

TECHNICAL PROPOSAL - VOLUME I

INTERSTATE 64 CAPACITY IMPROVEMENTS – SEGMENT III

FROM: 1.15 MILES WEST OF ROUTE 199
(LIGHTFOOT)
TO: 1.05 WEST OF ROUTE 199
(HUMELSINE PARKWAY)
YORK COUNTY, VIRGINIA

STATE PROJECT NO.: 0064-965-229, P-101, R-201, C-501,
B-638, B-639, B-640, B-641, B-642, B-643, D-609, D-610, D611
FEDERAL PROJECT NO.: NHPP-064-3 (498)
CONTRACT ID NUMBER: C00106689DB97



PREPARED FOR:



SUBMITTED BY:





September 14, 2017

Mr. Joseph A. Clarke, P.E.
Alternative Project Delivery Division
Virginia Department of Transportation
1401 East Broad Street
Annex Building, 8th Floor
Richmond, Virginia 23219

RE: I-64 Capacity Improvements – Segment III, York County, Virginia
State Project Nos.: 0064-965-229, P-101, R-201, C-501, B-638, B-639, B-640, B-641, B-642, B-643,
D-609, D-610, D-611
Federal Project No.: NHPP-064-3 (498)
Contract ID Number: C00106689DB97

Dear Mr. Clarke:

The Lane Construction Corporation (LANE) is pleased to present our Technical Proposal for the above referenced Design-Build (D-B) project. Our response contains all information requested in the RFP dated June 21, 2017 and Addenda 1, 2, and 3. LANE is teamed with Rummel, Klepper, & Kahl, LLP (RK&K), Lead Designer, and Volkert, Inc., Structures Lead, to provide the Virginia Department of Transportation (VDOT) a Team with a solid reputation for completing complex projects innovatively, on time, and often ahead of schedule. Collectively, our Team's experience enables us to deliver the high quality and technically-sound project both VDOT and the public expects. Our Team has taken every opportunity to include enhancements, provide value-added features, manage and mitigate risk, and reduce both construction and long-term maintenance cost. By focusing on our quality, safety, and public information, VDOT, traveling public, and property owner stakeholders will benefit from this completed Project.

4.1.1 Offeror's Full Legal Name and Address:

The Lane Construction Corporation
90 Fieldstone Court
Cheshire, CT 06410

4.1.2 Declaration of Intent: It is the Offeror's intent, if selected, to enter into a contract with VDOT for the Project in accordance with the terms of this RFP.

4.1.3 120-Day Declaration: Pursuant to Part 1, Section 8.2, we declare 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 Technical Proposal is actually submitted to VDOT ("Technical Proposal Submission Date").

4.1.4 Offeror's Point of Contact Information: Mr. John P. Havel, Jr., PE is the authorized representative and point of contact for the LANE Team for all matters associated with this submittal.

John P. Havel, Jr. PE, Pursuit Manager
14500 Avion Parkway, Suite 200
Chantilly, VA 20151
Tel: (412) 445-0423 Fax: (703) 222-5960
Email: JPHavel@laneconstruct.com

The Lane Construction Corporation
14500 Avion Parkway | Suite 200
Chantilly, VA 20151
T 703-222-5670 F 703-222-5960
www.LaneConstruct.com
An Equal Opportunity Employer M / F / D / V

4.1.5 Offeror's Principal Officer Information: Mr. David J. Rankin is a Principal Officer of LANE.

David J. Rankin, Senior Vice President
6125 Tyvola Centre Drive
Charlotte, NC 28217
Tel: (704) 553-6500 Fax: (704) 553-6598
Email: DJRankin@laneconstruct.com

4.1.6 Final Completion Date: In accordance with RFP Section 2.3.1, LANE proposes a Final Completion Date of September 24, 2021.

4.1.7 Unique Milestone Dates: LANE does not propose any unique milestone dates.

4.1.8 Proposal Payment Agreement: An executed Proposal Payment Agreement (Attachment 9.3.1) can be found in the Appendix of Volume 1.

4.1.9 Certification Regarding Debarment Forms: Certifications for Debarment for Primary and Lower Tier Transactions have been completed and executed for the Offeror and all subconsultants, subcontractors, and other entities as identified as members of the LANE Team. These can be found in the Appendix of Volume 1.

4.1.10 DBE Statement: LANE supports the Disadvantaged Business Enterprise (DBE) program and is committed to meeting the 12% goal for the design and construction of this Project utilizing Virginia certified DBE companies.

The LANE Team appreciates the opportunity to propose on this critically important Project. We look forward to partnering with VDOT to make the I-64 Capacity Improvements – Segment III Project a landmark success for the citizens of Virginia.

Respectfully submitted,



John P. Havel, Jr., PE
Pursuit Manager
The Lane Construction Corporation

4.2 | OFFEROR'S QUALIFICATIONS

4.2.1 Qualifications of Key Personnel

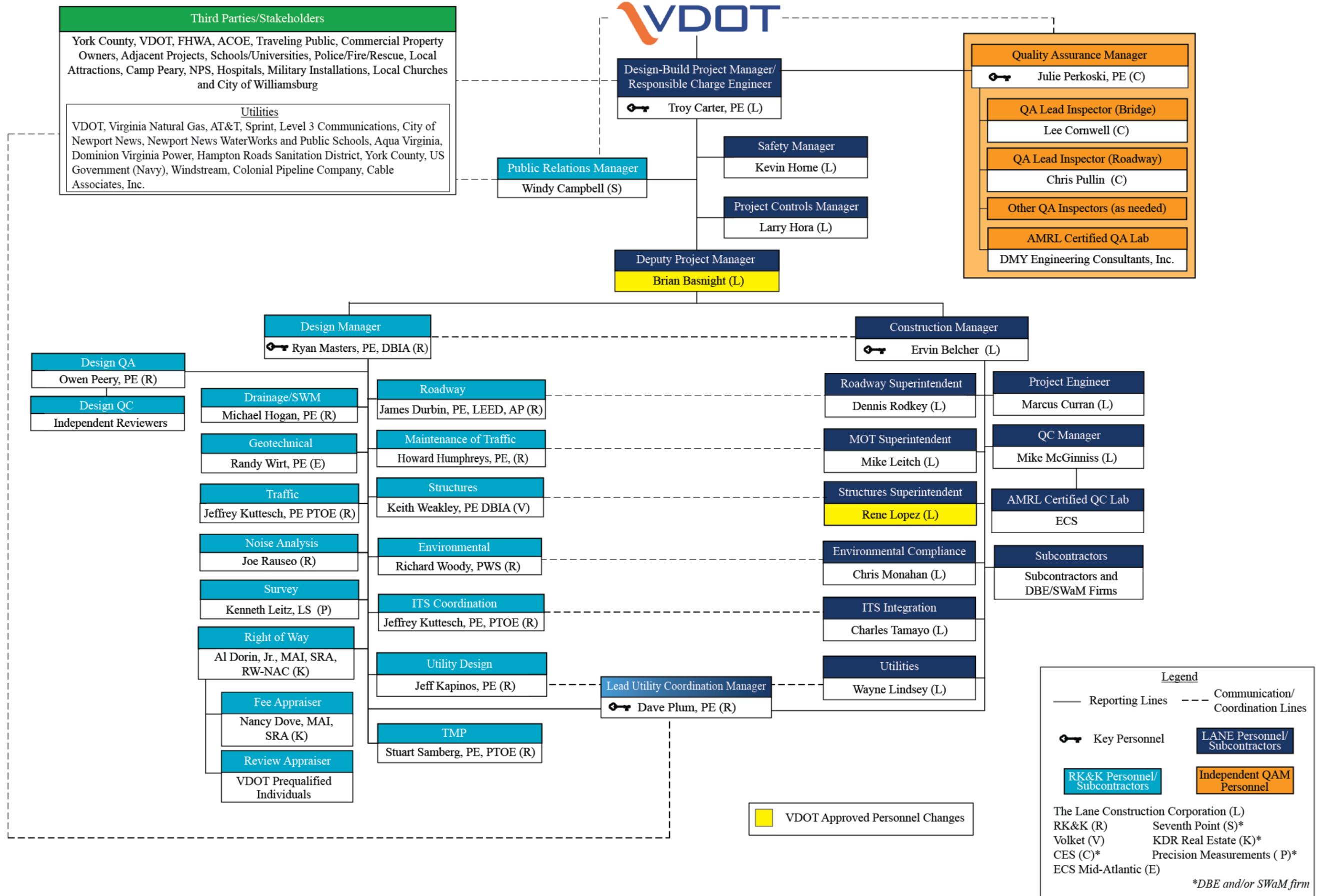
Since the submission of our Statement of Qualifications (SOQ) dated May 2, 2017, the LANE Team has made the following VDOT-approved changes:

- Mr. Troy Corey, the Deputy Project Manager is no longer with LANE. He has been replaced by Brian Basnight. (Non-Key Personnel)
- Mr. Ben McKenna, the Structures Superintendent has retired and is no longer with LANE. He has been replaced by Rene Lopez. (Non-Key Personnel)

The LANE Team confirms that all other information presented in the SOQ remains true and accurate in accordance with Part 1, Section 11.4. The LANE Team will remain intact for the duration of the contract.

4.2.2 Organizational Chart

Under the leadership of our Design-Build Project Manager (DBPM), Troy Carter, PE, the LANE Team is structured to effectively manage and deliver the design and construction of this Project. The LANE Team is organized to provide VDOT with a single-source point of contact, responsible for all design and construction activities. Our Team organization has a straightforward chain of command, with individual tasks and functional responsibilities clearly identified. This organizational chart identifies key personnel and major functions to be performed for the successful management, design, and construction of the Project. Though reporting relationships are rigid, the lines of communication within the Team will remain fluid and flexible to meet the requirements of each individual project task. In order to prevent unnecessary project delays, it may be prudent at times for other members within the LANE Team to communicate directly with their counterparts at VDOT. This will be directed and authorized in advance by Mr. Carter, PE and the VDOT Project Manager. Our updated organization chart with the VDOT-approved changes is included on the following page.



4.3 | DESIGN CONCEPT

Our Design Concept for the I-64 Capacity Improvements – Segment III (I-64 Segment III) Project provided in this Technical Proposal have been a coordinated effort between our design and construction teams to comply with the Technical Requirements; design and implement MOT plans to provide a **safe work zone for construction personnel and the traveling public, minimize impacts to traffic disruptions, improve the effectiveness of operations, and significantly reduce the need for future inspection and maintenance.**

The LANE Team Offers	Benefit to VDOT
No Median Retaining Walls	<ul style="list-style-type: none"> Eliminates future maintenance and inspection costs Preserves current roadway aesthetics Maintains a consistent typical section
Complete Replacement of Lakeshead Drive Bridge	<ul style="list-style-type: none"> Reduces future maintenance costs Increased service life versus rehabilitated structure
Roadway and Bridges Designed to Reduce the Construction Footprint	<ul style="list-style-type: none"> Reduces environmental impacts Reduces the number of required BMPs
Unique Approach to MOT	<ul style="list-style-type: none"> Reduces temporary pavement and lane closures Eliminates an 8-mile detour to reduce motorist’s frustration

4.3.1 Conceptual Roadway Plans

The LANE Team’s Conceptual Roadway plans are included in Volume II and meet or exceed all RFP requirements and Attachment 2.2. The design stays within the proposed right of way (ROW) limits shown in the RFP Conceptual Plans and does not require design exceptions or design waivers beyond what is listed in the RFP documents.

