conducted properly and performs QA testing and documentation per the approved plan. The QAM maintains the Project's Materials Book in accordance with the VDOT's Materials Division requirements.

Kokosing has an established work history with Quinn based upon QA/QC procedures on VDOT DB projects, such as Route 1 Improvements at Fort Belvoir and Fall Hill Avenue and Mary Washington Boulevard Extension. Our QA/QC team's experience, combined with lessons learned, gives VDOT seasoned professionals with a successful track record of administering QA/QC programs in Virginia. The QAM has full authority to stop work and will manage his forces to meet the Project demands with the resources he deems appropriate to ensure compliance.

Construction QA/QC Plan: The Construction QA/QC Plan establishes clear procedures to inspect the construction and testing of materials. Meetings and open communication are key to an effective QA/QC program as outlined in the Plan. Proper planning and Project meetings contribute significantly to success including:

Daily Communications: During construction, the QAM communicates daily with key staff. Every day, he conducts a brief meeting with the QA staff to confirm work is covered and accurate records are kept, and he communicates with our CM to ensure QC staff and construction operations are proceeding as planned. The QC and QA staff also communicates each day to confirm inspection coverage of the work.

Preparatory Inspection Meetings: Prior to starting any work, the QAM leads these meetings to confirm Project personnel understands the upcoming work. The objective is to coordinate/communicate among Kokosing's production, QA, and QC personnel, as well as VDOT's independent assurance and verification sampling and testing (IA/VST) personnel.

Weekly QA/QC Meetings: The CM, QCM, QAM, and the senior QA and QC inspectors discuss work progress and address any issues/concerns. Minutes are prepared and any outstanding issues are tracked until resolved. The VDOT project manager has an open-door invitation to attend.

Monthly Project Progress Meetings: QCM and QAM join these meetings to update attendees on the QA/QC Program. Construction QA and QC inspection personnel perform construction inspection, sampling, and testing as prescribed by the Minimum Requirements and other applicable contract documents. This includes documentation of construction activities and acceptance of manufactured materials. The following phases are in place to verify work is performed in substantial conformance with the contract:

1. **Utility Relocation Inspections:** Ensures utilities are relocated per the approved plan. Maintain UT-7 daily records of utility work relating to in-plan utility relocations.

4.4 PROJECT APPROACH

2. **Start-up Phase Inspections:** Takes place as work begins. The QAM or his staff reviews the work to verify conformance to the plans and that the correct documentation is being forwarded to VDOT after his review/acceptance.
3. **Production Phase Inspections:** Ensures the methods/procedures established in the start-up phase are maintained, and any deficiencies noted in the initial phase have been resolved/corrected.
4. **Intermediate Phase Inspections:** Throughout construction, the QA/QC team continues to inspect/test the work per the QA/QC Plan and other contract documents. Our Team accommodates VDOT's independent verification inspections as requested.
5. **Final Inspection and Punch-list:** QA/QC team is responsible for final inspection. The QAM maintains the punch list which is created as the Project approaches substantial completion. There are final inspections on all definable features of the work against approved construction plans, specifications, and other related construction documents, with any discrepancies noted and rectified. As-built preparation will follow VDOT requirements.

QA/QC documentation is maintained electronically online accessible to Project personnel using Bentley's ProjectWise System and PlanGrid. The QAM monitors the QC and QA staff for document control, reviews the inspection staffs' daily diaries daily and makes them available for the VDOT project manager to review.

Anticipated Construction QA and QC Staffing: For a project of this size, scope, and complexity, our QA/QC staff must be experienced to deliver a final product that meets/exceeds the requirements. The DBPM ensures that Project policies are implemented and that our Team is staffed with knowledgeable and dedicated professionals who are committed to designing and constructing this Project. Implementing QA/QC as prescribed by our Team eliminates the need for VDOT to augment the quality effort.

The Kokosing Team's Project schedule of work indicates a need for between two and six QC and three to five QA individuals involved in the Construction QA/QC Program depending upon the number of crews actively working and the testing needs (Asphalt/Concrete/Earthwork) of the specific phases under construction at any one time. This does not include the field engineers or crew supervisors who ensure construction is per the plans/specifications. The QAM is dedicated to the Project full-time and will be onsite full-time during construction.

4.5 | Construction of the Project

4.5 CONSTRUCTION OF THE PROJECT

4.5.1 SEQUENCE OF CONSTRUCTION

Describe the approach to construction phasing including the general sequence of activities required to complete the Project by the Final Completion date identified in Part 1, Section 4.1.6 or the earlier Final Completion date proposed by the Offeror.

The Project Team's sequence of construction (SOC) was achieved by investigating various sequences and selecting the safest, most efficient, and constructible option. Our Team of engineers, estimators, and construction personnel jointly participated in Technical Work Group (TWG) meetings to accomplish a balance among safety, design, MOT, construction, quality, maintenance, and final acceptance. The process began with reviewing and evaluating the RFP constraints, including evaluation of key elements, such as grading operations, bridge beam installation, shoulder strengthening, interchange operations, SWM and drainage studies, and mill/overlay work. As the Project is mostly linear, we determined that the inside widening and bridge widening/re-decking would guide how the sequencing takes place. This concept was then compared against the key elements noted above to the RFP concept and requirements/limitations. This iterative process allowed our Team to select the safest, most efficient, economical, and low-maintenance Project by starting with the widening to the median for a majority of the corridor**.** Our schedule and SOC provides for the Project to begin fieldwork in October 2023.

The careful examination of the sequence and construction activities, as well as the critical items outlined below, positions our Project Team to anticipate any potential delays in construction. Delays will be avoided through flexible sequencing as they allow different areas of construction to be completed simultaneously or identify alternative areas of construction should there be issues that impede progress, such as utility or material delays. Flexible and thoughtful sequencing and anticipation of potential delays will allow us to meet the final completion date.

APPROACH TO CONSTRUCTION PHASING: Our Team's SOC develops the least number of MOT phases and short-term lane closures to minimize impacts to the traveling public and enhance safety during construction.

Construction operations are divided logically and systematically throughout the Project. Due to the nature of the improvements, the NB and SB lanes can be constructed independently. This allows for construction teams to be efficient in the areas of operation to keep the Project moving and avoid unnecessary delays.

The NB lane has a single bridge that requires widening and re-decking. The remainder of the NB improvements is a roadway widening to the inside which can be worked in a single direction and opened sequentially reducing the number of lane closures and temporary barrier setting and re-setting processes to speed up construction. The critical path to final completion of the NB lanes will be the bridge widening and re-decking over Lewis Creek. Early completion of this element is the key to assuring compliance with the overall schedule.

SB improvements are fully driven by the bridge work. Typically, we would layout the bridge widenings and re-decking based upon the location and spacing of the beams to support a construction joint. However, the RFP states that the drainage off of the decks is a critical concern and requires that storm water cannot spread into the travel lane more than one foot. Therefore, careful consideration was given to match the lane construction phases to the drainage needs, existing beam alignments, and constructability. Temporary scuppers were added to the bridge decks to reduce the spread and provide for efficient lane use and constructability.

The I-81, I-64, and US-250 interchange is a tight construction zone with widening of interstate and ramp facilities with complex, high volume traffic movements. Within this constraint, the Team will provide as much space to the traveling public as possible to maintain lane widths while working in a compressed work zone to minimize disruptions.

4.5 CONSTRUCTION OF THE PROJECT

Lastly, the I-81 and I-64 interchange requires significant attention to detail to construct the piers and bridge deck improvements through the width and height constrained, heavily traveled multilevel interchange. Sequencing must maintain adequate travel ways and curvature sight distances.

Evaluating the sequencing this way allows the Project Team to effectively coordinate our design and construction elements and manage the resources required for environmental permitting, ROW, stakeholder coordination, safety, and utility relocations. The SOC provides flexibility to overcome **unforeseen delays to any specific location with multiple options to shifting resources to other areas of the Project that can continue independent from the affected location.** Our program and strategy afford the Team flexibility during construction to mitigate delays and impacts to the traveling public.

PROJECT SEQUENCING:

Sequencing will follow the phases as outlined below. As shown in **Figure 4.5.1-1** there are several areas of major bridges and culverts that will need to be managed throughout construction.

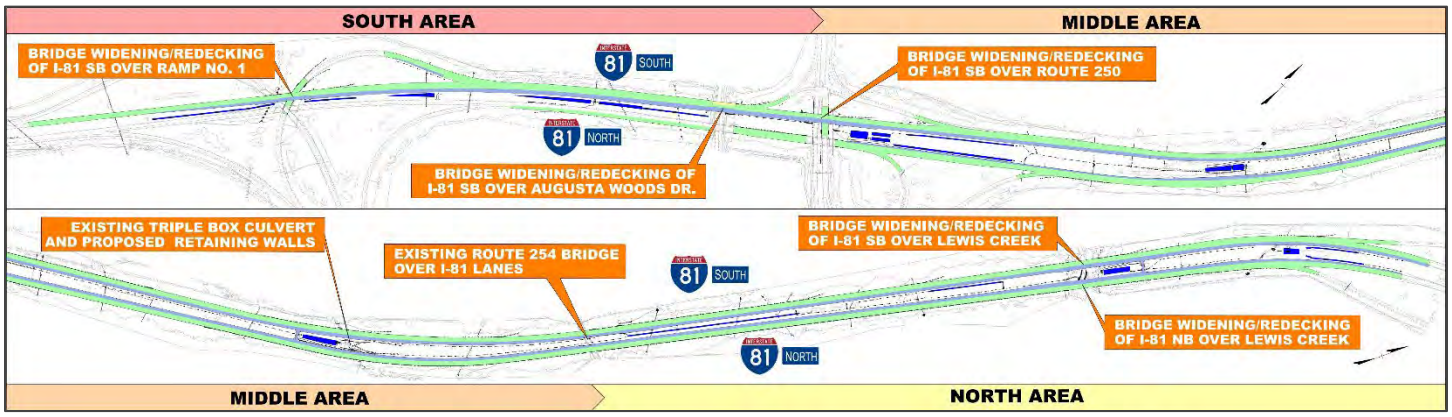


Figure 4.5.1-1: Bridge and Major Culvert Locations

Advanced Work Package/Pre-Phase Activities – The purpose of the advanced work package is to install elements not restricted by receipt of environmental permits but are required prior to engagement of the mainline widening activities. This will require temporary lane closures as depicted in **Figure 4.5.1-2** periodically throughout the corridor. The phase will include:

1. Installation of Project corridor construction signage
2. Short term lane closures for shoulder strengthening activities and installation of additional shoulder pavement where needed pavement; this is a mill and fill activity
3. Installation of temporary drainage, including bridge scuppers
4. Installation of construction entrances
5. Installation of temporary CCTV and ITS elements
6. Relocation of permanent CCTV and ITS elements

Figure 4.5.1-2: Advanced Work Package/Pre-Phase Typical Section

4.5 CONSTRUCTION OF THE PROJECT

Phase 1 – This phase is to construct the inside widening of I-81 throughout the corridor, including roadway, drainage, and median work. The existing median crossovers will be maintained during this phase. This will require shifting of traffic to the outside of the roadway, as depicted in **Figure 4.5.1-3**, utilizing the existing strengthened shoulders and shoulder widening constructed in the Pre-Phase. Phase 1 of mainline construction will include:

Step I

1. Installation of lane shifts to the outside with barrier and signage
2. Installation of the median construction entrances with permanent asphalt per **Figure 4.5.2-2**

Step II

1. Median drainage and grading activities
2. Roadway and bridge widenings to the inside
3. Installation of inside guardrail

Figure 4.5.1-3: Phase 1 Typical Section

Phase 2 – This phase constructs the outside reconstruction of I-81 throughout the corridor. This will require shifting of traffic to the inside of the roadway, as depicted in **Figure 4.5.1-4**, utilizing the newly constructed roadway widening from Phase 1. Phase 2 of mainline construction will include:

Step I

1. Shift traffic to the median on the newly constructed widening with barrier and signage
2. Bridge rehabilitation and re-decking activities on all five bridges
3. Outside drainage rehabilitation activities
4. Installation of overhead signage
5. Replace existing outside guardrail

Step II

1. Patching existing lanes, cross-slope correction, and ramp tie-ins
2. Final paving and striping activities

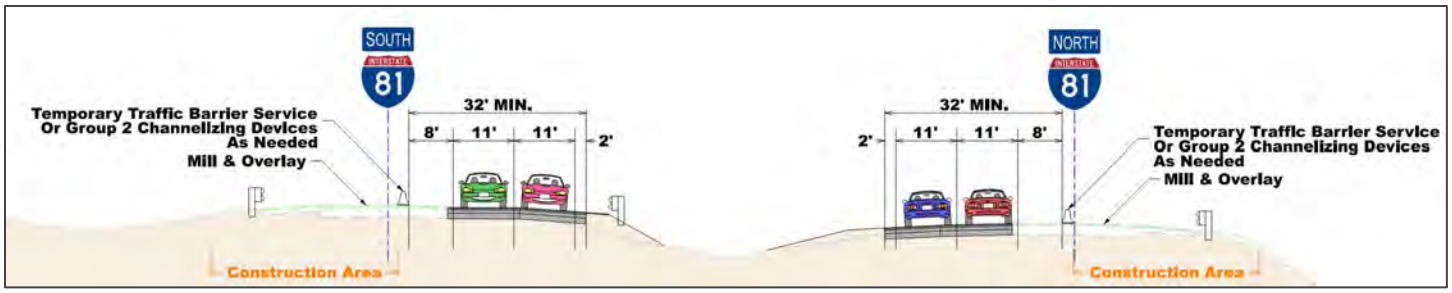


Figure 4.5.1-4: Phase 2 Typical Section

4.5 CONSTRUCTION OF THE PROJECT

Construction Access: The Transportation Management Plan (TMP) Section addresses construction access and the vital role it plays for the location of lane widening, temporary pavement, and safe construction ingress and egress to and from the work zone. The underpass area was evaluated thoroughly for conflicts with utilities and existing vital infrastructure to ensure safety, constructability, and schedule compliance.

Nine construction access locations are currently proposed to minimize disruption to traffic but maximize access to the various areas through the Project area. The construction entrances are depicted in the Volume II documents.

Existing median crossovers will be maintained throughout construction until future access points are constructed.

NB Sequencing Major Elements: Generally, the NB lane is a relatively simple inside median widening with pavement widening and grading located in the median. During construction, vehicles are shifted to the outside on temporary pavement. The Lewis Creek Bridge is the only pinch point for the construction phasing due to its narrow deck width. As such, the bridge will be widened early in the schedule so that the north end widening of the roadway can be constructed.

SB Sequencing Major Elements: The SB lanes are more complex with multiple bridges, road widening, and construction activities within high volume interchanges. Typically, the widening is tangential through the corridor, however, there are multiple pinch points with the bridges. Drainage spread requirements on the bridges limit the available space to shift traffic. As discussed below, our solution is to introduce temporary elements to maximize our roadway space for traffic and construction.

Drainage Elements: Drainage features are to be installed throughout the Project in the median and takes place during the first phases of construction. As part of the lane shifting on the bridges, all spans will require temporary drainage scuppers to be installed in the bridge deck to maintain the maximum allowable spread into the travel lanes.

I-81 / US-250 Interchange Major Elements: This interchange provides its own unique challenges which we have evaluated in detail. The bridge widening and re-decking requires lane shifts on I-81; the drainage and the location of supporting structural elements directly affect the location of the local travel lanes on US-250. Protecting the traveling public below the bridge from construction activities directly overhead is significant and the debris netting to catch falling material will be placed without compromising minimum height clearance/restrictions under the bridge. Detailed operations for Phase 2 construction in this area are needed due to the ramp from EB US-250 to SB I-81 interfacing with the SB I-81 to EB I-64. This location requires sub phases to construct in the new southbound I-81 ramp gore area as shown on **Figure 4.5.1-5**.

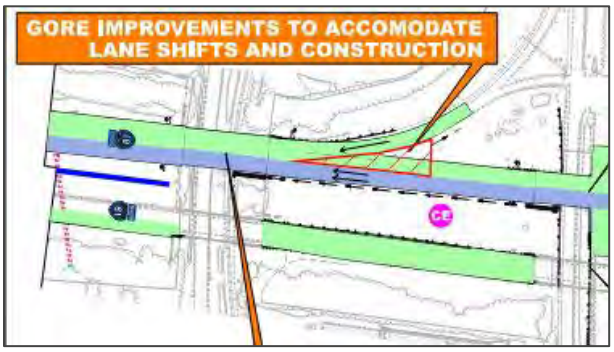


Figure 4.5.1-5: EB US-250 to SB I-81 Sub Phase

The Augusta Woods underpass will be maintained with two 10-ft-wide minimum lanes (see **Figure 4.5.1-6**). Bicycles are not currently accommodated separately from the roadway and the expectation during construction will be that they will continue to share the lanes. The existing condition does not provide for pedestrian accommodations nor will we do so due to lack of space. We will make every attempt to provide any additional roadway and shoulder width possible for safety concerns. As

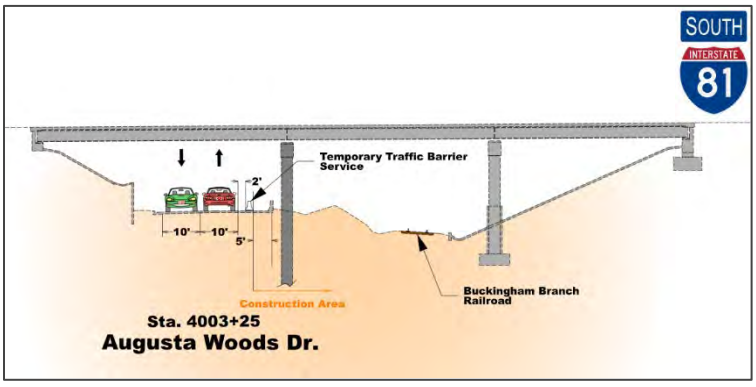


Figure 4.5.1-6: Augusta Wood Underpass Typical

construction progresses around the pier, the barrier can be shifted at this pinch point to allow for additonal shoulder space to accommodate bicyclists.

I-81 SB / I-64 Interchange Major Elements: This area will require installation of a bridge pier alongside heavy traffic movements under a superelevated ramp. Although we evaluated pier protections and determined it is not needed as the offsets were adequate, similar cautions and material fall restrictions are planned to be installed to safety protect adjacent traffic. When placing the beams, the travel-way on the I-64 westbound to I-81 SB flyover must be slow rolled or stopped with police assistance to ensure crane activity does not impose a hazardous condition.

Describe in detail the approach to addressing safety, operations, staging, and storage areas during construction.

SAFETY AND OPERATIONS: Our core value, ***Safety First!*** is paramount in every task we do. It is conditioned that every team member is a safety leader who acts to identify, correct and/or report unsafe conditions; stops any unsafe act; takes personal responsibility for their and fellow team member safety; and works incident free. The drive to have safe work zones, prevent injuries, illness, and other incidents of loss commits us to Zero At-Risk Behaviors, which are fostered by:

- Treating every team member with respect, building trust, listening to understand their safety and health issues, and supporting each other to work safely and healthy
- Going beyond compliance with applicable rules and regulations to promote a Zero At-Risk Behavior culture
- Providing training that provides each team member with the knowledge, skills, and abilities to perform their assigned work
- Operating with leadership with safety heading the pack in all that we do
- Encouraging each other to be safety and health champions on and off the job (Safety 24/7)
- Holding each other accountable for superior safety and health practices and providing the leadership and resources to achieve our vision

Every team member is empowered with authority to act by suspending or stopping work to prevent injury, occupational illness or other incident of loss. No Project task nor schedule deadline is more important than working safely. Kokosing will ensure that balance exists and the work is prosecuted safely while meeting Project production and schedule goals.

The Kokosing Team recognizes that every project poses unique and challenging safety hazards. Prior to construction, we will prepare a site-specific safety plan and orientation which is developed with input from our health safety and environment manager, project manager, construction manager, superintendents, and engineers and will meet/exceed regulatory agency and VDOT requirements and policies. Once completed, anyone who enters the Project must attend our safety orientation and abide by the rules and practices. No one will work on this Project that does not abide by the Project safety program.

4.5 CONSTRUCTION OF THE PROJECT

Safety performance is closely monitored; any injuries and near misses are investigated, documented, and reviewed by Safety Manager Aaron Rife, GSP, CHST. Lessons learned safety briefings/corrective actions will occur with all personnel on the Project concerning near misses and accidents to prevent repeat occurrences.

Activity plans determine and identify any hazards inherent to work activities and provide information to protect the employee. Employees participating in this activity are oriented before starting work and includes the following:

- Working in traffic (including safely installing lane closure setups)
- Working in confined spaces (including asphalt paving near the temporary concrete barrier)
- Work zone ingress and egress (for material haulers, supervisors, subcontractors, etc.)
- Work zone maintenance and protecting traffic
- No cell phone usage in the work zone

Due to the nature of the work involved, the Project Team employs the following safety and operational considerations, at a minimum:

Protection of traveling public in the work zone: Our traffic control plan provides safe ingress and egress to construction work zones. We located access points outside of ramps to avoid areas of heavy inflow of vehicles entering the corridor.

- Construction deliveries (inflow and outflow) are scheduled outside of peak hours as much as practical
- Safe access points are supported by advanced warning signage and space to facilitate deceleration/acceleration for trucks entering or exiting a work zone
- Our Team communicates and notifies stakeholders along the corridor to ensure public schools, police, and emergency management personnel are updated on traffic shifts and phasing through the Project

We will establish work zone access locations to develop VDOT Work Area Protection Manual compliant clear zones within each ingress or egress area. When not feasible, we will provide temporary guardrail or barrier within the area.

Documenting new MOT patterns and conducting regular drive-through video inspections verify conformity and operational acceptance/excellence.

Signage, deceleration/acceleration space in and out of the work zone, positive separation of traffic, extensive MOT planning, and public outreach notifications offer protection throughout the work zones. For the safest and most efficient MOT, our Team documents and monitors all new MOT patterns to verify conformity and operational acceptance/excellence. Throughout the life of the Project, we will conduct regular drive-through video inspections and review work zones for compliance to the approved traffic control plans and confirm work zones are set up properly.

Per RFP Section 2.9.6, temporary CCTV services will be installed at the two additional locations required per the RFP (MM 224 and 226). Power will be provided from 12 gel-cell batteries in each trailer as specified and images will be transmitted wirelessly and continuously.

Current cameras exist on I-81 at:

- I-64 MM 87.5
- I-81 MM 221.0
- I-81 MM 222.6
- I-81 MM 224.0

4.5 CONSTRUCTION OF THE PROJECT

Existing ITS Assets will be maintained at the current locations and continue to be operational during and after construction. The advance notice of a minimum of 4-weeks will be provided to VDOT, per the RFP section 2.9.6, for any actions impacting the existing ITS assets. Any loss of CCTV communications will also be reestablished within the timeframes dictated in the RFP.

Working within construction areas of restricted movement: Narrow work zones create "pinch points" where safety can be compromised. Employee orientations educate and emphasize recognizing and avoiding these areas when possible. Daily Toolbox Talks remind equipment operators the dangers of these zones; the mandatory daily "walk-around" inspection of their equipment and confirmation of a functioning back-up alarm. Activity pre-planning identifies operations requiring "vehicle movement spotters" to safely complete the work. All equipment onsite is evaluated for "blind spots" to determine if rear mounted cab cameras need to be installed.

Night work: A safety program tailored for night work will be implemented. Pre-shift planning requires an evaluation of how much portable lighting is required for each operation and positioning to minimize glare to oncoming traffic. Foremen must test and mobilize lighting equipment prior to darkness to ensure adequate lighting at all times. Specific back-up lighting equipment is made available as needed. Toolbox Talks are geared towards hazards typically encountered for nighttime operations.

Public awareness: Public awareness is essential beginning before the start of construction and continually updated throughout the life of the Project to maintain safety for the traveling public, VDOT staff, and Project personnel. The Project Team works with VDOT to develop a comprehensive public awareness program that informs the traveling public ahead of any traffic impacts or shifts. This will include messages on the existing DMS structures, display boards, media outreach, and website updates. Pardon our dust meetings or Project update meetings will be attended by the project manager and appropriate staff.

Traffic control measures: Traffic control measures are used where work encroaches upon or is in proximity to traveled roadways, complying with VDOT standards for the Manual for Uniform Traffic Control Devices (MUTCD). Barricades, warning and directional signs will be placed in advance of the work zone to alert the public of any lane closures and/or other traffic control measures. Flaggers, in addition to barricades and signs, will be utilized at equipment crossings and construction entranced as needed to control traffic.

Bridge demolition: The RFP requires an extensive scope of bridge repairs, widening, and re-decking five existing bridges within the Project limits. Our Demolition Policy mandates demolition operations to be completed in accordance with OSHA 29 CFR 1926.850. Prior to any demolition, a Site-Specific Demolition Plan is prepared which outlines in detail the following:

- Policies and procedures to ensure safety for the public
- Policies and procedures to ensure employee safety
- Procedures to identify and remove hazardous materials
- Site controls including protecting the public and adjacent structures plus daily inspection procedures
- Methods to demolish the structure
- Equipment for demolition operations
- Fire protection methods
- Removing material from the site
- Approved silica protection plans identifying mitigation risk procedures

Incident Management Plan: The Project Team will develop an Incident Management Plan (IMP) to define our response and management of incidents that meets or exceeds the requirements of RFP Section 2.10.1 including

detours and wrecker service. The IMP is developed in coordination with VDOT, local EMS, and other stakeholders to identify the protocols pertaining to those parties that are contacted in case of an incident, including coordination with the police. It will be submitted for review and approval by VDOT before any work zones and/or lane closures become active. This plan details our response and support for the type of incident, estimated duration and defines key Project Team members, "what if" scenarios for how to deal with the nature and duration of the incident (i.e. – potential detours to be put in place if a traffic restriction will exist for more than 60 minutes, etc.), EMS, and the procedures to clear the incidents. The IMP will contain names and contact information for all necessary Emergency Services identified and the agencies to be notified. It demonstrates that our construction team has control of any incidents that occur within the Project limits. We will augment this team with our designated Incident Management Commander and a 24/7 point of contact for emergency notification of incident by TOC.

STAGING AND STORAGE AREAS: The Project Team has evaluated the corridor and developed a site-specific access and staging plan. We focused on two goals: 1) maximizing the safety of the traveling public, including site access with the least possible impact on traffic and 2) optimizing production to reduce cost and minimize the Project schedule. The location of our staging and storage areas is critical to manage safe and efficient construction operations.

Our Team has identified multiple locations within the existing ROW for material staging and storage. A significant benefit to our Team's approach of widening towards the median is it allows us to use the existing median as a staging area in a protected environment to the traveling public and supports multiple phases of structure, drainage, and grading operations.

Key issues that are addressed specifically in our site access and staging plan include:

- Safety of the traveling public and security for employees and visiting personnel.
- Safe ingress and egress for construction vehicles, workers, and equipment to/from the construction site. This Project will require a large quantity of material, equipment, and supplies that require temporary storage.
- Proximity to the segment work areas for access and operational efficiency.
- Environmental controls required for material and equipment stored.

To meet the Field Office Special Provision and to provide locations advantageous for staging, storage, and disposal, our Team investigated and initiated contact with landowners at various locations along the Project including directly adjacent properties, local quarries, and vacant business facilities. Numerous options exist and to provide the staging and storage needs for the project.

Figure 4.5.1-7 represents one such property off of Sangers Lane directly adjacent to the Project that is well suited for staging and storage area as well as an office compound. We have received a proposal from this property owner for this property and will continue discussions with them after award.

Figure 4.5.1-7: Potential Staging and Storage

4.5 CONSTRUCTION OF THE PROJECT

4.5.2 TRANSPORTATION MANAGEMENT PLAN

Explain how the Offeror will maintain traffic through all phases of construction.

Our Team focused on minimizing impacts to the traveling public and stakeholders during each phase of construction. Our TMP and MOT plans placed an emphasis on safety through sound engineering design, providing constant communication with involved parties, and reacting to changing conditions to account for all facets of construction. Public mobility and minimizing construction delays are goals that the Project Team are committed to delivering on for Project success.

To facilitate construction, a Type B, Category V TMP is developed in accordance with I&IM-241.7/TE-351.5 and designed to the methodology provided in the Virginia Work Area Protection Manual, Revised September 2019; the Manual on Uniform Traffic Control Devices, Revisions 1 and 2 of May 2012; and the Virginia Supplement to MUTCD, Revision 1 of September 2013.

Our TMP has an Incident Management Plan (IMP) as discussed in Section 4.5.1. Team members involved in the design and implementation of the work zones are experienced with interstate widening projects throughout Virginia and are certified with VDOT Advanced Work Zone Traffic Control Training.

Figure 4.5.2-1: RDA's I-64 Widening – Segment 2 Project Successfully Implemented a Similar MOT/TMP Approach

MAINTAINING TRAFFIC THROUGH ALL CONSTRUCTION PHASES: To mitigate potential delays, we structured our sequence to be flexible to enable the Team to address unforeseen circumstances. As further outlined in our TMP in Section 4.5.2, we have identified mitigation measures for a number of field operations. Any necessary revisions will be implemented. Continued and close involvement with our Incident Management Commander keeps procedures in place to mitigate delays related to MOT and clearing any accidents.

Temporary Pavement: When developing the MOT phasing, we are keeping work areas consistently on either the inside or outside of the travel way to minimize traffic shifts and avoid working on either side of the road simultaneously. To complete the first phase widening to the median, shoulder strengthening and temporary pavement widening of the existing outside shoulders to comply with RFP lane/shoulder closure requirements. This shoulder strengthening is primarily completed within the existing shoulder and has minimal affect along the outside fill/cut slopes, allowing the work to be completed during mainline lane and shoulder closures. Traffic will not be shifted onto the strengthened shoulders until all areas in the specific work zone are completed.

Temporary Drainage: A major concern on limited access highways is hydroplaning and water spreading onto the travel lanes, particularly on the bridges throughout the Project. Our Team has mitigated these issues by preventing spread beyond 1-ft. into the adjacent travel lane. Additional changes have been made to address temporary spread to include increasing shoulder widths, temporary scuppers along the bridge shoulders, revising proposed drainage layouts to accommodate temporary conditions, and phasing work to provide adequate drainage relief.

Mitigation Measures: There is high volume truck traffic through the corridor in combination with steep grades which demands special consideration when developing the MOT design. Our Team is experienced with interstate bridge replacements and widening and knows the value of providing advance notice to travelers, as well as designing beyond the minimum requirements provided in the VWAPM. We provide signage for clear

communication of our traffic control measures on approach to mainline bridges to mitigate potential congestion areas associated with narrower shoulder widths. The use of reduced shoulder widths is limited to locations where we have no other options and in place for the shortest durations possible to complete the critical construction elements.

Describe in detail any proposed lane or ramp closures, temporary detours, time of day restrictions, flagging operations, minimum lane widths and work zone speed reductions required to construct the Project using the Sequence of Construction.

LANE OR RAMP CLOSURES: Our approach to MOT includes minimizing the need for lane or ramp closures by phasing work behind temporary traffic barrier as much as possible. Work that must be completed with lane or ramp closures are detailed in the TMP and coordinated closely with VDOT.

Full depth widening of entrance and exit ramps are phased in during normal work hours, reducing the need to use closures for operations, such as milling/overlaying the existing pavement. Temporary short duration road closures (off peak hours, 15 minutes at a time) are used for setting beams during bridge construction and are coordinated with the public and emergency responders.

TEMPORARY DETOURS: No off-site temporary detours are anticipated for this Project as a result of construction. Detour routes that may be needed due to a crash or emergency situation will be developed as part of our IMP and pre-staged detour equipment and materials will be available to deploy when needed.

TIME-OF-DAY RESTRICTIONS: Our Team will comply with the RFP for time-of-day restrictions regarding allowable short-term lane, shoulder, and total closures. This information is coordinated with VDOT's TOC and Project Manager for scheduling purposes, as well as discussed in the Public Communication and IMP.

FLAGGING OPERATIONS: Flagging operations will be required on the side streets and ramp approaches to the interstate. These will be for short duration and spot improvement operations where access to the construction area is restricted. Flaggers will be certified by VDOT as required.

SHORT DURATION SLOW ROLLS: When beams for the bridges are erected, roadway closures may be required, not to exceed 15 minutes, for public safety. Close coordination with State Police, VDOT TOC, and local first responders will be required, along with providing information to local news agencies, radio stations, VDOT's website, and dynamic sign messaging all in advance to inform travelers when to expect expected delays.

MINIMUM PAVEMENT WIDTHS: We conform to the RFP's lane and shoulder requirements by maintaining at least 32-ft. of clear width pavement in each direction if I-81, comprised minimally of 11-ft. travel lanes, 8-ft. outside shoulders, and 2-ft. inside shoulders for the mainline roadway segments. Our drainage team has taken an extensive look at the bridges to be reconstructed and determined locations where additional shoulder width is needed to accommodate the stormwater lane spread requirements. Temporary drainage elements, including bridge scuppers, will be provided to reduce the spread and minimize additional widths to the bridge decks and complex construction phasing. Recognizing the high truck percentages for the corridor, efforts are made for a safe and free-flowing operations throughout the work zone, including maintaining and/or improving geometry at the existing interchanges. All roadway widths are designed to accommodate WB-67 design vehicle turning movements.

WORK ZONE SPEED REDUCTIONS: Our Team does not expect any work zone speed reductions**.** All temporary lane shifts, merges, acceleration/deceleration lanes, and temporary alignments for diversions meet the standards for 70 MPH as indicated in the RFP. However, an application will be made to sign the Project for 60 MPH per the RFP.

4.5 CONSTRUCTION OF THE PROJECT

Identify major Project Stakeholders and discuss how they will be impacted by Sequence of Construction.

PROJECT STAKEHOLDERS: Our Team has implemented a plan for continuous stakeholder input to mitigate issues and concerns. We will hold regularly scheduled meetings with stakeholders during construction to quickly address concerns. This outreach is coordinated with the VDOT Staunton District Construction Division and Public Affairs staff and includes representatives from:

TABLE 4.5.2-1: STAKEHOLDER INPUT TO MITIGATE ISSUES AND CONCERNS

Stakeholder	Potential Impacts	Mitigation Strategies
VDOT	▪ Perceptions/issues raised by residents, traveling public, and business owners	▪ Hold weekly coordination meetings ▪ Notification on traffic impacts / incident to the Staunton TOC
Augusta County, City of Staunton	▪ Perceptions / issues raised by residents, traveling public, and business owners	▪ Include in design process regarding minor roads and detours ▪ Cooperatively address outreach and responses to businesses and property owners ▪ Notification on impacts / incidents to the County
EMS, Police, Fire, and Rescue	▪ Reduced shoulders and/or congestion along I-81 ▪ Short term roadway stoppages for girder erection	▪ Provide adequate lane/shoulder widths on I-81 for first responders ▪ Hold coordination meetings prior to implementing detour routes ▪ Notification on impacts / incidents to police/EMS
Schools and Colleges	▪ Construction and lane closures along bus routes ▪ Heavy traffic during college events	▪ Provide adequate lane/shoulder widths along minor roads during bridge construction ▪ Provide advance notice and coordination of lane closures ▪ Develop work activities/schedule around regional Universities and local school events to include move-in days, special events, and graduations
Utility Companies	▪ Direct impacts to facilities throughout the corridor	▪ Early coordination during the design process to avoid and/or locate relocations advantageous for both parties
Local Business Groups	▪ Construction activities near businesses	▪ Provide communication and TTC signage/devices to minimize impact to local businesses
Trucking Industry	▪ Delays attributed to construction activities and/or work zone geometry	▪ Provide adequate lane/shoulder widths on I-81 to accommodate WB-67 vehicles, including ramp movements ▪ Ensure closures are reported as required to LCAMS and VA Traffic

Describe approach to public outreach, including keeping stakeholders informed during all phases of the Project.

APPROACH TO PUBLIC OUTREACH: Our Team acknowledges the benefits of public outreach on a large-scale project of this nature and will engage stakeholders in the decision-making process as well as informing involved parties of key Project changes prior to and during construction. This approach is handled in the following ways:

Traffic Management Task Force: This group consists of members from the Project, RDA, VDOT, and local jurisdictions:

- A task force dedicated to traffic management proactively addresses MOT risks:

4.5 CONSTRUCTION OF THE PROJECT

- VDOT and relevant stakeholders are invited to work with our Project staff to discuss potential risks prior to and during construction
- The Task Force meets regularly to review MOT and optimize traffic safety and efficiency
- Recommendations are continually implemented into the MOT plan

- Goals:
  - Minimize delays to the traveling public
  - Reduce disruptions to adjacent businesses
  - Maximize safety throughout the Project's life cycle
  - Keep VDOT and stakeholders up-to-date on the Project's progress; and alert them to any upcoming changes in the traffic pattern

Graphics/Progress Photos:

- Our Team provides VDOT with written information and graphics about the Project to post on VDOT's website or to use during informal public meetings and presentations, including:
  - Plan of work graphics
  - Schedule updates
  - Anticipated temporary lane/shoulder closures
  - General Project photos
  - Quarterly drone footage
  - Time lapse videos of construction activities
- Impacts to local routes, such as detours and/or lane closures, are accompanied by graphics depicting the routes anticipated for use by the traveling public:
  - Graphics are provided a least one month ahead of the impacts and are updated as conditions change

VDOT and Locality Coordination:

- There will be an ongoing relationship with VDOT and stakeholders during design and construction:
  - During design, formal reviews of the MOT plans and TMP documents
  - During construction, there are regular updates to VDOT, the City of Staunton, and Augusta County to ensure compliance with standards and City/County ordinances
- Our Team meets all RFP requirements regarding the development of the IMP:
  - We coordinate with VDOT NWRO TOC and VSP for wrecker support of disabled vehicles within the Project limits
  - We coordinate with VDOT and localities when developing alternate detour routes

Our Team manages maintenance activities in accordance with the RFP, Section 2.10 while giving priority to VDOT Interstate Maintenance Office (IMO) as needed.

Describe how the approach has considered public safety and has included measures to limit disruptions to vehicular and pedestrian traffic through the work area and adjacent public transportation facilities/roadways.

PUBLIC SAFETY: Our design concept provides construction ingress and egress lanes at construction entrance/exit points along the I-81 work zone for safe and efficient operations adjacent to travel lanes consistent with **Figure 4.5.2-2.** The acceleration/deceleration lanes are outside of ramp merge areas to minimize congestion

and confusion with oncoming traffic, as well as advance warning signage consistent in the VWAPM. Any active construction ingress/egress lane is closed to the public using Group II channelizing devices or opened back up to traffic as increased shoulder width work is completed.