Through the proprietary meeting process and preliminary engineering efforts, the LANE Team has identified the following roadway enhancements for the Project:

Design Concept Enhancement Location	Enhancement	Result	Benefit to VDOT and the End User
I-64 Majority of Alignment – (Western terminus to Queens Road overpass)	Shift EB and WB horizontal alignment 5’ towards median and maintain traffic on the existing “right” edge of travel lane during Phase I Construction.	<ul style="list-style-type: none"> Maintains existing shoulders during Phase I Construction 	<ul style="list-style-type: none"> Maintains a continuously paved emergency pull-off area, increasing level of service and safety during incidents and normal operations. Increases driver familiarity and consistency.
		<ul style="list-style-type: none"> Maintains existing auxiliary lanes designed to 70mph 	<ul style="list-style-type: none"> Auxiliary lane lengths exceed requirements for the 55mph construction speed, which results in more room for those maneuvers. Increases driver familiarity and consistency.
		<ul style="list-style-type: none"> Eliminates shoulder strengthening 	<ul style="list-style-type: none"> Night time lane closures are eliminated for this purpose; decreasing impacts to motorists. Reduces schedule risk by allowing median construction to begin sooner. Eliminates maintenance of temporary pavement, minimizing lane closures. Fewer lane shifts; resulting in increased driver safety.

		<ul style="list-style-type: none"> Fewer lane shifts; resulting in increased driver safety. 	<ul style="list-style-type: none"> Eliminates vehicle travel paths traversing existing edge of pavement.
		<ul style="list-style-type: none"> Shifts the proposed outside hinge point toward the median, reducing disturbed area. 	<ul style="list-style-type: none"> Reduces environmental impacts which results in faster permitting and agency coordination. Reduces number of SWM BMP's and their maintenance; pipe extensions/structures; environmental impacts. Reduces existing ITS and sign structure conflicts, which benefits the schedule. Increases offset to potential roadside hazards outside the clear zone increasing safety.
	Replace horizontal lane shifts with reversing curves	<ul style="list-style-type: none"> Smoother transitions 	<ul style="list-style-type: none"> Motorist safety
I-64 Between Route 143 and Queens Creek	Shift EB and WB horizontal alignment away from the median	<ul style="list-style-type: none"> Eliminated 2500' retaining wall and concrete median barrier identified in RFP 	<ul style="list-style-type: none"> Eliminates future wall maintenance. Accelerates construction. Improved motorist safety by eliminating an object at the edge of the 30' clear zone. Preserves current aesthetics. Improves safety for maintenance activities like mowing.
I-64 Station 1270+00 to 1290+00	Shift EB and WB horizontal alignment away from the median	<ul style="list-style-type: none"> Eliminated 1000' retaining wall and concrete median barrier 	<ul style="list-style-type: none"> Eliminates future wall maintenance Accelerates construction Improved motorist safety by eliminating an object at the edge of the 30' clear zone. Preserves current aesthetics Improves safety for maintenance activities like mowing.
I-64 EB Off Ramp to Route 143	Shifted RFP Ramp location away from the limited access line	<ul style="list-style-type: none"> Improved constructability Reduction in MOT phases 	<ul style="list-style-type: none"> Accelerates construction Improved motorist safety with less traffic shifts during construction.

(a) General Geometry including Horizontal Curve Data and Associated Design Speeds, Number and Widths of Lanes and Shoulders

As shown in Volume II, our design will provide a 6-lane median divided facility with three general purpose lanes in each direction. The plans include information detailing horizontal curve data, the number and width of lanes and shoulders, superelevation (meeting TC-5.11 for the design speed), and improvements to ramps within the Project limits. Ramp acceleration and deceleration lanes have been designed to meet the RFP requirements. The taper length on all deceleration lanes have been revised from 250' to 300' to be in compliance with VDOT's requirements detailed on page C-108 of the Road Design Manual. The off-ramp to Route 143 has been modified to meet storage and vehicle turning requirements.

(b) Horizontal Alignments

The proposed horizontal alignment closely mirrors the Conceptual RFP design but has been *optimized to accelerate construction and reduce construction related impacts and delays to the traveling public*. We achieve this by shifting the I-64 EB and WB horizontal alignments 5' towards the median, compared to the RFP design. This will allow construction to begin in Phase

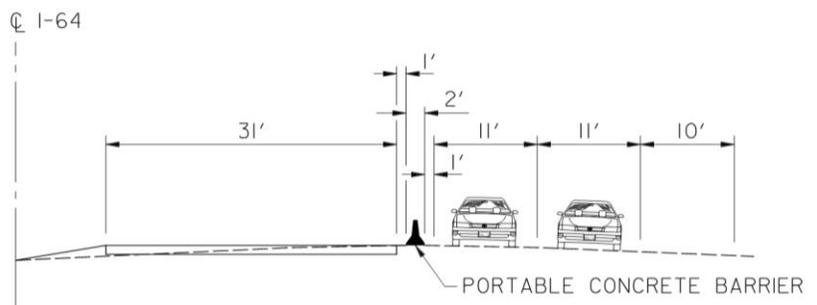


Figure 4.3-1. I-64 EB Phase I MOT

I without shifting traffic onto the existing shoulders throughout over 70% of the Project. This also allows LANE to maintain traffic in Phase 1 on the existing alignment and preserve the existing paved shoulder with 11' lanes, except in the following tight spots where 12' lanes will be used: under the Route 604 overpass, between Station 1270 to 1290, between the Route 143 overpass and Queens Creek, and east of the Queens Road overpass. In addition to maintaining the existing 10' wide paved shoulder, the existing acceleration and deceleration lanes are retained with their existing length and 12' lane width. This benefits the Project by:

- Maintaining the existing paved shoulder to provide:
 - A continuous paved emergency pullover area throughout 70% of Phase I construction
 - Reduced changes in traffic patterns during construction – driver consistency
- Reducing traffic shifts onto shoulders minimizes:
 - Night time lane closures to strengthen the existing shoulders which results in fewer impacts to the traveling public.
 - Vehicle travel paths traversing the existing edge of pavement in construction – fewer lane shifts equals an increase in driver safety and consistency.
 - Pavement maintenance concerns with maintaining traffic on strengthened shoulders
 - Construction can begin more quickly which will alleviate pressure on the Project schedule
- Moving the outside shoulder hinge point towards the median:
 - Reducing the need for widening to the outside, disturbed area, number of SWM BMPs and VDOT maintenance of those BMPs
 - Reducing the need to extend pipes and secondary structures
 - Reducing environmental impacts associated with potential widening to the outside
 - Shifting the proposed guardrail location further from the existing ITS utilities along the existing eastbound shoulder and reducing impacts

In addition to shifting the proposed baselines 5' towards the median, we have replaced nearly all the horizontal lane shifts utilized in the RFP Conceptual Plans with 75mph reverse curves, resulting in an increase in motorist safety at minimal cost.

The RFP Conceptual Plans proposed a 2500' long wall, up to 20' tall, between Route 143 and Queens Creek. Our roadway design has eliminated this wall by shifting the EB and WB horizontal alignments approximately 10' away from the median and making minor changes to the vertical grade. Eliminating this wall and the associated concrete median barrier required along WB I-64 will accelerate construction, and eliminate VDOT's need for future maintenance. Maintaining a graded median in this area instead of 2,500 LF of concrete wall and median barrier also preserves and maintains existing the aesthetics within the Project area. Additionally, while the base of the wall would have been outside the EB I-64 clear zone, eliminating the wall also increases motorist safety by removing an object that an errant a vehicle could impact at the edge of the 30' clear zone.

In addition to eliminating the 2500' long retaining wall proposed in the RFP Conceptual Plans, our Team identified an area between Stations 1270 and 1290 EB where the existing difference in elevation between EB and WB I-64 coupled with widening both roadways to the median would require a wall (up to 10 feet tall) and concrete median barrier at the top of the wall. Identifying and removing the possible need for the wall improves public safety and eliminates VDOT's need for future maintenance.

The alignment of the I-64 EB off-ramp to Route 143 has been shifted horizontally away from the existing limited access line. This will improve constructability, reduce the number of MOT changes which will limit impacts on motorists during construction, and impacts to wetlands/existing pipes/drainage.

(c) Maximum Grade for all Segments and Connectors

Our Team's design meets or exceeds the grade requirements detailed in the RFP. It:

- Improves substandard vertical clearance of I-64 eastbound under the Route 199 and 604 overpasses to meet VDOT's desirable 16'-6" vertical clearance.
- Improves the existing vertical geometry to meet or exceed the 75mph design speed.

- Improves the **proposed vertical alignment to not exceed 3% within the entire Project area** to help vehicles maintain speed and improve traffic flow.

(d) Typical Sections of the Roadway Segments to Include Retaining Walls and Bridge Structures

Roadway: The typical sections in Volume II graphically depict the design intent and comply with the RFP. The existing roadway is to be fully demolished and reconstructed with cross slopes compliant with all standards and RFP requirements. The design includes a graded median with guardrail while the alignment shift increases the distance between the outside graded shoulder and existing hinge point to provide a wider than required shoulder. As discussed above, the Project has eliminated the need for a retaining wall between Route 143 and Queens Creek; as well as, between Stations 1270 and 1290 EB.

The proposed design includes barrier pier protection and guardrail where required. Our plan includes replacement of the existing guardrail to meet VDOT’s guidance in Appendix J of the Road Design Manual; as well as, clearing of the roadway clear zone in locations that are not protected by barrier. A landscaping plan will be developed to denote proposed areas that will be planted or reforested. The plan will be developed by a landscape architect, licensed in the Commonwealth of Virginia, to meet all requirements in Part 2, Section 2.8.

Bridge Structures: The Typical sections of bridges will conform to Volume V, Part 2, Chapter 6 of the VDOT Structure & Bridge Manuals, the RFP, and close coordination with the roadway plans and MOT requirements specific to each location. A minimum of two 12 foot lanes will be maintained at all times of construction phasing and the permanent condition will consist of three 12 foot lanes with two 12 foot shoulders. Cross slopes will match those on the approach roadway and closure pour joints are located away from the wheel line of traffic.

(e) Conceptual Hydraulic and Stormwater Management Design

Storm Drainage: Storm drainage will be designed to adequately convey runoff through the Project while optimizing the system to facilitate construction, minimize impacts, and result in overall reduced maintenance efforts and costs. Existing drainage structures found to be hydraulically inadequate will be replaced in such a manner as to minimize the number of structures required, facilitate construction, and future maintenance. For instance, inadequate pipes crossing I-64 with less than 7-feet of cover will be replaced in segments through coordination with the SOC Plan. As such, fewer manhole and drop inlet structures will be needed to replace existing pipe systems. All inadequate cross pipes replaced with jacked and bored pipes will be plugged and abandoned to minimize impacts to I-64 travel lanes.

Based on our Team’s horizontal alignment, we’ve eliminated/reduced modifications to outside slopes and ditches and the related drainage, clearing and grading required by the RFP. This shift of the roadway baseline has also eliminated the need to extend 13 culverts to the outside resulting in less future maintenance.

The preliminary pipe inspection report was used to determine how to address the existing pipes and develop an efficient proposed drainage system that facilitates construction and results in less maintenance. Only culverts and storm sewer pipes in critical condition will be replaced. Pipes that are hydraulically adequate, not in critical condition, and can be efficiently incorporated into the proposed storm drain system, will be repaired. See Table 4.3-2 below for pipes that will be replaced with the proposed method of replacement. The need for jack and bore pipes will be minimized by installing pipes in phases as roadway sections are replaced. Table 4.3-3 lists the pipes that will be repaired.

Table 4.3-2. Pipes to be Replaced

Pipe Run		Pipe Size (IN)	Existing Material	Pipe Length (FT)	Approx. Cover (FT)	Proposed Method of Replacement
A 10 GRATE 105	GRATE 109	24	RCP	188.72	9	Jack and Bore
A 10A GRATE 107	GRATE 109	20	RCP	206.03	6	Open Cut
A11 GRATE INLET 103	A11 GRATE IN MEDIAN 105	24	RCP	297.75	10	Jack and Bore
A13 INLET BASIN	A13 EOP OUTLET	24	RCP	164.94	10	Jack and Bore

A14 INLET BASIN	A14 OUTLET BASIN	24	RCP	82.22	6	Open Cut
A17 INLET BASIN	A17 OUTLET BASIN	24	RCP	145.16	9.5	Jack and Bore
A18 INLET	A18 GRATE IN MEDIAN	24	RCP	191.48	10	Jack and Bore
A20 INLET BASIN	A20 OUTLET BASIN	24	RCP	148	10	Jack and Bore
A21 INLET	A21 GRATE IN MEDIAN	24	RCP	139.22	5	Open Cut
A22 INLET BASIN	A22 OUTLET BASIN	24	RCP	131.4	4	Open Cut
A26 GRATE IN MEDIAN	A26 GRATE	36	RCP	131.47	14	Jack and Bore
A27 END OF PIPE INLET	A27 OUTFALL BASIN	15	RCP	133.08	9	Jack and Bore
A46 EOP INLET	A46 OUTLET BASIN	24	RCP	118.84	9	Jack and Bore
A47 EOP INLET	A47 EOP OUTLET	24	RCP	105.48	7	Open Cut
A59 EOP OUTLET	A59 EOP INLET	24	RCP	104.67	5	Open Cut
A59A EOP INLET	A59A EOP OUTLET	24	RCP	72.45	3	Open Cut
A81 HEADWALL	A81 MH IN MEDIAN	36	RCP	172.72	30	Jack and Bore
A82 TEE IN MEDIAN	A82 OUTFALL	36	RCP	233.34	30	Jack and Bore
P3 GRATE 109	OUTFALL 110	30	CMP	90.21	5	Open Cut
P4 HEADWALL	P4 ENDWALL	24	RCP	61.38	14	Jack and Bore
P5 HEADWALL	P5 ENDWALL	18	RCP	60.51	10	Open Cut
P9 INLET BASIN	P9 EOP OUTLET	36	CMP	100	12	Jack and Bore
P10 INLET BASIN	P10 OUTLET BASIN	15	RCP	76.09	10	Open Cut
P11 INLET BASIN	P11 END OF PIPE OUTLET	24	RCP	93.5	12	Open Cut
P15 EOP INLET	P15 BASIN OUTLET	18	RCP	52.69	11	Open Cut
P16 EOP INLET	P16 EOP OUTLET	30	RCP	150.39	25	Jack and Bore
P23 EOP INLET	P23 EOP OUTLET	24	RCP	71.92	5	Open Cut

Table 4.3-3. Pipes to be Repaired

Pipe Run		Pipe Size (IN)	Existing Material	Pipe Length (FT)
A43 EOP INLET	A43 OUTLET BASIN	42	RCP	108.45
A44 INLET BASIN	A44 OUTLET BASIN	42	RCP	98.63
A45 OUTLET BASIN	A45 INLET BASIN	42	RCP	124.62
A52 EOP INLET	A52 OUTLET BASIN	36	RCP	110.77
A53 EOP INLET	A53 EOP OUTLET	36	RCP	86.96
A68 EOP INLET	A68 OUTLET BASIN	36	RCP	116.01
A69 INLET BASIN	A69 EOP OUTLET	36	RCP	121.19
A70 EOP INLET	A70 OUTLET BASIN	42	RCP	132.88
A71 INLET BASIN	A71 EOP OUTLET	42	RCP	149.38
P3B INLET	P3B OUTFALL	24	RCP	75.68
P7 INLET BASIN	P7 EOP OUTLET	30	RCP	73.68

Stormwater Management Plan: SWM for the Project will be governed by the grandfathered criteria outlined in Part IIC of the State stormwater regulations and the requirements of York County Watershed Management and Protection area overlay district (WMP) associated with the watersheds of Waller Mill Reservoir and Jones Mill Reservoir. The DEQ Performance Based Computations were used to determine the required removal rate for compliance with the State Regulations. The following unique challenges were considered for the Project:

- Anticipated high groundwater elevations in some areas where BMP’s are being proposed in the RFP design.
- On site BMP facilities are required for Project areas within the Waller Mill and Jones Mill Reservoir watersheds for compliance with the WMP
- Multiple 100-year floodplain crossings, including Queens Creek
- Multiple delineated wetlands and waters of the U.S. parallel the outside shoulders

Taking into account all of these challenges, our Team **developed a SWM configuration that improves upon the RFP SWM concept design** by:

- Eliminating all water quality swales on the Project
- Eliminating the following BMP’s: 3-4,3-5, 3-6, 4-2, 5-1, 5-5, 8-3, 8-4, 9-2, 9-3, and 10-8. Some BMP’s are being removed due to the potential presence of high groundwater and/or streams and wetlands. Other BMP’s are not required due to redirection of runoff to other BMP’s, the purchase of nutrient credits, and/or meeting water quantity criteria such as the 1% Rule. Please see Table 4.3-4 for details regarding the redesign of the SWM Plan.
- BMP 10-7 is being relocated and realigned in order to avoid impacts to streams as well as a potential utility conflict with a sanitary force main.
- Nutrient credits will be purchased to meet 25% of the total required removal rate for the Project, other than in the Waller Mill and Jones Mill Reservoir watersheds
- In order to meet all water quality and quantity requirements, including those within the York County Watershed Management Protection (WMP), the SWM Plan consists of 2 bioretention basins, 11 enhanced extended detention basins, and 1 retention basin.
- Enhanced Extended Detention basins and a Retention Basin (III), will be proposed for the York County Watershed Management Protection (WMP) in the Waller Mill Reservoir watershed in order to meet the York County requirements.
- An Enhanced Extended Detention basin will be proposed for the WPM in the Jones Mill Reservoir watershed in order to meet the York County requirements.

Table 4.3-4. Altered SWM Plan: Eliminated BMP’s

BMP Rem'd	Reason for Removal	Design Alteration	Benefit to Project
3-4	Potential stream and wetland impact	Runoff redirected to BMP 3-1 and 3-2	Reduced ROW and maintenance, elimination of 2 jack and bore pipes
3-5	High Groundwater	Runoff redirected to BMP 3-1 and 3-2	Reduced ROW and maintenance, elimination of a jack and bore pipe
3-6	Not needed for Water Quality or Quantity Control	Runoff redirected to other outfalls with BMP's, Nutrient credits purchased	Reduced ROW and maintenance
4-2	Not needed for Water Quality or Quantity Control	Runoff redirected to other outfalls with BMP's, Nutrient credits purchased	Reduced maintenance
5-1	Not needed for Water Quality or Quantity Control	Runoff redirected to BMP 5-3	Reduced maintenance
5-5	Potential stream and wetland impact	Runoff redirected to other outfalls with BMP's, Nutrient credits purchased	Reduced ROW and maintenance, elimination of a jack and bore pipe
8-3	Nutrient credits purchased, 1% Rule applies for water quantity requirements	Runoff conveyed to Queens Creek	Reduced maintenance, elimination of a jack and bore pipe
8-4	Nutrient credits purchased, 1% Rule applies for water quantity requirements	Runoff conveyed to Queens Creek	Reduced maintenance, elimination of a jack and bore pipe

9-2	Nutrient credits purchased, 1% Rule applies for water quantity requirements	Runoff conveyed to Queens Creek	Reduced ROW and maintenance, elimination of a jack and bore pipe
9-3	Nutrient credits purchased, 1% Rule applies for water quantity requirements	Runoff conveyed to Queens Creek	Reduced ROW and maintenance, elimination of a jack and bore pipe
10-8	High Groundwater	Runoff redirected to BMP 10-7	Reduced ROW and maintenance, elimination of a jack and bore pipe

The elimination of BMP’s results in reduced ROW required for the Project at 9 locations, maintenance of BMP’s, and impacts to wetlands and streams. All outfalls will meet adequacy of outfalls MS-19 criteria.

(f) Proposed Right of Way Limits

The LANE Team’s design has reduced the proposed ROW by 221,928 sf (5.1Ac.) and eliminated the need to negotiate with eight parcels that were identified in the RFP Conceptual Plans. This reduction will save the LANE Team schedule time and expense in right of way negotiations and VDOT acquisition costs. Right of way reductions improve public perception of the project and minimize risk to the Project schedule.

(g) Proposed Utility Impacts

Based on the information provided to date along with our knowledge of the Project, it does not appear that there are any substantial utility conflicts that cannot be addressed during the design process. However, there are some areas related to utilities that could have impacts to cost and schedule if not managed effectively.

Our Team’s ability to effectively manage utility coordination and conflicts is based upon our highly-experienced staff and their long-standing relationships with utility companies in the Commonwealth. Utility impacts can have a significant impact to Project schedule and cost especially if unforeseen. Our Team has thoroughly reviewed the RFP plans and discussed impacts with the utility companies. We have a thorough understanding of how to manage these impacts such that cost and schedule is optimized.

Our Team’s design concept maximizes utility impact avoidance while balancing the overall benefits to VDOT and the travelling public. For example, **our horizontal alignment is set such that we avoid disturbance beyond the outside shoulder for the majority of the corridor, which minimizes the impacts to VDOT fiber optic in these areas.** We have also carefully reviewed the roadway alignment and sequence of construction to minimize impacts to existing ITS devices, including CCTV cameras (2 proposed relocation) and traffic monitoring station (TMS) cabinets (three relocations). Additionally, we have **located SWM devices to avoid/minimize impacts to utilities.**

The primary tactic to mitigate the utility risk to the Project is to develop a design that avoids the in-place utilities. Avoidance is not only helpful in limiting the work and involvement of the utility companies, but it is key in demonstrating value in our relationships with VDOT and the utility companies and also gives them an interest in making the Project successful. Another practice is open, honest, ongoing communication with the impacted utility companies. While we would strive to avoid all the utilities within the Project limits, even the utility companies realize this is not always possible. Building on the relationships and strong reputation we have established in the industry over the years and specifically in the Hampton Roads District, we will work together with the various utility companies to make the relocations as smooth and least disruptive as possible.