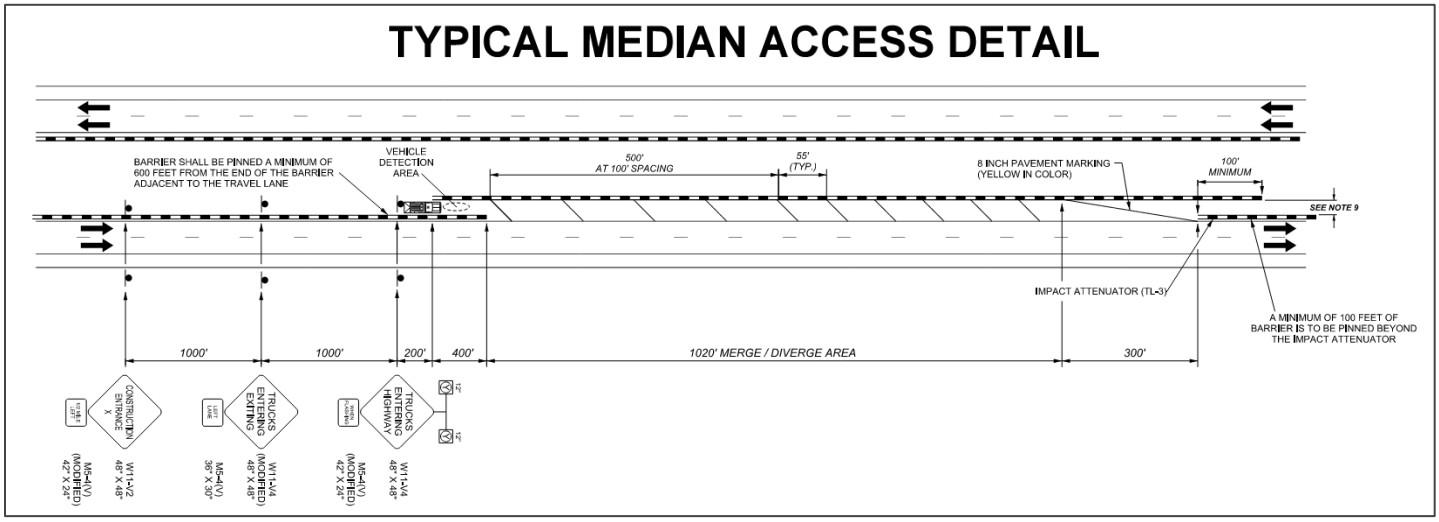


Figure 4.5.2-2: Typical Construction Ingress/Egress

A major goal of our design is minimizing impacts to ramp traffic when widening the mainline. Ramp construction is phased in while providing acceleration/deceleration lanes, sight distance and adequate widths for turning movements of WB-67**.**

Our design emphasizes accommodating temporary stormwater spread within existing and temporary shoulders corridor wide and analyzed the anticipated spread values for mainline temporary barrier, proposed inlets, and at mainline bridge crossings. Our Team's approach meets/exceeds the temporary spread requirements by increasing shoulder widths, adjusting inlets, adding/installing bridge deck scuppers to ensure water quickly runs off of the roadway in the temporary condition.

As previously mentioned, our Team does not expect any work zone speed reductions**.** However, as required by the RFP we will seek a reduction in the posted speed limit to 60 MPH for the duration of construction. Whether or not the Department approves the speed reduction, the Kokosing Team intends to deploy the use of Dynamic Speed Limit signs on the Project to aide in public safety.

The Kokosing Team uses Hill & Smith VSL 1000 Variable Speed Limit Signs that enhance transportation, improve public safety, and increase mobility in work zones. The LED display allows for optimum viewing for varying highway speeds. With the use of wireless communication through a modem, the speed limit sign can be controlled from a remote location allowing immediate changing of the posted speed limit to help control traffic due to an incident or inclement weather. The result is a much safer work zone environment for both the traveling public and the Kokosing Team work zone personnel.

Figure 4.5.2-3 shows an image of the type of Dynamic Speed Limit Sign the Kokosing Team will use on the Project during construction.

Figure 4.5.2-3: Dynamic Speed Limit Sign

4.6 | Proposal Schedule

4.6 PROPOSAL SCHEDULE

4.6.1 PROPOSAL SCHEDULE

Our proposal schedule is included in Volume II of our Technical Proposal.

4.6.2 PROPOSAL SCHEDULE NARRATIVE

Proposal Schedule Narrative shall describe the proposed overall plan to accomplish the Work and, if applicable, to attain incentive(s) including, but not limited to the overall sequencing, a description and explanation of the Critical Path, proposed means and methods, and other key assumptions on which the Proposal Schedule is based.

PLAN TO ACCOMPLISH THE WORK: We have developed the Proposal Schedule detailing our plan to successfully complete the work in accordance with the Contract Documents. The narrative provides an explanation of the sequencing, description, and explanation of the Critical Path, proposed means and methods, and other key assumptions upon which the schedule is based.

The schedule was developed in a Critical Path Method format (CPM) utilizing Primavera software, based on the RFP information, available resources, design concepts, and construction means that our Team has chosen.

By minimizing construction phases and efficiently sequencing the Project, the Kokosing Team will deliver substantial completion of 81 NB **195 days ahead** of the RFP Final Completion date and the overall Project Completion **17 days ahead** of the RFP Final Completion Date. Substantial completion is defined as three northbound lanes open to traffic with intermittent temporary lane closures during allowable periods to complete surface course paving, final striping, and final seeding.

TABLE 4.6.2-1: SCHEDULE OVERVIEW

Notice of Intent to Award	February 22, 2023
Notice to Proceed	April 7, 2023
Design Activities	April 2023 – September 2024
Construction	October 2023 – May 2027
Proposed Unique Milestone – 81 NB Lanes Substantially Complete	***November 24, 2026***
Proposed Final Completion	***May 21, 2027***
RFP Final Completion	June 8, 2027

DESIGN: The design phase includes concept development, QA/QC reviews, submission of Intermediate, Final, and Ready for Construction (RFC) design stages of the Roadway and Structure elements of the Project. The 21-day VDOT review periods are activities in the schedule. Included for support of the design preparation is survey coordination and mapping, geotechnical investigation, and utility designations. Activities are included for geotechnical field work, reports, and VDOT's review, prior to submitting the final roadway packages. The design phase will begin immediately upon receipt of the Notice of Intent to Award to begin advancing the concept plans to the intermediate stage. Critical design elements are shown on the Critical Path, specifically the design of the new Structures, Temp Pavement Design, Utility Relocations, and Environmental Permits.

We plan to complete each design package prior to commencing construction of that package, with a priority being placed an Advanced Work Package (AWP) which will include the design of the E&S, MOT, and clearing activities required at the start of construction. The AWP will also include shoulder strengthening that will be required for Phase 1 MOT configurations and access for temporary work areas at the bridge location. This package will be followed the roadway and Structural plans. In the event non-critical (such as landscaping, signage, striping, etc.) design elements may hold up the roadway plans, the less critical elements may be held back for a final RFC plan submission, allowing the critical design elements to be submitted, approved and construction to commence.

4.6 PROPOSAL SCHEDULE

Scope Validation and Field Investigations: Upon Receipt of NTP, the design and construction teams will start Scope Validation with Field Survey updates, taking place simultaneously. These updates include the evaluation of property information, validation of existing pavement elevations and limits, and the location of existing underground utilities with a subsurface field investigation. Additionally, geotechnical investigations will commence with the submittal of a boring plan for VDOT informational purposes and the stakeout of the boring locations in the field. The roadway design will also commence concurrent with the survey update and the geotechnical investigations and will be adjusted as necessary to accommodate the results of the fieldwork.

Final Design: While the work shown on the AWP plans is ongoing, final structural, roadway, and any non-critical roadway elements will be developed and submitted to VDOT for review. This will allow RFC plans to be approved by Spring 2024 when full-scale construction activities are scheduled to begin.

ENVIRONMENTAL AND PERMITTING: Our schedule will contain all necessary environmental and permitting activities. The schedule has been developed to allow time for adequate information to be developed for the permit submittal processes and the environmental site assessment. A milestone was created to show the approval of all the water quality permits, which will be a Hold Point, restricting any work from occurring within wetland areas to start prior to permit approval. In general, the only areas where wetlands are anticipated are in the lowland median areas. Actual wetland areas will be determined when we perform the official delineation post-award. The schedule shows work starting in upland areas prior to obtaining the Water Quality Permits, with the approval of VDPES and SWPPP as part of the AWP.

By building extra ROW negotiation time into our CPM for the Railroad Parcel, our Team mitigates potential schedule delays.

ROW AND UTILITIES: These two activities will be coordinated to start upon receipt of NTP, utilizing the RFP and Design Concept plans to start work immediately. This gives the maximum amount of time for research, appraisals, and negotiations. This process allows the utility owners as much time as possible to develop the most optimized relocation plans and to complete their work in advance of the new roadway construction. Preliminary meetings have already taken place with the utility companies that require relocation, in order to ensure that the Team has a handle on the scope and complexity of the relocations that will be required.

QA/QC: QA/QC activities will be performed as required in the contract documents and relevant tasks are included in our proposal schedule. The activities included in our proposal schedule consist of:

1. QA/QC Plan Submittal and Presentation
2. QA/QC review of Design Packages
3. Preparatory Inspection Meetings
4. QA and QC Field Inspections Hold Points

CONSTRUCTION: The first construction phase is the Advanced Work Package (or Pre-phase) in which the Team will begin with outside shoulder trench widenings and strengthening in the fall of 2023 prior to the winter weather. While this work will not be completed prior to winter, it will allow for earlier completion in spring 2024 which then allows traffic to be pushed towards the outside as needed to perform the inside widening during Phase 1. In this Phase, Traffic will be pushed to the outside of both NB and SB lanes, allowing work to occur in the median for both directions. The median widening work will begin with rough grading and drainage installation followed by boxing out for the widening and FDR of subgrade. After the widened pavement is placed, backed up, and final ditch work completed, the new guardrail will be installed in preparation for the next phase. At the structures, deck demolition, substructure widening and reconstruction will occur to the median side of the bridges only. The widening of the 5 bridges in Phase 1 allows them to accommodate the Phase 2 traffic shift.

Once the median widening and bridges are ready to receive traffic, Phase 2 will involve shifting traffic toward

the median in both the NB and SB directions. Once traffic is shifted the bridge decks retrofits can be completed on all bridges except the 81SB over Augusta Woods Drive. That bridge has a third phase to accommodate the US 250 on-ramp.

Phase 2 also includes the required pavement patching, outside drainage improvements, sign structure installation, and guardrail replacement followed by final surface and striping, with traffic running in the final configuration. Our work schedule/sequencing is shown on the Project Schedule included in Volume II.

CRITICAL PATH: The Critical Path for this Project starts with the permitting required for design field investigations followed by geotechnical field investigations and laboratory analysis. Final grading, drainage, and roadway design activities follow that allows the Project will be able to fully enter Phase 1 Project-wide median construction in early 2024.

During Phase 1, the Critical Path remains on median roadway widening activities, as the roadwork durations in the median exceed structural activities. In Phase 2, the Critical Path runs through the last two phases of the I-81 SB bridge over Augusta Woods Dr. SB followed by final 81 SB surface paving and final striping.

By minimizing construction phases and efficiently sequencing the Project, the Kokosing Team will deliver substantial completion of 81 NB 195 days ahead of the RFP Final Completion date and the overall Project Completion 17 days ahead of the RFP Final Completion Date. This early completion:

- ***Significantly improves safety which reduces impacts to the traveling public***
- ***Reduces daily lane closures and roadway restrictions***
- ***Provides for early beneficial occupancy of the 6-lane alignment***

WORK BREAKDOWN STRUCTURE (WBS): The WBS is a multi-level, hierarchical arrangement of the Work to be performed on the Project. The Kokosing Team has arranged the WBS to break down the major phases of the Project by Type of Work and Locations. Level 1 of the WBS was assigned to the Project name, I-81 DB Staunton. A brief description of the Level 2 WBS is below, followed by a table showing the Level 2 - Level 4 WBS used on the Project.

1. **Project Milestones:** As required by the RFP, the major Project milestones are included under this WBS. It includes all contractual milestones such as NTP, Proposed Final Completion, and Final Completion.
2. **General Conditions:** Includes work activities associated with the contractual obligation of the DB Team to administer the Project such as Project Management and Scope Validation. QA/QC efforts required to meet with VDOT minimum requirements for DB are included here, as are any contractual hold points.
3. **Design:** Under this WBS, all the design efforts with their respective submission and review/approval timeline are included. A further breakdown of this division is shown in **Table 4.6.2-2**.
4. **Environmental:** This section includes the effort involved with procuring all of the environmental permits associated with the Project.
5. **ROW Acquisition:** This section shows the effort required to procure any property required to complete the Project. This includes negotiated purchases, condemned properties, and easements (temporary and permanent).
6. **Utility Coordination:** This section shows the coordination, design, and construction activities associated with any required Utility Relocations.
7. **Public Involvement:** This section shows the anticipated public involvement activities.
8. **Material Procurement:** This section includes lead time for critical material acquisition.
9. **Construction:** This WBS section depicts the construction activities grouped by Type of Work and Locations. Further breakdowns are included in **Table 4.6.2-2.**

4.6 PROPOSAL SCHEDULE

TABLE 4.6.2-2: HIGH-LEVEL WBS	
Level 2 WBS	**Level 3 – Level 4 WBS**
Project Milestone	
General Conditions	▪ Project Management ▪ Scope Validation ▪ Quality Control/Quality Assurance
Design	▪ Design Survey ▪ Geotechnical Engineering ▪ Advanced Work Package ▪ MOT, Grading, Drainage, ESC, SWM, and ROW ▪ Bridge Design ▪ ITS/Signage/Striping ▪ Final Roadway
Environmental	▪ Permitting ▪ Hazardous Material ▪ Noise Analysis
ROW Acquisition	
Utility Coordination	▪ Utility Coordination ▪ Utility Relocations
Public Involvement	
Material Procurement	
Construction	▪ Maintenance of Traffic ▪ Roadway o Advance Work Package o Phase 1 (Median Widening) o Phase 2 (Outside Work) ▪ Structures o B638 – 81SB over Ramp I o B639 – 81SB over Augusta Woods & RR o B640 – 81SB over US 250 o B641 – 81SB over Lewis Creek o B642 – 81NB over Lewis Creek ▪ Signage, Striping, ITS

ASSUMPTIONS: The Project Schedule was built based on the following key assumptions:

1. **Weather days:** The number of weather days allocated in the schedule is further described in the calendar section below, but they were calculated using 32-Year Climate History from NOAA data local to the Project in Staunton, VA. The data set used was the actual weather experienced from 1991-2022.
2. **Crews:** This schedule assumes that crews will be available to work in multiple locations at the same time. This includes both Roadway and Structures, where the schedule typically shows work ongoing at 2 to 3 bridges at a time.
3. **Design/Construction Start:** This Project assumes that the design of the AWP will be progressed enough to start the outside Shoulder Strengthening work in 2023, but that major construction work will not begin until the Spring of 2024.
4. **Noise Barrier:** This schedule assumes that noise barrier will be not be built consistent with the results of

the preliminary noise study performed by VDOT.

5. **VDOT Review Periods:** This schedule assumes that VDOT will utilize, but not exceed their full review period for all design and construction submittals. This period is 21 calendar days for all submittals except Geotechnical Reviews, where 45 calendar days are allowed.

CALENDARS: The four Project calendars were used in the schedule and include:

1. **Calendar Days** are based on a 7-day week. This is used for VDOT review periods and other activities whose durations are defined as calendar days in the contract, as well as some design, and procurement activities
2. **5-Day with Holidays** is based on five working days per week and includes holiday restrictions. Used for most design activities and other work not impacted by adverse weather.
3. **5-Day with Holidays and Weather** is based on five working days per week, accounting for holiday restrictions and anticipated weather days. This calendar was used for most construction activities. No Saturday work was shown during the fall or late May/early June to account for Graduation, Move-in Day, and NCAA Football game related restrictions.
4. **5-Day Paving** is similar to the 5-Day and Holidays and Weather calendar described above, except it also does not allow any work from the start of December through mid-March. This is used for FDR, paving, and striping activities that have temperature restrictions.

As noted above, the number of weather days were calculated using the 1991-2022 Climate History from locally available NOAA data, with weather days built into the calendar, as shown below.

	Average Daytime Temp Below 32°F or Precipitation Greater than 0.25"											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Workdays (Mon-Fri) Lost in Calendar Days	5.9	4.3	2.9	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	4.1
Nonworking (Mon-Fri) Days Shown in Calendar Due to Weather	6	5	3	3	3	3	3	3	3	3	3	5

SCHEDULE MANAGEMENT MEANS AND METHODS: 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 meetings 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 progress/partnering meetings with the major stakeholders, including VDOT, the Kokosing

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 using the above tracking aids and action items identified and assigned to someone who can resolve it. Five-week, and long term "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.

Updating Process: Each month, starting with Notice to Proceed, the Preliminary Schedule will be updated as the Team prepares, submits, and receives approval of the Baseline Schedule. Once the Schedule is approved it will be updated and submitted to VDOT for approval monthly until Final Completion of the Project. Each update will be accompanied with a narrative report and tables as prescribed in the DB Project Schedule Special Provision. The updated schedule and narrative will reflect:

- Activities started or completed during the period
- Actual start and finish dates
- Activities on-going during the period
- Remaining duration for on-going activities
- Modified relationships to correct out-of-sequence progress
- Modified relationships to reflect Kokosing's plan for completing the remaining work
- Change Orders
- Relief events
- Compensation events

Schedule Recovery: If during the course of the Project, changes or unforeseen circumstances arise that impact the Project schedule, the Team will immediately notify VDOT and prepare a schedule recovery plan to recover lost time. This plan may include increasing work shifts, adding crews and resources to construct Critical Path activities, changing MOT schemes or modifying the design to remove activities from the Critical Path. If it is early in the Project at the time of the impact is encountered, schedule recovery may require adjustments by any or all of the discipline managers including design, permitting, ROW, utility relocation, and construction. In the event all other DB disciplines have completed their tasks, re-sequencing the construction schedule by the Construction Manager will be the primary focus in order to mitigate impacts.

MITIGATING RISKS: The experience that the Kokosing Team has obtained in working on projects of similar nature will be critical to the timeliness of resolving design and construction hurdles as they occur. Our Team has successfully utilized a rolling design process on other jobs that enables critical construction phases and activities requiring normally long lead times to be under production simultaneously with final designs. We pride ourselves in solving construction and design issues rapidly without sacrificing the quality of the Project. Based on our preliminary knowledge of the proposed scope of work for this Project and our experience on previous projects of the same size and complexity, the following risks, issues, or problems may cause schedule delays and may require mitigation:

ROW: ROW acquisition and relocations can take several months to negotiate and if eminent domain is necessary, even longer. We will hit the ground running as soon as we receive NTP and aggressively complete the ROW and relocation process. The Project has mitigated this risk by sequencing the Project to perform inside widening towards the median first, where no acquisition is required. In the event of delays to this activity that extend into the outside widening in Phase 2, we will shift the design and construction focus to other areas of the Project to

avoid impacts to the final completion date.

Utility Relocations: There is a risk in schedule delay if the utility companies take longer than anticipated to relocate their utilities with respect to the Project. Specifically, the Citizens Fiber cable must be relocated prior to the onset of any inside widening work to begin (Phase 1) as it conflicts with the proposed inside widening. Our Team has determined that all potential relocations would occur entirely with-in existing ROW, allowing this work to commence as soon as P&Es are approved.

Design Approvals: There is a risk that the design approval process could exceed that anticipated in our CPM schedule which could shorten the time available for construction. In order to take advantage of the DB process to its greatest extent, we feel it is necessary to develop the construction plans in a manner conducive to staying "one step ahead" of construction. By breaking up the design into early work packages, we will be able to obtain "release for construction" plans sooner to enhance progress and avoid delays.

Environmental Impacts and Permits: Restrictions for permit review periods could extend the approval period thus causing a delay in the schedule. Early submission for permits is necessary to allow as much time as possible for approvals. The Project will also designate Upland locations where work may begin that is not tied to any Wetland water quality permits. Acquiring the required permits from all affected agencies will require diligent performance by the team. A proactive approach will help to incorporate those agencies as stakeholders and generate a partnering approach.

Subcontractor Scheduling: There is a significant workload for high priority subcontractors; scheduling will be jointly coordinated and done well in advance to avoid delays. We will mitigate potential delays using a partnered approach for open and often coordination/communication with subcontractors.

Material Lead Time: The Team identified schedule critical elements associated with longer lead time materials (i.e., Drainage materials, MSE wall panels, Bridge Beams, Bridge Pile) and has designated when they are needed to ensure the design and release of these items is adequately prioritized. This will also expedite the shop drawing process to ensure there are no delays to the Project schedule.

Project Phasing: The complexity of the Project will require that the many of the Project features will be constructed concurrently, and/or in specific sequence. To help mitigate this, we will sequence the Project into three major and distinct Areas which can to some degree be constructed independently from one another. This enables the five-mile corridor to be progressed efficiently, allowing the Team measured flexibility during construction to mitigate delays and limit impacts to the traveling public.

Our three (3) Project Work Areas can be constructed independently from one another which maximizes our Team's ability to mitigate potential delays and allocate resources to maintain the Project Schedule.

SUMMARY: The Kokosing Team has developed a Proposal Schedule and Proposal Schedule Narrative that demonstrates our understanding of the complexities and interrelationships of the technical elements of the Project. Additionally, our Proposal Schedule takes the following into account: internal plan reviews, VDOT plan reviews and approvals, environmental permitting and constraints, ROW acquisition, utility relocation, construction activities and QA/QC inspection and testing. Our Team is committed to continuously improve the schedule to better serve VDOT, associated stakeholders, and the traveling public.

Appendix

ATTACHMENT 4.0.1.1

I-81 WIDENING MM 221 to MM 225

Contract ID No. C00116269DB116

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, 95-97
Acknowledgement of RFP, Revisions, and/or Addenda	Attachment 3.6 (Form C-78-RFP)	Sections 3.6, 4.0.1.1	no	Vol. I, 98
Letter of Submittal	NA	Sections 4.1		Vol. I, 1
Letter of Submittal on Offeror's letterhead	NA	Section 4.1.1	yes	Vol. I, 1
Identify the full legal name and address of Offeror	NA	Section 4.1.1	yes	Vol. I, 1
Authorized representative's original signature	NA	Section 4.1.1	yes	Vol. I, 1
Declaration of intent	NA	Section 4.1.2	yes	Vol. I, 1
120 day declaration	NA	Section 4.1.3	yes	Vol. I, 1
Point of Contact information	NA	Section 4.1.4	yes	Vol. I, 1
Principal Officer information	NA	Section 4.1.5	yes	Vol. I, 1
Final Completion Date	NA	Section 4.1.6	yes	Vol. I, 1
Unique Milestone Date(s)	NA	Section 4.1.7	yes	Vol. I, 1
Proposal Payment Agreement or Waiver of Proposal Payment	Attachment 9.3.1 or 9.3.2	Section 4.1.8	no	Vol. I, 99-102
Certification Regarding Debarment Forms	Attachment 11.8.6(a) Attachment 11.8.6(b)	Section 4.1.9	no	Vol. I, 103-109

ATTACHMENT 4.0.1.1

I-81 WIDENING MM 221 to MM 225

Contract ID No. C00116269DB116

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Written Statement to Achieve 6% DBE Goal	NA	Section 4.1.10		Vol. I, 1
Confirmation of SCC and DPOR from SOQ	NA	Section 4.1.11		Vol. I, 1
Offeror's Qualifications	NA	Section 4.2		Vol. I, 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, 2
Deputy Key Personnel	Attachment 4.2.1	Section 4.2.1	no	Vol. I, 110-113
Organizational chart with any updates since the SOQ submittal clearly identified	NA	Section 4.2.1	yes	Vol. I, 2
Revised narrative when organizational chart includes updates since the SOQ submittal	NA	Section 4.2.1	yes	Vol. I, 2
Design Concept	NA	Section 4.3		Vol. I, 3-16 | Vol. II, 17-45
Conceptual Roadway Plans and description	NA	Section 4.3.1.1	yes	Vol. I, 5-11
Conceptual Structural Plans and description	NA	Section 4.3.1.2	yes	Vol. I, 11-16
Project Approach	NA	Section 4.4		Vol. I, 46-65
Environmental Management	NA	Section 4.4.1	yes	Vol. I, 46-50
Utilities	NA	Section 4.4.2	yes	Vol. I, 50-54

ATTACHMENT 4.0.1.1

I-81 WIDENING MM 221 to MM 225

Contract ID No. C00116269DB116

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Geotechnical	NA	Section 4.4.3	yes	Vol. I, 54-59
Quality Assurance/ Quality Control (QA/QC)	NA	Section 4.4.4	yes	Vol. I, 60-65
Construction of Project	NA	Section 4.5		Vol. I, 66-78
Sequence of Construction	NA	Section 4.5.1	yes	Vol. I, 66-73
Transportation Management Plan	NA	Section 4.5.2	yes	Vol. 1, 74-78
Proposal Schedule	NA	Section 4.6		Vol. II, 79-87 | Vol. I, 88-94
Proposal Schedule	NA	Section 4.6.1	no	Vol. II, 79-87
Proposal Schedule Narrative	NA	Section 4.6.2	no	Vol. I, 88-94
Proposal Schedule in electronic format	NA	Section 4.6	no	N/A

ATTACHMENT 3.6

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

RFP NO. C00116269DB116

PROJECT NO.: 0081-007-013

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 RFP – October 19, 2022 (Date)
2. Cover letter of Addendum No. 1 – November 8, 2022 (Date)
3. Cover letter of Addendum No. 2 – November 22, 2022 (Date)
4. Cover letter of Addendum No. 3 – December 20, 2022 (Date)
5. Cover letter of Addendum No. 4 – January 13, 2023 (Date)

SIGNATURE

1/19/23
DATE

Gregory A. Hamilton, PE, DBIA
PRINTED NAME

Regional Sr. Vice President
TITLE

ATTACHMENT 9.3.1
PROPOSAL PAYMENT AGREEMENT

THIS PROPOSAL PAYMENT AGREEMENT (this "Agreement") is made and entered into as of this ____ day of _____, 20__, by and between the Virginia Department of Transportation ("VDOT"), and Kokosing Construction Company, Inc. ("Offeror").

WITNESSETH:

WHEREAS, Offeror is one of the entities who submitted Statements of Qualifications ("SOQs") pursuant to VDOT's October 19, 2022 Request for Qualifications ("RFQ") and was invited to submit proposals in response to a Request for Proposals ("RFP") for the **I-81 Widening MM 221 to MM 225, Project No. 0081-007-013** ("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 **one hundred twenty thousand and 00/100 Dollars ($120,000.00)** ("Proposal Payment"), which payment constitutes payment in full to Offeror for the conveyance of Offeror's Intellectual Property to VDOT in accordance with this Agreement. Payment of the Proposal Payment is conditioned upon: (a) Offeror's Proposal being, in the sole discretion of VDOT, responsive to the RFP; (b) Offeror complying with all other terms and conditions of this Agreement; and (c) either (i) Offeror is not awarded the Design-Build Contract, or (ii) VDOT cancels the procurement or decides not to award the Design-Build Contract to any Offeror.

4. **Payment Due Date**. Subject to the conditions set forth in this Agreement, VDOT will make payment of the Proposal Payment to the Offeror within forty-five (45) days after the later of: (a) notice from VDOT that it has awarded the Design-Build Contract to another Offeror; or (b) notice from VDOT that the procurement for the Project has been cancelled and that there will be no Contract Award.

5. **Effective Date of this Agreement**. The rights and obligations of VDOT and Offeror under this Agreement, including VDOT's ownership rights in Offeror's Intellectual Property, vests upon the date that Offeror's Proposal is submitted to VDOT. Notwithstanding the above, if Offeror's Proposal is determined by VDOT, in its sole discretion, to be nonresponsive to the RFP, then Offeror is deemed to have waived its right to obtain the Proposal Payment, and VDOT shall have no obligations under this Agreement.

6. Indemnity. Subject to the limitation contained below, Offeror shall, at its own expense, indemnify, protect and hold harmless VDOT and its agents, directors, officers, employees, representatives and contractors from all claims, costs, expenses, liabilities, demands, or suits at law or equity ("Claims") of, by or in favor of or awarded to any third party arising in whole or in part from: (a) the negligence or wilful misconduct of Offeror or any of its agents, officers, employees, representatives or subcontractors; or (b) breach of any of Offeror's obligations under this Agreement, including its representation and warranty under Section 8 hereof. This indemnity shall not apply with respect to any Claims caused by or resulting from the sole negligence or wilful misconduct of VDOT, or its agents, directors, officers, employees, representatives or contractors.

7. Assignment. Offeror shall not assign this Agreement, without VDOT's prior written consent, which consent may be given or withheld in VDOT's sole discretion. Any assignment of this Agreement without such consent shall be null and void.

8. Authority to Enter into this Agreement. By executing this Agreement, Offeror specifically represents and warrants that it has the authority to convey to VDOT all rights, title, and interest in Offeror's Intellectual Property, including, but not limited to, those any rights that might have been vested in team members, subcontractors, consultants or anyone else who may have contributed to the development of Offeror's Intellectual Property, free and clear of all liens, claims and encumbrances.

9. Miscellaneous.

a. Offeror and VDOT agree that Offeror, its team members, and their respective employees are not agents of VDOT as a result of this Agreement.

b. Any capitalized term used herein but not otherwise defined shall have the meanings set forth in the RFP.

c. This Agreement, together with the RFP, embodies the entire agreement of the parties with respect to the subject matter hereof. There are no promises, terms, conditions, or obligations other than those contained herein or in the RFP, and this Agreement shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties hereto.

d. It is understood and agreed by the parties hereto that if any part, term, or provision of this Agreement is by the courts held to be illegal or in conflict with any law of the Commonwealth of Virginia, validity of the remaining portions or provisions shall not be affected,

and the rights and obligations of the parties shall be construed and enforced as if the Agreement did not contain the particular part, term, or provisions to be invalid.

e. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Virginia.

IN WITNESS WHEREOF, this Agreement has been executed and delivered as of the day and year first above written.

VIRGINIA DEPARTMENT OF TRANSPORTATION

By: _____

Name: _____

Title: _____

KOKOSING CONSTRUCTION COMPANY, INC.

By: _____

Name: Gregory A. Hamilton, PE, DBIA

Title: Regional Sr. Vice President

ATTACHMENT 11.8.6(a)
CERTIFICATION REGARDING DEBARMENT
PRIMARY COVERED TRANSACTIONS

Project No.: 0081-007-013

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

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

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

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

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

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

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

Signature	11/11/22. Date	Regional Sr. Vice President Title

Kokosing Construction Company, Inc.
Name of Firm

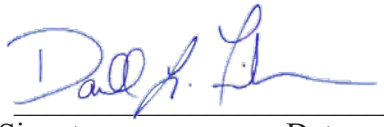
ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project No.: 0081-007-013

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	11/9/22 Date	Chief Business Officer Title

Rinker Design Associates, P.C.
Name of Firm

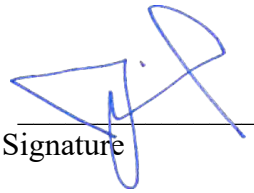
ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project No.: 0081-007-013

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.



11/10/2022	Executive Vice President
Signature Date	Title

Whitney, Bailey, Cox & Magnani, LLC
Name of Firm

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

Project No.: 0081-007-013

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.

Dean A Shelton	11/11/2022	Senior Associate
Signature	Date	Title

Haley & Aldrich, Inc.

Name of Firm

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

Project No.: 0081-007-013

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.

Elizabeth Quinn Viviani 11/9/2022 President
Signature Date Title

Quinn Consulting Services, Inc.
Name of Firm

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

Project No.: 0081-007-013

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.

Leslie R. Bynaite 11/10/2022 Vice President
Signature Date Title

H & B Surveying and Mapping, LLC
Name of Firm

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

Project No.: 0081-007-013

1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

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

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

Signature	November 9, 2022	Judson H. Dalton Vice President
Signature	Date	Title

W. C. English, Incorporated
Name of Firm

ATTACHMENT 4.2.1

DEPUTY KEY PERSONNEL RESUME FORM

Brief Resume of Key Personnel anticipated for the Project.

a. Name & Title: **Jeff Walton | Project Manager**

b. Project Assignment: **Deputy Design-Build Project Manager**

c. Name of the Firm with which you are employed at the time of submitting Technical Proposal: **Kokosing Construction Company, Inc.**

d. Employment History: With this Firm **21** Years With Other Firms **16** Years

Please list chronologically (most recent first) your employment history, position, general responsibilities, and duration of employment for the last fifteen (15) years. (NOTE: If you have less than 15 years of employment history, please list the history for those years you have worked. Project specific experience shall be included in Section (g) below):

Kokosing Construction Company, Inc. | Start Date: July 2018 | End Date: Present | Position: Project Manager. Jeff manages and oversees construction on heavy highway, bridge, and utility projects, leads the project team, equipment and material procurement, establishes/executes objectives and goals, completes work plans, maintains budgets and resources, procures/coordinates subcontractors, develops the project-specific safety program with the project team including training needs, monitors schedules, conducts progress meetings, evaluates/minimizes exposures and risks, mitigates issues, reviews/approves deliverables, RFIs, change orders, administers contracts, and oversees budget, safety, and quality compliance.

Kokosing Construction Company, Inc. | Start Date: 2007 | End Date: July 2018 | Position: Construction Manager/Superintendent. Gaining solid experience in highway construction, utility relocations, and maintenance of traffic, Jeff supervised field operations, ensured construction was per drawings, maintained as-built documents, conducted pre-construction staff meetings establishing goals and responsibilities, evaluated safety exposures and risks, participated in developing the project-specific safety program, work plans, and Job Hazard Analyses, reviewed scope to identify any specialized safety training needs, reviewed Toolbox Talks, Take Fives, and Morning Huddles, conducted weekly safety inspections with the project manager/project engineer, submitted weekly Safety Inspection Reports, coordinated labor, equipment, and subcontractors, schedules, oversaw quality control compliance and project close out.

e. Education: Name & Location of Institution(s)/Degree(s)/Year/Specialization: **N/A**

f. Active Registration: Year First Registered/ Discipline/VA Registration #: **N/A**

g. Document the extent and depth of your experience and qualifications relevant to the Project.

1. *Note your role, responsibility, and specific job duties for each project, not those of the firm.*
2. *Note whether experience is with current firm or with other firm.*
3. *Provide beginning and end dates for each project; projects older than fifteen (15) years will not be considered for evaluation.*

(List only three (3) relevant projects for which you have performed a similar function. On-call contracts with multiple task orders (on multiple projects) should not be listed as a single project.

CMAR MD 5 Point Lookout, Point Lookout, MD, $15.4 Million, Maryland Dept. of Transportation/State Highway Administration	
With Current Firm? Yes	Project Role: Project Manager
Start Date: Nov. 2020	End Date: Nov. 2022

Project Manager. Jeff oversees construction, leads the project team, equipment and material procurement, establishes/executes objectives and goals, completes work plans, maintains budgets and resources, procures/coordinates subcontractors, develops the project-specific safety program with the project team, including training needs, monitors schedules, conducts progress meetings, evaluates/minimizes exposures and risks, mitigates issues, reviews/approves deliverables, RFIs, change orders, administers contracts, and oversees budget, safety, and quality compliance.

This project widens 2.25 miles and geometric adjustments along the MD 5 corridor (north/southbound) to accommodate two 11-ft. travel lanes with 8-ft. shoulders. There are environmental mitigation and drainage improvements. Revised the sequence of construction and MOT approach by adding a temporary widening in certain areas for continuous two-way traffic during construction. This welcomed change was exactly what the owner and local residents were looking for as it reduced impacts to the public and Point Lookout State Park. By creating two-way traffic, the construction schedule was reduced by nine months.

Relevancy: Alternative Delivery; Roadway; Survey; Environmental; Geotechnical; Drainage; Erosion & Sediment Control; TMP; ROW; Utilities; Public Involvement/Relations; Signage, QC; Construction Engineering/Inspection; Safety; Project Management

MD 28 over Monocacy, Dickerson, MD, $7.8 Million, Maryland Dept. of Transportation/State Highway Administration	
With Current Firm? Yes	Project Role: Project Manager
Start Date: July 2018	End Date: Jan. 2021

Project Manager. Jeff oversaw construction, led the project team, equipment and material procurement, completed work plans, maintained budgets and resources, coordinated subcontractors, monitored schedules, conducted progress meetings, evaluated/minimized exposures and risks, mitigated issues, reviewed/approved deliverables, RFIs, change orders, and oversaw budget, safety, and quality compliance.

This bridge rehabilitation project, which began south of the MD 28 and Park Mill Road intersection and extended south to MD 109 for 0.29 miles, replaced a concrete deck on a steel truss bridge on MD 28 over the Monocacy River. Although considered structurally sound, the bridge needed repairs to extend its lifespan. Replaced the stringers, repaired the steel truss and concrete substructure, cleaned and painted new/existing structural steel, repaired concrete bridge piers, constructed a temporary access road to remove major debris and vegetation under the bridge, and resurfaced and reconstructed along bridge approaches. Traffic was maintained on the bridge, using one alternating lane controlled by a temporary traffic signal. There were limited closures on MD 28 during weekends, nights and off-peak hours where traffic was detoured for construction activities, e.g., pouring the concrete deck. This project improves safety and mobility and reduces maintenance costs.

Relevancy: Roadway; Survey; Bridge; Environmental; Erosion & Sediment Control; Traffic Control Devices; QC; Safety; Project Management

CMAR MD 24-Sections A & G, Harford County, MD, $5.1 Million, Maryland Dept. of Transportation/State Highway Administration	
With Current Firm? Yes	Project Role: Deputy Project Manager/Construction Manager
Start Date: Dec. 2013	End Date: Aug. 2015

Deputy Project Manager/Construction Manager. Jeff participated in the CMAR process from Notice to Proceed to preconstruction, to construction, to project close out. He provided design input, performed constructability reviews and participated in the cost estimating and Opinion of Probable Construction Cost (OPCC) reviews and onsite agency partnering meetings. During construction, Jeff oversaw the project, including supervising field operations, coordinating labor, equipment, materials, and subcontractors, and developing the CPM, short and long-term scheduling. He attended progress meetings that included stakeholders and informed them of job progress and addressed concerns. The initial project design placed a deep concrete footer constructed in and below the stream bottom, causing huge impacts to the stream. As an alternative, Jeff and the Lead Cost Estimator recommended and got approval to build a retaining wall with piles, sheeting, and a pile cap constructed from the roadway level. A wire wall was built behind the cap and up the slope, and imbricated rocks were built on top of the cap to give the wall a natural appealing front face. Benefits included accelerated construction, increased wall stability, and reduced construction cost while enhancing appearance.

This project improved road safety by remediating the slope supporting MD 24 with reinforced soil lifts and live stake along Rock Bank, repaired the pavement, improved roadway drainage, and addressed roadside safety concerns. Project was completed under budget.

Relevancy: Alternative Design; Roadway; Survey; Structures; Environmental; Geotechnical; Drainage, Erosion & Sediment Control; SWM; Retaining Wall; Utilities; Public Involvement/Relations; Traffic Control Devices; QC; Construction Engineering/Inspection; Safety; Project Management

ATTACHMENT 4.2.1

DEPUTY KEY PERSONNEL RESUME FORM

Brief Resume of Key Personnel anticipated for the Project.

a. Name & Title: **Rick DeLong, PE | Director of Transportation Engineering**

b. Project Assignment: **Deputy Design Manager**

c. Name of the Firm with which you are employed at the time of submitting Technical Proposal:
Rinker Design Associates

d. Employment History: With this Firm **4** Years With Other Firms **25** Years

Please list chronologically (most recent first) your employment history, position, general responsibilities, and duration of employment for the last fifteen (15) years. (NOTE: If you have less than 15 years of employment history, please list the history for those years you have worked. Project specific experience shall be included in Section (g) below):

Rinker Design Associates | Start Date: 2018 | End Date: Present | Position: Director of Transportation Engineering. Mr. Rick DeLong, PE, is a Professional Engineer in the Commonwealth of Virginia and serves as RDA's Director of Transportation Engineering, with 29 years of experience in transportation infrastructure design in Virginia. Rick routinely serves as Project Manager for major design-bid-build and design-build projects throughout Virginia, managing multi-disciplinary design teams and subconsultants for the delivery of transportation and infrastructure-related projects for various clients. In his role at RDA, he manages and oversees the transportation engineering staff and projects, including roadway, traffic, and hydraulics disciplines. Additionally, he routinely manages the coordination with other RDA disciplines, including structures, utility, survey, and ROW departments, and allocates company resources to ensure efficient and effective delivery of RDA's services to meet project schedule and budget. He is responsible for monitoring project performance for schedule, budget, and contract requirement compliance, and is also responsible for ensuring the implementation of RDA's corporate Quality Management Plan. Rick has a thorough understanding of various project delivery methods, as well as all applicable VDOT and AASHTO design principles and standards. He is responsible for executing successful project delivery in accordance with all VDOT's processes and procedures.