Water, sanitary sewer, and gas utilities appear to be deep enough to avoid relocation in many of the areas. Most of the initial concerns are with VDOT ITS cables, fiber optic lines, or other communication lines. The VDOT ITS conduits and cables were not designated in the survey and the anticipated depth of cover (18”) for these devices is minimal. There is a risk of impacts along the majority of the corridor due to minor grading and/or the installation of new guardrail. By shifting the baseline 5’ towards the median for a large segment of the Project, the potential for impacts to these devices has been reduced. Additionally, minor adjustments to junction boxes and conduit runs will be used wherever feasible to reduce the need for relocations. Electric is primarily overhead and appears to have proper vertical clearance to avoid any modifications.

A listing of utility crossings potentially in conflict with the proposed design is provided below.

Utility Owner/Type of Facility	WBL Station	EBL Station	Test Hole #	Potential Conflict	Mitigation Strategy
Hampton Roads Sanitation District 18” Force Main	-----	1107+15	41	Storm sewer pipe	Storm under force main w/approx.1.5 ft clearance – recommend special bedding and piers for FM casing. No relocation anticipated
Newport News 16” Water Main	-----	1109+00	40	Storm sewer pipe	Storm under water main w/less than 1 ft clearance – recommend special bedding and piers for WM casing. No relocation anticipated
Verizon Communication	2192+00	-----	N/A	Storm sewer pipe	Perform test pit, relocate if necessary
Verizon Communication (4” Conduit)	-----	1207+00	N/A	SWM BMP	Perform test pit, relocate if necessary and complete SUE locating.
VA Natural Gas/4” Gas	2428+50	1428+30	24 25	New Bridge Abutments	Relocate gas main
Cox Communications/2” PVC Cable	2428+80	1428+50	28 29	New Bridge Abutments	Relocate CATV line
VDOT/ITS Cables/Conduit	Project Wide	Project Wide	-----	Drainage pipe lateral crossings on EB and WB shoulders	Test pit and avoid/relocate/adjust conduit depth as necessary

(h) Noise Wall Locations

Our noise wall concept is in accordance with the approximate sound barrier wall locations and heights shown in the RFP Conceptual Plans and in accordance with Addendum No. 3. It includes 89,220 SF of sound barrier wall (ground mounted) and 6,080 SF of bridge (structure) mounted sound barrier wall. Bridge (structure) mounted sound barrier wall is quantified and priced separately from other sound barrier wall. Bridge (structure) mounted sound barrier wall pricing includes additional structural modifications to the proposed supporting structure. We recognize these quantities will be adjusted based on the results of the LANE Team’s final approved Noise Abatement Design Report (NADR) and final VDOT approved noise barrier plan.

While the proposed design corresponds with the location shown in the RFP Conceptual plans, the LANE Team will investigate the possibility of shifting the alignment to minimize impacts to utilities. The LANE Team will use our more than 40 years of traffic noise abatement analysis and design experience from projects like the Woodrow Wilson Bridge replacement to evaluate and design traffic noise abatement that maximizes attenuation with minimum wall area. In addition to acoustical considerations, our integrated approach – acoustical engineers collaborating with our environmental, utilities, hydraulics, structural, and roadway engineers throughout the overall Project design process – will deliver noise abatement measures with the lowest-possible effects to environmental resources.

4.3.2 Conceptual Structural Plans

The LANE Team’s Conceptual Structural Plans are included in Volume II. These plans demonstrate that the designs meet the criteria set forth in the RFP as well as AASHTO LRFD Bridge Design Specifications & VDOT Mods (including the Additional Foundation Criteria-Attachment 2.3), VDOT standards & IIMs, at a minimum.

Additionally, the LANE Team has requested and received the CII/SSI information that has been carefully studied and incorporated, where appropriate, into the proposed design. The designs will focus on emphasizing low maintenance alternatives, inspectability, and constructability.

I-64 over Lakeshead Drive

During the RFP/Technical Proposal phase, the LANE Team evaluated the feasibility of a full bridge replacement, a superstructure replacement, and a widening and rehabilitation as shown in the RFP concept. The full replacement option was chosen due to both lower construction cost and speed of construction, as well as the associated reduction in future maintenance costs and increased service life for VDOT.

Design Concept Enhancement	Result
Full Bridge Replacement	<ul style="list-style-type: none"> • Reduced future maintenance due to design improvements (i.e. corrosion resistance reinforcement) • Up-to-date design features and increased service life • No inconsistencies between new and existing sections of bridge
Single Span	<ul style="list-style-type: none"> • Reduced future maintenance to joints/bearings/substructure • Reduced cost
Integral Abutment	<ul style="list-style-type: none"> • Reduced maintenance • No bearings • Reduced cost
Increased Horizontal Clearance to Substructure from Lakeshead Drive	<ul style="list-style-type: none"> • Increased safety • Increased horizontal sight distance
New TL-5 Parapets on Each Side of Bridge	<ul style="list-style-type: none"> • Increased safety for drivers • Up-to-date test level crash testing

The existing bridges over Lakeshead Drive are composed of three simple-span prestressed concrete beams with an overall length of 153'. Based on the current biennial inspection report, the current element condition ratings for the deck, superstructure, and substructure are 6, 5, and 6, respectively. According to the RFP, significant rehabilitation of these bridges is required, including reconstructing the ends of the deck into a deck slab extension, eliminating joints over the pier with a link slab closure, applying a new overlay to the deck, replacing existing bearing assemblies, and repairing concrete deterioration in the super and substructures. The cost and schedule implications of this work coupled with the effort to construct the required bridge widening indicated that a complete bridge replacement is preferable, and more beneficial to VDOT.



The bridge replacements will follow VDOT standards as a jointless bridge without bearings thereby eliminating the biggest maintenance concern for bridges and reducing elements to inspect. We will construct new full integral abutments on a single row of piles between the existing abutment and pier locations to create a 77-foot long single span bridge with MSE walls wrapping around the abutments. A complete replacement also allows for new 42" TL-5 barriers to be placed on both sides of the new bridge. A minimum of two 12-foot lanes will be maintained across the bridges at all times.

Bridge Deck: The bridge deck will be a corrosion resistant reinforced concrete deck that follows the VDOT Manual of the Structure and Bridge Division Part 2 guidance. The construction will be staged in order to maintain two 12-foot travel lanes at all times with two foot shoulders on each side. Bridge framing consists of four girder bays spaced at 12'-0" and one center bay spaced at 8'-6". Overhang dimension is 3'-5" measured from centerline of fascia girder.

Bridge Beams: The bridge beams will be PCBT-45 with 8,000 psi concrete. These beams are 9" deeper than the existing 36" AASHTO girders; however, with an existing vertical clearance of 22'-6" (January 2016

inspection report), the remaining vertical clearance is still well in excess of the required clearance over Lakeshead Drive.

Substructure: The substructure will be composed of fully integral abutments. This eliminates joints and bearings which will minimize future maintenance costs. Expanded polystyrene material will be placed behind the abutments to allow expansion and contraction of the superstructure while minimizing settlement behind the backwalls.

Foundation: The integral abutments will be supported on a single row of plumb steel HP12 piles. The piles will be oriented with their weak axis parallel to the baseline to facilitate the longitudinal expansion and contraction imparted to the abutments. The piles will be sized and tip elevations will be established to account for the anticipated downdrag loads below the MSE embankment, while sleeves will be used within the MSE embankment to prevent additional loading.

Queens Creek

The existing bridges at Queens Creek will be replaced with new bridges that are approximately 935’ and 960’ long, respectively.

Design of the bridge elements will consider all the current design criteria loading, as well as the anticipated construction loads, including temporary equipment loads applied during superstructure erection. These elements will be sized to accommodate the worst case. Our plan submissions will include details for protecting new superstructure elements, such as covering the deck with construction grade poly sheeting and the use of timber crane mats. Crawler cranes will be placed on crane mats to protect the bridge deck and distribute the loading across the girders. Prior to placing the crane mats, a layer of polyurethane sheeting will be placed on top of the bridge to capture any inadvertent oil leaks.



At a minimum the existing low chord elevation will be maintained so that the hydraulic opening is equivalent to the existing condition.

Design Concept Enhancement	Result
Increased Span Length	<ul style="list-style-type: none"> • Decreased pile costs • Minimized wetland impact • Reduced future maintenance on piles and caps • Reduced scour impacts
Virginia Pier for Expansion Joint	<ul style="list-style-type: none"> • Fewer piers with battered piles required • Reduced axial stress in beams which will reduce cracking and required maintenance
Reduced Piers with Battered Piles	<ul style="list-style-type: none"> • Lower construction cost • Reduced scour impacts • Reduced potential for blockage in Queens Creek
Buried Approach Slab	<ul style="list-style-type: none"> • Less maintenance

The scour analysis greatly impacted the design and many decisions were made to mitigate the effects scour will have on the bridge. First, **spans were lengthened to minimize continuous scouring between pier locations.** Second, the piers in the Queens Creek channel were skewed to minimize the blockage of water flow and minimize the potential for scour. Another concept utilized to maximize the uninterrupted flow of water was to minimize the number of battered piles – only two piers utilize battered piles to resist longitudinal forces. To keep the size of the remaining plumb piles small and eliminate large axial forces from being imparted to the superstructure, one Virginia Pier will be used in the middle of the bridge, which will release built up stresses while keeping the bearings protected from water.

A minimum of two 12-foot lanes will be maintained across the bridges at all times. A 12-foot gap will be maintained between structures to allow for inspection access.

Bridge Deck: A corrosion resistant reinforced concrete bridge deck that follows the VDOT Manual of the Structure and Bridge Division Part 2 guidance will be designed. A transparent noise barrier will be added on the south side of the deck to reduce noise pollution permeating to adjacent property owners. The final height and extent of the noise barrier on the bridge will be established by the results of the Final Design Noise Analysis submitted to and approved by VDOT. The deck will utilize a Virginia Abutment at each end of the bridge to **reduce future maintenance costs and extend the life of beam ends and bearings**. Another feature to **reduce future maintenance is the Virginia Pier which will be used in the middle of the bridge**. This will prevent water from corroding beam ends and bearings while eliminating beam and deck cracking that would result from superstructure axial forces that are induced in a fully continuous deck that was restrained by several battered piles.

Bridge Beams: VDOT PCBT-53 beams will be used. These beams are deeper than the existing beams; therefore, the grade at the bridge will be raised to maintain the proposed bottom chord elevation the same as existing, which will match the current hydraulic opening. Continuity diaphragms will be used to make the girders continuous for live load.

Substructure: Bridge abutments will be the Virginia Abutment type to accommodate the expansion and contraction that will occur over the 900+-foot-long structure. A single row pile bent system will be utilized at pier locations with the PCBTs resting on a pile cap that is supported by square prestressed concrete piles. Piers in the channel will be skewed to reduce scour in the stream bed. Also, **to reduce scour, an effort was made to minimize the number of battered piles used**. To maximize plumb piles, while minimizing pile sizes, a Virginia Pier will be used to alleviate the longitudinal forces that are transferred to the substructure units.

Foundations: The existing piles will be cut off a minimum of 2-feet below the existing ground line. New piles will be 24” square prestressed piles.

Colonial Parkway



The historic bridges over Colonial Parkway are to be widened per the RFP (replacement was not an option). The first step will be to verify all elevations, both on the bridge structure itself, and on Colonial Parkway below. This is a critical step to ensure that the widening will tie in properly and critical vertical clearances will be achieved for both the permanent condition and temporary condition during construction. The design team has already extensively reviewed and studied the existing as-built plans and current inspection report for each structure (EB & WB). This will be supplemented by a field visit by the design engineers, which is always the best approach for widening & rehabilitation projects. The initial design of the widening will be closely coordinated with the MOT concept development, which will enhance the safety of the Project during and after construction. Colonial Parkway is located in close proximity to the Lakeshead Drive bridge, requiring careful coordination of MOT on both structures. This includes close coordination with the construction team on methods to retain the fill over the arch adjacent to the traffic barrier during the demolition phase. The design of the widened arch section will take into consideration the connection to the existing CIP arch section. The design will utilize tension ties to offset the thrust force of the arch, which is currently achieved by the tension tie under Colonial Parkway. The design will ensure that the stiffness of the proposed CIP arch matches that of the existing arch, to eliminate the potential for differential deflections. This will improve performance and public acceptance by eliminating distress to the brick façade that would be induced by differential deflections, and reduce impacts to future inspections to document and track differential deflections. The design of the proposed widening will be such that the geometry exactly matches the existing arch. The brick façade and aesthetics are crucially important to these historic structures. Anchorage details for the brick façade will be developed, pursuant to the RFP and as built plans, to properly

anchor the brick façade to the widened arch. The arch segments will incorporate high performance concrete and CRR reinforcing steel which will be fully connected to the existing arch segments that will reduce long term maintenance.

Construction of the CIP arch will be achieved by utilizing temporary signals and a single lane closure on Colonial Parkway under the existing arch and widened portion of the bridge. Design of the falsework will ensure that adequate vertical clearances will be achieved during this phase, and the falsework will be protected by traffic barrier to ensure safety of the traveling public and workers. The phasing will be adjusted to minimize the disruption to traffic on Colonial Parkway for installation of the new CIP arch sections. **Minimizing the use of this work zone will enhance both public acceptance as well as the safety and operations of the Project during construction.** Installation of the ties will be achieved by jack & bore (utilizing the shored footing excavations), thus reducing disturbance of existing pavement on Colonial Parkway, enhancing public acceptance and construction of the Project.

The LANE Team met on-site with the masonry contractor who built the original bridge: Snow Jr. & King. They inspected the existing structures and discussed the proposed construction as well as methods used to construct the existing bridges. Snow Jr. & King has extensive experience with historic masonry construction in the Colonial Williamsburg area.

The widening will be accomplished using prestressed concrete piles. The proposed piles will be located outside of the area of the existing laterally battered piles, thereby avoiding interference with the existing piles or impacting them. Temporary shoring will be installed to allow excavation of the existing wing and retained fill. The wing footing will be carefully removed to preserve the existing concrete piles and incorporate them into the proposed footing. The main portion of the widening will be accomplished with vertical piles to avoid conflict issues with widening in the future.

Overhead Sign Structures

All existing overhead span sign structures are proposed to be replaced in kind due to impacts of the proposed widening; this includes span structures for DMS devices.

All existing cantilever sign structures in the Project limits were reviewed and assessed for impacts due to the Project and for compliance with the MUTCD. The following table summarizes any issues identified and the proposed mitigation strategy at each location to bring the signing into compliance.

Additionally, the RFP which requires all advance guide signs to be mounted overhead, so the Project will upgrade one existing ground mounted advance guide sign (EB I-64, 1-mile ahead for Exit 242 A-B at Station 1457+00) by replacing the sign overhead on an adjacent overhead span structure. We will also replace the existing ground mounted Reach the Beach sign with a new sign on an overhead span structure.

Sign Structure	WBL Station	EBL Station	Issue	Mitigation Strategy
Exit 238, 1-Mile Ahead (Cantilever)	2380+50	-	Impacted by proposed construction	Replace in kind
Exit 234, Exit Direction Sign (Cantilever)	-	1077+50	Not located at theoretical gore and would not align over proposed auxiliary lane	Replace at theoretical gore
Exit 234A, Exit Direction (Cantilever)	2110+00	-	Not located at theoretical gore and would not align over proposed auxiliary lane	Replace at theoretical gore
Exit 234B, Exit Direction (Cantilever)	2094+00	-	Missing required ¼-mile ahead advance guide sign for Exit 234A	Replace with required additional overhead sign
Exit 242 A-B 1-Mile Ahead (Ground Mount)	-	1457+00	Ground-mounted advance guide signage not in compliance with RFP requirement for overhead installation	Install replacement panel on new overhead sign structure with DMS at Station 1462+00

4.4 | PROJECT APPROACH

The LANE Team’s approach to managing design and construction of the Project is to meet and exceed, where practical, the RFP requirements while maximizing the benefits to VDOT and stakeholders. Central to our approach is the promotion of innovative design concepts, inclusion of proprietary design and construction concepts, optimized safety to the motoring public, and enhancements to long-term maintenance through reduced complexity of details and demand for inspections. Our approach emphasizes conventional VDOT and industry standard design concepts utilizing proven and durable materials; eliminating long-term serviceability risks commonly associated with other more complicated concepts. Our Team’s local knowledge of permitting and relationships with various agencies affords the LANE Team confidence in minimizing risk of delays that could otherwise hamper the Environmental Management and Permitting process.

Our Team synergy’s and composition allows VDOT to function more in an oversight role, and allows the Project to successfully advanced through the Project Milestones, having diligently planned for and managed risk, cost, and schedule.

4.4.1 Environmental Management

LANE emphasizes the ‘keep it simple’ approach principle in environmental management. Information is presented in a way that is easy to access and, where possible, integrated into an Environmental Management Plan (EMP) that outlines the compliance requirements applicable to the Project.

Our EMP is practical, user-friendly, and focuses on key issues to ensure the Project is delivered in full compliance with the environmental commitments for the Project identified in the following:

- Final Environmental Impact Statement (FEIS) signed November 26, 2013;
- Record of Decision (ROD) dated August 10, 2016;
- Right of Way (RW) Authorization (EQ-201);
- Plans, the Specifications, and Estimates (PS&E);
- Re-evaluation Authorization (EQ-200);
- Environmental Certification/ Commitments Checklist (EQ-103).

We will implement the following thorough an integrated approach to environmental risk management strategies during design and construction:

- Accurately identify and evaluate environmental resources that occur within the Project limits
- Avoid, minimize, and mitigate environmental impacts to the greatest extent practicable
- Partner with regulatory agencies to secure permits without delay and facilitate reasonable permit conditions consistent with construction means and methods
- Incorporate environmental commitments within design processes, plan preparation, preconstruction planning, and construction activities to ensure activities are conducted responsibly
- Maintain an environmental compliance program, including standards, procedures and conducting staff training, site inspections, and records maintenance
- During Construction use an environmental commitment tracking system to document compliance, perform periodic monitoring of the Project to assess and document performance, use an environmental compliance assistance strategy to promote environmental compliance and use regulatory agency notifications to communicate with the agencies during Project construction to ensure the Project remains compliant with environmental commitments.

Our approach to environmental management promotes the early integration of environmental considerations into the plan. As a result, our Team does not anticipate any environmental “surprises”, project development “surprises” or the expenditure of wasted efforts during design or construction that may have environmental permitting difficulties or in conflict with the Project environmental commitments. **In short, our plan anticipates and mitigates any potential delays with environmental concerns.**

We have performed a Project environmental risk assessment considering environmental commitments for natural, cultural, biological, recreational, conservation and geological resources to ensure that all legal requirements are reviewed in detail. We believe that appropriately controlling environmental risk will improve environmental performance. The benefits of our environmental management plan include:

- Identify environmental risk and management controls early in the process to maintain and promote compliance with environmental commitments.
- Identify opportunities to improve environmental performance and reduce risk. One example; providing field personnel with awareness training in environmental risk areas will be the development and distribution informational awareness fact sheets to promote the awareness of the significant Cultural Resources and Historic Events that have occurred in this area of Virginia such as the Battle of Williamsburg, Colonial Parkway, Historic Events in Yorktown, etc.
- Complies with environmental legal requirements and integrates them within our team procedures.

Our risk assessment identified potential environmental impacts for which mitigation strategies have been developed to eliminate and/or minimize those identified impacts (Table 4.4-1)

Table 4.4-1. Environmental Risk Mitigation Strategies

Resource	Mitigation Strategy
Cultural Resources/Section 4(f)	<ul style="list-style-type: none"> • Avoid diminishing the historic setting, feeling, design, materials, and workmanship of Redoubt #9 • Keep impacts below de minimis levels: Yorktown Battlefield • Awareness Training for construction staff with Information awareness fact sheets on the Historic Aspects in the Project area • Incorporate shapes to depict the view shed of historic properties on Project plans and work activities to avoid these areas. • Incorporate review time into Project schedule for coordination with VDHR and National Park Service Colonial National Historical Park.
Colonial Parkway	<ul style="list-style-type: none"> • Coordinate Traffic Advance Warning measures for maintaining traffic along Colonial Parkway for Bridge work • Coordinate with NPS Project design plans and activities within view shed • Coordinate the repair of the road surface with NPS
Camp Peary	<ul style="list-style-type: none"> • Ensure Stormwater Management does not discharge water onto the DOD property • Following NTP, identify and coordinate any easement/right of way requirements with the DOD • Incorporate the boundaries on Project plans and inform workers about these areas and the 20ft boundary limitation • Coordinate Utility relocation with DOD to avoid disruption in the service • Coordinate the traffic management plans and timing at the ramps and overpasses to ensure minimal disruption for access
Wetlands/Streams	<ul style="list-style-type: none"> • Early coordination/consultation with USACE, VDEQ and VMRC • Secure/Confirm Corps Jurisdictional Determination • Evaluate Avoidance and Minimization Measures • Provide compensatory mitigation for unavoidable impacts • Developed restoration approaches for temporary impact areas • Early preparation and submittal of Joint Permit Application concurrent with ROW Plan development

ENVIRONMENTAL AWARENESS FACT SHEET

COLONIAL PARKWAY

The Colonial Parkway is a constructed cultural landscape built by the National Park Service and Bureau of Public Roads between 1931 and 1959. It was built to connect distinct areas of Colonial National Historical Park from the Colonial Yorktown Battlefield through Williamsburg to Jamestown Island, the first permanent English Colonial settlement on the North American continent. The 23-mile three-lane Colonial Parkway was built to conserve the scenery, natural and historic objects and wildlife. Colonial Parkway is a meticulously crafted landscape that integrates the region's natural and cultural resources into a memorial roadway of the American colonial experience. Traversing a diverse environment, the parkway provides visitors with dramatic open vistas of rivers and tidal estuaries as well as shady passageways through pine and hardwood forests.