McCormick Taylor, Inc. | Start Date: 2012 | End Date: 2018 | Position: Director of Transportation Engineering. In addition to all duties from his previous position which were carried over to this newly created position at McCormick Taylor, Rick was responsible for the oversight and management of all McCormick Taylor's transportation operations North Carolina and South Carolina as well. Additionally, Rick served as McCormick Taylor's design manager on several VDOT design-builds including 395 Express Lanes and Greenview Drive Widening.

McCormick Taylor, Inc. | Start Date: 2004 | End Date: 2012 | Position: Virginia Engineering Group Leader. Rick was responsible for the oversight and management of all McCormick Taylor's transportation operations for Virginia. He was responsible for project management of both VDOT and locally administered transportation projects throughout Virginia, as well as overseeing staff development and resource allocations for all transportation projects in Virginia.

e. Education: Name & Location of Institution(s)/Degree(s)/Year/Specialization:
Pennsylvania State University, University Park, PA | BS | 1993 | Civil Engineering

f. Active Registration: Year First Registered/ Discipline/VA Registration #:
1998 | Professional Engineer | #0402031642

g. Document the extent and depth of your experience and qualifications relevant to the Project.

1. *Note your role, responsibility, and specific job duties for each project, not those of the firm.*
2. *Note whether experience is with current firm or with other firm.*
3. *Provide beginning and end dates for each project; projects older than fifteen (15) years will not be considered for evaluation.*

(List only three (3) relevant projects for which you have performed a similar function. On-call contracts with multiple task orders (on multiple projects) should not be listed as a single project.

495 NEXT, Fairfax, VA, $430 Million, Transurban/VDOT	
With Current Firm? Yes	Project Role: Deputy Design Manager
Start Date: July 2021	End Date: May 2023 (design complete - est.)

Deputy Design Manager. Rick coordinates and manages efforts for the design of construction plans associated with the I-495 Express Lanes Northern Extension (495 NEXT). This public-private partnership between the Commonwealth of Virginia and Transurban extends the 495 Express Lanes north by 2.5 miles from the Dulles Corridor to the George Washington Memorial Parkway interchanges near the American Legion Bridge. Improvements include the mainline widening of NB and SB I-495, interchange ramp improvements at the Dulles Toll Road, Georgetown Pike, and George Washington Memorial Parkway interchanges, and widening, replacement, or addition of 13 bridge structures. Rick has led weekly design coordination meetings between roadway, structures, hydraulics, traffic/ITS, utilities, and right of way disciplines, and assisted in facilitating over-the-shoulder and hand-off/hand-back meetings with VDOT and Transurban. He has been developing, monitoring, and updating the project's design schedule on a weekly basis. Additionally, he is

responsible for establishing and overseeing the project's QA/QC program which includes the review of the design, working plans, shop drawings, specs, and constructability, as well as ensuring that the design conforms with the contract documents.

Relevancy: VDOT Design-Build; Roadway; Survey; Structure/Bridge; Environmental; Geotechnical; Drainage, Erosion & Sediment Control, SWM; Traffic Control Devices; TMP; Soundwalls; ROW; Utilities; Public Involvement/Relations; Signage; Lighting; VMS; Cameras; ITS; QA/QC; Construction Engineering/Inspection; Safety; Project Management

Hampton Roads Bridge-Tunnel Expansion (HRBT), Norfolk, VA, $3.8 Billion, VDOT (subconsultant to HDR)	
With Current Firm? Yes	Project Role: Executive Design Manager
Start Date: Aug. 2019	End Date: May 2021

Executive Design Manager. Rick oversaw management and design efforts for the roadway, drainage, MOT, and utility design for portions of the overall HRBT project as a subconsultant to HDR (design value $4M; total construction value $3.8B). The design and construction JV teams broke the project down into five segments for internal management: Segment 1 (Hampton), Segment 2 (trestles bridges and tunnel), Segment 3 (Willoughby), Segment 4 (Norfolk/Navy), and Segment 5 (I-564 Interchange). As a significant subconsultant, Rick was responsible for RDA's management and design for Segment 1 (MOT and utility design), Segment 3 (drainage design, MOT, and utility design), Segment 4 (roadway design, drainage design, MOT, and utility design), and Segment 5 (MOT and utility design). He managed RDA's allocation of resources, monitored the project schedule, and developed/reviewed additional design work orders. Finally, he coordinated QA/QC efforts within RDA to ensure the plans and calculations were documented and accurate.

Relevancy: VDOT Design-Build; Roadway; Survey; Structure/Bridges; Environmental; Geotechnical; Drainage, Erosion & Sediment Control, SWM; Traffic Control Devices; TMP; Soundwalls; ROW; Utilities; Signage, Lighting, VMS, Cameras; QA/QC; Construction Engineering/Inspection; Project Management

Transform I-66 Outside the Beltway (Segment 1C East), Fairfax County, VA, $30 Million, VDOT	
With Current Firm? Yes	Project Role: Design Manager
Start Date: Jan. 2019	End Date: Feb. 2021

Design Manager. Rick was responsible for design oversight of all elements and disciplines for this segment that reconstructed/widened a 1-mile section of I-66 through the Route 29 interchange, raised the roadway, and replaced the I-66 bridges over Route 29. Responsibilities included the project management and coordination of the contract, which was comprised of interchange/roadway design, bridge and retaining wall design, MOT, signing and pavement marking plans, ITS, lighting design, review of design work plans, specifications and deliverables, monitoring of design project schedule, QA/QC program, cost controls, and coordination/OTSR/Comment Review meetings with the contractor and VDOT. Rick oversaw evaluating vertical clearances under the new bridge to existing Route 29 below. He directed the team on profile adjustments on I-66 to achieve the proper clearance to Route 29's future reconstruction plan. Rick also provided an independent review of the design/plans to ensure compliance with all contract requirements. Additionally, he was responsible for establishing and overseeing the project's QA/QC program which included the review of the design, working plans, shop drawings, specs, and constructability.

Relevancy: VDOT Design-Build; Capacity Improvements; Structure/Bridge; Drainage, Erosion & Sediment Control, SWM; Utilities; Public Involvement/Relations; QA/QC, Soundwalls; Construction Engineering/Inspection; ROW

I-81 WIDENING MM 221 TO MM 225 TECHNICAL PROPOSAL VOLUME II

VIRGINIA DEPARTMENT OF TRANSPORTATION

January 20, 2023

State Project No.: 0081-007-013, B638, B639, B640, B641, B642, C501, D602, D603, P101, R201
Federal Project No.: NHPP-081-2(329)
Contract ID Number: C00116269DB116

kokosing
CONSTRUCTION COMPANY, INC.
6235 WESTERVILLE ROAD
WESTERVILLE, OH 43081

Design Concept Overview

LEGEND

- VDOT RIGHT OF WAY
- VDOT RIGHT OF WAY & CITY OF STAUNTON LIMITS
- CITY OF STAUNTON LIMITS
- PROJECT LIMITS
- DESIGN ELEMENTS THAT APPLY TO ENTIRE PROJECT LMIITS

ID	DESIGN ELEMENTS THAT PROVIDES SAFETY
S1	Reduced build-up depths to limit impacts to traveling public during construction
S2	Utilized drilled shaft piers, minimizing impacts to existing utilities/roadways
S3	Scuppers utilized to mitigate spread
S4	Optimized MOT phases to reduce multiple traffic lane shits
S5	Limit construction entrances to outside of ramp auxilary lanes
S6	Tangent alignments used at bridges during construction
S7	Dedicated SWM entrances provided allowing safe access during maintenance
S8	Regular cleaning/maintenance of traffic control devices
S9	CCTV to monitor traffic incidents
	Design optimizations over the RFP design

ID	DESIGN ELEMENTS THAT ACCELERATE PROJECT DELIVERY
D1	Reduced build-up shortens overlay construction phase
D2	Eliminated water & gas impacts with revised guardrail design
D3	Incorporated early work packages to complete clearing & grubbing
D4	Start early coordination with BBRR to remove inactive power poles
D5	Utilized drilled shaft pier construction to simplify MOT approach
D6	Early start of Shentel relocation prior to contract NTP
D7	Removal of Time of Year Restriction for Northern Long-eared Bat
	Design optimizations over the RFP design

ID	DESIGN ELEMENTS THAT ENSURE QUALITY
Q1	Eliminated portion of storm sewer trunk line reducing maintenance
Q2	Relocated Lewis Creek to avoid bridge scour and sanitary sewer impacts
Q3	Utilize Scenario 5 to minimize the number of SWM facilities required
Q4	Use of Jointless Bridge Construction details eliminates joints
Q5	Bridge deck closure pours
Q6	Additional 0.5" bridge deck thickness for top mat reinforcing steel cover
	Design optimizations over the RFP design

ID	DESIGN ELEMENTS THAT REDUCE COST
C1	Utilized retaining walls in lieu of box culvert extension. Reduces stream impacts by 62 linear-feet and wetland impacts by 0.02 acres
C2	BMP 13-1 relocated outside of wetland area – Impact reduction of 0.12-acres
C3	Horizontal alignment adjustment to better match existing geometry
C4	Reduced overall project wetland impacts by 0.23 acres
C5	Optimized profile to reduce build-up and cross slope correction
C6	Utilized open channel systems in lieu of storm sewer networks
	Design optimizations over the RFP design

I-81 WIDENING MM 221 TO MM 225

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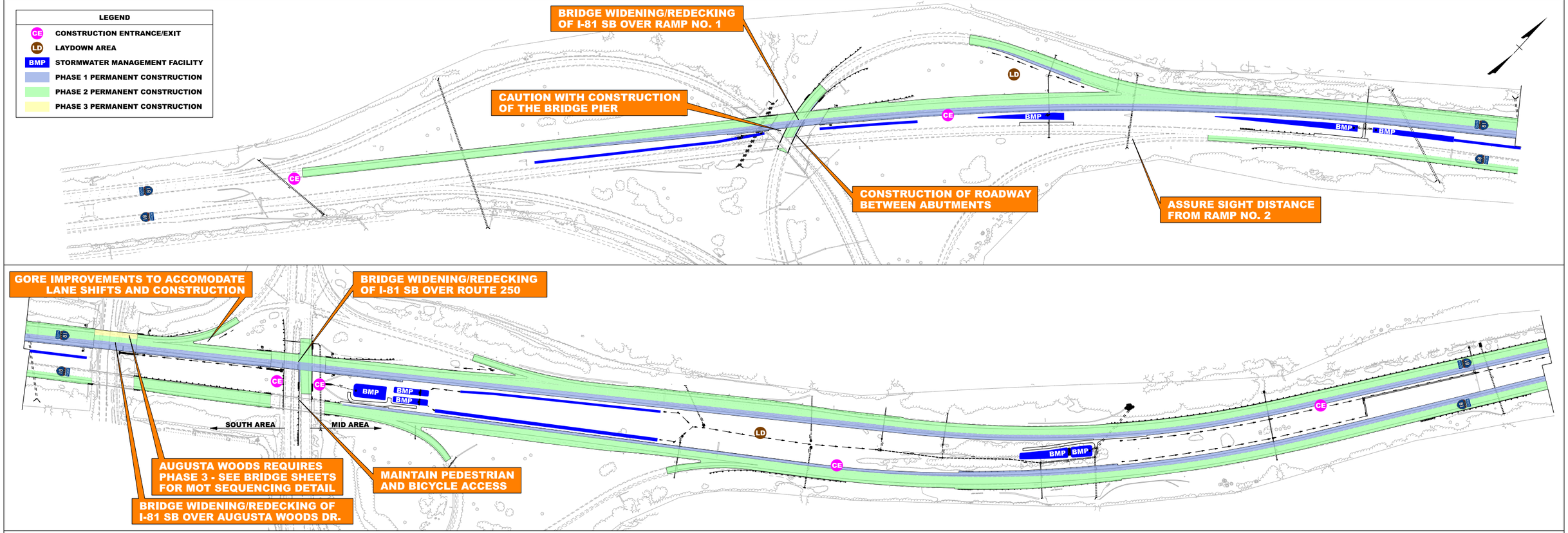
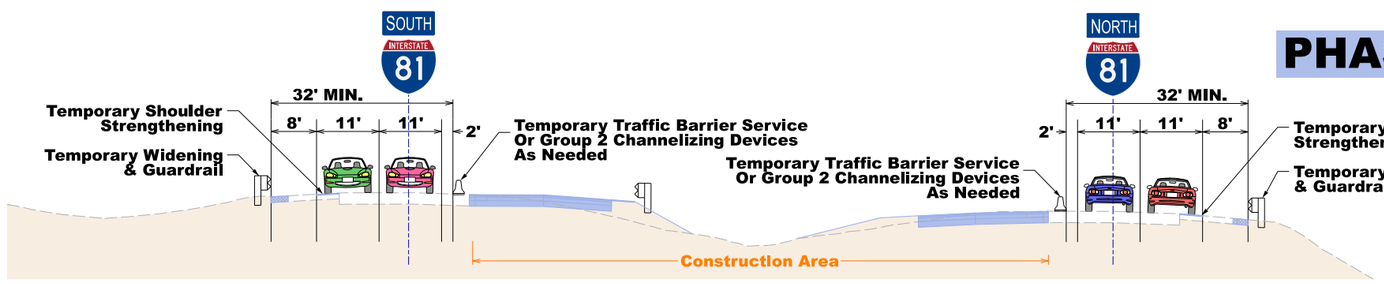
SCALE 0 1/8 mi 1/4 mi

PROJECT 0081-007-013

SHEET NO. 1

PAGE NO. 17





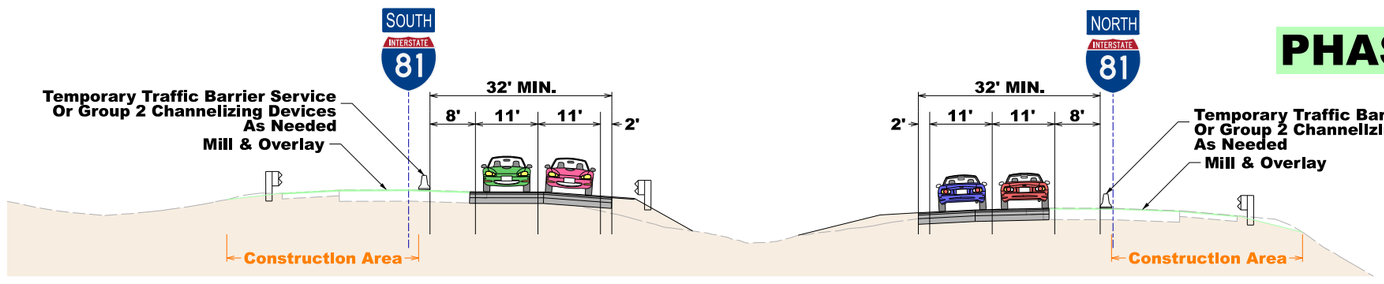
PHASE 1

CONSTRUCTION ACTIVITIES COMPLETED THIS PHASE

- Construction of temporary pavement and shoulder strengthening.
- Installation of barrier.
- Installation of construction entrances.
- Installation of temporary drainage.
- Installation of bridge scuppers.
- Construction of roadway and drainage elements in the median.

KEY MOT FEATURES THIS PHASE

- Installation of project limit signing.
- Temporary pavement and shoulder strengthening completed under lane closures.
- Shift traffic to the outside of the travel lanes.
- Maintenance of ITS and CCTV throughout the project area.
- Installation of additional CCTV elements.
- Maintain existing median crossovers.



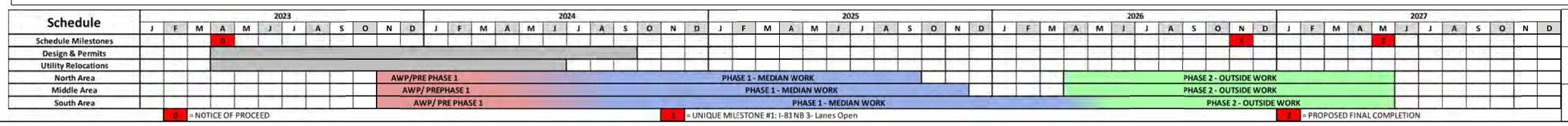
PHASE 2

CONSTRUCTION ACTIVITIES COMPLETED THIS PHASE

- Shift lanes to the inside.
- Adjust barrier for lane shifts.
- Construction of roadway and drainage elements on the outside of the roadway.
- Construction of ramps and tie-ins.
- Bridge rehabilitation and re-decking.
- Final sign and structure installation.
- Final mill and overlay.

KEY MOT FEATURES THIS PHASE

- Shift lanes to the inside.
- Maintenance of ITS and CCTV throughout the project area.
- Installation of additional CCTV elements.
- Maintain existing median crossovers.



I-81 WIDENING MM 221 TO MM 225

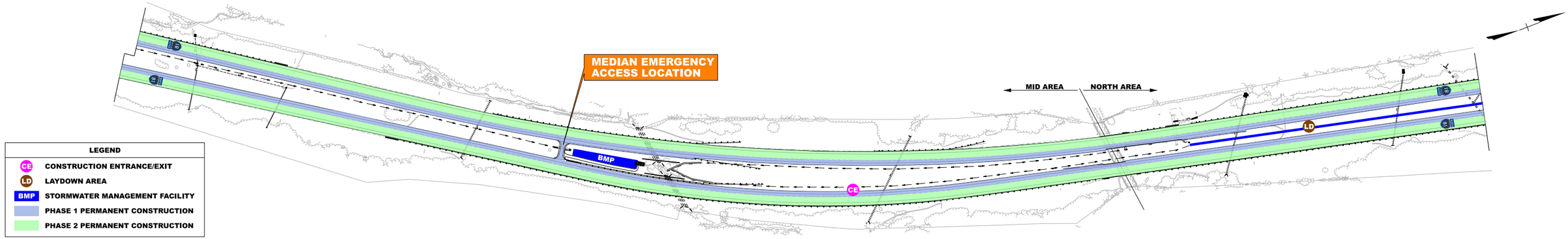
kokosing CONSTRUCTION COMPANY, INC. rda

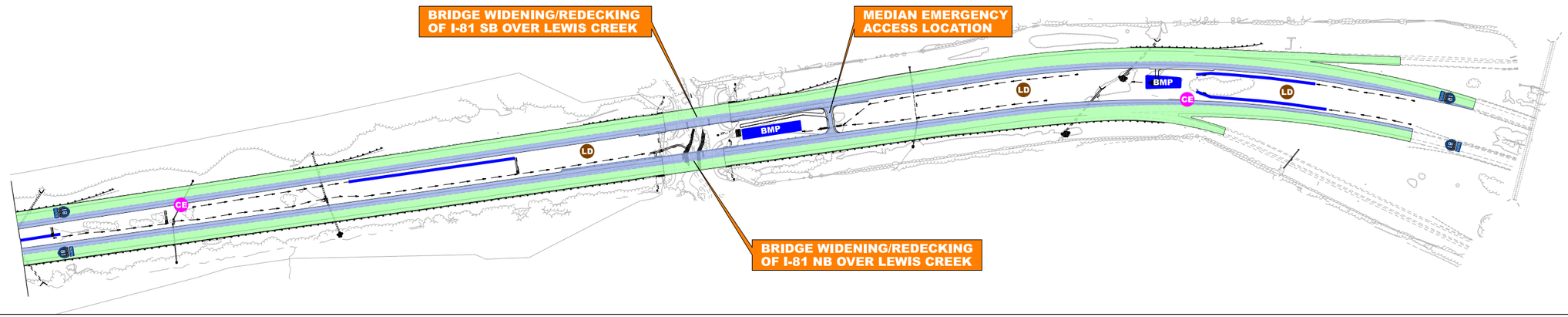
SCALE 0 200' 400'

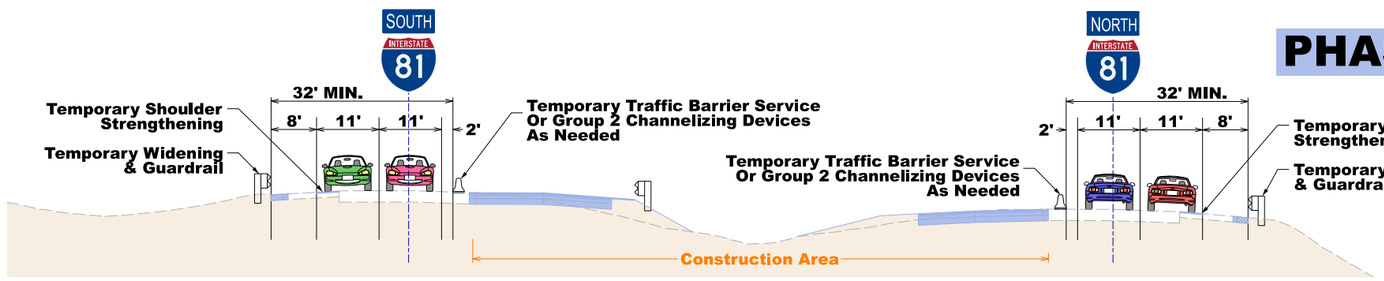
PROJECT 0081-007-013

SHEET NO. 1K(1)

PAGE NO. 18







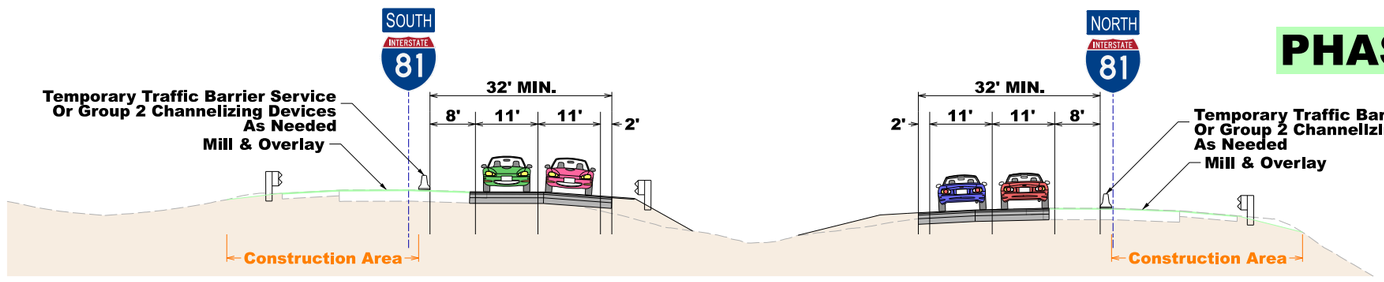
PHASE 1

CONSTRUCTION ACTIVITIES COMPLETED THIS PHASE

- Construction of temporary pavement and shoulder strengthening.
- Installation of barrier.
- Installation of construction entrances.
- Installation of temporary drainage.
- Installation of bridge scuppers.
- Construction of roadway and drainage elements in the median.

KEY MOT FEATURES THIS PHASE

- Installation of project limit signing.
- Temporary pavement and shoulder strengthening completed under lane closures.
- Shift traffic to the outside of the travel lanes.
- Maintenance of ITS and CCTV throughout the project area.
- Installation of additional CCTV elements.
- Maintain existing median crossovers.



PHASE 2

CONSTRUCTION ACTIVITIES COMPLETED THIS PHASE

- Shift lanes to the inside.
- Adjust barrier for lane shifts.
- Construction of roadway and drainage elements on the outside of the roadway.
- Construction of ramps and tie-ins.
- Bridge rehabilitation and re-decking.
- Final sign and structure installation.
- Final mill and overlay.

KEY MOT FEATURES THIS PHASE

- Shift lanes to the inside.
- Maintenance of ITS and CCTV throughout the project area.
- Installation of additional CCTV elements.
- Maintain existing median crossovers.

Schedule

	2023												2024												2025												2026												2027											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Schedule Milestones				0																															2																							
Design & Permits																																																												
Utility Relocations																																																												
North Area													AWP/PRE PHASE 1												PHASE 1 - MEDIAN WORK																								PHASE 2 - OUTSIDE WORK											
Middle Area													AWP/ PREPHASE 1												PHASE 1 - MEDIAN WORK																								PHASE 2 - OUTSIDE WORK											
South Area													AWP/ PRE PHASE 1												PHASE 1 - MEDIAN WORK																								PHASE 2 - OUTSIDE WORK											

0 = NOTICE OF PROCEED
1 = UNIQUE MILESTONE #1: I-81 NB 3- Lanes Open
2 = PROPOSED FINAL COMPLETION

I-81 WIDENING MM 221 TO MM 225

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SCALE 0 200' 400'

PROJECT 0081-007-013

SHEET NO. 1K(2)

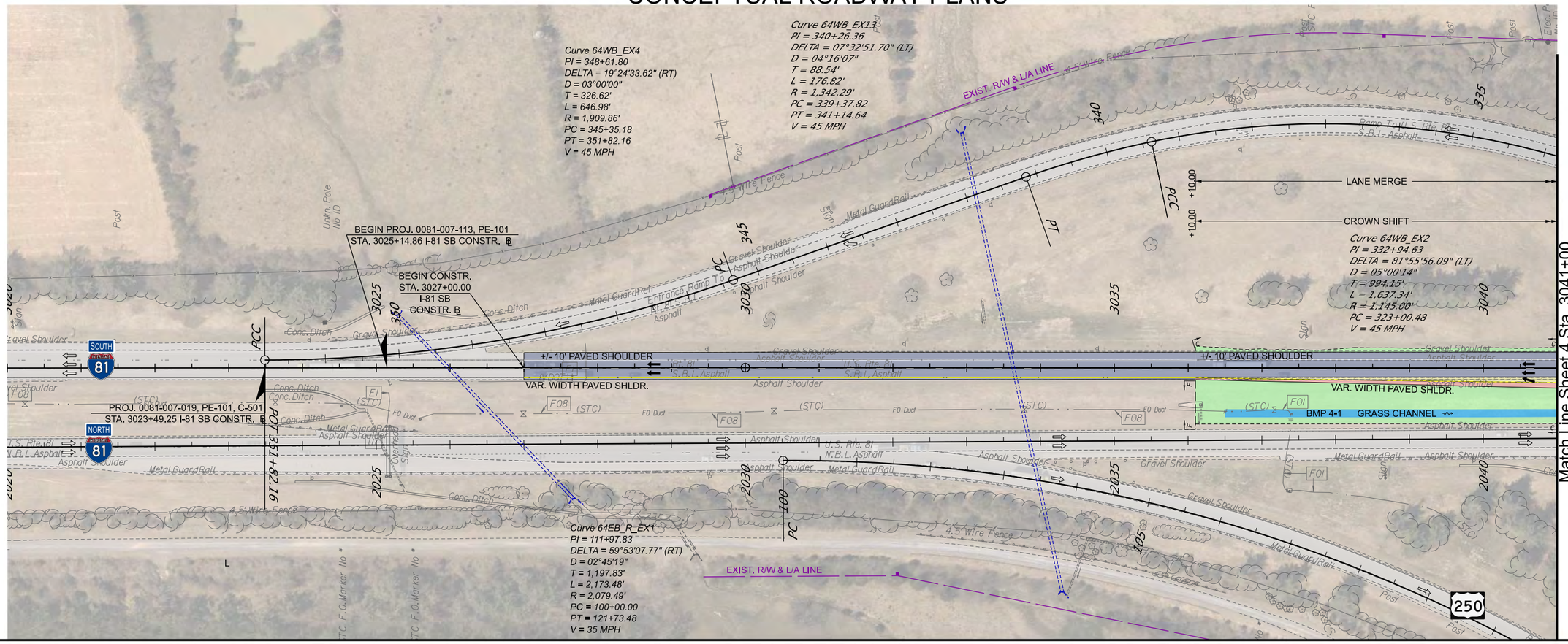
PAGE NO. 19

LEGEND

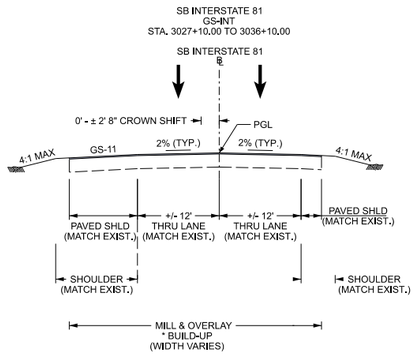
- Proposed New Pavement
- Proposed Mill & Overlay
- Proposed Shoulder Pavement
- Proposed Bridge Deck Replacement
- Proposed Standard MC-4
- Proposed BMP
- Median Crossover
- BMP Access Road
- Proposed Demolition of Pavement
- Proposed Grading
- Limits of Construction in Cut
- Limits of Construction in Fill
- 1 Proposed Standard GR-MGS
- 2 Proposed Standard GR-6
- 3 Proposed Standard GR-FOA
- 4 Proposed Standard BPPS
- 5 Proposed OHSS
- Existing Utility To Be Removed / Abandoned
- Existing Railroad R/W & L/A Line
- Proposed Permanent Easement
- Proposed Temp. Construction Ease.

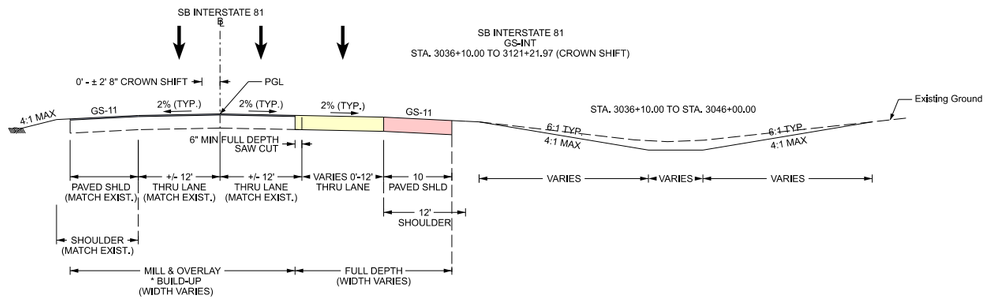
STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	81	0081-007-013 C-501	3

CONCEPTUAL ROADWAY PLANS



CONCEPTUAL TYPICAL SECTIONS





NOTES:
1. PROPOSED MINIMUM PAVEMENT SECTION IS TO BE IN ACCORDANCE WITH THE RFP SECTION 2.6.1.1 NEW PAVEMENT AND PAVEMENT WIDENING.
2. REHABILITATION OF EXISTING I-81 TRAVEL LANES IS TO BE IN ACCORDANCE WITH THE RFP SECTION 2.2 AND ATTACHMENT 2.6.1.2.
3. ALL CURVES TO BE SUPERELEVATED IN ACCORDANCE WITH TC-5.11R UNLESS OTHERWISE NOTED AND ALLOWED BY THE RFP.

I-81 WIDENING MM 221 TO MM 225

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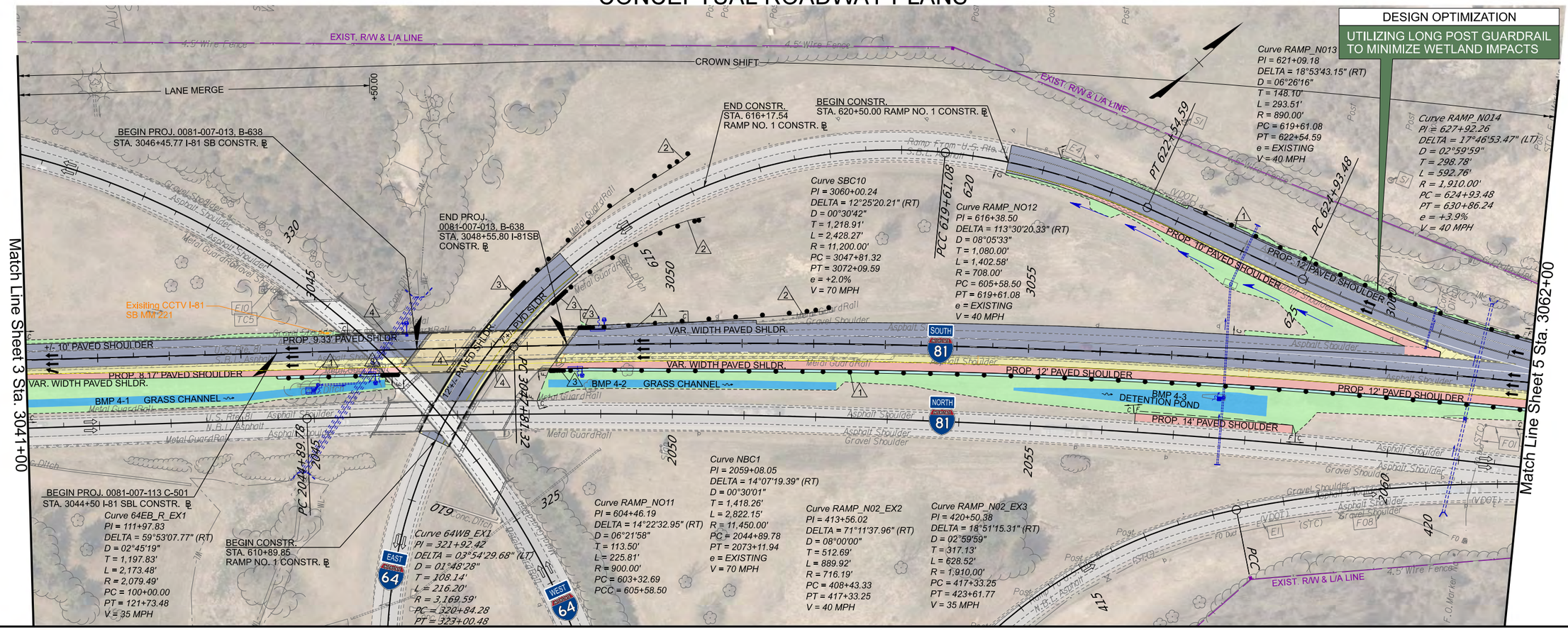
SHEET NO.	PLAN SCALE	PROJECT	PAGE NO.
3	0 75' 150'	0081-007-013	20

LEGEND

- Proposed New Pavement
- Proposed Mill & Overlay
- Proposed Shoulder Pavement
- Proposed Bridge Deck Replacement
- Proposed Standard MC-4
- Proposed BMP
- Median Crossover
- BMP Access Road
- Proposed Demolition of Pavement
- Proposed Grading
- Limits of Construction in Cut
- Limits of Construction in Fill
- 1 Proposed Standard GR-MGS
- 2 Proposed Standard GR-6
- 3 Proposed Standard GR-FOA
- 4 Proposed Standard BPPS
- 5 Proposed OHSS
- Existing Utility To Be Removed / Abandoned
- Existing Railroad R/W & L/A Line
- Proposed Permanent Easement
- Proposed Temp. Construction Ease.

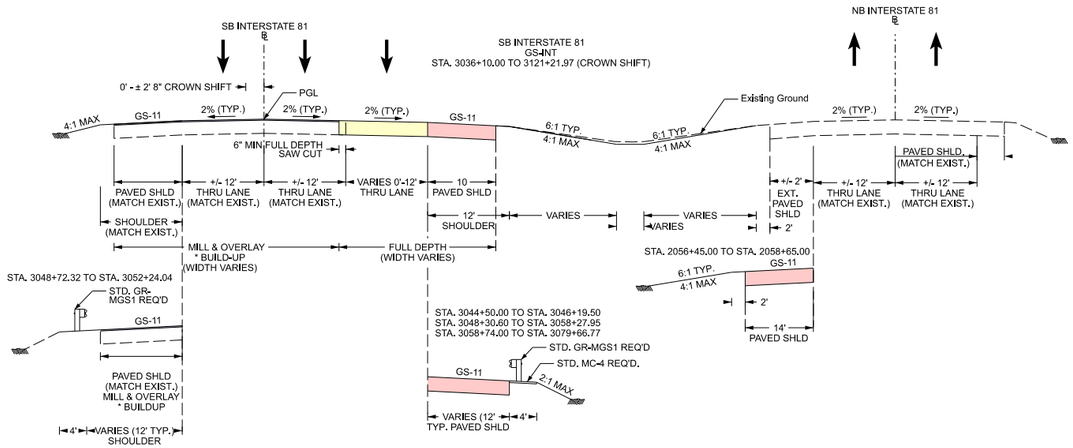
STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	81	0081-007-013 C-501	4

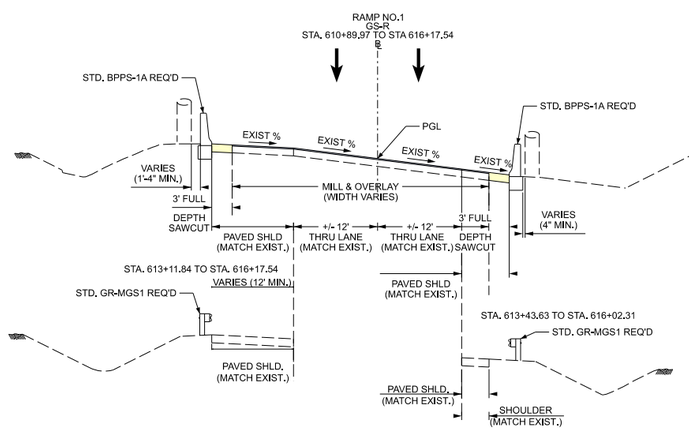
CONCEPTUAL ROADWAY PLANS

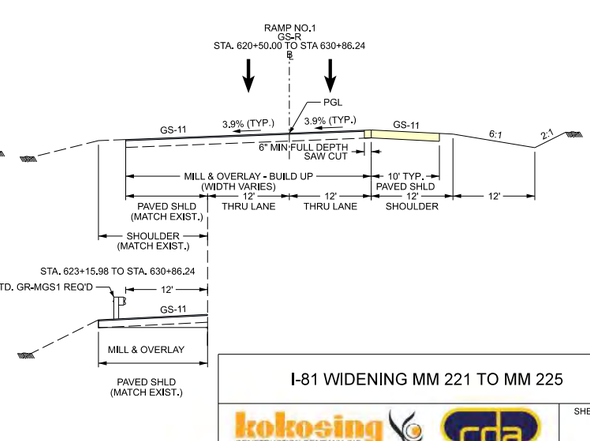


CONCEPTUAL TYPICAL SECTIONS

NOTES:
1. PROPOSED MINIMUM PAVEMENT SECTION IS TO BE IN ACCORDANCE WITH THE RFP SECTION 2.6.1.1 NEW PAVEMENT AND PAVEMENT WIDENING.
2. REHABILITATION OF EXISTING I-81 TRAVEL LANES IS TO BE IN ACCORDANCE WITH THE RFP SECTION 2.2 AND ATTACHMENT 2.6.1.2.
3. ALL CURVES TO BE SUPERELEVATED IN ACCORDANCE WITH TC-5.11R UNLESS OTHERWISE NOTED AND ALLOWED BY THE RFP.