The limited access highway was built along the York River with broad sweeping curves, set in a meticulously landscaped right-of-way devoid of commercial development. It's right of way is mostly 300 feet either side of centerline, expanding to include irregular shorelines. Modern parkways were characterized by their curving alignments, limited access, pleasure driving experience, and use of designed plantings and park-like features. The parkway's original alignment and topography remains intact, as do its important bridge and grade-crossing structures modeled after Colonial Revival architectural style influenced by the reconstruction of Williamsburg at the same time.

The Colonial Parkway enters the project area at approximately Station 1421 +91.91 EB and Station 2420+28.78 WB in a heavily wooded area. I-64 spans the Colonial Parkway over two brick bridges built in the Colonial Revival style. As the design of the structures and viewshed are integral to the Parkway, care should be taken to construct the project in accordance with Sections 2.1.1 Proposed Bridge Improvements - B-639 and B-640 over the Historic Colonial Parkway, 2.4.2 Cultural Resources, and 2.8 Landscaping of the Scope of Work, approved plans and Special Provisions for Exposed Aggregate Concrete and Brick Masonry Bridge Façade to minimize potential impacts.



Sample Awareness Fact Sheet

<p>Stormwater</p>	<ul style="list-style-type: none"> • Strategic design and placement of stormwater management best management practices to maximize pollutant control and minimize ROW acquisition • Purchase of Nutrient Credits for 25% of required reduction • Early preparation of SWPPP, ESC Plans, and Post-Construction Stormwater Management Plans • ESC and SWPPP Training for construction staff • Temporary measures to minimize impacts during construction • Implement strict adherence to erosion and sediment control • Provide stormwater management controls as close to the source as practicable • Secure Nutrient Credits
<p>Noise</p>	<ul style="list-style-type: none"> • Complete final Noise Analysis Design Report (NADR) • Conduct final design noise analysis in compliance with the effective VDOT State Noise Abatement Policy, VDOT Highway Traffic Noise Impact Analysis Guidance Manual, and VDOT Noise Report Development and Guidance Document • Perform coordination with VDOT and the public on the final noise abatement recommendations and decisions.
<p>Threatened and Endangered species</p>	<ul style="list-style-type: none"> • Small Whorled Pogonia – the SWP is not to be considered impacted • Northern Long Eared Bat – Complete Section 7 of ESA consultation with USFWS and implement required Avoidance & Minimization Measures (AMM) per Programmatic Consultation BA • Mabee’s salamander (a state threatened species) coordinate with agencies to assess potential for habitat. It is anticipated that there is a low potential for habitat. • Limiting clearing of existing vegetation to the minimum required • Strict adherence to erosion and sediment control
<p>Tidewater Fire Ant Quarantine</p>	<ul style="list-style-type: none"> • Restrict the movement of articles capable of transporting fire ants out of the quarantine area into non-regulated areas • Address during the identification of borrow source and disposal area for the Project • Address the transportation of soils/materials within the Project corridor to ensure compliance with this quarantine
<p>Hazardous Materials</p>	<ul style="list-style-type: none"> • Prepare a project specific Spill Prevention Control & Countermeasure (SPCC) Plan presenting measures to avoid spillages of fuels, chemicals, and fluids, and emergency response actions • Compliance with Section 411.01 in the 2007 Road and Bridge Specifications for Type B structures and VDOT Special Provisions for asbestos inspection and abatement • Conduct a Phase I ESA in conformance with ASTM Standard E 1527-13 for all right-of-way acquisitions and perform asbestos inspections on structures • Remove and dispose of any discovered hazardous material in compliance with all applicable federal, state, and local regulations. • Minimize disturbance within the vicinity of the drainage ravine associated with Camp Peary PCB site near Station 2248+00 LT (mile post 237.1) to the extent possible. The peak discharge rate or runoff volume to the outfall will not be increased. • Develop a communication strategy to comply with OSHA Right to Know to workers regarding potential chemical hazards of PCBs.
<p>Anadromous Fish Species</p>	<ul style="list-style-type: none"> • Time-of-year restrictions for in-stream work for anadromous fish 15 February to 30 June any given year, as required by permit agencies. • Install any temporary construction measure outside of the time of year restriction

Environmental Document Re-evaluation: RK&K completed a refined desk top mapping and analysis of the water resources within the corridor using the FEIS, site topographic mapping, aerial photographs, and data from work on other projects in the area. The environmental resources in the corridor are located in the undisturbed areas between the roadway and the existing right of way. **Shifting our alignment effectively reduced impacts to environmental resources.** We do not anticipate changes in Project scope or footprint from that approved in the August 10, 2016 FHWA Record of Decision (ROD). As a result, no additional NEPA environmental studies are anticipated.

Cultural Resources/Section 4(f) Resources: Changes are not anticipated to the Project scope or footprint approved by the ROD and significant effects to cultural resources are not expected. Our design and construction

approach remains with the area mitigated by archaeological data recovery for Redoubt #9 and avoids to the portion of site 44YO0051/099-0040 located adjacent outside the existing right-of-way.

Our design stays within the easement and ROW in the RFP Conceptual Plans and avoids impacts or effects to the Williamsburg Battlefield.

Our construction approach on the Colonial Parkway will use construction methods and equipment that limit the effects to the existing pavement surface and our restoration approach for the areas affected during construction will incorporate the materials and workmanship so the historic nature will be minimally affected. To ensure our repair approach is appropriate, our Team will coordinate the proposed repair proposal with the NPS and VDOT prior to implementation.

For the bridges over Colonial Parkway, our Team will coordinate the design for the aesthetics of the bridge widening and vegetative screening with NPS and VDOT. We have included this review time into the Proposal Schedule and have established a hold point in construction schedule for work on these structures. In addition, during the traffic engineering design and installation, our team will coordinate with NPS to minimize impacts to the traffic and we will maintain communication with NPS throughout construction.

Our Team has incorporated shapes to depicted the view shed of historic properties on Project plans and work activities to avoid these areas. These areas will be communicated to the design team and site workers to reduce the chances that unauthorized activities will occur in them.

The ROD documents indicate that there is no Section 4(f) use in Waller Mill Park or for the Colonial Parkway Bridges and FHWA de minimis findings on 4(f) Resources was based on acreage impacts to the Battle of Williamsburg of 2.69 acres. Our Team will continue to avoid and minimize impacts to these resources during design and construction of the Project.

Hazardous Materials: Our design and construction activities will minimize disturbance to the maximum extent possible within the vicinity of the drainage ravine associated with the Camp Peary PCB site. The peak discharge rate or runoff volume to this drainage area will not be increased. Our team will avoid disturbance to soils and sediments in this area to the greatest extent feasible. Runoff from this area is not being intercepted by the Project's proposed drainage system and will continue to be conveyed through an existing 42" pipe under I-64. We will incorporate a hazardous material communication plan identifying existing environmental conditions at this site and provide appropriate training to site workers with respect to potential chemical hazards of PCBs. The Hazard Communication Plan will comply with OSHA Right to Know Regulations; 29 CFR Parts 1910, 1915, 1917, 1918, 1926, and 1928.

T&E Species: According to the FEIS and ROD, T&E species within or adjacent to the Project corridor is the small whorled pogonia (SWP). VDOT is in the process of conducting Section 7 consultation for the SWP with USFWS and a final effect determination is pending. In accordance with RFP Addendum 1, we have assumed that there are no SWP habitat areas within the Project limits.

On May 4, 2015, the northern long-eared bat (NLEB) was listed as a federally threatened species throughout its range within the eastern and mid-western U.S. The USFWS, Federal Highway Administration (FHWA), and Federal Railroad Association (FRA) have developed a standardized Programmatic Consultation Biological Assessment (BA) approach to assessing potential impacts to NLEB from highway and railroad projects. Our Team will rely on the 4(D) rule MOA and do not anticipate any time of year restriction on tree clearing. Our Team will conduct bat inspections of all bridges in accordance with the Programmatic Consultation BA and VDOT's bridge inspection protocols.

VDOT recently completed a re-evaluation of the SWP habitat for this Project and determined there are no SWP plants that will be encountered or effected by the Project.

For Mabee's salamander (a state threatened species), we will coordinate with VDGIF to assess potential habitat within the Project LOD and if necessary complete a Presence/Absence Survey between February and May, in accordance with VDGIF protocols.

Water Quality Permits and Mitigation: Our environmental team has a wealth of experience negotiating with environmental agencies to acquire permits for transportation projects. We anticipate the Project will be authorized by Individual Permits however, during the early coordination with the regulatory agencies, our team will present using the “single and complete project” USACE and VDEQ definition to authorize each individual crossing of a Water of the US to expedite the Project schedule.

Our Team is experienced at performing wetlands and WOUS delineations pursuant to the USACE Wetland Delineation Manual, Technical Report Y-87-1 (1987 Manual), 2010 Regional Supplement to the USACE Wetland Delineation Manual: Atlantic and Gulf Coastal Plain, the USM and the Cowardin Classification System.

The FEIS estimated Segment III impacts in to be approximately five (5) acres of tidal wetlands, 0.65 non-tidal wetlands and 2,104 linear feet of stream. The request for the Segment III ROD estimated the impacts to wetlands at 3.4 acres and 1,018 linear feet of stream. The RFP Conceptual Plans, using the field verified wetland and stream delineation, estimates impacts of 4,534 linear feet of stream and 79,393 square feet of non-tidal wetlands and 148,104 square feet of tidal wetlands. The LANE Team’s design impacts are approximately 34,975 square feet of non-tidal wetlands, 4,234 square feet of tidal wetlands, 108,106 square feet of shaded tidal wetlands and 1,074 linear feet of stream impacts.

Based on these impacts, our Team is prepared to secure the following authorizations for the Project:

- United States Army Corps of Engineers (USACE) – Individual Permit
- Virginia DEQ Virginia Water Protection Permit (VWPP) – Individual Permit
- Virginia Marine Resources Commission (VMRC) State-owned Subaqueous Bed Permit
- Virginia DEQ Virginia Stormwater Management Program (VSMP)
- Virginia DEQ Coastal Zone Management Area (CZMA) Consistency Determination

We anticipate the standard wetlands compensation ratios 2:1 forested, 1.5:1 scrub-shrub and 1:1 for emergent for permanent wetlands impacts, 2:1 for tidal wetland impacts, 1:1 for shading impacts and 1:1 ratio for wetlands habitat conversion where site distance clearing is required in the wetlands areas. We will complete USM to determine stream compensation requirements for the Project’s permanent stream impacts. We anticipate the 1,497 linear feet of outfall improvements listed as the Identified Eroded Outfalls will be self-compensating due to use of natural channel design and the water quality improvement benefits within the watershed. The Project’s mitigation needs will be met in accordance with the USACE 2008 Compensatory Mitigation for Losses of Aquatic Resources through, the purchase of mitigation bank credits, the creation of wetlands sites and/or payment to an approved in-lieu fee program.

Schedule Integration: Our Team has established schedules for environmental studies completion and the acquisition of water quality permit with milestone dates. These milestone dates are established environmental hold points in the Proposal Schedule to ensure that any regulatory issues that may arise are dealt with quickly and efficiently. Our environmental lead will participate in scheduled team meetings to report the status of the environmental milestones and ensure the environmental commitments are incorporated into the design. Our Team will use an environmental commitments database to track the Project’s environmental commitments and establish a detailed construction schedule that considers many variables such as seasonal time of year restrictions, required permit water quality monitoring, phased installation of erosion and sediment controls and stormwater management implementation.

The Proposal Schedule includes activities related to the preparation, submission and approval of the Individual Permits, agency coordination, and environmental commitment implementation. These activities will be reviewed and modified, as appropriate, once avoidance and minimization efforts of the design have been completed, environmental impacts quantified, and confirmation from the Agencies on the application type. To minimize the possibility of delays to the Project due to environmental concerns, a conservative approach has been taken for scheduling environmental permitting activities, agency coordination for Cultural Resources issues, noise studies and abatement, hazardous materials clearances, submission of a SPCC Plan, inspection and

potential abatement of Asbestos in the existing bridges, inspection of bridges for bat use, and activities to address the Fire Ant Quarantine presence on the Project.

Construction Compliance: Our Team has experts that understand the VDOT/FHWA’s expectations for the implementation of the Project’s environmental commitments. We are experienced at providing environmental engineering solutions for construction implementation, negotiating with regulatory agencies to solve difficult environmental issues, identifying efficiencies to minimize Project delays while encouraging creative solutions to keep projects in compliance with environmental commitments.

The LANE Team has developed protocols to document and track Environmental Compliance that includes, use of an environmental commitments database to document compliance, performing periodic monitoring of the Project to assess and document performance, provide plan sheets for each area with environmental conditions, provide environmental compliance assistance to promote compliance, and using regulatory agency notifications to communicate with the agencies during construction to ensure the Project remains compliant with environmental commitments contained in the environmental clearances.

4.4.2 Hydraulics

Our Team’s Hydraulics and Stormwater Management approach integrates the storm drain and BMP system designs to efficiently convey runoff throughout the Project while minimizing the Project footprint. Runoff will be diverted from certain outfalls having inadequate conveyance capacity and/or presence of jurisdictional waters and wetlands to other BMP’s to meet water quality and quantity requirements and minimize Project impacts. These outfalls have reduced post-developed discharge values that can be adequately conveyed by the receiving existing drainage system, thus meeting adequacy of outfall MS-19 requirements. **This innovative approach results in less overall construction and maintenance costs, while providing an adequate drainage system that reduces the potential for future erosion problems.**

Water Quality and Local Regulations: Our Team performed an evaluation of the Part IIB Virginia Runoff Reduction Method (VRRM) and the Part IIC Performance Based Criteria computations to compare the pollutant removal requirements and determine which criteria would result in fewer BMP’s, less ROW required for SWM, and overall lower construction and maintenance costs. The VRRM results in a required removal rate of approximately 179 lb/yr phosphorus, while the Performance Based Computations results in a required removal rate of 117 lb/yr phosphorus. Our Team determined that the Part IIC criteria required less BMP’s to meet water quality requirements, lower construction and ROW costs of meeting 75% of water quality requirements on site, and lower overall costs of purchasing nutrient credits for the 25% remaining pollutant load. These lower costs and minimized Project impacts were achieved while still meeting the York County Watershed Management and Protection (WMP) area overlay district water quality requirements for the Waller Mill and Jones Mill Reservoir watersheds. For the WMP areas, we are providing a 10% phosphorous reduction from the pre-development loading rate with on-site BMP’s in accordance with the local county requirements.

For the Waller Mill Reservoir watershed, three Enhanced Extended Detention Basins and one Retention Basin III is being proposed to meet these county requirements. These facilities will also provide water quantity control to meet adequacy of outfall requirements. Even with the implementation of these facilities, the maximum amount of nutrient credits can be purchased to meet 25% of the total Project’s water quality requirements throughout the remainder of the Project. The design of the retention basin and any deep pools associated with enhanced extended detention basins will include a valve that can regulate outflow to allow for a complete draining of the facilities. The bottom elevation of each facility is set higher than the outfall pipe invert elevations. For instance, the enhanced extended detention basin associated with BMP 5-7 at Sta. 1179+00, Rt of Cl, has a bottom footprint elevation of approximately 76’ and the SWM-1 structure outfall pipe has invert out elevation of approximately 75’. The receiving channel will be improved and graded for approximately 200 ft in order to achieve positive drainage and provided an adequate outfall. As such, this facility can be fully drained when necessary to facilitate any maintenance and rehabilitation that may be required over the lifetime of the facility.

Water Table: The drainage design and stormwater management plan has been evaluated and adjusted in order to account for several site conditions that pose significant challenges. Two bioretention facilities, BMP’s 3-5 and 10-8, have been eliminated due to potential high groundwater and four BMP’s have been eliminated due to potential stream and wetland impacts. The GDR provided by VDOT was evaluated and conservative estimates of high groundwater were made in order to evaluate the feasibility of BMP’s and the type of BMP’s allowed. As a result, enhanced extended detention basins are primarily being proposed and have been placed in locations where high groundwater was not present. Bioretention facilities BMP 3-1 and 4-1 were designed with engineered soil media and underdrain depths 4’ to 6’ below existing ground. The soil borings 17BH-001 and 17BH-007 at these BMP locations had no evidence of groundwater for depths of 15’ to 20’, allowing for the use of these types of facilities.

BMP Maintenance Access: All BMP facilities will have access roads provided and a 10’ maintenance path around the entire perimeter to allow for maintenance throughout the extent of facility. BMP’s 4-3, 5-7, and the retention basin at Sta. 1210+00, Rt of CL, will have access roads directly off Rochambeau Drive, allowing for easier entry into the facilities than off the interstate. BMP’s 4-4, 4-6 and 5-3 will have access roads off Fenton Mill Road, facilitating access to these facilities, as well. This **minimization of access roads off the interstate will facilitate safer maintenance access and reduce overall long-term costs.** The SWM Plan was designed to consider **the ease of maintaining facilities and accessing areas with heavy equipment for situations that would require significant repair or rehabilitation.**

Outfalls and Water Quantity Requirements: Our Team evaluated adequacy of outfall requirements per MS-19 and has reduced the number of BMP facilities required by applying the 1% Rule and designing a system to treat increased runoff with an efficient and strategic placement of BMP’s. All outfalls were identified and pre- and post-developed discharge values for the 2- and 10-year storm events were developed in order to estimate possible storage requirements in addition to water quality volume requirements for overall grading. Facility volume requirements were estimated and incorporated into the preliminary grading of each facility. Facilities were not required for some of the Project areas draining towards Queens Creek as the 1% Rule applied in this case.

Special considerations were taken into account with the design of the SWM Plan to meet the conditions of the RFP and the Project site. Extensive evidence of erosion, particularly for the outfalls between Sta. 2398+00 and 2447+00, resulted in a conservative design of BMP’s 10-2, 10-3, and 10-7, which are enhanced extended detention basins. The 1-year storm will be completely contained by these facilities to adequately address the existing erosion problems of the sites. Repairs will be made to any existing problems not contained within the footprint of these facilities. In addition to this design, BMP 10-8 was eliminated within this area due to potential conflicts with wetlands and streams. The runoff originally treated by this facility will be directed to BMP 10-7, while still containing the 1-year storm runoff volume. The elimination of BMP 10-8 results in less ROW, construction, and maintenance costs, all while meeting stormwater management requirements. See Table 4.4-2 for a complete listing of how water quantity requirements were met at each outfall.

Table 4.4-2. Water Quantity Treatments at Each Project Outfall

Outfall ID	Station	Associated BMP	How Water Quantity Requirements Were Achieved
1	2021+00, Lt of CL	N/A	Project runoff diverted to BMP's 3-1 and 3-2 resulting in decreased post-developed flows
2	2032+00, Lt of CL	3-1 and 3-2	Post-developed 2 and 10-year storm flows decreased to below pre-developed conditions
3	1054+00, Rt of CL	N/A	Project runoff diverted to BMP's 3-1 and 3-2 resulting in decreased post-developed flows
4	2078+00, Lt of CL	N/A	Project runoff diverted to other outfalls resulting in decreased post-developed flows

5	2090+00, Lt of CL	4-1	Post-developed 2 and 10-year storm flows decreased to below pre-developed conditions
6	1097+00, Rt of CL	N/A	Project runoff diverted to other outfalls resulting in decreased post-developed flows
7	1107+00, Rt of CL	4-3	Post-developed 2 and 10-year storm flows decreased to below pre-developed conditions
8	2125+00, Lt of CL	4-4	Post-developed 2 and 10-year storm flows decreased to below pre-developed conditions
9	2129+00, Lt of CL	N/A	Project runoff diverted to BMP 4-6, offsite runoff conveyed through Project
10	2132+00, Lt of CL	4-6	Post-developed 2 and 10-year storm flows decreased to below pre-developed conditions
11	2143+50, Lt of CL	N/A	Project runoff diverted to BMP 5-3, offsite runoff conveyed through Project
12	2149+00, Lt of CL	5-3	Post-developed 2 and 10-year storm flows decreased to below pre-developed conditions
13	2161+50, Lt of CL	N/A	Project runoff diverted to BMP 5-7, offsite runoff conveyed through Project
14	2167+00, Lt of CL	N/A	Project runoff diverted to BMP 5-7, offsite runoff conveyed through Project
15	1180+00, Rt of CL	5-7	Post-developed 2 and 10-year storm flows decreased to below pre-developed conditions
16	2194+00, Lt of CL	6-1	Post-developed 2 and 10-year storm flows decreased to below pre-developed conditions
17	1210+00, Rt of CL	Retention Basin III	Post-developed 2 and 10-year storm flows decreased to below pre-developed conditions
18	1238+00, Rt of CL	N/A	Water Quantity Swales proposed to reduce 2 and 10-year post-developed flows , offsite runoff conveyed through Project
19	1248+00, Rt of CL	N/A	Water Quantity Swales proposed to reduce 2 and 10-year post-developed flows, offsite runoff conveyed through Project
20	1264+00, Rt of CL	N/A	Water Quantity Swales proposed to reduce 2 and 10-year post-developed flows, offsite runoff conveyed through Project
21	1290+00, Rt of CL	N/A	Water Quantity Swales proposed to reduce 2 and 10-year post-developed flows
22	1295+00, Rt of CL	N/A	Water Quantity Swales proposed to reduce 2 and 10-year post-developed flows, offsite runoff conveyed through Project
23	1332+50	N/A	Project runoff conveyed to Queens Creek, 1% Rule applies
24	Queens Creek	N/A	Project runoff conveyed to Queens Creek, 1% Rule applies
25	2411+00, Lt of CL	10-2 and 10-3	The 1-year storm volume fully contained and post-developed 2 and 10-year storm flows decreased to below pre-developed conditions
26	2420+00, Lt of CL	N/A	Project runoff diverted to BMP 10-2 and 10-3 resulting in decreased post-developed flows
27	2347+00, Lt of CL	10-7	The 1-year storm volume fully contained and post-developed 2 and 10-year storm flows decreased to below pre-developed conditions
28	1465+00, Rt of CL	11-1	Post-developed 2 and 10-year storm flows decreased to below pre-developed conditions

In addition, BMP 10-7 was reshaped and adjusted to avoid further impacts with recently surveyed stream features and a potential utility conflict with a sanitary sewer force main. This adjustment also results in less ROW required for the location. All BMP grading and drainage design associated with this outfall was carefully evaluated to avoid any impact to NPS property and keep all Project work within VDOT ROW. All Project site runoff at this outfall location will be conveyed to BMP 10-7 and treated so that the 1-year storm discharge is contained with no increase of runoff from VDOT ROW onto NPS property.