I-81 WIDENING MM 221 TO MM 225

kokosing CONSTRUCTION COMPANY, INC. | rda

SHEET NO.	PROJECT	PAGE NO.
4	0081-007-013	21

PLAN SCALE 0 75' 150'

LEGEND

- Proposed New Pavement
- Proposed Mill & Overlay
- Proposed Shoulder Pavement
- Proposed Bridge Deck Replacement
- Proposed Standard MC-4
- Proposed BMP
- Median Crossover
- BMP Access Road
- Proposed Demolition of Pavement
- Proposed Grading
- Limits of Construction in Cut
- Limits of Construction in Fill
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- 2 Proposed Standard GR-6
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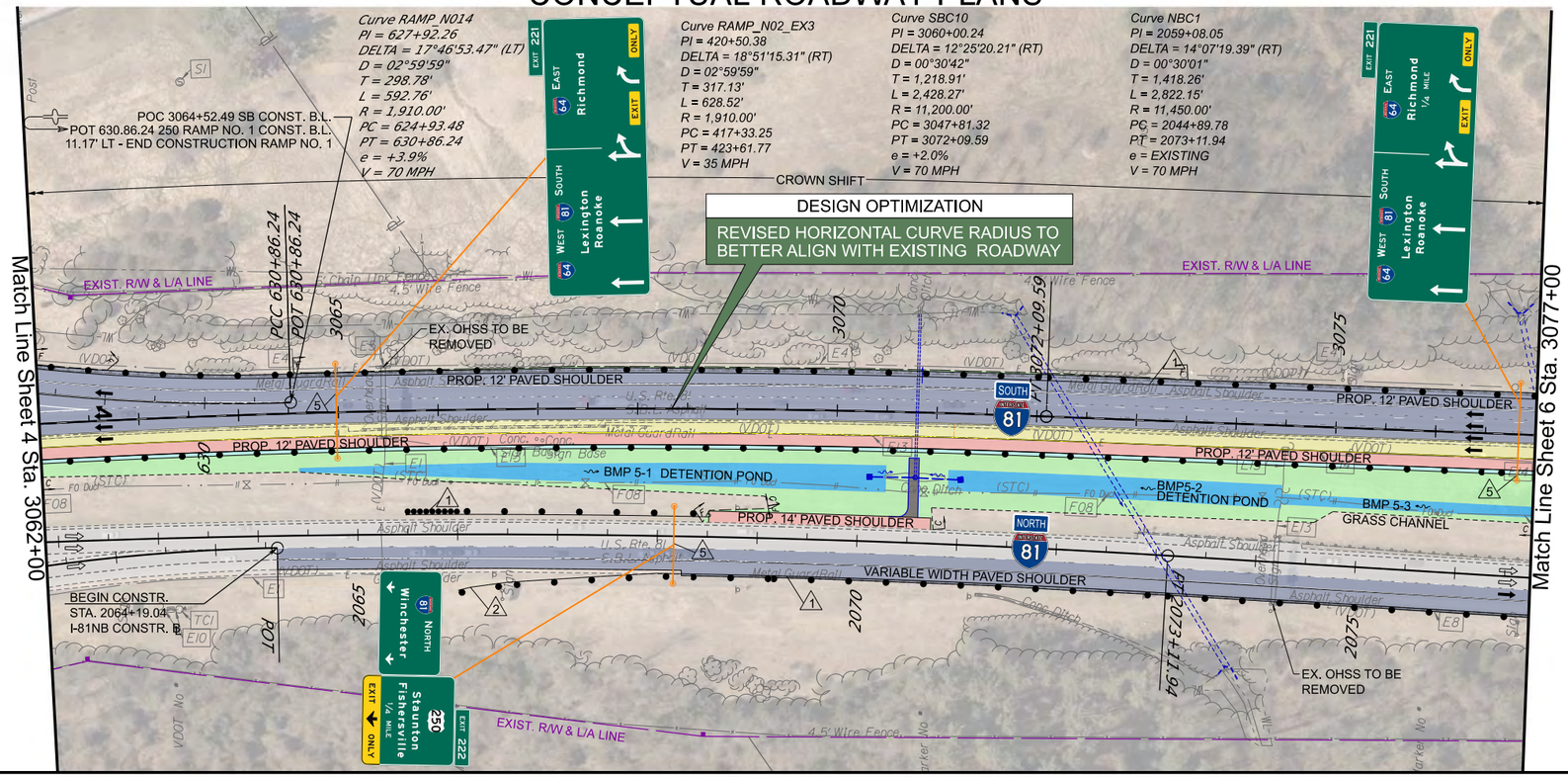
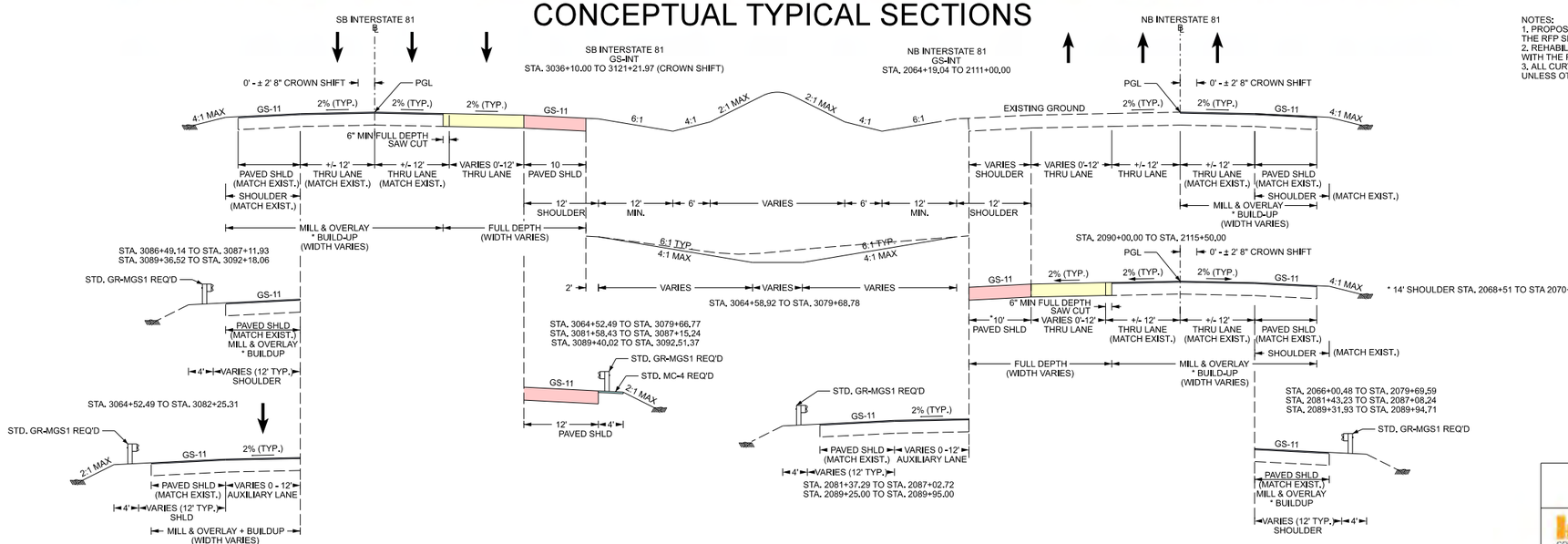
- Existing Railroad R/W & L/A Line
- Proposed Permanent Easement
- Proposed Temp. Construction Ease.

STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	81	0081-007-013 C-501	5

CONCEPTUAL ROADWAY PLANS



CONCEPTUAL TYPICAL SECTIONS



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I-81 WIDENING MM 221 TO MM 225

kokosing CONSTRUCTION COMPANY, INC. | rda

SHEET NO.	PROJECT	PAGE NO.
5	0081-007-013	22

PLAN SCALE 0 75' 150'

LEGEND

- Proposed New Pavement
- Proposed Mill & Overlay
- Proposed Shoulder Pavement
- Proposed Bridge Deck Replacement
- Proposed Standard MC-4
- Proposed BMP
- Median Crossover
- BMP Access Road
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- Proposed Grading
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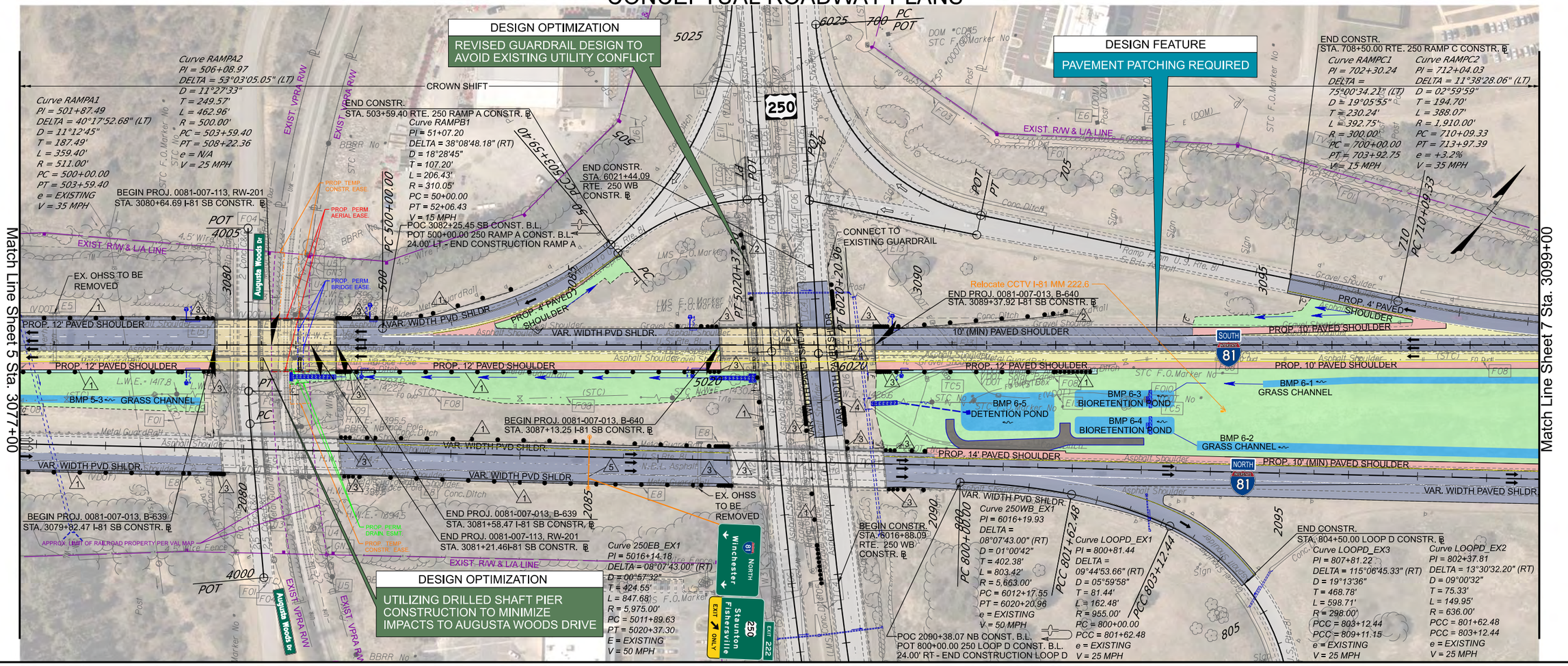
- Proposed Temp. Construction Ease.

STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	81	0081-007-013 C-501	6

CONCEPTUAL ROADWAY PLANS



CONCEPTUAL TYPICAL SECTIONS

SEE SHEET 5 FOR NB/SB INTERSTATE 81 CONCEPTUAL TYPICAL SECTIONS.

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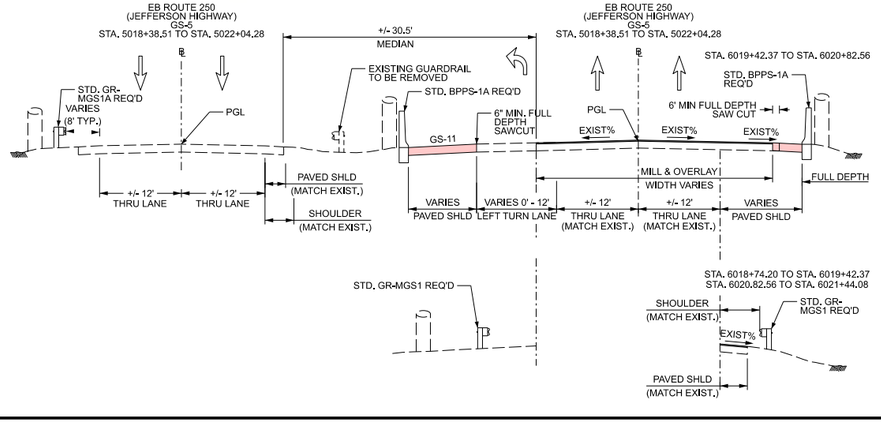

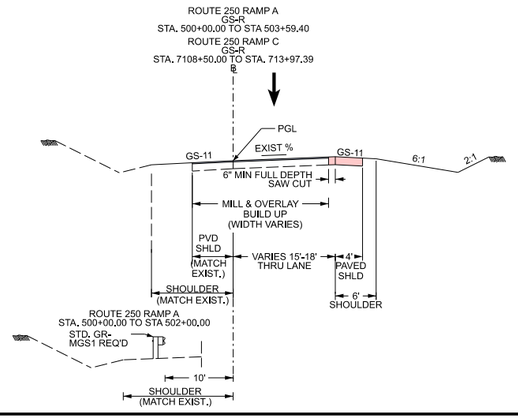

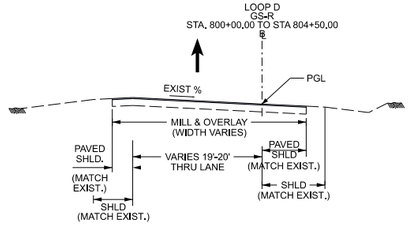

I-81 WIDENING MM 221 TO MM 225

kokosing CONSTRUCTION COMPANY, INC. | rda

PLAN SCALE 0 75' 150'

SHEET NO.	PROJECT	PAGE NO.
6	0081-007-013	23

LEGEND

- Proposed New Pavement
- Proposed Mill & Overlay
- Proposed Shoulder Pavement
- Proposed Bridge Deck Replacement
- Proposed Standard MC-4
- Proposed BMP
- Median Crossover
- BMP Access Road
- Proposed Demolition of Pavement
- Proposed Grading
- Limits of Construction in Cut
- Limits of Construction in Fill
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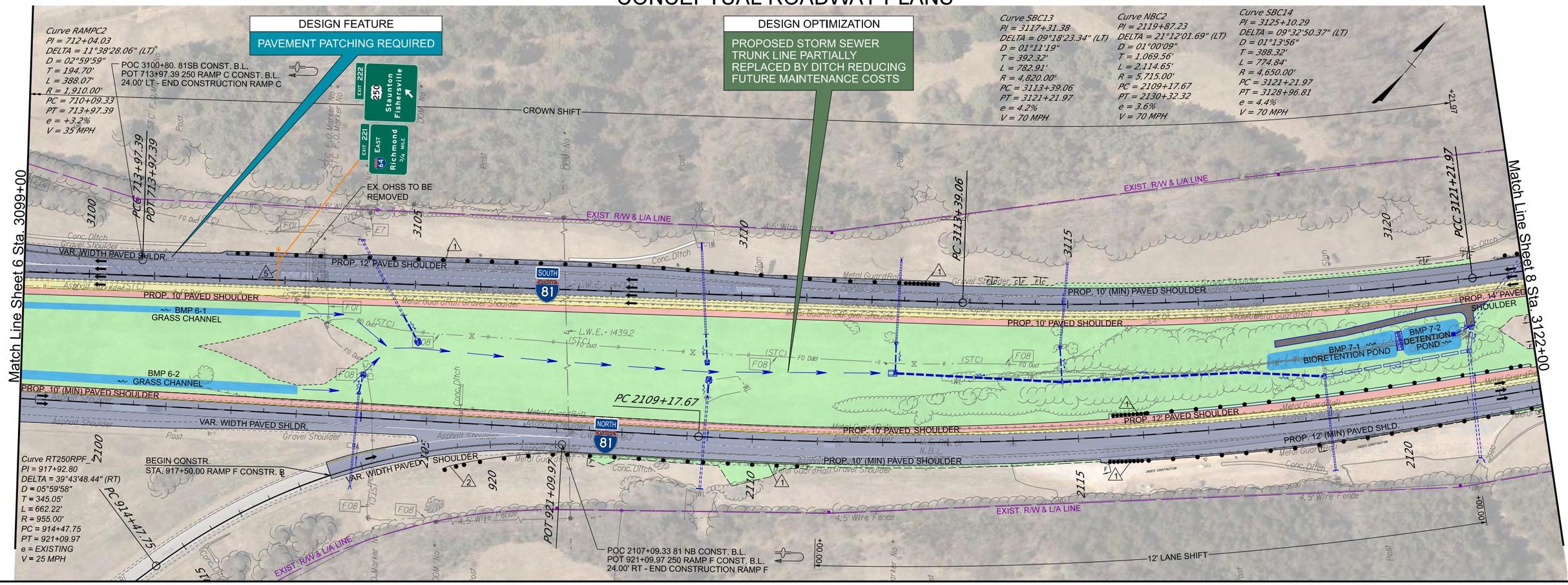
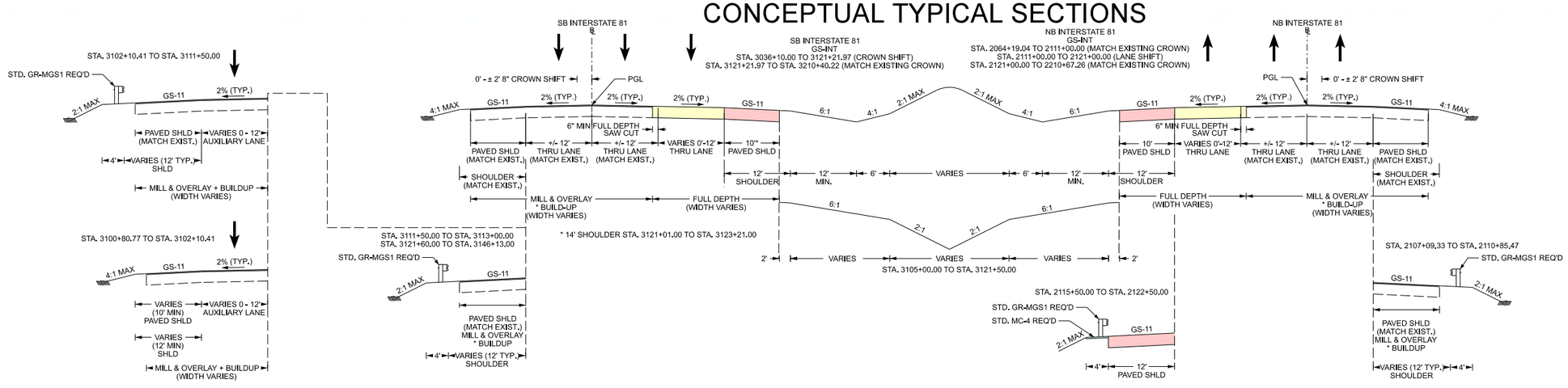
- Proposed Permanent Easement
- Proposed Temp. Construction Ease.

STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	81	0081-007-013 C-501	7

CONCEPTUAL ROADWAY PLANS



CONCEPTUAL TYPICAL SECTIONS



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I-81 WIDENING MM 221 TO MM 225

kokosing CONSTRUCTION COMPANY, INC. | rda

SHEET NO.	PLAN SCALE	PROJECT	PAGE NO.
7	0 75' 150'	0081-007-013	24

LEGEND

- Proposed New Pavement
- Proposed Mill & Overlay
- Proposed Shoulder Pavement
- Proposed Bridge Deck Replacement
- Proposed Standard MC-4
- Proposed BMP
- Median Crossover
- BMP Access Road
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- Proposed Grading
- Limits of Construction in Cut
- Limits of Construction in Fill
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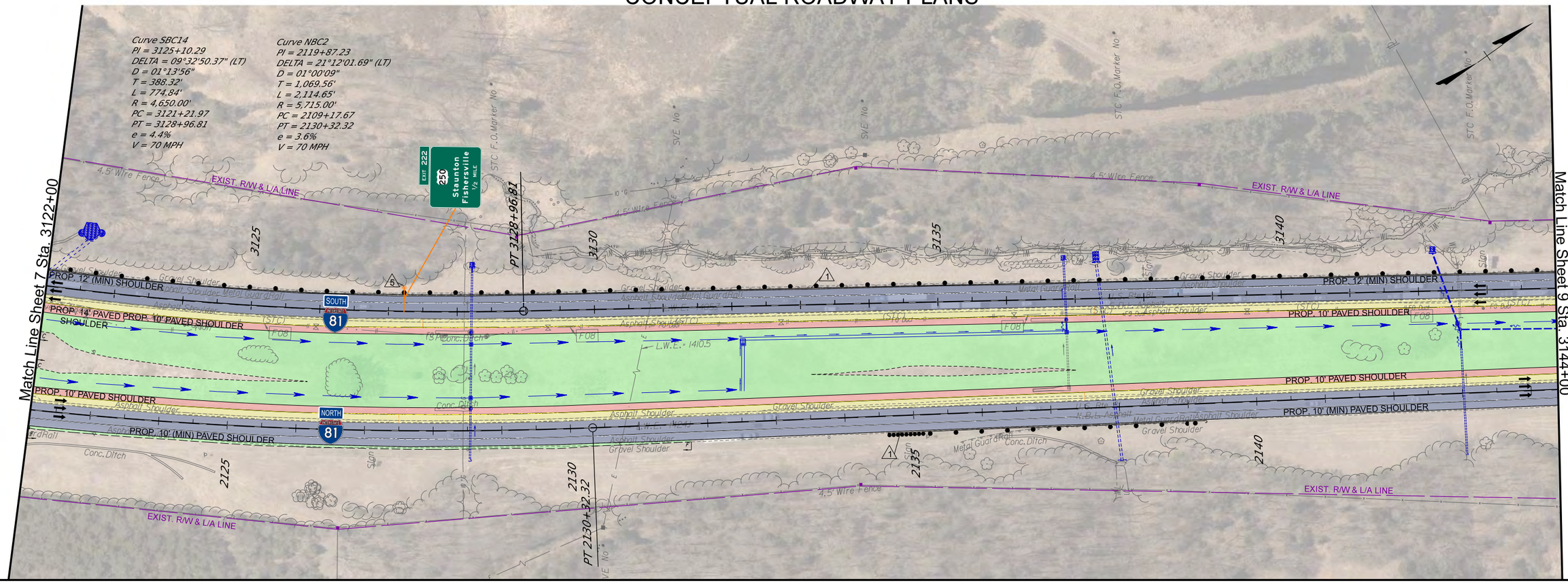
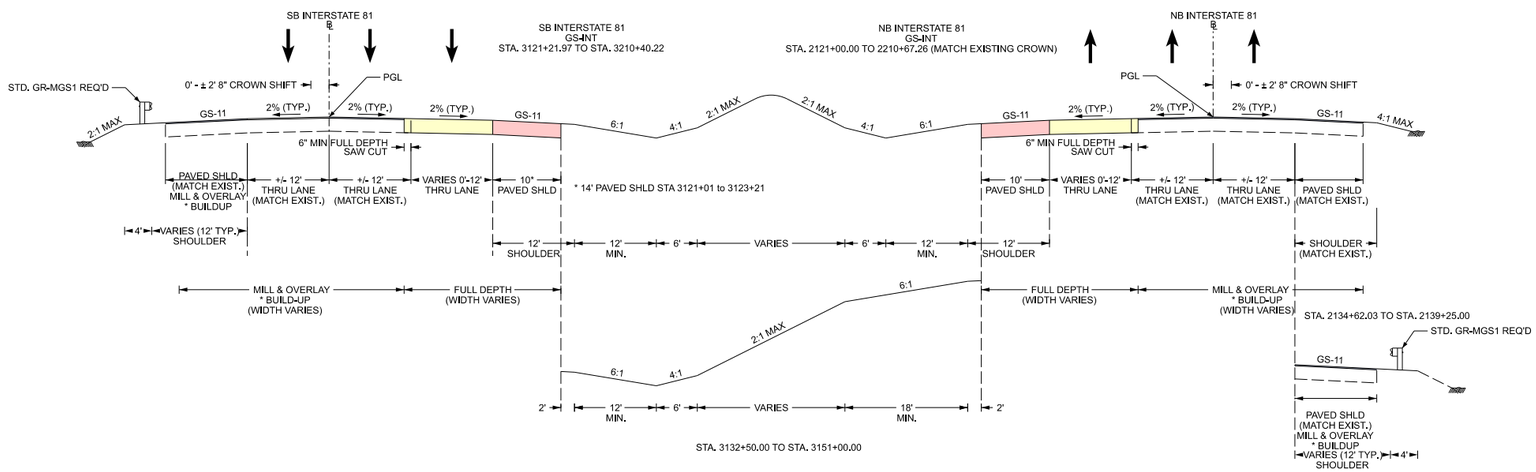
- Proposed Permanent Easement
- Proposed Temp. Construction Ease.

STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	81	0081-007-013 C-501	8

CONCEPTUAL ROADWAY PLANS



CONCEPTUAL TYPICAL SECTIONS



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I-81 WIDENING MM 221 TO MM 225

kokosing CONSTRUCTION COMPANY, INC. | rda

SHEET NO.	PLAN SCALE	PROJECT	PAGE NO.
8	0 75' 150'	0081-007-013	25

LEGEND

- Proposed New Pavement
- Proposed Mill & Overlay
- Proposed Shoulder Pavement
- Proposed Bridge Deck Replacement
- Proposed Standard MC-4
- Proposed BMP
- Median Crossover
- BMP Access Road
- Proposed Demolition of Pavement
- Proposed Grading
- Limits of Construction in Cut
- Limits of Construction in Fill
- Proposed Standard GR-MGS
- Proposed Standard GR-6
- Proposed Standard GR-FOA
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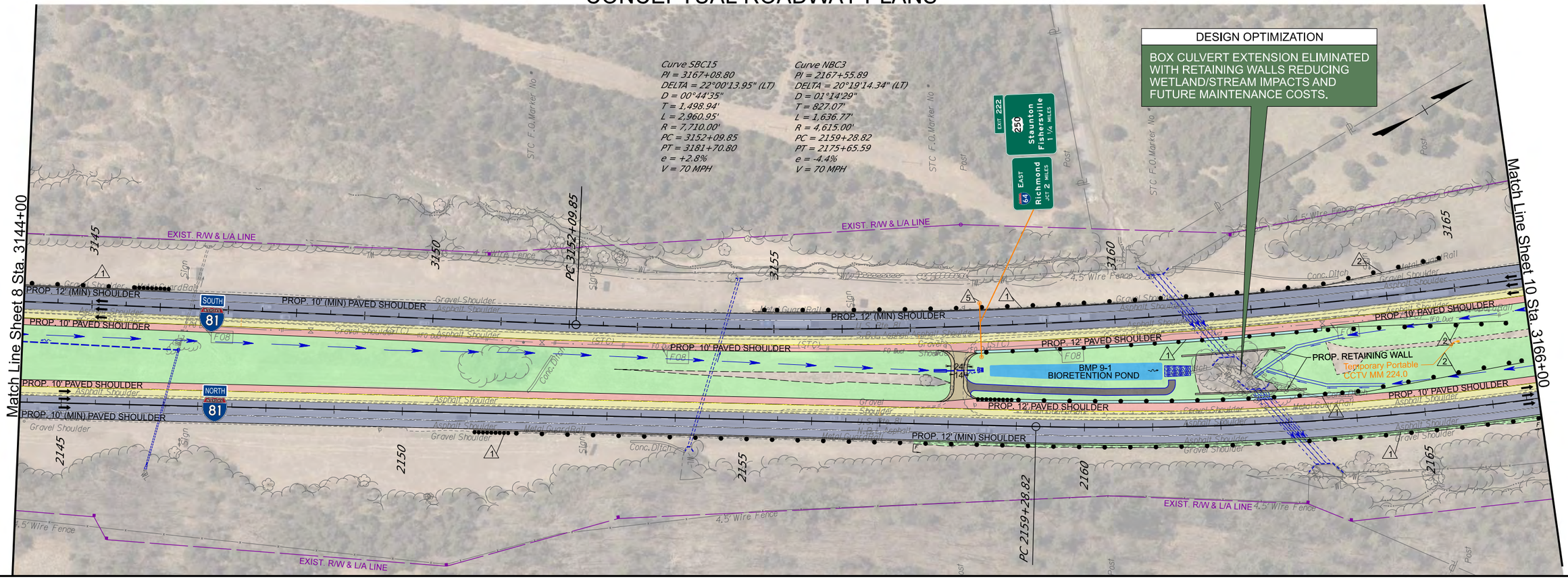
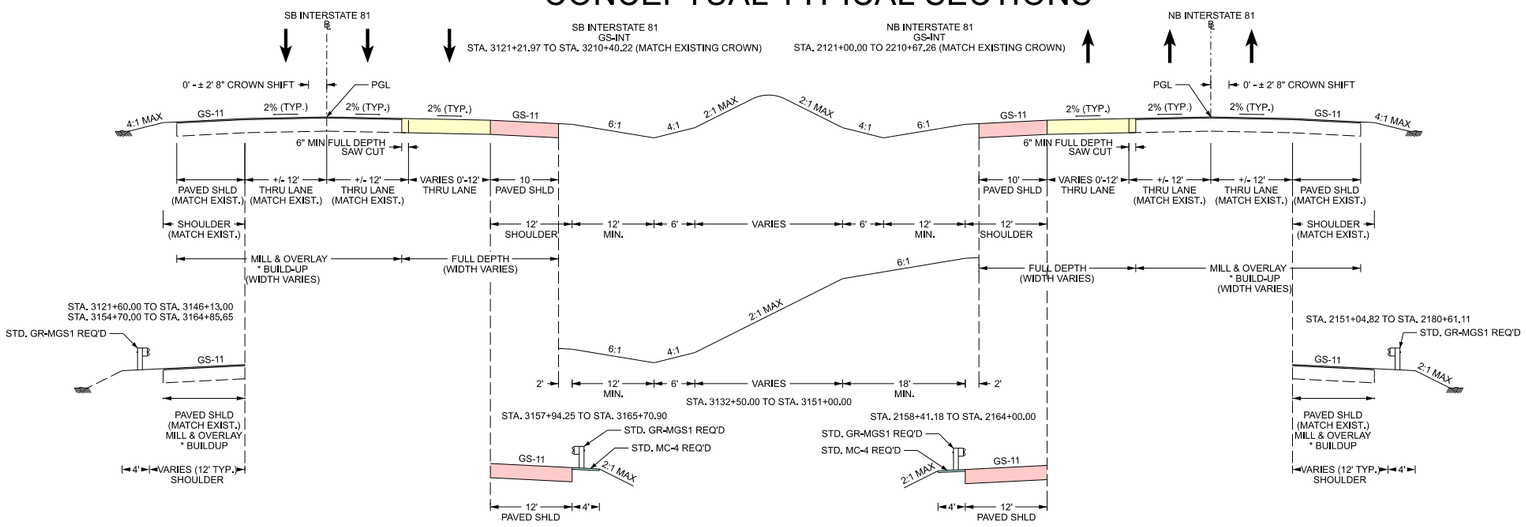
- Existing Utility To Be Removed / Abandoned
- Existing Railroad R/W & L/A Line
- Proposed Permanent Easement
- Proposed Temp. Construction Ease.

STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	81	0081-007-013 C-501	9

CONCEPTUAL ROADWAY PLANS



CONCEPTUAL TYPICAL SECTIONS



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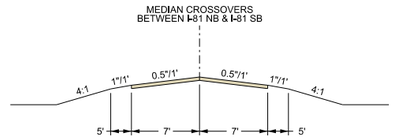
MEDIAN CROSSOVERS BETWEEN I-81 NB & I-81 SB



I-81 WIDENING MM 221 TO MM 225

kokosing CONSTRUCTION COMPANY, INC. | rda

SHEET NO.	PLAN SCALE	PROJECT	PAGE NO.
9	0 75' 150'	0081-007-013	26

LEGEND

- Proposed New Pavement
- Proposed Mill & Overlay
- Proposed Shoulder Pavement
- Proposed Bridge Deck Replacement
- Proposed Standard MC-4
- Proposed BMP
- Median Crossover
- BMP Access Road
- Proposed Demolition of Pavement
- Proposed Grading
- Limits of Construction in Cut
- Limits of Construction in Fill
- Proposed Standard GR-MGS
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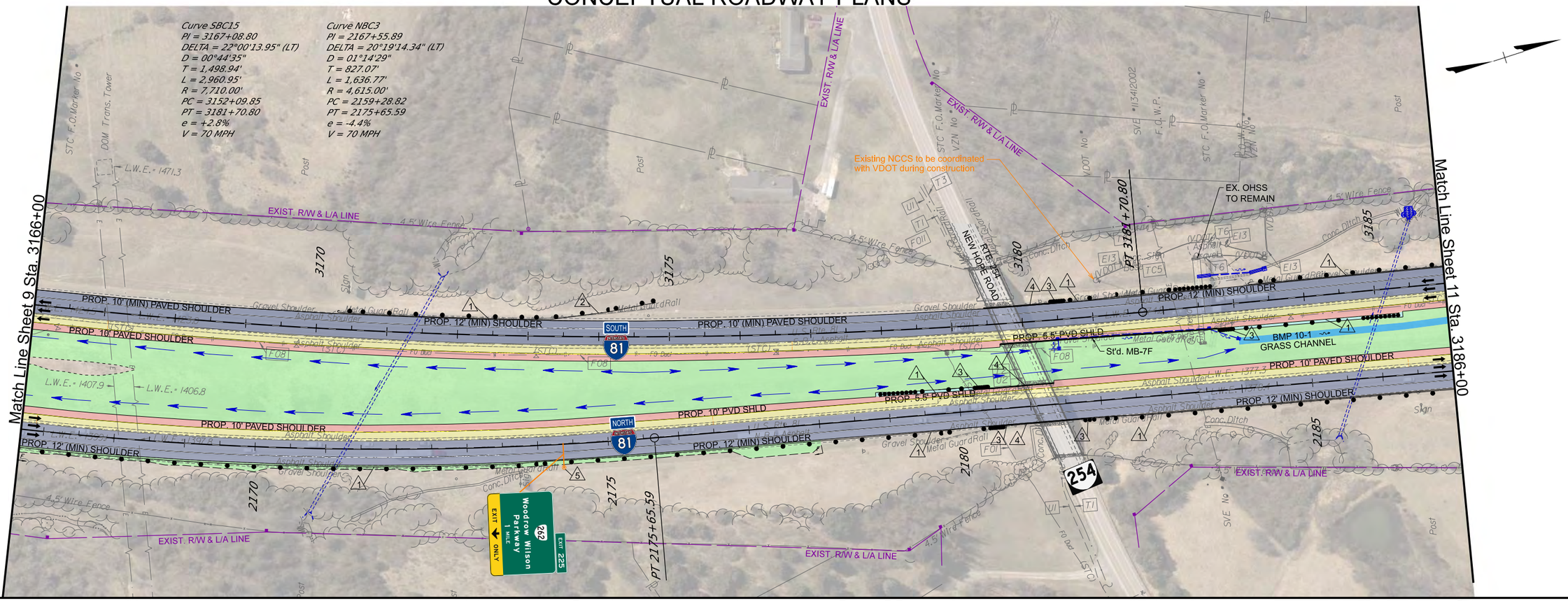
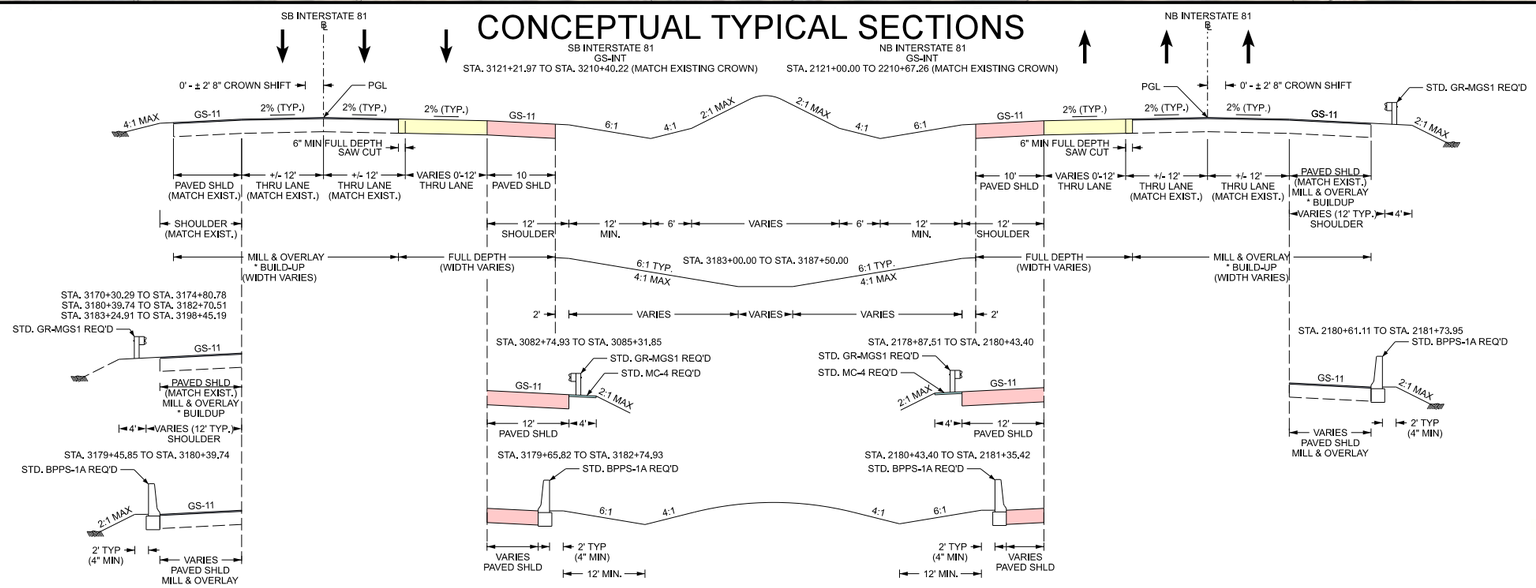
- Proposed Permanent Easement
- Proposed Temp. Construction Ease.

STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	81	0081-007-013 C-501	10

CONCEPTUAL ROADWAY PLANS



CONCEPTUAL TYPICAL SECTIONS



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I-81 WIDENING MM 221 TO MM 225

kokosing CONSTRUCTION COMPANY, INC. | rda

PLAN SCALE	PROJECT	SHEET NO.	PAGE NO.
0 75' 150'	0081-007-013	10	27

LEGEND

- Proposed New Pavement
- Proposed Mill & Overlay
- Proposed Shoulder Pavement
- Proposed Bridge Deck Replacement
- Proposed Standard MC-4
- Proposed BMP
- Median Crossover
- BMP Access Road
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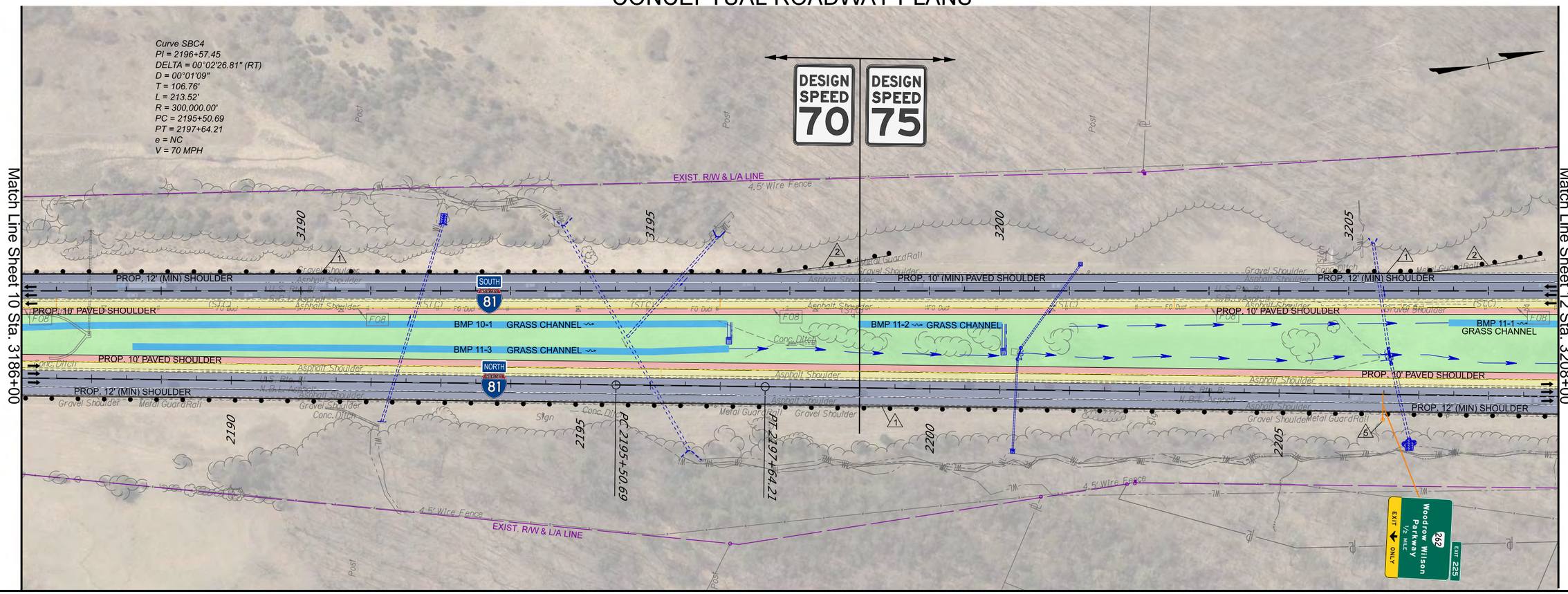
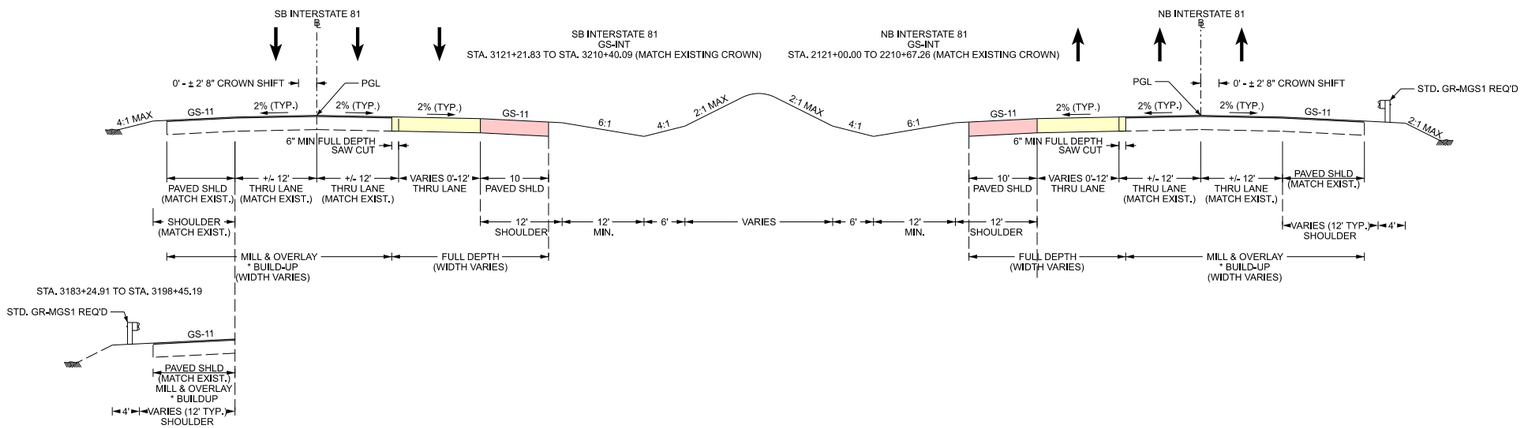
STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	81	0081-007-013 C-501	11

CONCEPTUAL ROADWAY PLANS



CONCEPTUAL TYPICAL SECTIONS



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I-81 WIDENING MM 221 TO MM 225

kokosing CONSTRUCTION COMPANY, INC. | rda

PLAN SCALE	PROJECT	SHEET NO.	PAGE NO.
0 75' 150'	0081-007-013	11	28

LEGEND

- Proposed New Pavement
- Proposed Mill & Overlay
- Proposed Shoulder Pavement
- Proposed Bridge Deck Replacement
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- Proposed BMP
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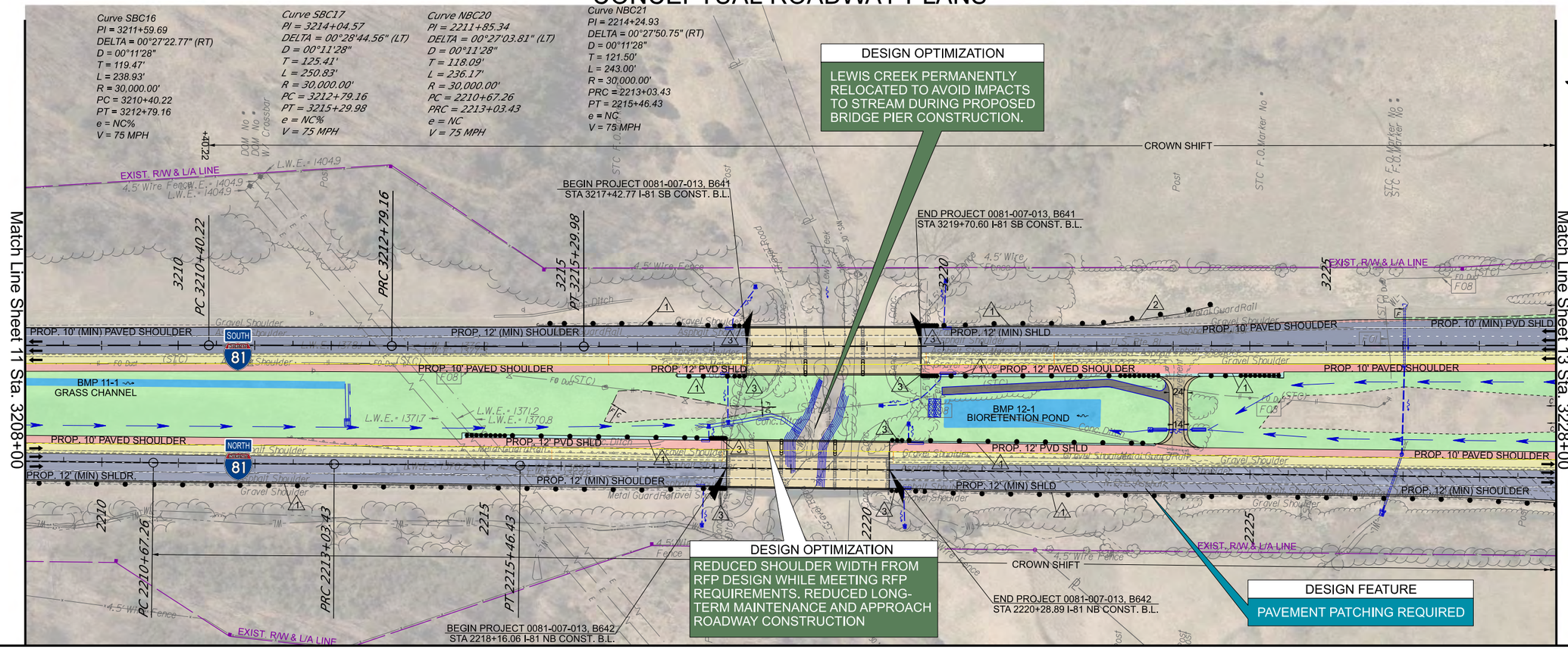
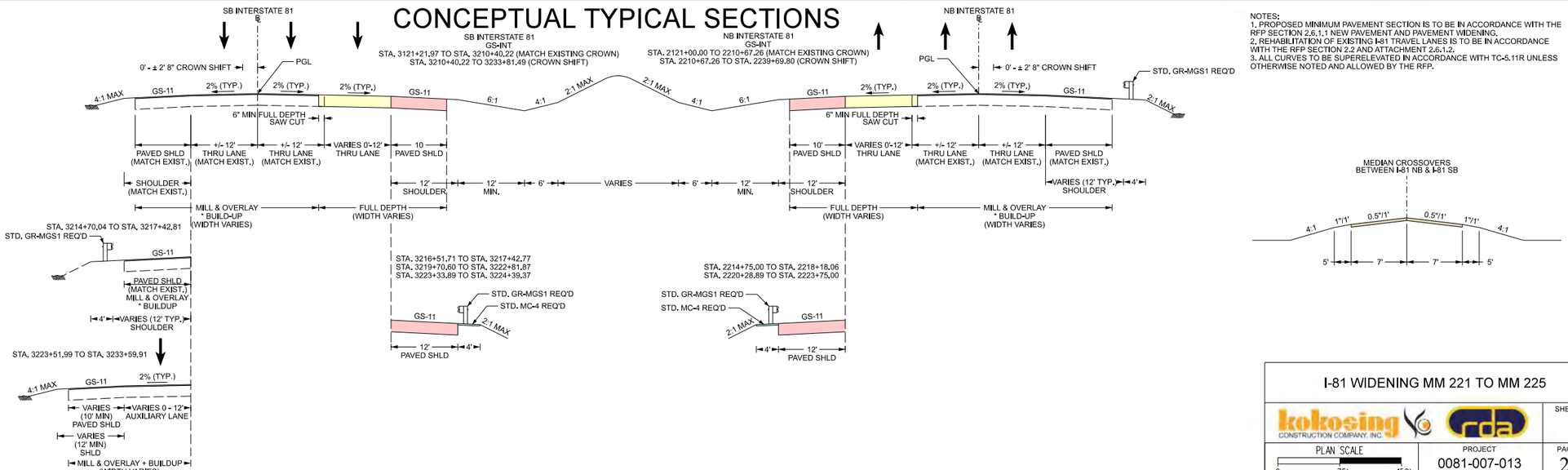
STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	81	0081-007-013 C-501	12

CONCEPTUAL ROADWAY PLANS



CONCEPTUAL TYPICAL SECTIONS



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MEDIAN CROSSOVERS BETWEEN I-81 NB & I-81 SB

I-81 WIDENING MM 221 TO MM 225

kokosing CONSTRUCTION COMPANY, INC. | rda

SHEET NO.	PROJECT	PAGE NO.
12	0081-007-013	29

PLAN SCALE 0 75' 150'

LEGEND

- Proposed New Pavement
- Proposed Mill & Overlay
- Proposed Shoulder Pavement
- Proposed Bridge Deck Replacement
- Proposed Standard MC-4
- Proposed BMP
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STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	81	0081-007-013 C-501	13

CONCEPTUAL ROADWAY PLANS

Curve SBC18
PI = 3231+28.41
DELTA = 07°57'29.95" (RT)
D = 01°34'11"
T = 253.90'
L = 506.98'
R = 3,650.00'
PC = 3228+74.51
PCC = 3233+81.49
e = 6.0%
V = 75 MPH

Curve SBC7
PI = 2234+91.83
DELTA = 14°06'57.42" (RT)
D = 01°28'09"
T = 482.87'
L = 960.84'
R = 3,900.00'
PC = 2230+08.96
PCC = 2239+69.80
e = 5.8%
V = 75 MPH

Curve SBC21
PI = 13+21.85
DELTA = 28°39'28.58" (RT)
D = 04°32'50"
T = 321.85'
L = 630.22'
R = 1,260.00'
PC = 10+00.00
PT = 16+30.22
e = 5.3%
V = 40 MPH

DESIGN OPTIMIZATION

PROPOSED BIORETENTION RELOCATED TO AVOID PERMANENT IMPACTS TO WETLANDS.

Match Line Sheet 12 Sta. 3228+00

CROWN SHIFT

PC 3228+74.51

PCC 3233+81.49

POT 39+94.93

POC 3235+75.62 81SB CONST. B.L.
POT 39+94.93 RT 262 RAMP C CONST. B.L.
24.00' LT - END CONSTRUCTION RAMP C

BEGIN CONSTRUCTION
RT 262 RAMP C CONST B.L.
STA. 32+90.00

EXIST. R/W & L/A LINE

PROP. 10' (MIN) PVD SHLD

PROP. 10' PVD SHLD

PROP. 12' SHOULDER

PROP. 14' PVD SHLD

PROP. 10' PAVED SHLD

PROP. 10' PAVED SHOULDER

PROP. 10' (MIN)PAVED SHOULDER

VAR. WIDTH PAVED SHOULDER

BMP 13-1
BIORETENTION
POND

BMP 13-2 GRASS CHANNEL

BMP 13-3 GRASS CHANNEL

END PROJECT 0081-007-013, PE-101
STA 3245+50.00 I-81 SB CONST. B.L.

END PROJECT 0081-007-013, C-501
STA 3241+50.00 I-81 SB CONST. B.L.

END CONSTRUCTION
I-81 NB CONST B.L.
STA. 2244+00.00

PC 10+00.00

PCC 2239+69.80

POT 32+71+38.62

POT 30+00.00

SOUTH 81

NORTH 81

Curve SBC19
PI = 3240+67.28
DELTA = 20°21'19.94" (RT)
D = 01°30'00"
T = 685.80'
L = 1,357.14'
R = 3,820.00'
PCC = 3233+81.49
PT = 3247+38.62
e = 5.8%
V = 75 MPH

Curve SBC8
PI = 2244+23.21
DELTA = 13°44'01.62" (RT)
D = 01°31'18"
T = 453.41'
L = 902.47'
R = 3,765.00'
PCC = 2239+69.80
PT = 2248+72.27
e = 6.7%
V = 75 MPH

PC 2230+08.96

POC 2232+81.08 I-81 NB CONST. B.L.
PC 10+00.00 RT 262 RAMP A CONST. B.L.
14.77' RT - BEGIN CONSTRUCTION RT 262 RAMP A

END CONSTRUCTION
RT 262 RAMP A
CONST B.L. STA. 14+75.00

PT 16+30.22

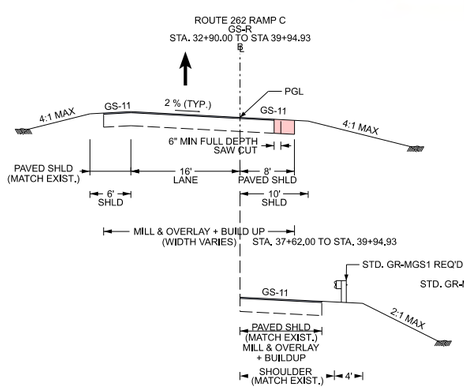
POT 24+01.20

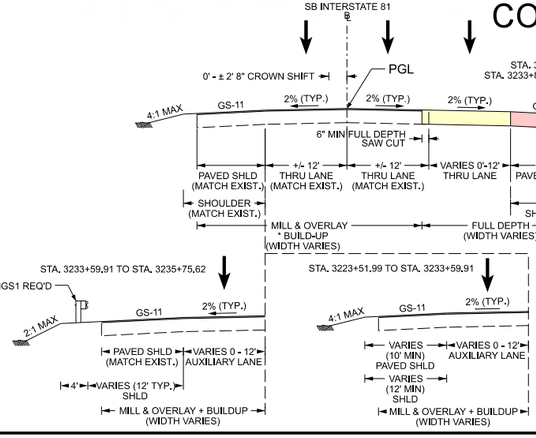
DESIGN FEATURE

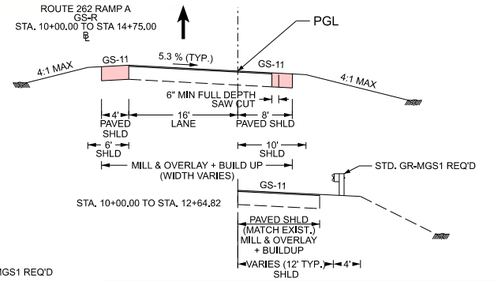
PAVEMENT PATCHING REQUIRED

Woodrow Wilson Parkway EXIT ONLY 289 EXIT 225

CONCEPTUAL TYPICAL SECTIONS







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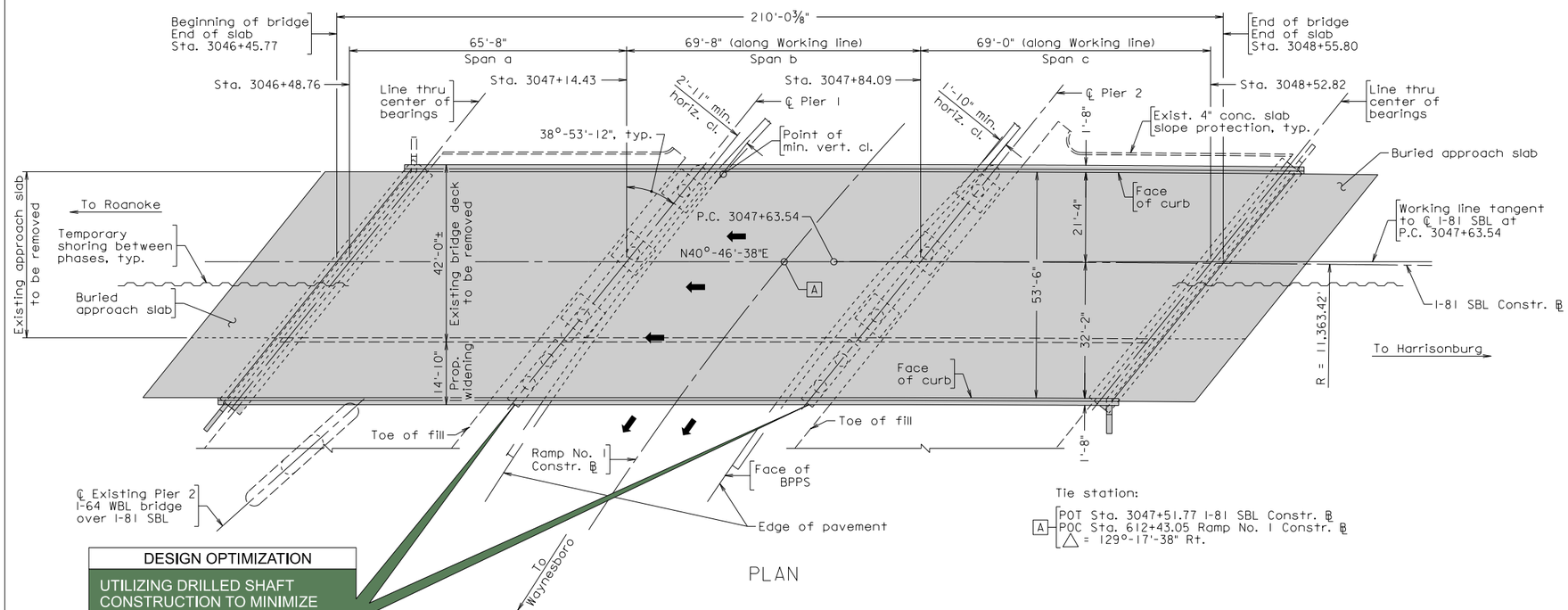
I-81 WIDENING MM 221 TO MM 225

kokosing CONSTRUCTION COMPANY, INC. | rda

SHEET NO.	PLAN SCALE	PROJECT	PAGE NO.
13	0 75' 150'	0081-007-013	30

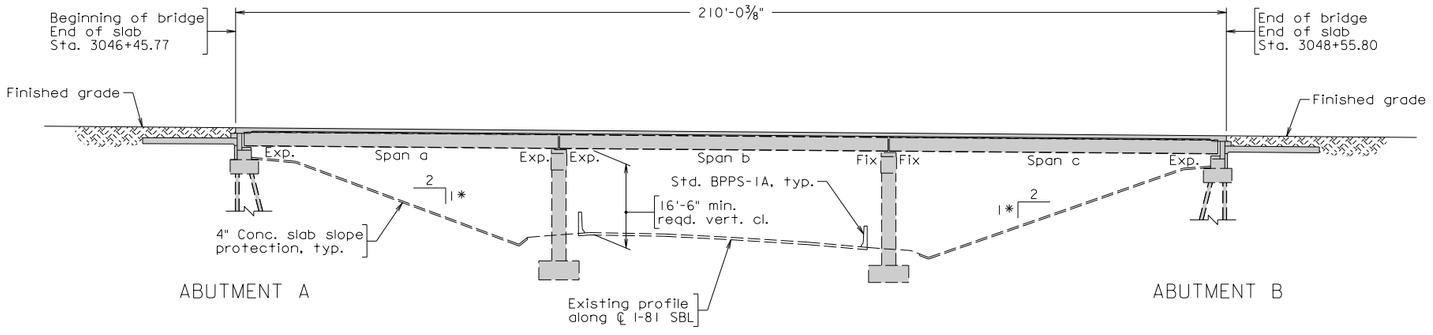
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	NHPP-081-2(329)	81	0081-007-013, B638	X
Federal Structure No.		0000000000001791	FHWA Construction and Scour Code:		X271-SN
Federal Stewardship and Oversight Code:		F0			UPC No. 116269



PLAN

DESIGN OPTIMIZATION

UTILIZING DRILLED SHAFT CONSTRUCTION TO MINIMIZE IMPACTS TO EXISTING ROADWAY



*Normal to abutment

DEVELOPED SECTION ALONG ℄ I-81 SBL

DESIGN EXCEPTION(S):

1. Reduced shoulder widths.
2. Modified BPB-4 parapet.

EXISTING STRUCTURE GENERAL NOTES:

Capacity: HS-20-44 loading and Bureau of Public Roads modified loading for military vehicles.

Specifications:

General: Virginia Department of Highways Road and Bridge Specifications, 1958.

Design: AASHO Standard Specifications for Highway Bridges, 1961.

PROPOSED STRUCTURE GENERAL NOTES:

The original approved sheet, including original signatures, is filed in the VDOT Central Office. Any misuse of electronic files, including scanned signatures, is illegal. Violators will be prosecuted to the full extent of the applicable laws.

Width: 53'-6" face-to-face of curbs.

Span layout: 65'-8" - 69'-8" - 69'-0" steel rolled beams.

Capacity: HL-93 loading.

Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2020.

Design: AASHTO LRFD Bridge Design Specifications, 8th Edition, 2017; and VDOT Modifications.

Standards: Virginia Department of Transportation Road and Bridge Standards, 2016; including all current revisions.

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

Virginia Structure No. of existing bridge is 2028. Plan No. 193-09, 193-09A and 193-09B.

The existing structure is designated a Type B structure in accordance with Sec. 411.

VDOT

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF TRANSPORTATION

PROPOSED BRIDGE REPAIRS AND WIDENING
I-81 SBL OVER RAMP 1
AUGUSTA COUNTY - 0.62 MI. S. OF RTE. 250
PROJECT 0081-007-013, B638

Recommended for Approval: _____ _____
(Developer) Date

Approved: _____ _____
Chief Engineer Date

193-09C

Date: December 2022 © 2022, Commonwealth of Virginia Sheet X of X

PLANS BY:	WBCM
COORDINATED:	Mitchell Dobres
SUPERVISED:	Mitchell Dobres
DESIGNED:	Deanna Schreiber
DRAWN:	Deanna Schreiber
CHECKED:	Mitchell Dobres

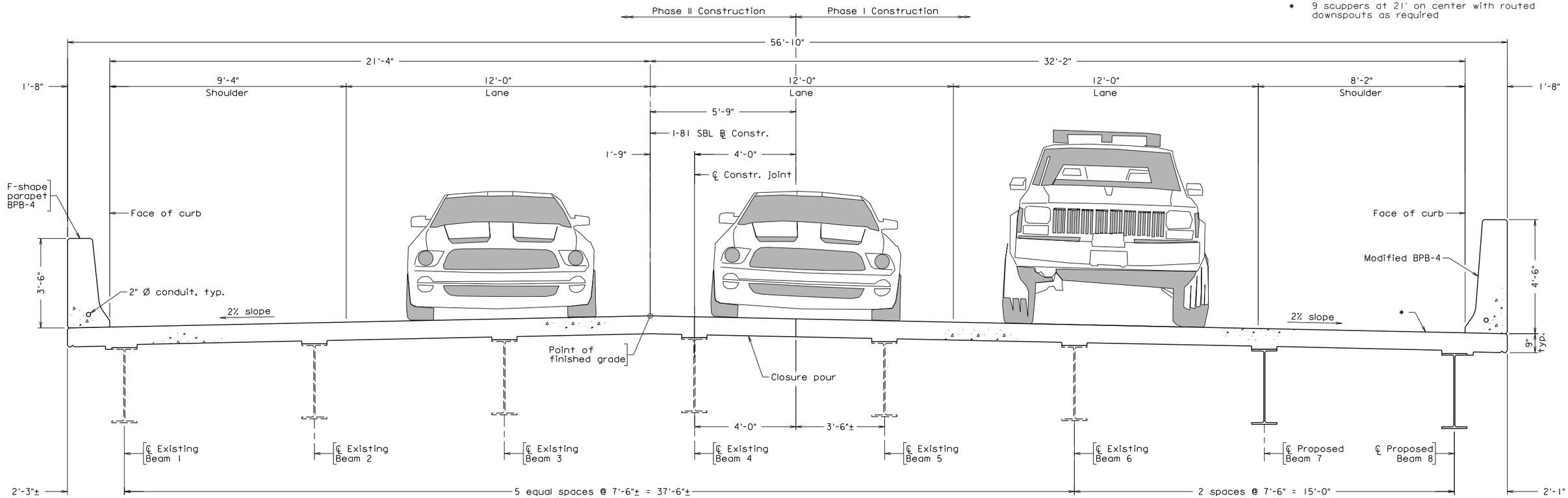
Scale: 1/16" = 1'-0"

c:\pwworking\dms12433\193-09C.001.dgn

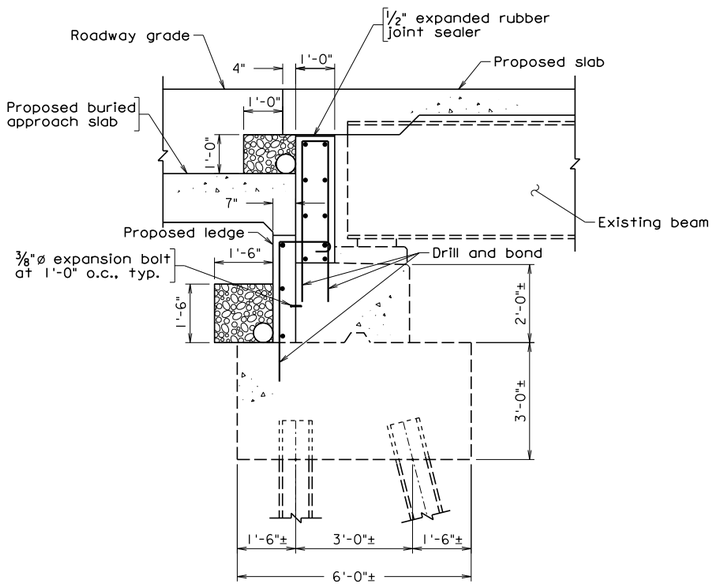
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—				

LEGEND:

* 9 scuppers at 21' on center with routed downspouts as required



TRANSVERSE SECTION SBL OVER RAMP I



TYPICAL ABUTMENT SECTION

Section at existing abutment

Scale: ½" = 1'-0"

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

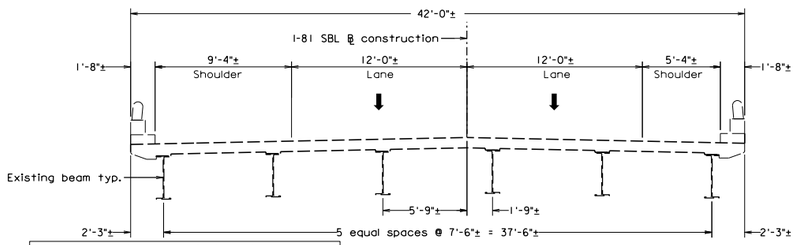
TRANSVERSE SECTION AND ABUTMENT SECTION

Designed: DMS.... Drawn: .....DMS.... Checked: .MEP...	Date	Plan No.	Sheet No.
	Dec. 2022	193-09C	

193-09C_002.dgn

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—				

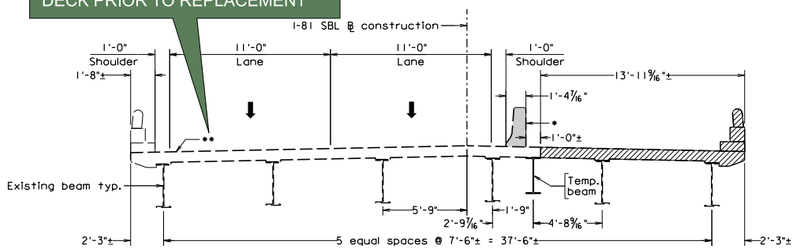
LEGEND:
- Denotes portion of existing structure to be removed
- Denotes new construction
- * MB-10A temporary barrier service
- ** 5 - 6" diameter cored scuppers through existing deck



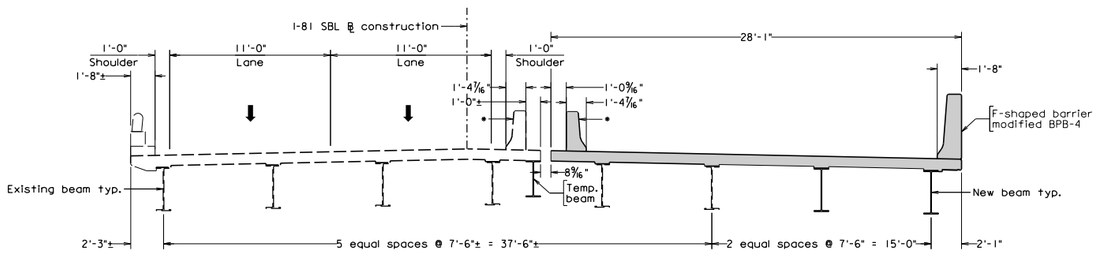
EXISTING

DESIGN OPTIMIZATION

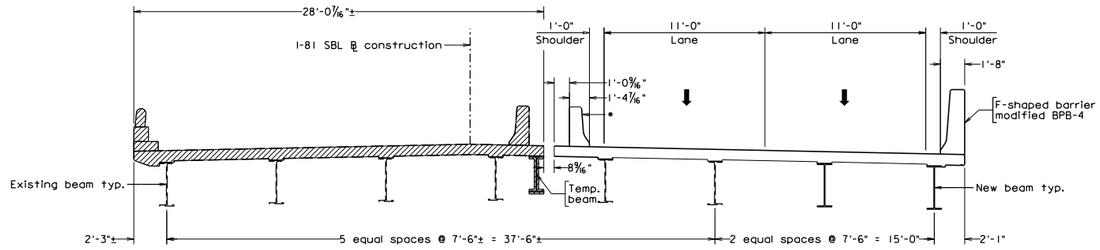
MITIGATING SPREAD INTO TRAVEL LANES BY CORING EXISTING DECK PRIOR TO REPLACEMENT



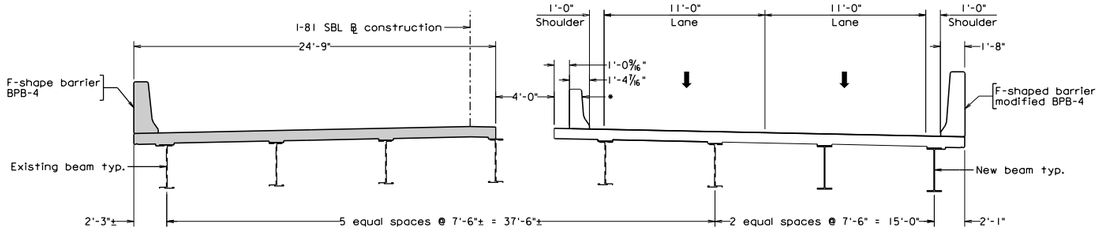
PHASE I - DEMOLITION



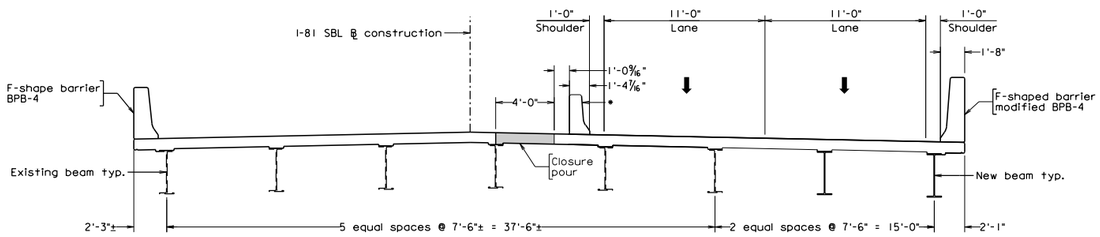
PHASE I - CONSTRUCTION



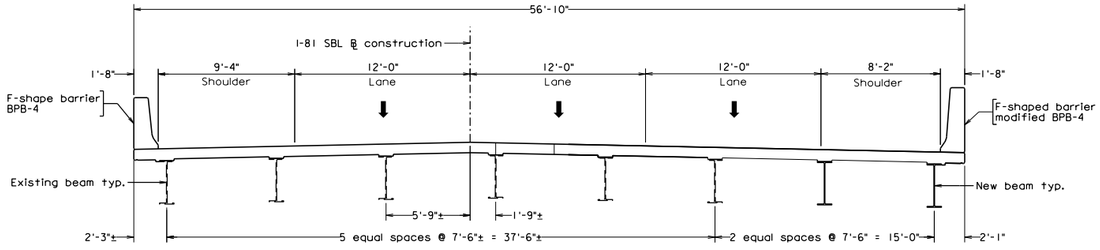
PHASE II - DEMOLITION



PHASE II - CONSTRUCTION



PHASE II - CLOSURE POUR



FINAL

Scale: ⅜" = 1'-0"

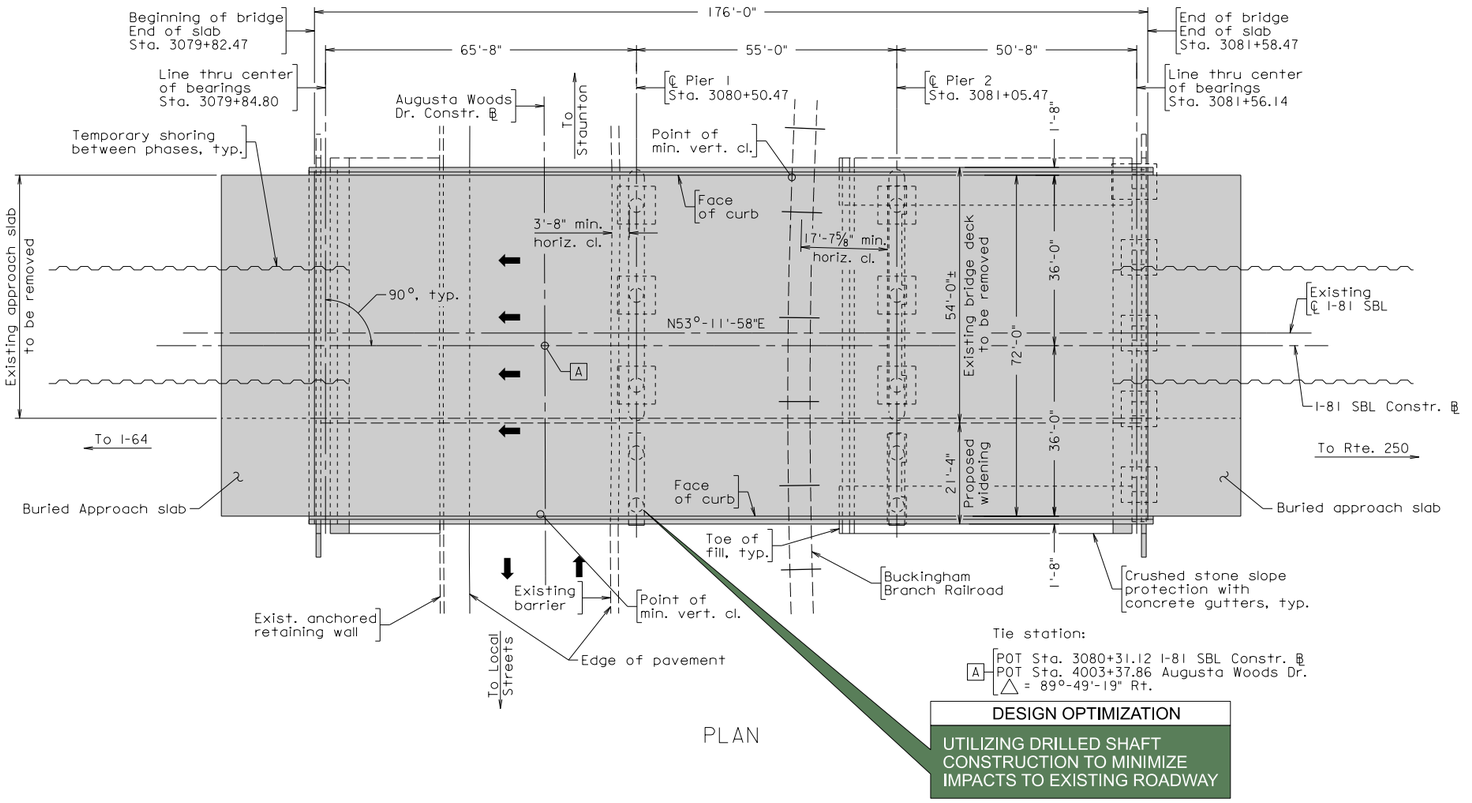
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

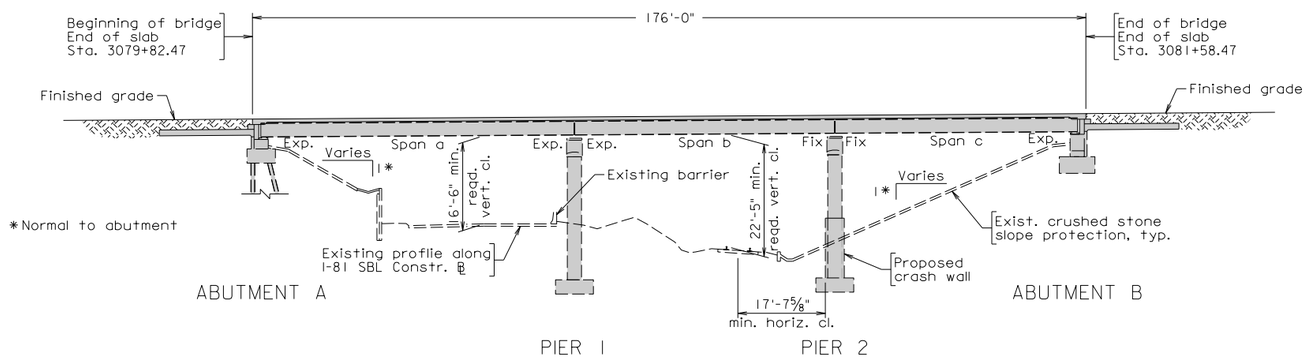
SEQUENCE OF CONSTRUCTION

Designed: DMS	Date	Plan No.	Sheet No.
Drawn: DMS	Dec. 2022	193-09C	
Checked: MED			

193-09C_011.dgn



PLAN



DEVELOPED SECTION ALONG I-81 SBL CONSTR. ℄

PLANS BY:	WBCM
COORDINATED:	Mitchell Dobres
SUPERVISED:	Mitchell Dobres
DESIGNED:	Deanna Schreiber
DRAWN:	Deanna Schreiber
CHECKED:	Mitchell Dobres

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

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	NHPP-081-2(329)	81	0081-007-013, B639	X
Federal Structure No.		0000000000001808	FHWA Construction and Scour Code:		X271-SN
Federal Stewardship and Oversight Code:		F0			UPC No. 116269

DESIGN EXCEPTION(S):

EXISTING STRUCTURE GENERAL NOTES:

Capacity: HS-20-44 loading and Bureau of Public Roads modified loading for military vehicles.

Specifications:

General: Virginia Department of Highways Road and Bridge Specifications, 1958.

Design: AASHO Standard Specifications for Highway Bridges, 1961.

PROPOSED STRUCTURE GENERAL NOTES:

The original approved sheet, including original signatures, is filed in the VDOT Central Office. Any misuse of electronic files, including scanned signatures, is illegal. Violators will be prosecuted to the full extent of the applicable laws.

Width: 72'-0" face-to-face of curbs.

Span layout: 65'-8" - 55'-0" - 50'-8" steel rolled beams.

Capacity: HL-93 loading.

Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2020.

Design: AASHTO LRFD Bridge Design Specifications, 8th Edition, 2017; and VDOT Modifications.

Standards: Virginia Department of Transportation Road and Bridge Standards, 2016; including all current revisions.

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

Virginia Structure No. of existing bridge is 2045. Plan No. 193-07 and 193-07A.

The existing structure is designated a Type B structure in accordance with Sec. 411.

VDOT

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF TRANSPORTATION

PROPOSED BRIDGE REPAIRS AND WIDENING I-81 SBL OVER AUGUSTA WOODS DRIVE AND BUCKINGHAM BRANCH RAILROAD AUGUSTA COUNTY - 0.6 MI. N. OF I-81/I-64 INTERCHANGE PROJECT 0081-007-013, B639

Recommended for Approval: _____ _____
(Developer) Date

Approved: _____ _____
Chief Engineer Date

193-07B

Date: December 2022 Sheet X of X

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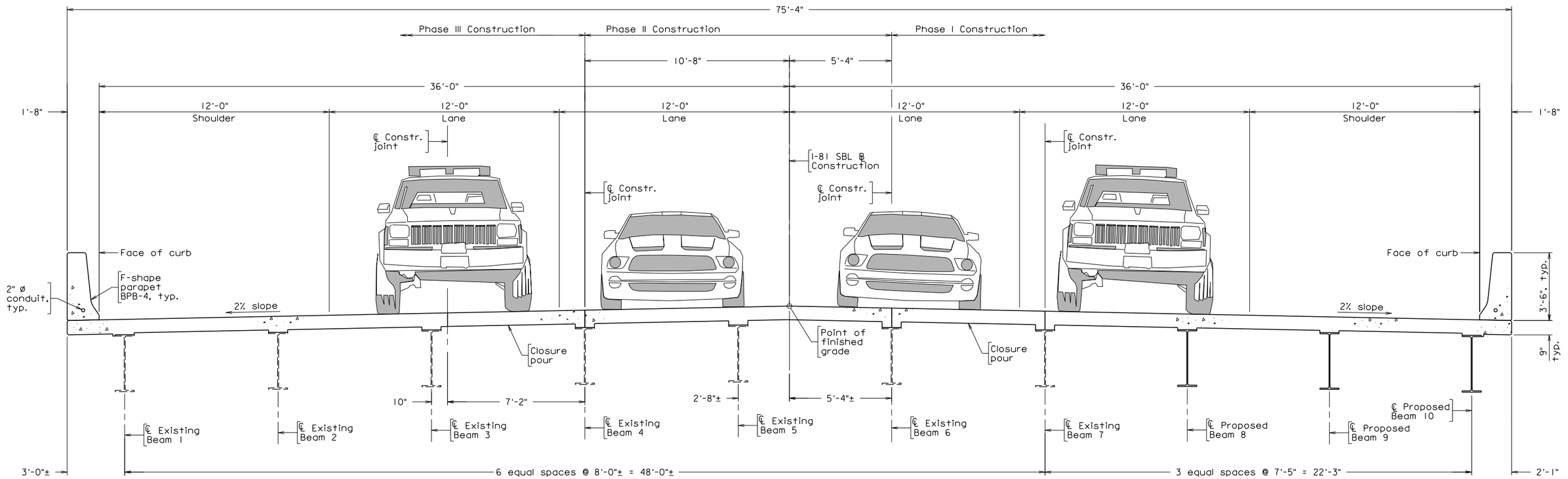
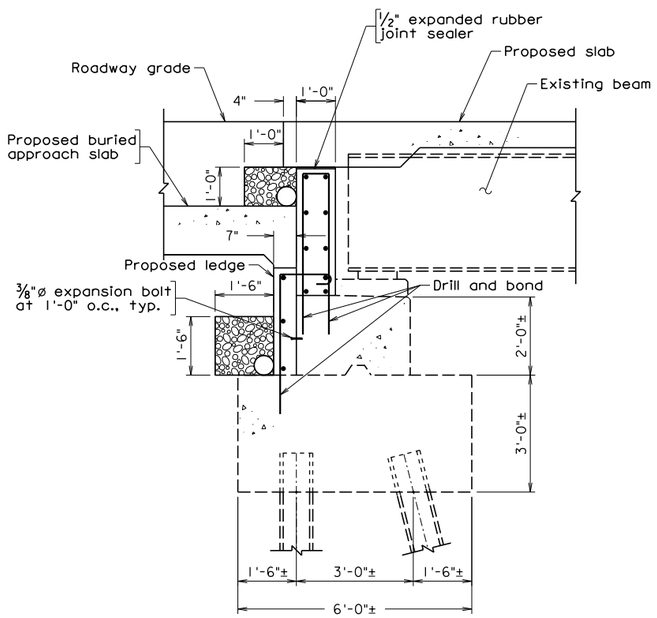
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—				



TRANSVERSE SECTION SBL OVER AUGUSTA WOODS DRIVE

Scale: ⅜" = 1'-0"



TYPICAL ABUTMENT SECTION

Section at existing abutment

193-07B_004.dgn

Scale as noted

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

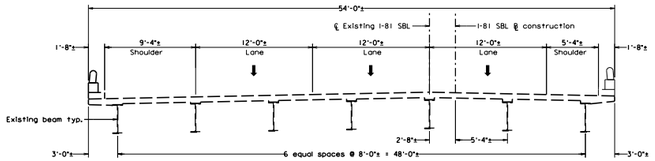
STRUCTURE AND BRIDGE DIVISION

TRANSVERSE SECTION AND ABUTMENT SECTION

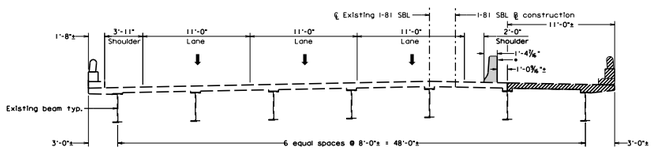
Designed: DMS	Date	Plan No.	Sheet No.
Drawn: DMS	Dec. 2022	193-07B	
Checked: MED			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—				

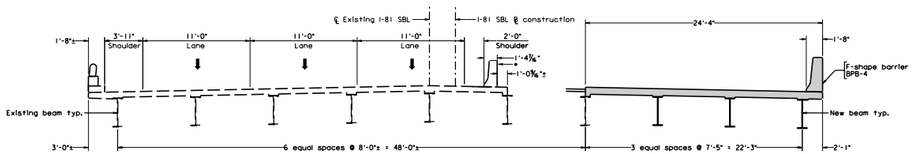
LEGEND:
LEGEND:
Denotes portion of existing structure to be removed
Denotes new construction
* MB-10A temporary barrier service



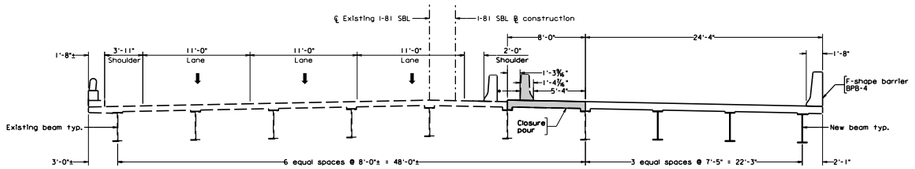
EXISTING



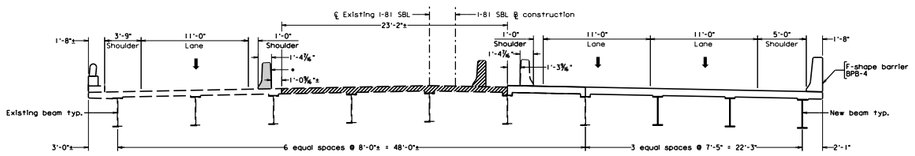
PHASE I - DEMOLITION



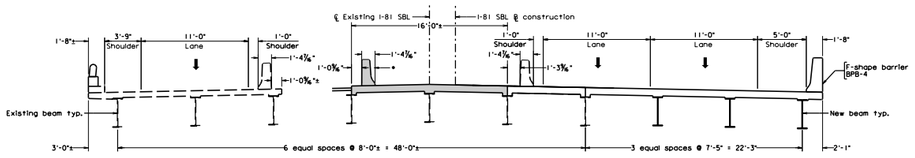
PHASE I - CONSTRUCTION



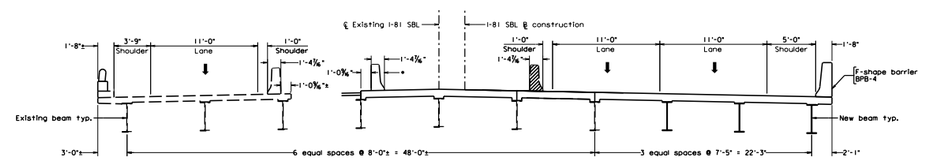
PHASE I - CLOSURE POUR



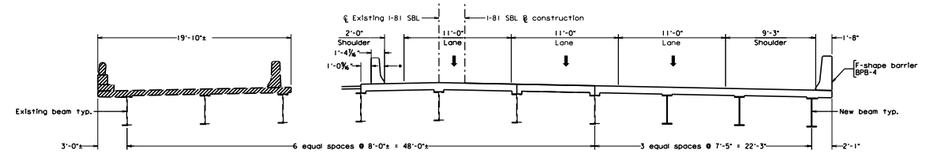
PHASE II - DEMOLITION



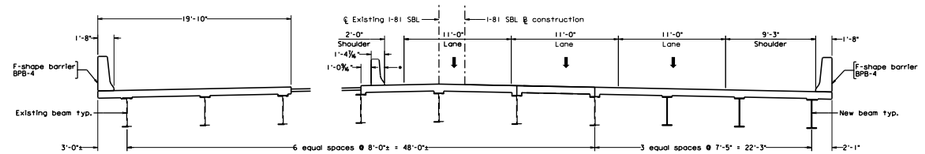
PHASE II - CONSTRUCTION



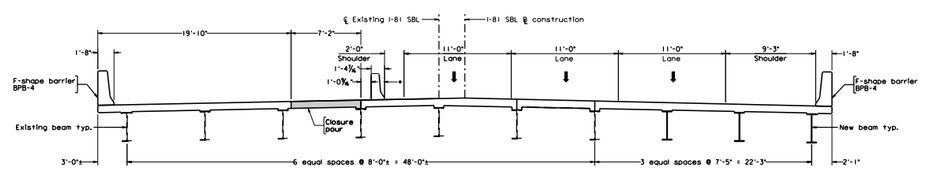
PHASE III - TEMPORARY BARRIER REMOVAL



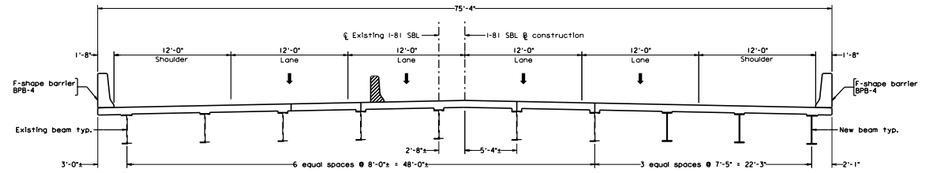
PHASE III - DEMOLITION



PHASE III - CONSTRUCTION



PHASE III - CLOSURE POUR



FINAL

193-07B_0113.dgn

Scale: 1/8" = 1'-0"

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

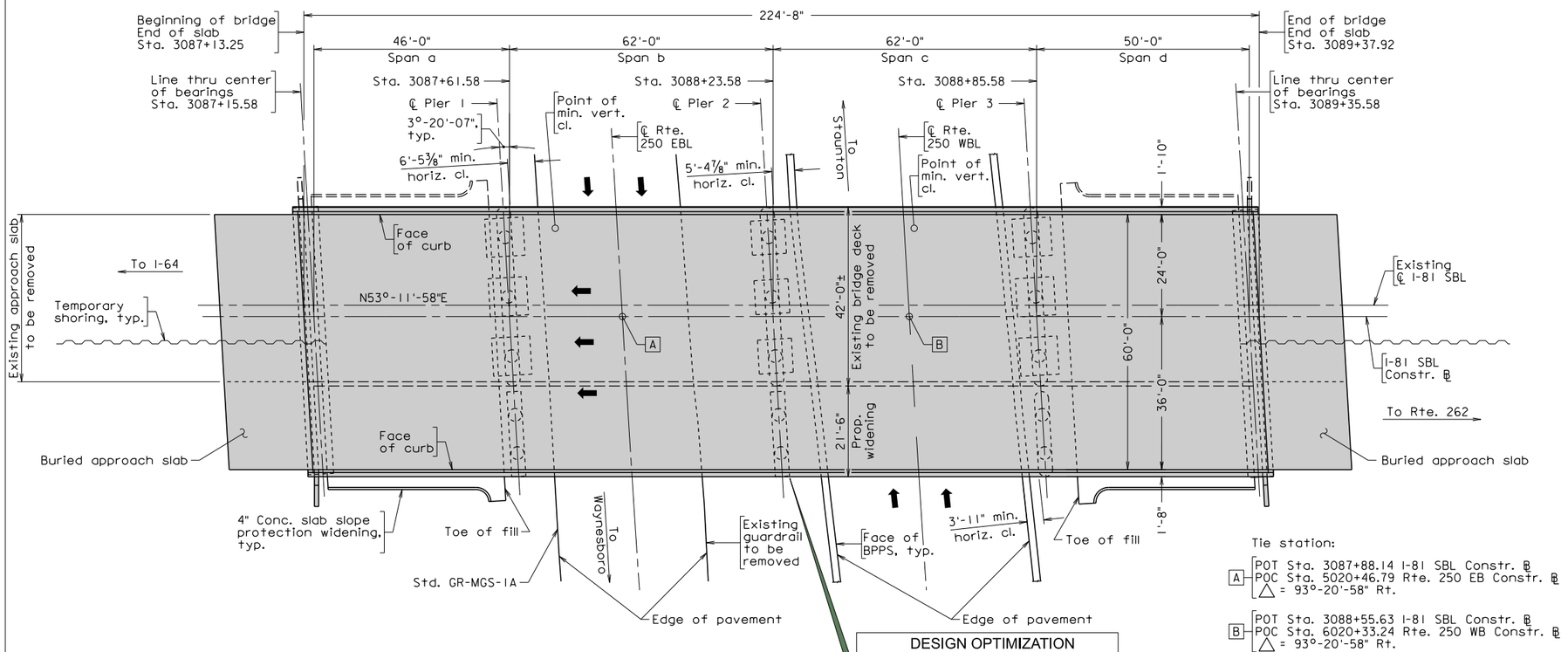
SEQUENCE OF CONSTRUCTION

Designed: DMS	Date	Plan No.	Sheet No.
Drawn: DMS	Dec. 2022	193-07B	
Checked: MED			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT		PROJECT	
VA.	—	NHPP-081-2(329)	81	0081-007-013, B640	X

Federal Structure No. 0000000000001812 — FHWA Construction and Scour Code: X271-SN

Federal Stewardship and Oversight Code: FO — UPC No. 116269



Tie station:

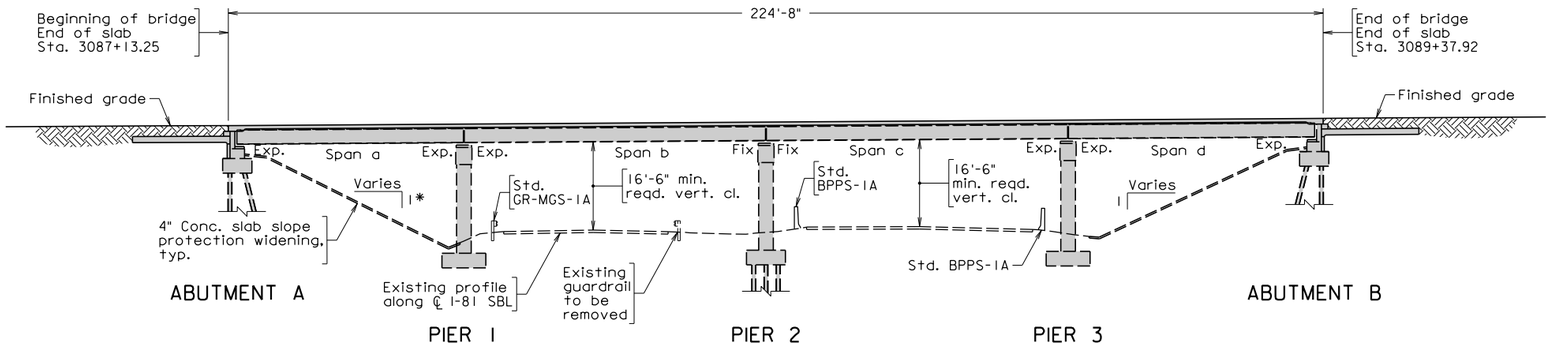
A — POT Sta. 3087+88.14 I-81 SBL Constr. ℄
POC Sta. 5020+46.79 Rte. 250 EB Constr. ℄
△ = 93°-20'-58" Rt.

B — POT Sta. 3088+55.63 I-81 SBL Constr. ℄
POC Sta. 6020+33.24 Rte. 250 WB Constr. ℄
△ = 93°-20'-58" Rt.

DESIGN OPTIMIZATION

UTILIZING DRILLED SHAFT CONSTRUCTION TO MINIMIZE IMPACTS TO EXISTING ROADWAY

PLAN



*Normal to Abutment

DEVELOPED SECTION ALONG CONSTR. ℄

DESIGN EXCEPTION(S):

EXISTING STRUCTURE GENERAL NOTES:

Capacity: HS-20-44 loading and Bureau of Public Roads modified loading for military vehicles.

Specifications:

General: Virginia Department of Highways Road and Bridge Specifications, 1958.

Design: AASHO Standard Specifications for Highway Bridges, 1961.

PROPOSED STRUCTURE GENERAL NOTES:

The original approved sheet, including original signatures, is filed in the VDOT Central Office. Any misuse of electronic files, including scanned signatures, is illegal. Violators will be prosecuted to the full extent of the applicable laws.

Width: 60'-0" face-to-face of curbs.

Span layout: 46'-0" - 62'-0" - 62'-0" - 50'-0" steel rolled beams.

Capacity: HL-93 loading.

Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2020.

Design: AASHTO LRFD Bridge Design Specifications, 8th Edition, 2017; and VDOT Modifications.

Standards: Virginia Department of Transportation Road and Bridge Standards, 2016; including all current revisions.

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

Virginia Structure No. of existing bridge is 2047. Plan No. 193-08 and 193-08A

The existing structure is designated a Type B structure in accordance with Sec. 411.

VDOT

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF TRANSPORTATION

PROPOSED BRIDGE REPAIRS AND WIDENING I-81 SBL OVER RTE. 250 AUGUSTA COUNTY - AT 0.8 MI. N. OF I-81/I-64 INTERCHANGE PROJECT 0081-007-013, B640

Recommended for Approval: _____ (Developer) _____ Date

Approved: _____ Chief Engineer _____ Date

193-08B

Date: December 2022

Sheet X of X

PLANS BY:	WBCM
COORDINATED:	Mitchell Dobres
SUPERVISED:	Mitchell Dobres
DESIGNED:	Deanna Schreiber
DRAWN:	Deanna Schreiber
CHECKED:	Mitchell Dobres

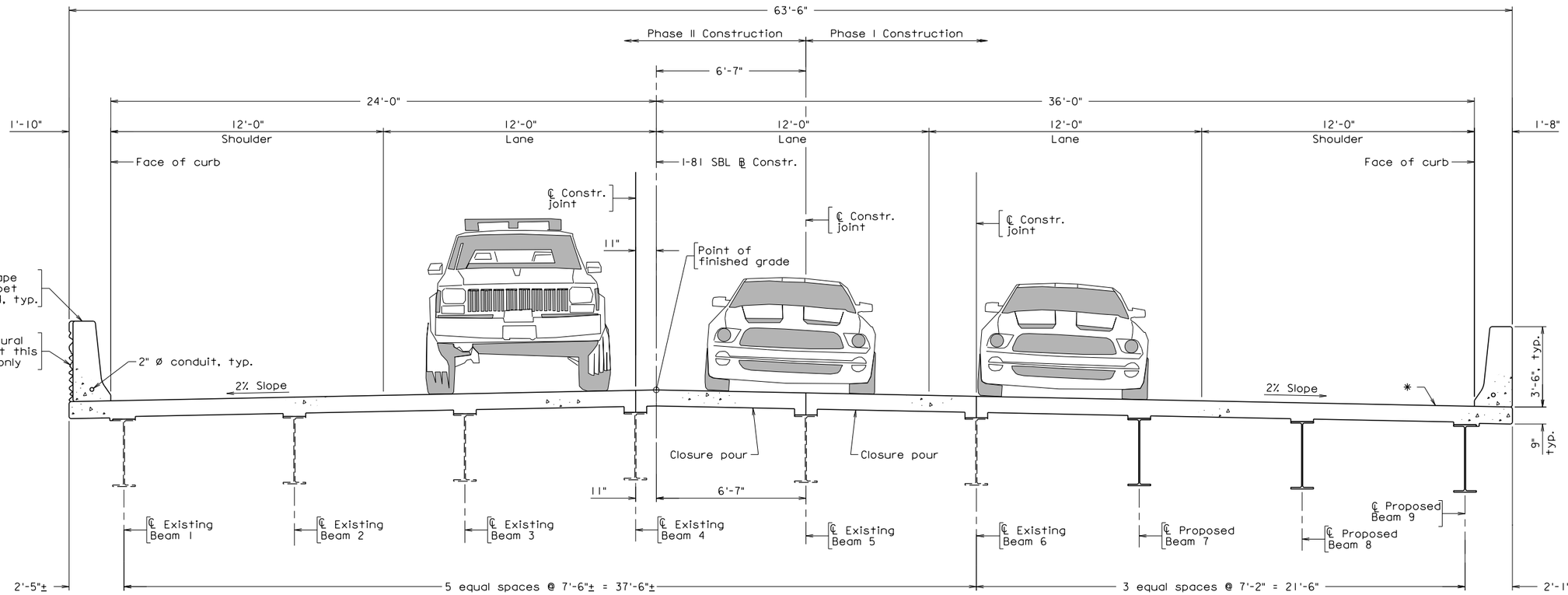
Scale: 1/16" = 1'-0"

193-08B_005.dgn

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—				

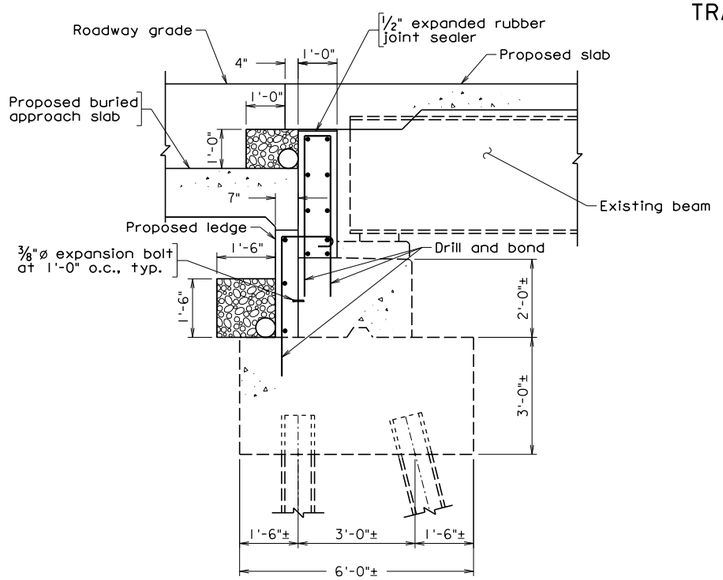
LEGEND:

* Two scuppers (one over each slope protection)



TRANSVERSE SECTION SBL OVER RTE. 250

Scale: 3/8" = 1'-0"



TYPICAL ABUTMENT SECTION

Section at existing abutment
Scale: 1/2" = 1'-0"

Scale as noted

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

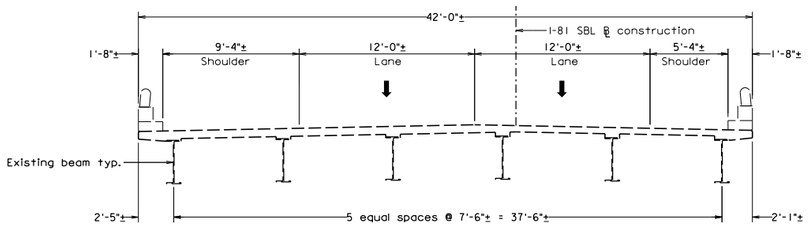
TRANSVERSE SECTION AND ABUTMENT SECTION

Designed: DMS.... Drawn: .....DMS.... Checked: ..MEB....	Date	Plan No.	Sheet No.
	Dec. 2022	193-08B	

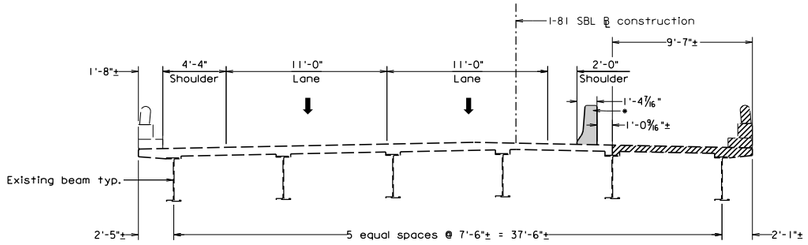
193-08B.006.dgn

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—				

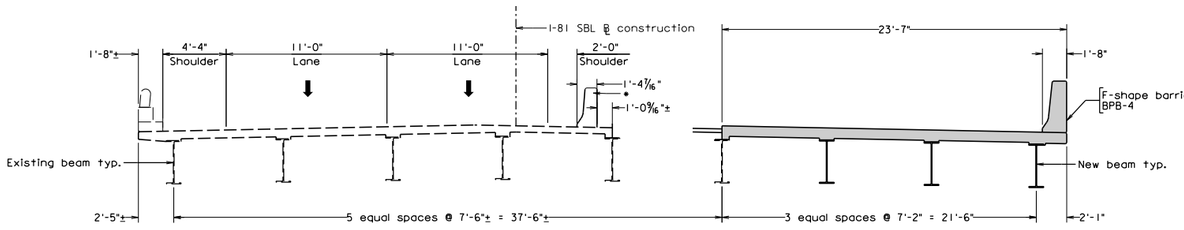
LEGEND:
- Denotes portion of existing structure to be removed
- Denotes new construction
- * MB-10A temporary barrier service



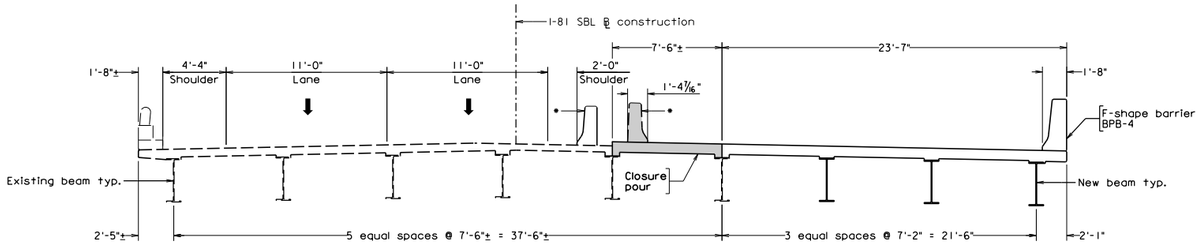
EXISTING



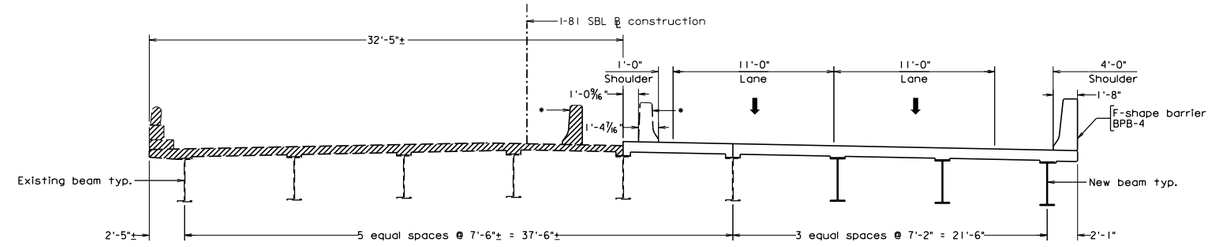
PHASE I - DEMOLITION



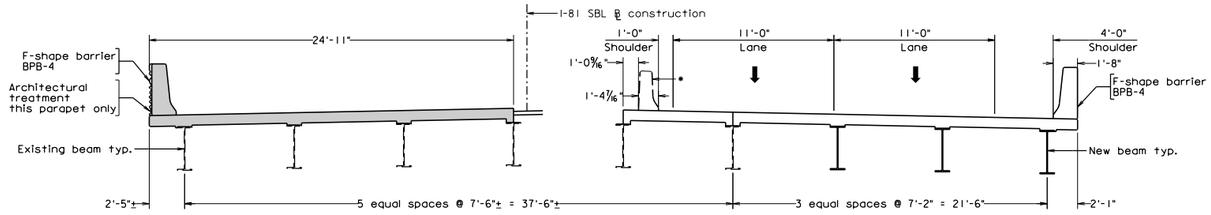
PHASE I - CONSTRUCTION



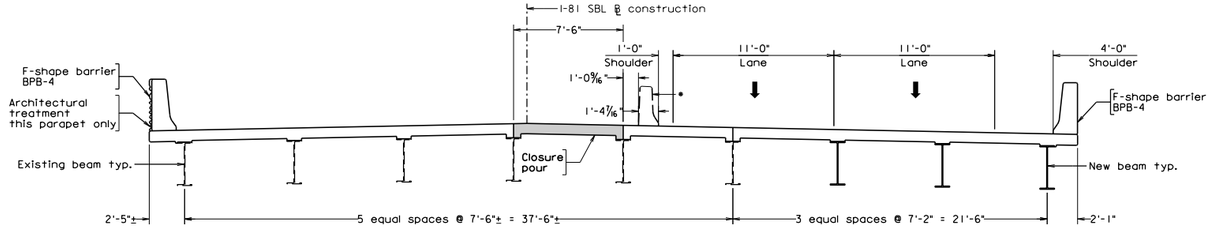
PHASE I - CLOSURE POUR



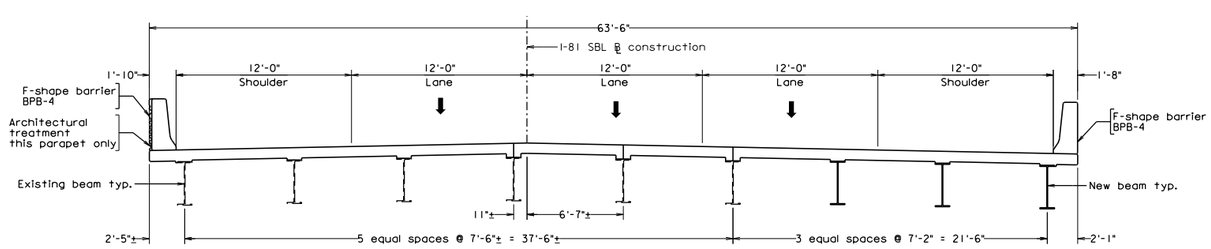
PHASE II - DEMOLITION



PHASE II - CONSTRUCTION



PHASE II - CLOSURE POUR



FINAL

193-07B_015.dgn

Scale: ⅜" = 1'-0"

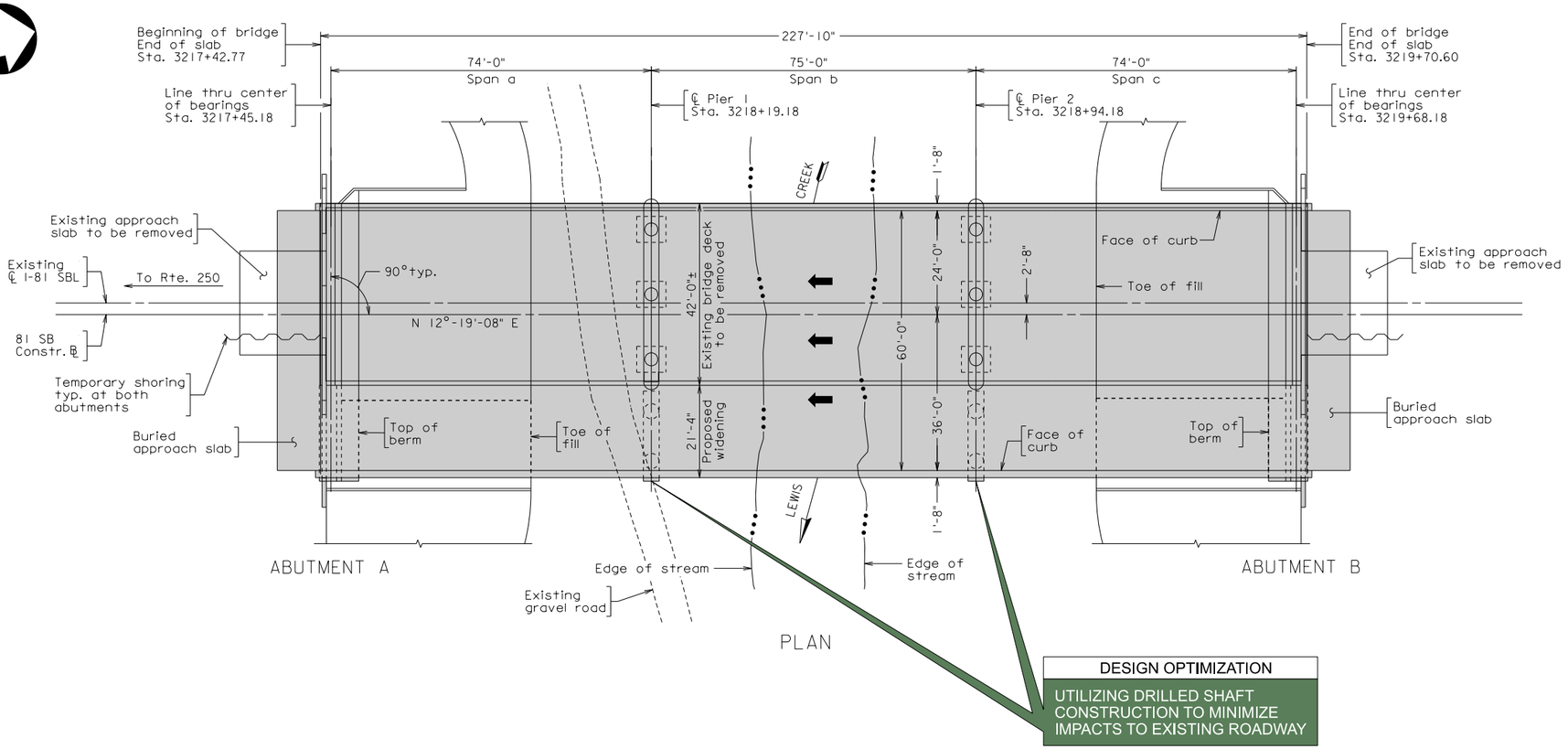
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

SEQUENCE OF CONSTRUCTION

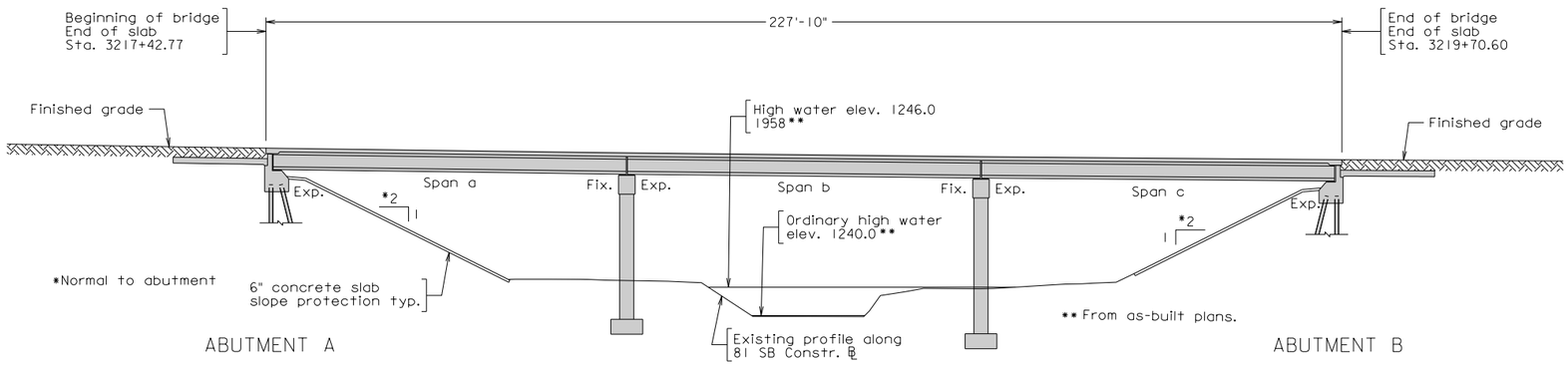
Designed: DMS	Date	Plan No.	Sheet No.
Drawn: DMS	Dec. 2022	193-08B	
Checked: MED			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	NHPP-081-2(329)	81	0081-007-013, B641	X
Federal Structure No. 000000000001853			FHWA Construction and Scour Code:	X081-S5	
Federal Stewardship and Oversight Code: F0				UPC No. 116269	



DESIGN OPTIMIZATION

UTILIZING DRILLED SHAFT CONSTRUCTION TO MINIMIZE IMPACTS TO EXISTING ROADWAY



DEVELOPED SECTION ALONG ℄

DESIGN EXCEPTION(S):

GENERAL NOTES:

The original approved sheet, including original signatures, is filed in the VDOT Central Office. Any misuse of electronic files, including scanned signatures, is illegal. Violators will be prosecuted to the full extent of the applicable laws.

Width: 60'-0" face-to-face of curbs.

Span layout: 74'-0" - 75'-0" - 74'-0" prestressed concrete 45" deep I-beam spans.

Capacity: HL-93 loading.

Drainage area: 20.0 sq. mi.

Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2020.

Design: AASHTO LRFD Bridge Design Specifications, 8th Edition, 2017; and VDOT Modifications.

Standards: Virginia Department of Transportation Road and Bridge Standards, 2016; including all current revisions.

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

Virginia Structure No. of existing bridge is 007-2106. Plan No. is 200-23.

VDOT

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF TRANSPORTATION

PROPOSED BRIDGE WIDENING ON

I-81 SBL OVER LEWIS CREEK
AUGUSTA CO. - 0.61 MI. S. OF RTE. 262
PROJ. 0081-007-013, B641

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

Approved: _____ _____
Chief Engineer Date

Date: December 2022

200-23B

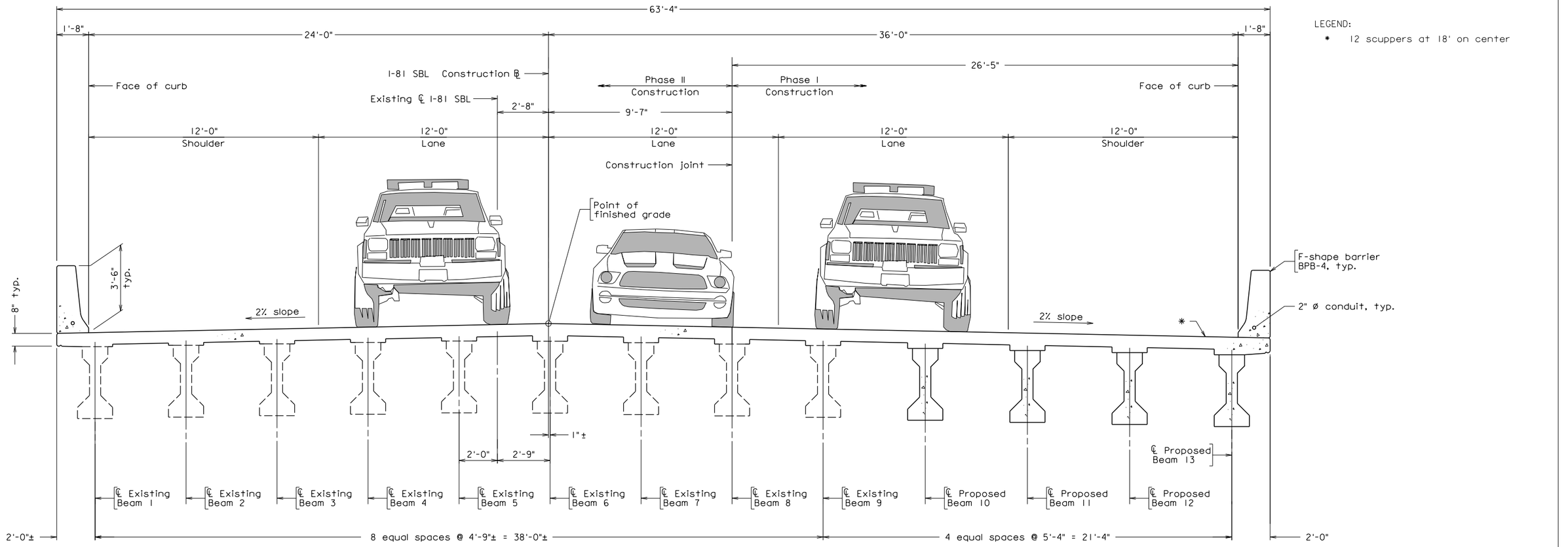
Sheet X of X

PLANS BY:	WBCM
COORDINATED:	Mitchell Dobres
SUPERVISED:	Mitchell Dobres
DESIGNED:	Deanna Schreiber
DRAWN:	Deanna Schreiber
CHECKED:	Mitchell Dobres

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

c:\pwworking\dms12433\200-23B.007.dgn

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	LEGEND:			

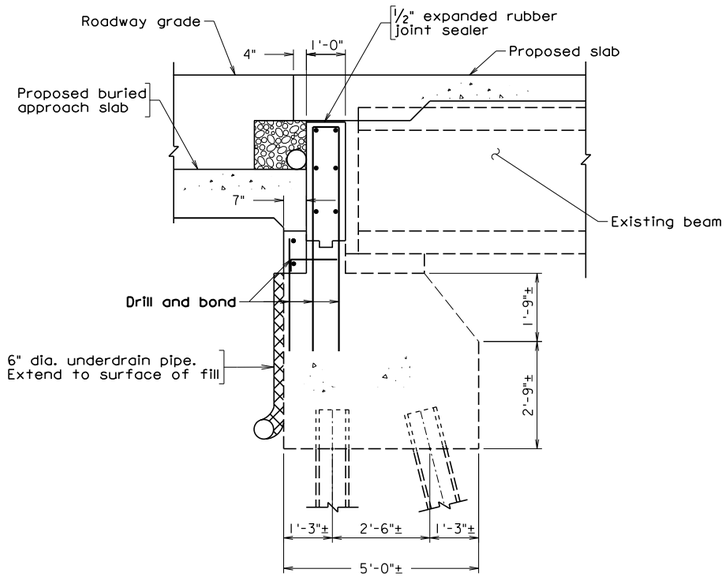


LEGEND:

* 12 scuppers at 18' on center

TRANSVERSE SECTION

Scale: 3/8" = 1'-0"



ABUTMENT SECTION

Section at existing abutment

Scale: ½" = 1'-0"

Scale as noted

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

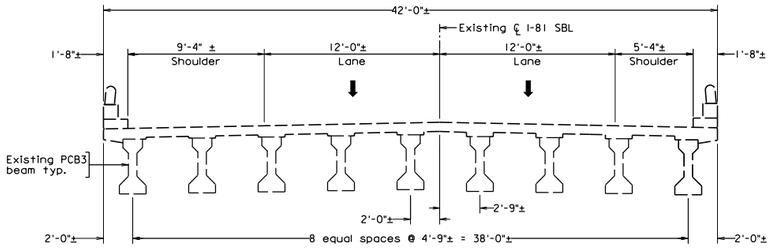
TRANSVERSE SECTION AND ABUTMENT SECTION

Designed: DMS.... Drawn: .....DMS.... Checked: ..MED...	Date	Plan No.	Sheet No.
	Dec. 2022	200-23B	

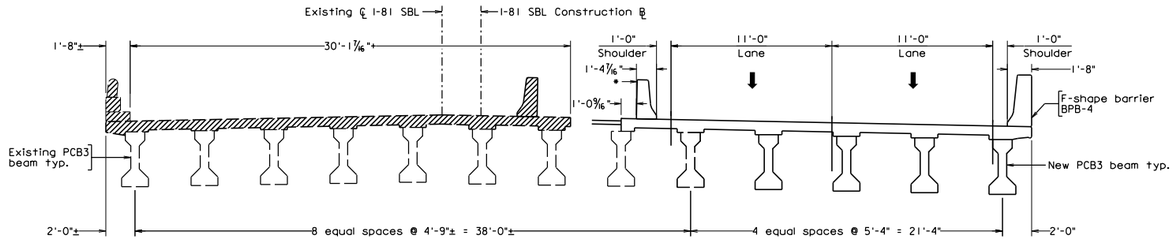
200-23B.008.dgn

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—				

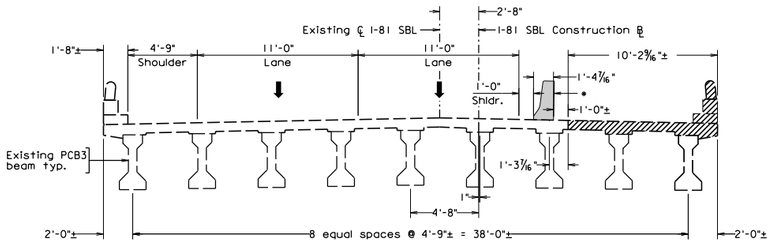
LEGEND:
- Denotes portion of existing structure to be removed
- Denotes new construction
- * MB-10A temporary barrier service



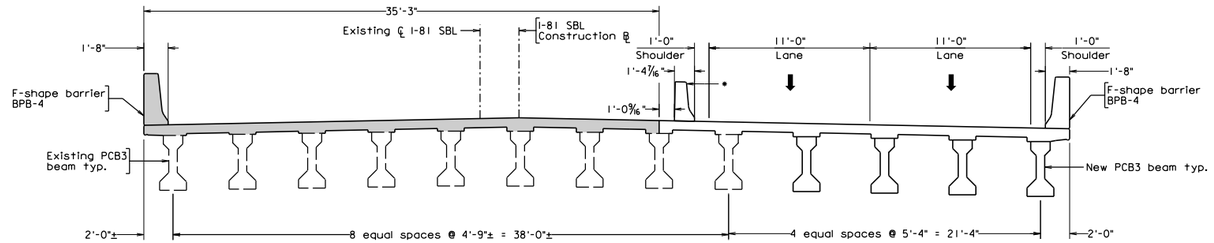
EXISTING



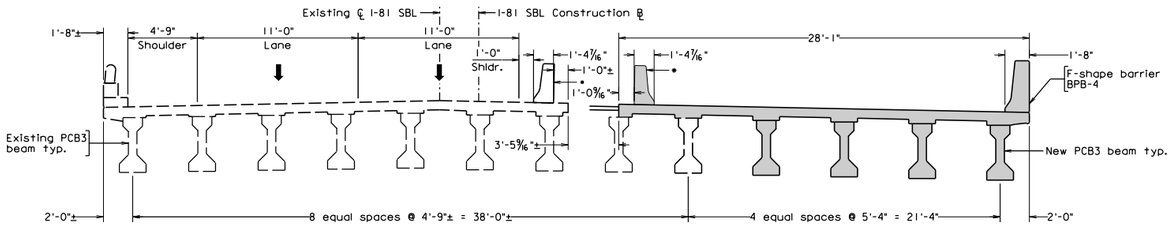
PHASE II - DEMOLITION



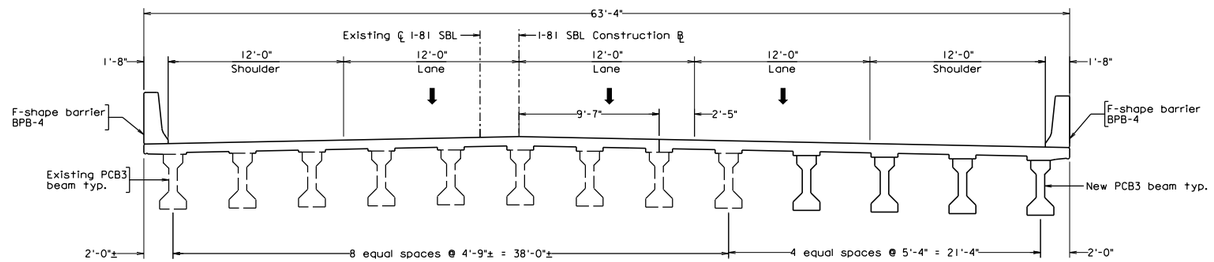
PHASE I - DEMOLITION



PHASE II - CONSTRUCTION



PHASE I - CONSTRUCTION



FINAL

200-23B_017.dgn

Scale: ⅜" = 1'-0"

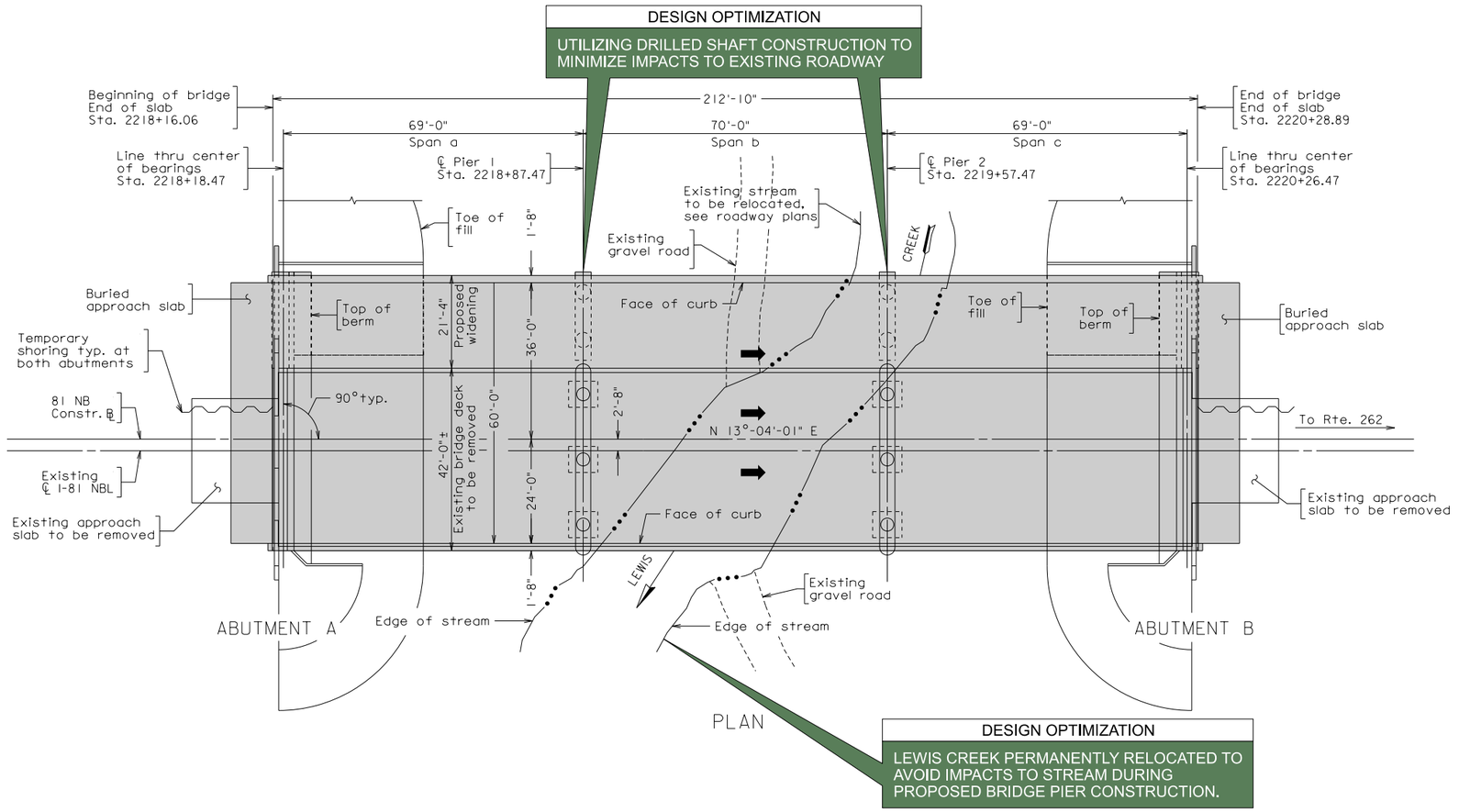
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

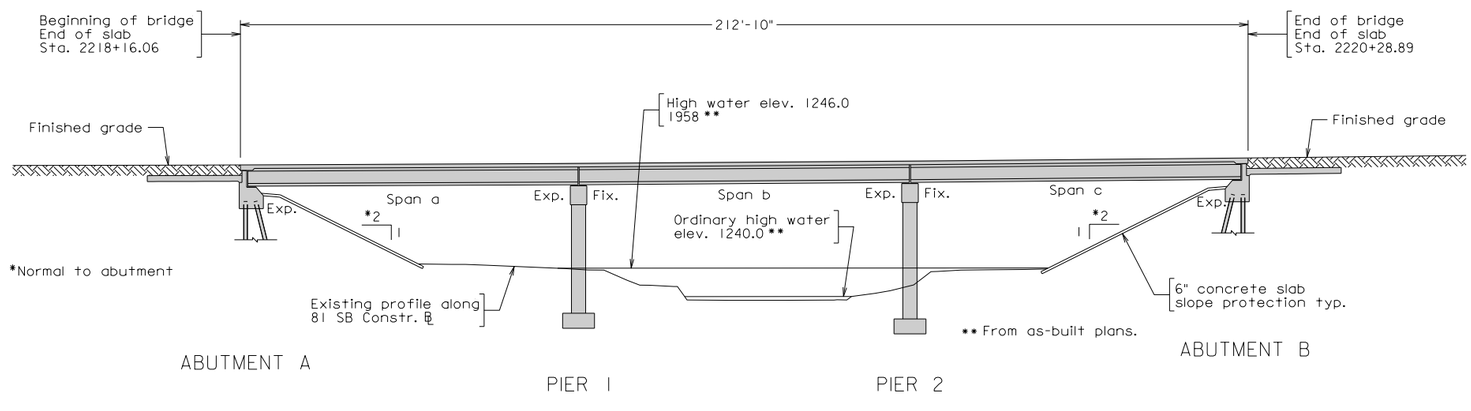
STRUCTURE AND BRIDGE DIVISION

SEQUENCE OF CONSTRUCTION

Designed: DMS	Date	Plan No.	Sheet No.
Drawn: DMS	Dec. 2022	200-23B	
Checked: MED			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	NHPP-081-2(329)	81	0081-007-013, B642	X
Federal Structure No. 000000000001854			FHWA Construction and Scour Code:	X081-S5	
Federal Stewardship and Oversight Code: F0				UPC No. 116269	





DEVELOPED SECTION ALONG ℄

DESIGN EXCEPTION(S):

GENERAL NOTES:

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Width: 60'-0" face-to-face of curbs.

Span layout: 69'-0" - 70'-0" - 69'-0" prestressed concrete 45" deep I-beam spans.

Capacity: HL-93 loading.

Drainage area: 20.0 sq. mi.

Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2020.

Design: AASHTO LRFD Bridge Design Specifications, 8th Edition, 2017; and VDOT Modifications.

Standards: Virginia Department of Transportation Road and Bridge Standards, 2016; including all current revisions.

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

Virginia Structure No. of existing bridge is 007-2107. Plan No. is 200-23.

PLANS BY:	WBCM
COORDINATED:	Mitchell Dobres
SUPERVISED:	Mitchell Dobres
DESIGNED:	Deanna Schreiber
DRAWN:	Deanna Schreiber
CHECKED:	Mitchell Dobres

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

VDOT

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
PROPOSED BRIDGE WIDENING ON

I-81 NBL OVER LEWIS CREEK
AUGUSTA CO. - 0.61 MI. S. OF RTE. 262
PROJ. 0081-007-013, B642

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

Approved: _____ _____
Chief Engineer — Date

Date: December 2022

200-23A

Sheet X of X

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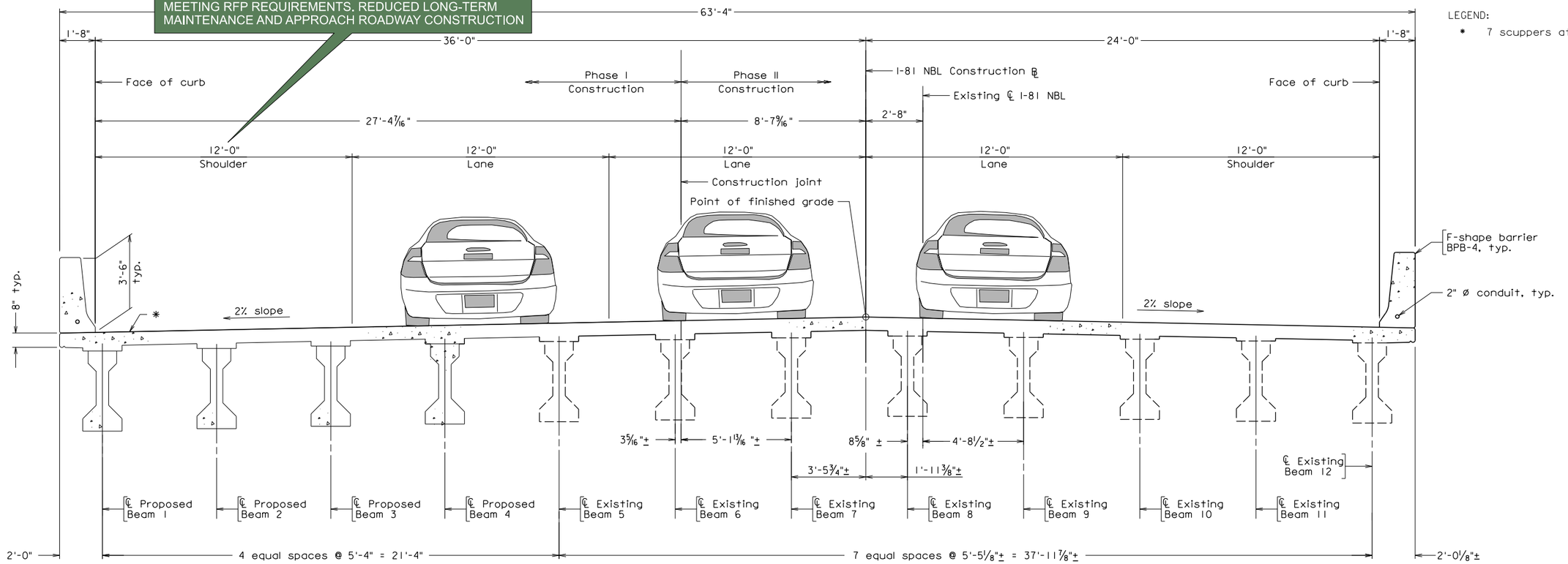
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—				

DESIGN OPTIMIZATION

REDUCED SHOULDER WIDTH FROM RFP DESIGN WHILE MEETING RFP REQUIREMENTS. REDUCED LONG-TERM MAINTENANCE AND APPROACH ROADWAY CONSTRUCTION

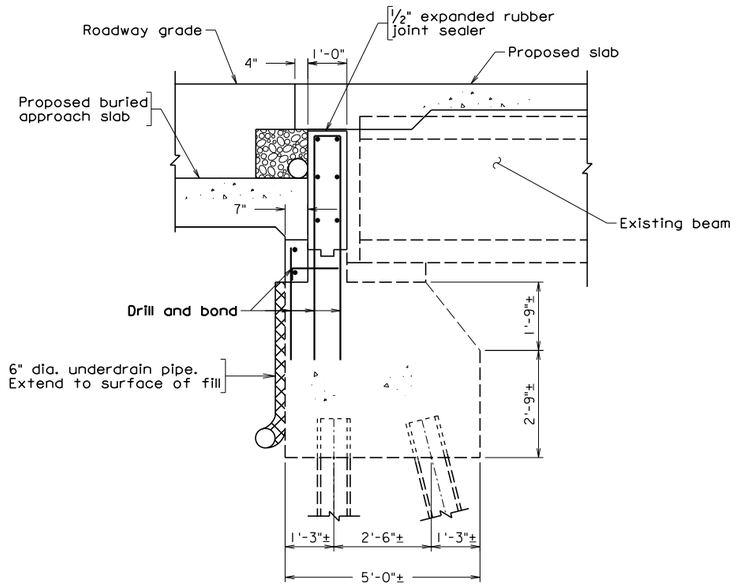


LEGEND:

* 7 scuppers at 27' on center

TRANSVERSE SECTION

Scale: 3/8" = 1'-0"



ABUTMENT SECTION

Section at existing abutment

Scale: 1/2" = 1'-0"

Scale as noted

200-23A_010.dgn

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

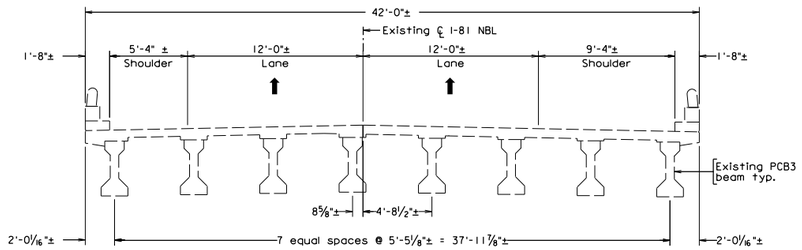
TRANSVERSE SECTION AND ABUTMENT SECTION

Designed: DMS	Date	Plan No.	Sheet No.
Drawn: DMS	Dec. 2022	200-23A	
Checked: MEB			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—				

LEGEND:

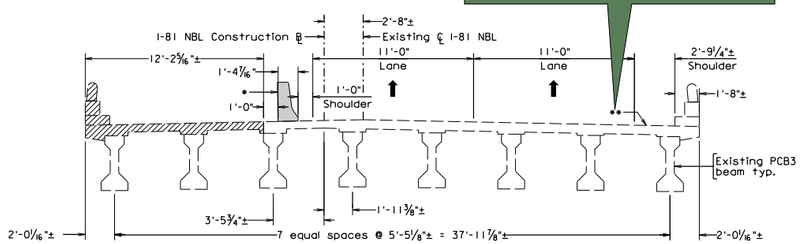
- Denotes portion of existing structure to be removed
- Denotes new construction
- * MB-10A temporary barrier service
- ** 9 - 6" diameter cored scuppers through existing deck



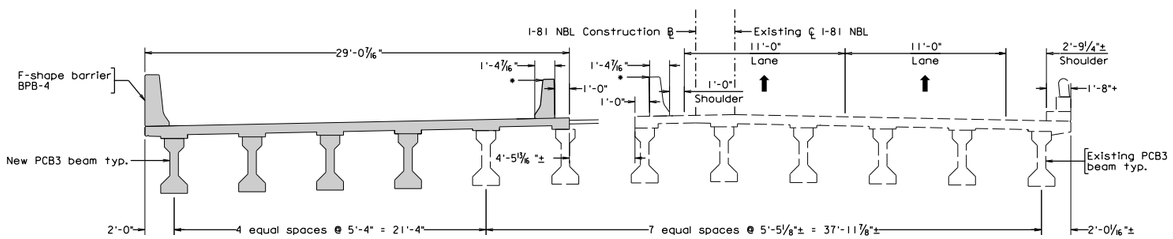
EXISTING

DESIGN OPTIMIZATION

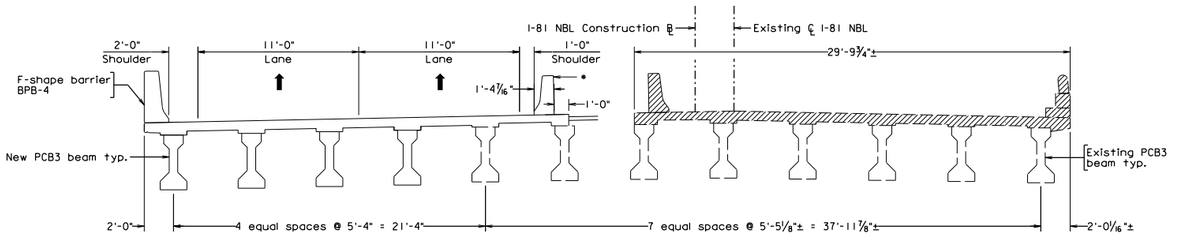
MITIGATING SPREAD INTO TRAVEL LANES BY CORING EXISTING DECK PRIOR TO REPLACEMENT



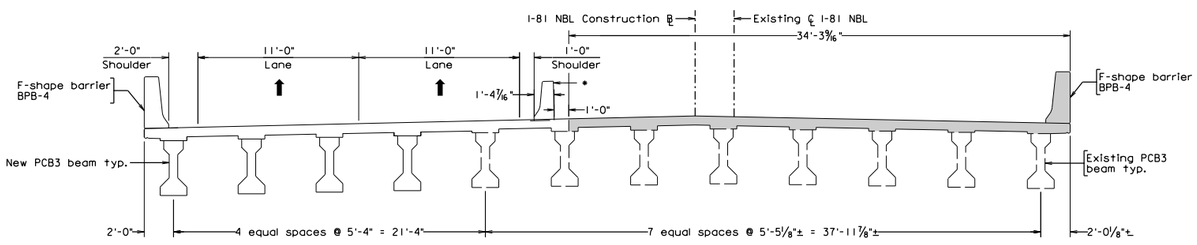
PHASE I - DEMOLITION



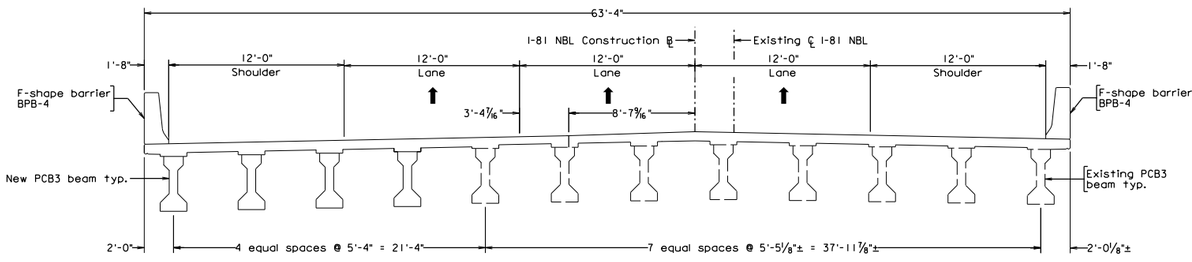
PHASE I - CONSTRUCTION



PHASE II - DEMOLITION



PHASE II -CONSTRUCTION



FINAL

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

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

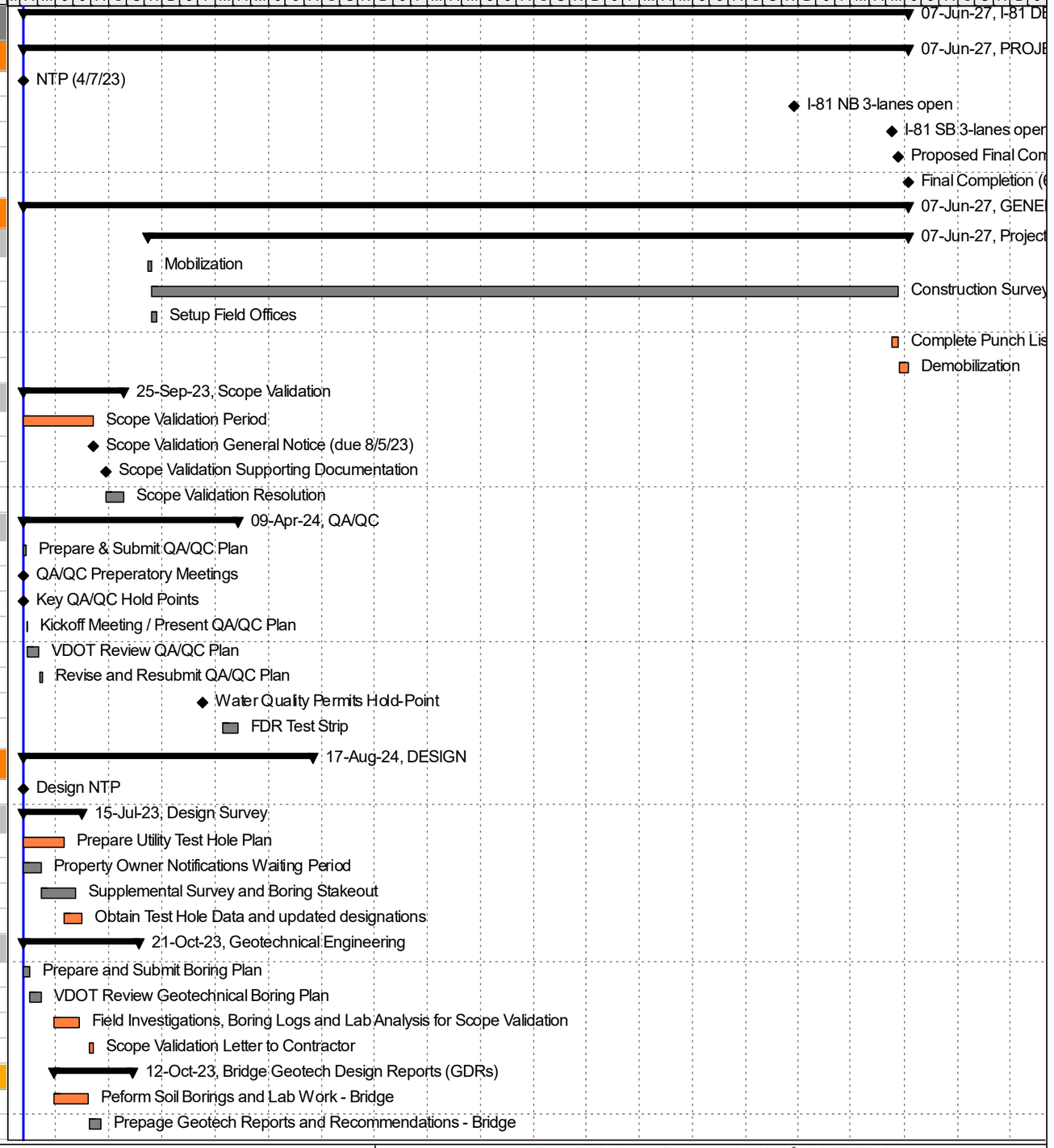
STRUCTURE AND BRIDGE DIVISION

SEQUENCE OF CONSTRUCTION

Designed: DMS.... Drawn: .....DMS.... Checked: .MEB...	Date	Plan No.	Sheet No.
	Dec. 2022	200-23A	

200-23A_019.dgn

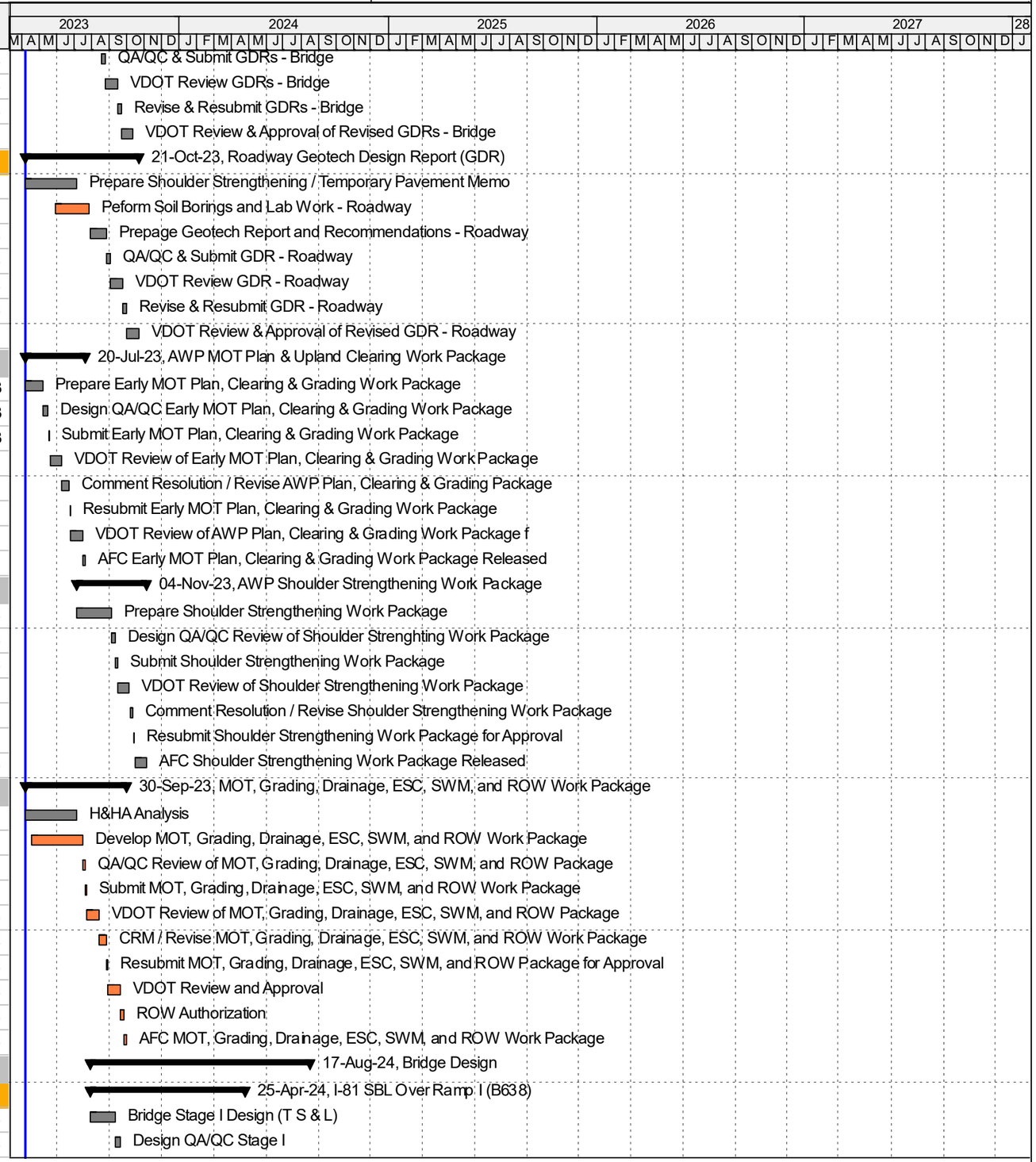
Activity ID	Original Duration	Activity Name	Start	Finish
I-81 DB mm221 to mm225 Proposal Schedule				
PROJECT MILESTONES				
K1040	0	NTP (4/7/23)	07-Apr-23*	
K4120	0	I-81 NB 3-lanes open		24-Nov-26
K4180	0	I-81 SB 3-lanes open		10-May-27
K4200	0	Proposed Final Completion		21-May-27
K4220	0	Final Completion (6/8/27)		07-Jun-27
GENERAL CONDITIONS				
Project Management				
K1920	5	Mobilization	06-Nov-23	13-Nov-23
K1980	739	Construction Surveying	14-Nov-23	21-May-27
K1990	5	Setup Field Offices	14-Nov-23	21-Nov-23
K4190	7	Complete Punch List	11-May-27	21-May-27
K4210	10	Demobilization	24-May-27	07-Jun-27
Scope Validation				
K1010	120	Scope Validation Period	07-Apr-23	04-Aug-23
K1510	0	Scope Validation General Notice (due 8/5/23)		05-Aug-2
K1560	0	Scope Validation Supporting Documentation		26-Aug-23
K1590	30	Scope Validation Resolution	27-Aug-23	25-Sep-23
QA/QC				
K1140	5	Prepare & Submit QA/QC Plan	07-Apr-23	11-Apr-23
K1150	0	QA/QC Preperatory Meetings	07-Apr-23	
K1160	0	Key QA/QC Hold Points	07-Apr-23	
K1170	1	Kickoff Meeting / Present QA/QC Plan	12-Apr-23	12-Apr-23
K1180	21	VDOT Review QA/QC Plan	13-Apr-23	03-May-23
K1210	5	Revise and Resubmit QA/QC Plan	04-May-23	08-May-23
K2400	0	Water Quality Permits Hold-Point	08-Feb-24	
A1030	15	FDR Test Strip	15-Mar-24	09-Apr-24
DESIGN				
K1000	0	Design NTP	07-Apr-23	
Design Survey				
K1020	70	Prepare Utility Test Hole Plan	07-Apr-23	15-Jun-23
K1050	30	Property Owner Notifications Waiting Period	07-Apr-23	06-May-23
K1220	60	Supplemental Survey and Boring Stakeout	07-May-23	05-Jul-23
K1310	30	Obtain Test Hole Data and updated designations	16-Jun-23	15-Jul-23
Geotechnical Engineering				
K1060	10	Prepare and Submit Boring Plan	07-Apr-23	16-Apr-23
K1200	21	VDOT Review Geotechnical Boring Plan	17-Apr-23	07-May-23
K1260	45	Field Investigations, Boring Logs and Lab Analysis for Scope Validation	29-May-23	12-Jul-23
K1460	9	Scope Validation Letter to Contractor	28-Jul-23	05-Aug-23
Bridge Geotech Design Reports (GDRs)				
K1270	60	Peform Soil Borings and Lab Work - Bridge	29-May-23	27-Jul-23
K1490	21	Prepage Geotech Reports and Recommendations - Bridge	28-Jul-23	17-Aug-23



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

kokosing CONSTRUCTION COMPANY, INC. | rda RINKER DESIGN ASSOCIATES

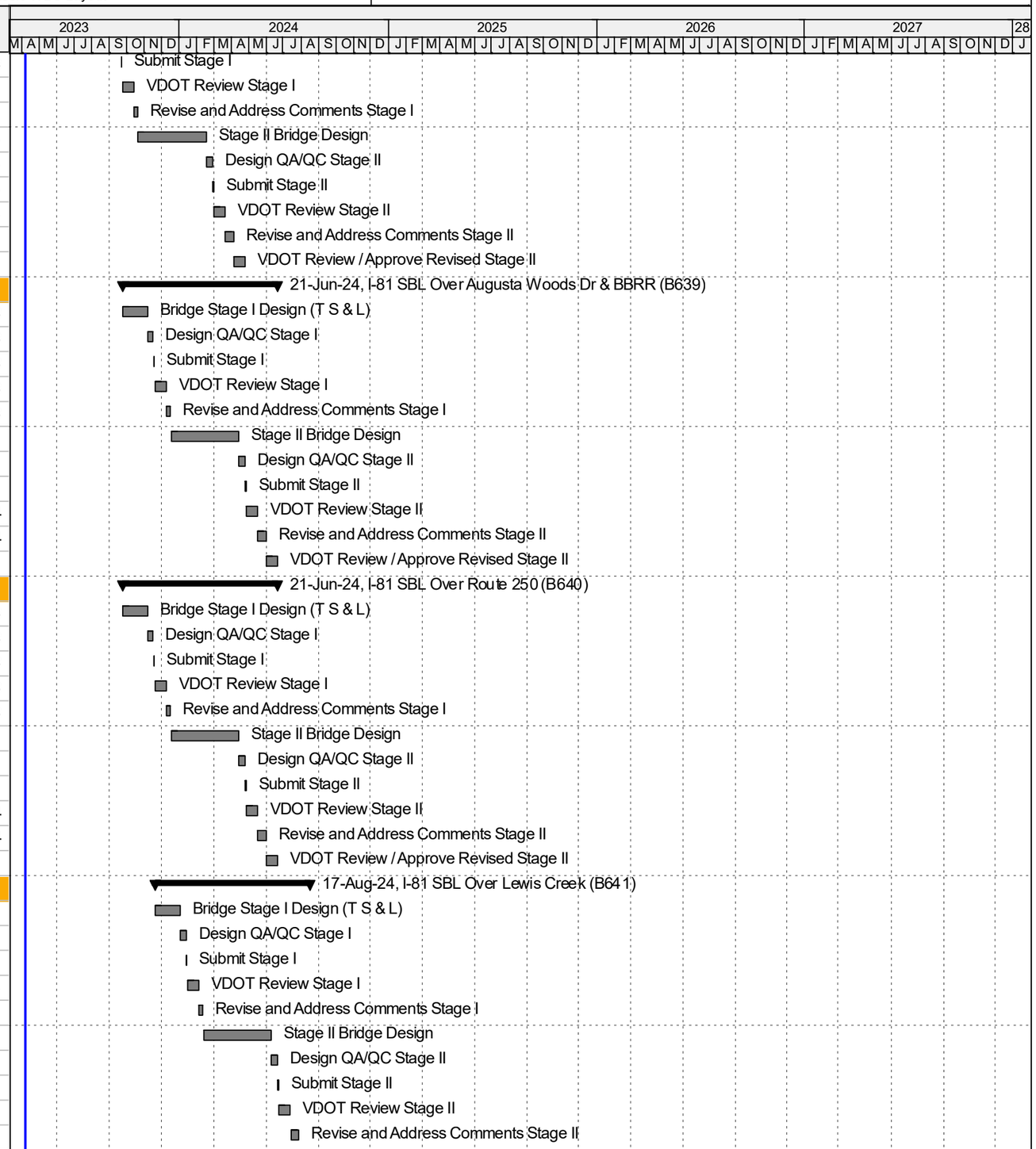
Activity ID	Original Duration	Activity Name	Start	Finish
K1540	7	QA/QC & Submit GDRs - Bridge	18-Aug-23	24-Aug-23
K1550	21	VDOT Review GDRs - Bridge	25-Aug-23	14-Sep-23
K1660	7	Revise & Resubmit GDRs - Bridge	15-Sep-23	21-Sep-23
K1690	21	VDOT Review & Approval of Revised GDRs - Bridge	22-Sep-23	12-Oct-23
Roadway Geotech Design Report (GDR)				
K1090	90	Prepare Shoulder Strengthening / Temporary Pavement Memo	07-Apr-23	05-Jul-23
K1280	60	Peform Soil Borings and Lab Work - Roadway	29-May-23	27-Jul-23
K1470	30	Prepage Geotech Report and Recommendations - Roadway	28-Jul-23	26-Aug-23
K1580	7	QA/QC & Submit GDR - Roadway	27-Aug-23	02-Sep-23
K1610	21	VDOT Review GDR - Roadway	03-Sep-23	23-Sep-23
K1730	7	Revise & Resubmit GDR - Roadway	24-Sep-23	30-Sep-23
K1770	21	VDOT Review & Approval of Revised GDR - Roadway	01-Oct-23	21-Oct-23
AWP MOT Plan & Upland Clearing Work Package				
K1110	30	Prepare Early MOT Plan, Clearing & Grading Work Package	07-Apr-23	06-May-23
K1230	10	Design QA/QC Early MOT Plan, Clearing & Grading Work Package	07-May-23	16-May-23
K1240	2	Submit Early MOT Plan, Clearing & Grading Work Package	17-May-23	18-May-23
K1250	21	VDOT Review of Early MOT Plan, Clearing & Grading Work Package	19-May-23	08-Jun-23
K1300	14	Comment Resolution / Revise AWP Plan, Clearing & Grading Package	09-Jun-23	22-Jun-23
K1330	2	Resubmit Early MOT Plan, Clearing & Grading Work Package	23-Jun-23	24-Jun-23
K1340	21	VDOT Review of AWP Plan, Clearing & Grading Work Package f	25-Jun-23	15-Jul-23
K1390	5	AFC Early MOT Plan, Clearing & Grading Work Package Released	16-Jul-23	20-Jul-23
AWP Shoulder Strengthening Work Package				
K1350	60	Prepare Shoulder Strengthening Work Package	06-Jul-23	03-Sep-23
K1620	7	Design QA/QC Review of Shoulder Strenghting Work Package	04-Sep-23	10-Sep-23
K1640	4	Submit Shoulder Strengthening Work Package	11-Sep-23	14-Sep-23
K1650	21	VDOT Review of Shoulder Strengthening Work Package	15-Sep-23	05-Oct-23
K1840	7	Comment Resolution / Revise Shoulder Strengthening Work Package	06-Oct-23	12-Oct-23
K1850	2	Resubmit Shoulder Strengthening Work Package for Approval	13-Oct-23	14-Oct-23
K1870	21	AFC Shoulder Strengthening Work Package Released	15-Oct-23	04-Nov-23
MOT, Grading, Drainage, ESC, SWM, and ROW Work Package				
K1120	90	H&HA Analysis	07-Apr-23	05-Jul-23
K1190	90	Develop MOT, Grading, Drainage, ESC, SWM, and ROW Work Package	17-Apr-23	15-Jul-23
K1380	5	QA/QC Review of MOT, Grading, Drainage, ESC, SWM, and ROW Packag	16-Jul-23	20-Jul-23
K1400	2	Submit MOT, Grading, Drainage, ESC, SWM, and ROW Work Package	21-Jul-23	22-Jul-23
K1410	21	VDOT Review of MOT, Grading, Drainage, ESC, SWM, and ROW Package	23-Jul-23	12-Aug-23
K1520	14	CRM / Revise MOT, Grading, Drainage, ESC, SWM, and ROW Work Pack	13-Aug-23	26-Aug-23
K1570	2	Resubmit MOT, Grading, Drainage, ESC, SWM, and ROW Package for Ap	27-Aug-23	28-Aug-23
K1600	21	VDOT Review and Approval	29-Aug-23	18-Sep-23
K1670	7	ROW Authorization	19-Sep-23	25-Sep-23
K1740	5	AFC MOT, Grading, Drainage, ESC, SWM, and ROW Work Package	26-Sep-23	30-Sep-23
Bridge Design				
I-81 SBL Over Ramp I (B638)				
K1480	45	Bridge Stage I Design (T S & L)	28-Jul-23	10-Sep-23
K1630	10	Design QA/QC Stage I	11-Sep-23	20-Sep-23



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

kokosing CONSTRUCTION COMPANY, INC. | rda RINKER DESIGN ASSOCIATES

Activity ID	Original Duration	Activity Name	Start	Finish
K1680	2	Submit Stage I	21-Sep-23	22-Sep-23
K1720	21	VDOT Review Stage I	23-Sep-23	13-Oct-23
K1860	7	Revise and Address Comments Stage I	14-Oct-23	20-Oct-23
K1890	120	Stage II Bridge Design	21-Oct-23	17-Feb-24
K2440	10	Design QA/QC Stage II	18-Feb-24	27-Feb-24
K2450	2	Submit Stage II	28-Feb-24	29-Feb-24
K2470	21	VDOT Review Stage II	01-Mar-24	21-Mar-24
K2510	14	Revise and Address Comments Stage II	22-Mar-24	04-Apr-24
K2530	21	VDOT Review / Approve Revised Stage II	05-Apr-24	25-Apr-24
I-81 SBL Over Augusta Woods Dr & BBRR (B639)				
K1700	45	Bridge Stage I Design (T S & L)	23-Sep-23	06-Nov-23
K1940	10	Design QA/QC Stage I	07-Nov-23	16-Nov-23
K2000	2	Submit Stage I	17-Nov-23	18-Nov-23
K2040	21	VDOT Review Stage I	19-Nov-23	09-Dec-23
K2100	7	Revise and Address Comments Stage I	10-Dec-23	16-Dec-23
K2120	120	Stage II Bridge Design	17-Dec-23	14-Apr-24
K2560	10	Design QA/QC Stage II	15-Apr-24	24-Apr-24
K2600	2	Submit Stage II	25-Apr-24	26-Apr-24
K2630	21	VDOT Review Stage II	27-Apr-24	17-May-24
K2670	14	Revise and Address Comments Stage II	18-May-24	31-May-24
K2740	21	VDOT Review / Approve Revised Stage II	01-Jun-24	21-Jun-24
I-81 SBL Over Route 250 (B640)				
K1710	45	Bridge Stage I Design (T S & L)	23-Sep-23	06-Nov-23
K1950	10	Design QA/QC Stage I	07-Nov-23	16-Nov-23
K2010	2	Submit Stage I	17-Nov-23	18-Nov-23
K2050	21	VDOT Review Stage I	19-Nov-23	09-Dec-23
K2110	7	Revise and Address Comments Stage I	10-Dec-23	16-Dec-23
K2130	120	Stage II Bridge Design	17-Dec-23	14-Apr-24
K2570	10	Design QA/QC Stage II	15-Apr-24	24-Apr-24
K2610	2	Submit Stage II	25-Apr-24	26-Apr-24
K2640	21	VDOT Review Stage II	27-Apr-24	17-May-24
K2680	14	Revise and Address Comments Stage II	18-May-24	31-May-24
K2750	21	VDOT Review / Approve Revised Stage II	01-Jun-24	21-Jun-24
I-81 SBL Over Lewis Creek (B641)				
K2020	45	Bridge Stage I Design (T S & L)	19-Nov-23	02-Jan-24
K2210	10	Design QA/QC Stage I	03-Jan-24	12-Jan-24
K2240	2	Submit Stage I	13-Jan-24	14-Jan-24
K2280	21	VDOT Review Stage I	15-Jan-24	04-Feb-24
K2350	7	Revise and Address Comments Stage I	05-Feb-24	11-Feb-24
K2410	120	Stage II Bridge Design	12-Feb-24	10-Jun-24
K2760	10	Design QA/QC Stage II	11-Jun-24	20-Jun-24
K2780	2	Submit Stage II	21-Jun-24	22-Jun-24
K2800	21	VDOT Review Stage II	23-Jun-24	13-Jul-24
K2870	14	Revise and Address Comments Stage II	14-Jul-24	27-Jul-24



Remaining Level of Effort | Remaining Work | Milestone
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kokosing CONSTRUCTION COMPANY, INC. | rda RINKER DESIGN ASSOCIATES

Activity ID	Original Duration	Activity Name	Start	Finish
K2890	21	VDOT Review / Approve Revised Stage II	28-Jul-24	17-Aug-24
I-81 NBL Over Lewis Creek (B642)				
K2030	45	Bridge Stage I Design (T S & L)	19-Nov-23	02-Jan-24
K2220	10	Design QA/QC Stage I	03-Jan-24	12-Jan-24
K2250	2	Submit Stage I	13-Jan-24	14-Jan-24
K2290	21	VDOT Review Stage I	15-Jan-24	04-Feb-24
K2360	7	Revise and Address Comments Stage I	05-Feb-24	11-Feb-24
K2420	120	Stage II Bridge Design	12-Feb-24	10-Jun-24
K2770	10	Design QA/QC Stage II	11-Jun-24	20-Jun-24
K2790	2	Submit Stage II	21-Jun-24	22-Jun-24
K2810	21	VDOT Review Stage II	23-Jun-24	13-Jul-24
K2880	14	Revise and Address Comments Stage II	14-Jul-24	27-Jul-24
K2900	21	VDOT Review / Approve Revised Stage II	28-Jul-24	17-Aug-24
ITS/Signing/Striping				
K1820	120	Prepare Preliminnary ITS/Signing/Striping Plan	01-Oct-23	28-Jan-24
K2320	7	QA/QC Prel. ITS/Signing/Striping Plan	29-Jan-24	04-Feb-24
K2370	2	Submit Prel. ITS/Signing/Striping Plan	05-Feb-24	06-Feb-24
K2380	21	VDOT Review Prel. ITS/Signing/Striping Plan	07-Feb-24	27-Feb-24
K2460	14	Revise and Resubmit ITS/Signing/Striping Plan	28-Feb-24	12-Mar-24
K2490	21	VDOT Review / Aprove ITS/Signing/Striping Plan	13-Mar-24	02-Apr-24
K2520	5	AFC ITS/Signing/Striping Released	03-Apr-24	07-Apr-24
Final Roadway				
K1750	90	Prepare Final Roadway Plans	01-Oct-23	29-Dec-23
K2190	10	Design QA/QC Final Roadway Plans	30-Dec-23	08-Jan-24
K2230	5	Submit Final Roadway Plans	09-Jan-24	13-Jan-24
K2260	21	VDOT Review Final Roaday Plans	14-Jan-24	03-Feb-24
K2340	14	Revise and Resubmit Final Roadway Plans	04-Feb-24	17-Feb-24
K2430	21	VDOT Review / Approve Final Roadway Plans	18-Feb-24	09-Mar-24
K2480	5	AFC Final Roadway Plans Released	10-Mar-24	14-Mar-24
ENVIRONMENTAL				
Permitting				
K1030	60	Preparation of NWP 6 - Geotechnical work	07-Apr-23	05-Jun-23
K1070	120	Preparation of Joint Permit Application (JPA)	07-Apr-23	04-Aug-23
K1100	160	VPDES Submission and Approval	07-Apr-23	13-Sep-23
K1500	10	QA/QC Joint Permit Application (JPA)	05-Aug-23	14-Aug-23
K1530	177	Agency Review and Permit Issuance (USACE, DEQ, VMRC)	15-Aug-23	07-Feb-24
Hazardous Material				
K2950	40	Prepare Asbestos Abatement Plan	19-Aug-24	22-Oct-24
K3060	10	81 NB & SB over Lewis Creek ACM Abatement	24-Oct-24	07-Nov-24
Noise Analysis				
K1130	60	Noise Analysis and Report Preparation	07-Apr-23	05-Jun-23
K1290	10	QA/QC & Submit Noise Report	06-Jun-23	15-Jun-23
K1320	21	VDOT Review	16-Jun-23	06-Jul-23
K1360	7	Incorporate Comments & Resubmit	07-Jul-23	13-Jul-23

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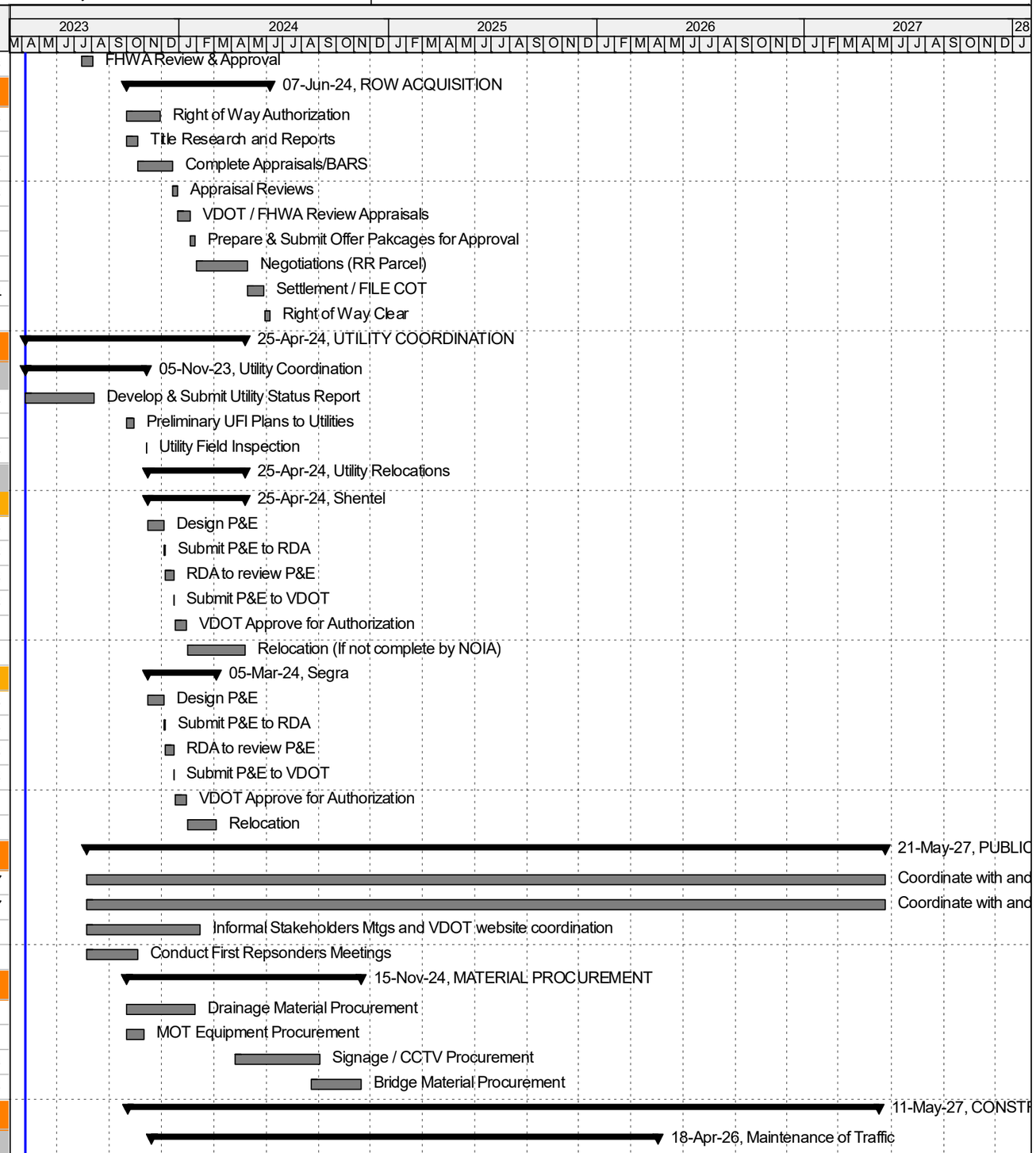
kokosing CONSTRUCTION COMPANY, INC. | rda RINKER DESIGN ASSOCIATES

Activity ID	Original Duration	Activity Name	Start	Finish
K1370	21	FHWA Review & Approval	14-Jul-23	03-Aug-23
ROW ACQUISITION				
K1790	60	Right of Way Authorization	01-Oct-23	29-Nov-23
K1800	20	Title Research and Reports	01-Oct-23	20-Oct-23
K1880	60	Complete Appraisals/BARS	21-Oct-23	19-Dec-23
K2140	10	Appraisal Reviews	20-Dec-23	29-Dec-23
K2200	21	VDOT / FHWA Review Appraisals	30-Dec-23	19-Jan-24
K2310	10	Prepare & Submit Offer Pakcages for Approval	20-Jan-24	29-Jan-24
K2330	90	Negotiations (RR Parcel)	30-Jan-24	28-Apr-24
K2650	30	Settlement / FILE COT	29-Apr-24	28-May-24
K2730	10	Right of Way Clear	29-May-24	07-Jun-24
UTILITY COORDINATION				
Utility Coordination				
K1080	120	Develop & Submit Utility Status Report	07-Apr-23	04-Aug-23
K1760	14	Preliminary UFI Plans to Utilities	01-Oct-23	14-Oct-23
K1900	1	Utility Field Inspection	05-Nov-23	05-Nov-23
Utility Relocations				
Shentel				
K1910	30	Design P&E	06-Nov-23	05-Dec-23
K2060	2	Submit P&E to RDA	06-Dec-23	07-Dec-23
K2080	14	RDA to review P&E	08-Dec-23	21-Dec-23
K2150	2	Submit P&E to VDOT	22-Dec-23	23-Dec-23
K2170	21	VDOT Approve for Authorization	24-Dec-23	13-Jan-24
K2270	60	Relocation (If not complete by NOIA)	15-Jan-24	25-Apr-24
Segra				
K1930	30	Design P&E	06-Nov-23	05-Dec-23
K2070	2	Submit P&E to RDA	06-Dec-23	07-Dec-23
K2090	14	RDA to review P&E	08-Dec-23	21-Dec-23
K2160	2	Submit P&E to VDOT	22-Dec-23	23-Dec-23
K2180	21	VDOT Approve for Authorization	24-Dec-23	13-Jan-24
K2300	30	Relocation	15-Jan-24	05-Mar-24
PUBLIC INVOLVEMENT				
K1420	1399	Coordinate with and Provide Updates to VDOT for Construction Progress	23-Jul-23	21-May-27
K1430	1399	Coordinate with and Provide Updates to other Stakeholders	23-Jul-23	21-May-27
K1440	200	Informal Stakeholders Mtgs and VDOT website coordination	23-Jul-23	07-Feb-24
K1450	90	Conduct First Repsonders Meetings	23-Jul-23	20-Oct-23
MATERIAL PROCUREMENT				
K1780	120	Drainage Material Procurement	01-Oct-23	28-Jan-24
K1810	30	MOT Equipment Procurement	01-Oct-23	30-Oct-23
K2550	90	Signage / CCTV Procurement	08-Apr-24	03-Sep-24
K2940	90	Bridge Material Procurement	18-Aug-24	15-Nov-24
CONSTRUCTION				
Maintenance of Traffic				



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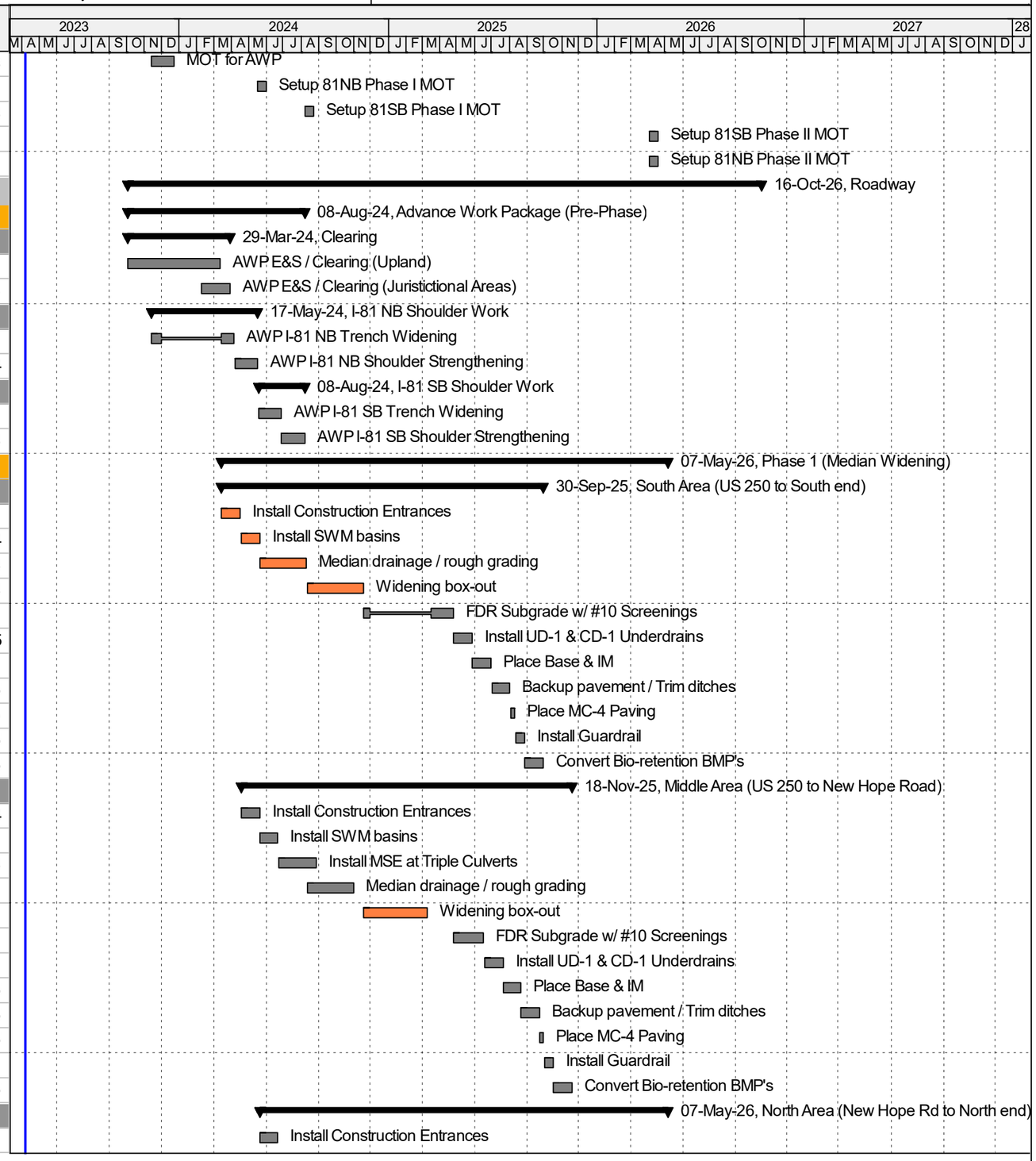
kokosing CONSTRUCTION COMPANY, INC. | rda RINKER DESIGN ASSOCIATES

Activity ID	Original Duration	Activity Name	Start	Finish
K1960	40	MOT for AWP	13-Nov-23	23-Dec-23
K2660	15	Setup 81NB Phase I MOT	17-May-24	01-Jun-24
K2910	15	Setup 81SB Phase I MOT	08-Aug-24	23-Aug-24
K3520	15	Setup 81SB Phase II MOT	03-Apr-26	18-Apr-26
K3530	15	Setup 81NB Phase II MOT	03-Apr-26	18-Apr-26
Roadway				
Advance Work Package (Pre-Phase)				
Clearing				
K1830	90	AWP E&S / Clearing (Upland)	02-Oct-23	11-Mar-24
K2390	30	AWP E&S / Clearing (Juristictional Areas)	08-Feb-24	29-Mar-24
I-81 NB Shoulder Work				
K1970	25	AWP I-81 NB Trench Widening	14-Nov-23	05-Apr-24
K2540	25	AWP I-81 NB Shoulder Strengthening	08-Apr-24	17-May-24
I-81 SB Shoulder Work				
K2690	25	AWP I-81 SB Trench Widening	20-May-24	27-Jun-24
K2860	25	AWP I-81 SB Shoulder Strengthening	28-Jun-24	08-Aug-24
Phase 1 (Median Widening)				
South Area (US 250 to South end)				
K2500	20	Install Construction Entrances	15-Mar-24	16-Apr-24
K2580	20	Install SWM basins	18-Apr-24	20-May-24
K2700	50	Median drainage / rough grading	21-May-24	09-Aug-24
K2920	60	Widening box-out	12-Aug-24	18-Nov-24
K3140	32	FDR Subgrade w/ #10 Screenings	19-Nov-24	24-Apr-25
K3320	20	Install UD-1 & CD-1 Underdrains	25-Apr-25	28-May-25
K3350	20	Place Base & IM	29-May-25	30-Jun-25
K3380	20	Backup pavement / Trim ditches	01-Jul-25	01-Aug-25
K3400	5	Place MC-4 Paving	04-Aug-25	11-Aug-25
K3410	10	Install Guardrail	12-Aug-25	27-Aug-25
K3440	20	Convert Bio-retention BMP's	28-Aug-25	30-Sep-25
Middle Area (US 250 to New Hope Road)				
K2590	20	Install Construction Entrances	18-Apr-24	20-May-24
K2710	20	Install SWM basins	21-May-24	21-Jun-24
K2820	40	Install MSE at Triple Culverts	24-Jun-24	27-Aug-24
K2930	50	Median drainage / rough grading	12-Aug-24	31-Oct-24
K3130	60	Widening box-out	19-Nov-24	11-Mar-25
K3310	32	FDR Subgrade w/ #10 Screenings	25-Apr-25	17-Jun-25
K3360	20	Install UD-1 & CD-1 Underdrains	19-Jun-25	21-Jul-25
K3390	20	Place Base & IM	22-Jul-25	21-Aug-25
K3430	20	Backup pavement / Trim ditches	22-Aug-25	23-Sep-25
K3460	5	Place MC-4 Paving	24-Sep-25	30-Sep-25
K3470	10	Install Guardrail	01-Oct-25	16-Oct-25
K3480	20	Convert Bio-retention BMP's	17-Oct-25	18-Nov-25
North Area (New Hope Rd to North end)				
K2720	20	Install Construction Entrances	21-May-24	21-Jun-24



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Activity ID	Original Duration	Activity Name	Start	Finish
K2830	20	Install SWM basins	24-Jun-24	25-Jul-24
K3070	50	Median drainage / rough grading	01-Nov-24	03-Feb-25
K3270	60	Widening box-out	13-Mar-25	20-Jun-25
K3370	32	FDR Subgrade w/ #10 Screenings	23-Jun-25	12-Aug-25
K3420	20	Install UD-1 & CD-1 Underdrains	14-Aug-25	15-Sep-25
K3450	20	Place Base & IM	16-Sep-25	17-Oct-25
K3490	20	Backup pavement / Trim ditches	20-Oct-25	20-Nov-25
K3500	9	Place MC-4 Paving	21-Nov-25	19-Mar-26
K3510	10	Install Guardrail	20-Mar-26	03-Apr-26
K3540	20	Convert Bio-retention BMP's	07-Apr-26	07-May-26
Phase 2 (Outside Work)				
I-81 NB Outside Work				
K3590	20	Outside E+S and Clearing	20-Apr-26	19-May-26
K3710	40	Outside Drainage	21-May-26	27-Jul-26
K3880	30	Slope Correction Paving	28-Jul-26	14-Sep-26
K3990	20	Outside Guadrail replacement	15-Sep-26	16-Oct-26
I-81 SB Outside Work				
K3600	20	Outside E+S and Clearing	20-Apr-26	19-May-26
K3720	40	Outside Drainage	21-May-26	27-Jul-26
K3890	30	Slope Correction Paving	28-Jul-26	14-Sep-26
K4000	20	Outside Guadrail replacement	15-Sep-26	16-Oct-26
Structures				
B638 - 81SB over Ramp I				
B638 Phase I				
K3000	10	Install Shoring	26-Aug-24	10-Sep-24
K3040	25	Deck Demolition	12-Sep-24	21-Oct-24
K3110	30	Substructure Widening	18-Nov-24	13-Jan-25
K3180	10	Set Girders	15-Jan-25	31-Jan-25
K3210	30	Form/Pour/Cure Deck	03-Feb-25	26-Mar-25
K3290	15	Place Parapets / Approach Slabs	27-Mar-25	22-Apr-25
K3570	5	Switch Bridge MOT to Phase II	20-Apr-26	24-Apr-26
B638 Phase II				
K2620	15	Beam UIT Treatment	26-Apr-24	21-May-24
K3650	25	Deck Demolition	27-Apr-26	05-Jun-26
K3740	15	Backwall reconstruction	08-Jun-26	30-Jun-26
K3810	25	Substructure Repairs	02-Jul-26	11-Aug-26
K3920	30	Form/Pour/Cure Deck	13-Aug-26	30-Sep-26
K4070	5	Form/Pour/Cure closure	01-Oct-26	08-Oct-26
K4020	15	Place Parapets / Approach slabs	01-Oct-26	26-Oct-26
A1000	30	Recoat Structure	09-Oct-26	27-Nov-26
B639 - 81SB over Augusta Woods/RR				
B639 Phase 1				
K2990	10	Install Shoring	26-Aug-24	10-Sep-24
K3030	25	Deck Demolition	12-Sep-24	21-Oct-24

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Activity ID	Original Duration	Activity Name	Start	Finish
K3100	30	Substructure Widening	18-Nov-24	13-Jan-25
K3170	10	Set Girders	15-Jan-25	31-Jan-25
K3200	30	Form/Pour/Cure Deck	03-Feb-25	26-Mar-25
K3280	15	Place Parapets / Approach Slabs	27-Mar-25	22-Apr-25
K3550	5	Switch Bridge MOT to Phase II	20-Apr-26	24-Apr-26
B639 Phase II				
K2840	15	Beam UIT Treatment	24-Jun-24	16-Jul-24
K3640	25	Deck Demolition	27-Apr-26	05-Jun-26
K3730	15	Backwall reconstruction	08-Jun-26	30-Jun-26
K3800	30	Form/Pour/Cure Deck	02-Jul-26	20-Aug-26
K3870	25	Substructure Repairs	02-Jul-26	11-Aug-26
K3960	15	Place Approach slabs	21-Aug-26	14-Sep-26
K3970	5	Form/Pour/Cure closure	21-Aug-26	27-Aug-26
K3980	5	Switch Bridge MOT to Phase III	15-Sep-26	22-Sep-26
B639 Phase III				
K4010	25	Deck Demolition	24-Sep-26	02-Nov-26
K4110	15	Backwall reconstruction	03-Nov-26	27-Nov-26
K4130	25	Substructure Repairs	30-Nov-26	18-Jan-27
K4140	30	Form/Pour/Cure Deck	20-Jan-27	15-Mar-27
K4150	15	Place Parapets / Approach slabs	16-Mar-27	08-Apr-27
K4160	5	Form/Pour/Cure closure	16-Mar-27	23-Mar-27
A1010	30	Recoat Structure	24-Mar-27	11-May-27
B640 - 81SB over 250				
B640 Phase I				
K3010	10	Install Shoring	26-Aug-24	10-Sep-24
K3050	25	Deck Demolition	12-Sep-24	21-Oct-24
K3120	30	Substructure Widening	18-Nov-24	13-Jan-25
K3190	10	Set Girders	15-Jan-25	31-Jan-25
K3220	30	Form/Pour/Cure Deck	03-Feb-25	26-Mar-25
K3300	15	Place Parapets / Approach Slabs	27-Mar-25	22-Apr-25
K3580	5	Switch Bridge MOT to Phase II	20-Apr-26	24-Apr-26
B640 Phase II				
K2850	15	Beam UIT Treatment	24-Jun-24	16-Jul-24
K3660	25	Deck Demolition	27-Apr-26	05-Jun-26
K3750	15	Backwall reconstruction	08-Jun-26	30-Jun-26
K3820	25	Substructure Repairs	02-Jul-26	11-Aug-26
K3930	30	Form/Pour/Cure Deck	13-Aug-26	30-Sep-26
K4080	5	Form/Pour/Cure closure	01-Oct-26	08-Oct-26
K4030	15	Place Parapets / Approach slabs	01-Oct-26	26-Oct-26
A1020	30	Recoat Structure	09-Oct-26	27-Nov-26
B641 - 81SB over Lewis Creek				
B641 Phase I				
K3020	10	Install Shoring	26-Aug-24	10-Sep-24
K3090	25	Deck Demolition	08-Nov-24	24-Dec-24

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Activity ID	Original Duration	Activity Name	Start	Finish
K3160	30	Substructure Widening	26-Dec-24	21-Feb-25
K3240	10	Set Girders	24-Feb-25	10-Mar-25
K3260	30	Form/Pour/Cure Deck	11-Mar-25	29-Apr-25
K3340	15	Place Parapets / Approach Slabs	30-Apr-25	23-May-25
K3610	5	Switch Bridge MOT to Phase II	20-Apr-26	24-Apr-26
B641 Phase II				
K2980	15	Beam UIT Treatment	19-Aug-24	12-Sep-24
K3680	25	Deck Demolition	27-Apr-26	05-Jun-26
K3770	15	Backwall reconstruction	08-Jun-26	30-Jun-26
K3840	25	Substructure Repairs	02-Jul-26	11-Aug-26
K3950	30	Form/Pour/Cure Deck	13-Aug-26	30-Sep-26
K4050	5	Form/Pour/Cure closure	01-Oct-26	08-Oct-26
K4060	15	Place Parapets / Approach slabs	01-Oct-26	26-Oct-26
B642 - 81NB over Lewis Creek				
B642 Phase I				
K2960	10	Install Shoring	19-Aug-24	03-Sep-24
K3080	25	Deck Demolition	08-Nov-24	24-Dec-24
K3150	30	Substructure Widening	26-Dec-24	21-Feb-25
K3230	10	Set Girders	24-Feb-25	10-Mar-25
K3250	30	Form/Pour/Cure Deck	11-Mar-25	29-Apr-25
K3330	15	Place Parapets / Approach Slabs	30-Apr-25	23-May-25
K3560	5	Swtich Birdge MOT to Phase II	20-Apr-26	24-Apr-26
B642 Phase II				
K2970	15	Beam UIT Treatment	19-Aug-24	12-Sep-24
K3670	25	Deck Demolition	27-Apr-26	05-Jun-26
K3760	15	Backwall reconstruction	08-Jun-26	30-Jun-26
K3830	25	Substructure Repairs	02-Jul-26	11-Aug-26
K3940	30	Form/Pour/Cure Deck	13-Aug-26	30-Sep-26
K4040	15	Place Parapets / Approach slabs	01-Oct-26	26-Oct-26
K4090	5	Form/Pour/Cure closure	01-Oct-26	08-Oct-26
Signage, Striping, ITS				
K3630	15	Install 81SB OHSS Sta. 3158	20-Apr-26	11-May-26
K3620	15	Install 81NB OHSS Sta. 2068	20-Apr-26	11-May-26
K3700	15	Install 81SB OHSS Sta. 3127	12-May-26	05-Jun-26
K3690	15	Install 81NB OHSS Sta. 2085	12-May-26	05-Jun-26
K3780	15	Install 81SB OHSS Sta. 3103	08-Jun-26	30-Jun-26
K3790	15	Install 81NB OHSS Sta 2174	08-Jun-26	30-Jun-26
K3850	15	Install 81SB OHSS Sta. 3077	02-Jul-26	27-Jul-26
K3860	15	Install 81NB OHSS Sta. 2206	02-Jul-26	27-Jul-26
K3900	15	Install 81SB OHSS Sta. 3065	28-Jul-26	20-Aug-26
K3910	15	Install 81NB OHSS Sta. 2233	28-Jul-26	20-Aug-26
K4100	18	Final Paving / Striping I-81 NB	27-Oct-26	24-Nov-26
K4170	20	Final Paving / Striping I-81 SB	09-Apr-27	10-May-27

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

kokosing CONSTRUCTION COMPANY, INC. | rda RINKER DESIGN ASSOCIATES