The survey of streams and wetlands provided by VDOT was used to further eliminate the use of BMP's at identified environmentally sensitive locations. The associated storm sewer system and ditch systems were

adjusted to adequately convey runoff to other outfalls with BMP’s. Some of these locations include BMP 3-6, BMP 4-3, and the outfall at Sta. 1238+00, Rt of CL. Together, these mitigation strategies eliminated 11 BMP’s and all water quality swales when compared to the RFP design. This results in a reduced design, easier environmental permitting, and an accelerated construction schedule; as well as, a reduction in required right of way, tree clearing, and VDOT long term maintenance costs.

Two other sensitive areas considered were the existing pipes conveying offsite drainage at Sta. 2248+00 and 2433+00. The first site at Sta. 2248+00 consists of existing 42” pipes conveying potentially PCB contaminated runoff from Camp Peary. The proposed storm sewer system is being designed to intercept all Project runoff and convey it around the existing pipes. Thus, any existing runoff from Camp Peary will not be impacted by the Project at all. The existing pipes that require repair and will be lined, however runoff from this area will not be impacted. The second pipe crossing at Sta. 2433+00 is conveying offsite runoff across I-64 and towards NPS property. As mentioned above, all Project drainage will be intercepted by the proposed storm sewer system and conveyed to BMP 10-7 for treatment. Thus, not only will there be no flow increases at this outfall location, but a substantial reduction of flow will be accomplished through BMP 10-7. All Project drainage and treatment will be contained within VDOT ROW and result in overall improved flow conditions along NPS property.

Erosion Repairs and TMDL Credits: For the 21 Identified Eroded Outfalls, a preliminary assessment was made of each outfall to determine the appropriate method of repair depending on which locations qualify as streams. See Table 4.4-3 for a list of which outfalls are manmade channels and which qualify as streams and/or Waters of the U.S. (WOUS) and the proposed repair. For all manmade outfalls, such as roadside ditches, the principle solution would consist of retrofitting the existing channel to DEQ approved BMP’s, such as swales or Dry Channel Regenerative Stormwater Conveyance (RSC) as a Stormwater Retrofit (Protocol 4 from CSN/CWP Recommendations of the Expert Panel to Define Removal Rates for Stream Restoration). Each retrofit site will be evaluated to address and alleviate evidenced erosion as well as provide TMDL pollutant removal credits in support of VDOT’s Chesapeake Bay TMDL Action Plan. This solution provides an increased benefit in terms of the credits earned compared to the cost of installing these types of facilities; as well as, reduced future maintenance requirements and costs. For all outfalls that consist of streams, natural channel design will be used and it is anticipated that Protocol 1, Credit for Prevented Sediment during Storm Flow, performing preconstruction Bank Erosion Hazard Index (BEHI) analyses in order to maximize nutrient credits achieved, would be appropriate for addressing these locations. The proposed stream restoration repairs will also provide TMDL pollutant removal credits. This approach maximizes the cost to benefit ratio of addressing and fixing the erosion at these locations.

Table 4.4-3. Identified Eroded Outfalls Classification

Outfall ID	Station Range	I-64 EB/WB	Classification	Proposed ESC Repair
1	1030+88 to 1035+32	EB	Roadside Ditch	Dry Channel RSC SW Retrofit
2	1037+00 to 1044+00	EB	Roadside Ditch	Dry Channel RSC SW Retrofit
3	1053+00 to 1060+00	EB	Ephemeral Stream	Stream Restoration/Natural Channel Design
4	1180+59	EB	Roadside Ditch	Dry Channel RSC SW Retrofit
5	1332+90	EB	Stream	Stream Restoration/Natural Channel Design
6	1335+50 to 1336+50	EB	Stream	Stream Restoration/Natural Channel Design
7	1343+00 to 1346+00	EB	Stream	Stream Restoration/Natural Channel Design
8	1352+00 to 1355+00	EB	Roadside Ditch	Dry Channel RSC SW Retrofit
9	1371+55	EB	Roadside Ditch	Dry Channel RSC SW Retrofit
10	1391+92 to 1393+00	EB	Stream	Stream Restoration/Natural Channel Design
11	1411+00 to 1411+67	EB	Roadside Ditch	Dry Channel RSC SW Retrofit
12	2039+56	WB	Stream	Stream Restoration/Natural Channel Design
13	2059+00 to 2065+00	WB	Roadside Ditch	Dry Channel RSC SW Retrofit
14	2054+50 to 2057+00	WB	Roadside Ditch	Dry Channel RSC SW Retrofit

15	2070+00 to 2071+60	WB	Roadside Ditch	Dry Channel RSC SW Retrofit
16	2121+00 to 2123+00	WB	Wetland/stream	Stream Restoration/Natural Channel Design
17	2195+00	WB	Stream	Stream Restoration/Natural Channel Design
18	2413+19	WB	Wetland/stream	Stream Restoration/Natural Channel Design
19	2420+18	WB	Wetland/stream	Stream Restoration/Natural Channel Design
20	2430+78	WB	Wetland/stream	Stream Restoration/Natural Channel Design
21	2432+00 to 2434+30	WB	Stream	Erosion and Sediment Control Measures-- Stabilization

Hydrologic and Hydraulic Analysis (H&HA): There are two crossings of FEMA delineated floodplains, Skimino Creek and Queens Creek, within the Project corridor. Skimino Creek is a Zone A floodplain and no impacts to flood levels are anticipated at this crossing as the existing structure will be extended. Queens Creek is a detailed studied Zone AE floodplain. See Figures 4.4-4 and 4.4-5 for the FEMA flood maps of these two crossings. FEMA developed a coastal flood hazard analysis of all flooding sources for York County in 2015, replacing any previous coastal storm surge stillwater elevations. The York River and its estuaries, including Queens Creek, were analyzed in this study. This model will be requested from FEMA and evaluated to determine if there is any relevant data that can be used in the bridge replacement H&HA.

The existing bridge will be demolished and replaced with a hydraulically equivalent structure that will result in a no rise of the 100-year flood elevation. Our approach to analyzing the crossing consists of the following:

Existing Conditions Model: We will use the VDOT model for Queens Creek along with field surveyed cross sections to develop a pre-developed conditions analysis. Any FEMA data determined to be applicable will be incorporated into the model, as well. Hydrology will be developed independently of the FEMA and VDOT model in order to determine what discharge values are the most appropriate.

Proposed Conditions Model: The proposed widened bridge will be added to the model to create our proposed conditions. This model will be used to evaluate the performance of the proposed structure and mitigate any impacts to the 100-year flood elevation. The report will include the VDOT LD-293 and LD-450 forms, HEC-RAS models, and electronic copies of the hydraulic results which will be used in our final design. The proposed bridge design will be evaluated to ensure that there is no net increase of the 100-year flood elevations, in keeping with VDOT requirements, and avoiding the CLOMR process with FEMA. As such, the bridge design will be coordinated closely with the development of the H&HA.

Bridge Scour: A bridge scour analysis for the bridge over Queens Creek will be developed using the approved methods outlined in HEC-18. A preliminary

Figure 4.4-4. Skimino Creek Crossing FEMA Map

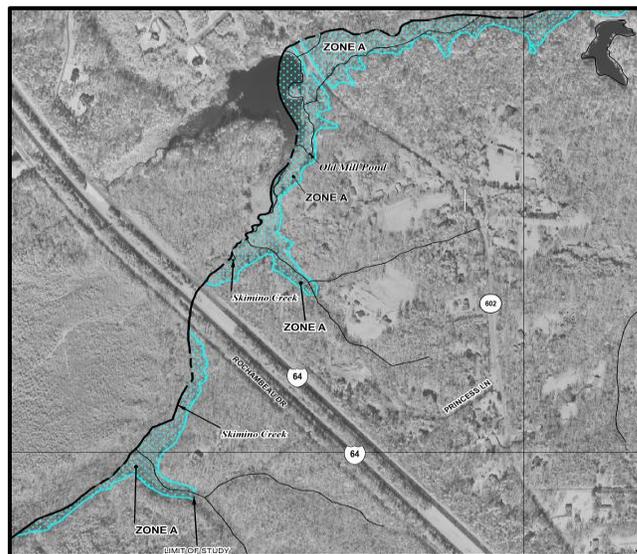
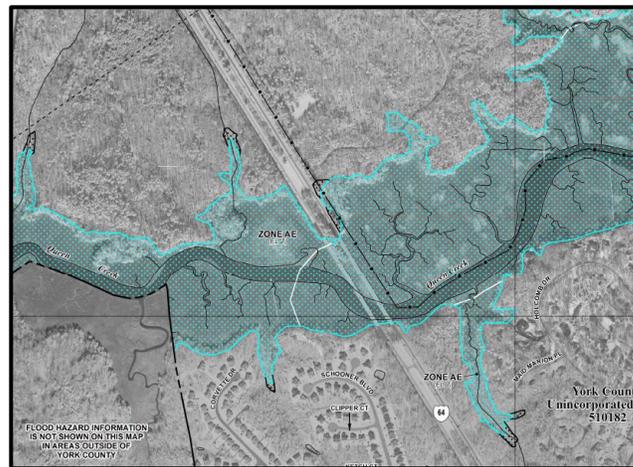


Figure 4.4-5. Queens Creek Crossing FEMA Map



evaluation using the VDOT supplied HEC-RAS model and the Geotech information from the GDR was performed to approximate what kind of scour depths can be expected. Strategic skewing of battered piers and piers within the main channel of Queens Creek was used to minimize potential scour depths. The results from the VDOT HEC-RAS model and a preliminary evaluation using HEC-18 were used to estimate scour depths of 11' to 15'. These results are being used conservatively to evaluate the design of the abutment and pier foundations. The foundations for the bridge piers and abutments will be designed to withstand scour from the 100-year storm, and will be checked with the 500-year storm scour results.

Erosion & Sediment Control: Our Team understands the environmental sensitivity of the Project and all work will be performed in accordance with VDOT requirements as well as the Virginia Erosion and Sediment Control (E&SC) Handbook and Regulations. Temporary measures, such as drainage channels, diversion dikes, and temporary and permanent structure connections to existing structures, will be designed for use during construction. A “Phase One” design plan will be designed to convey offsite runoff through the construction site prior to land disturbance. With this approach, construction runoff will be separated from offsite drainage that is conveyed through the Project site, resulting in less contamination of outfalls and environmentally sensitive areas such as wetlands and streams. Complying with water quality permits and keeping Project impacts within permitted limitations will be greatly facilitated, allowing for an efficient and expedited sequence of construction. These areas will have minimal disturbance and will be stabilized prior to the start of the construction work. Subsequent phases will be matched to each phase of construction activities. This will include all onsite measures to include perimeter controls, sediment traps and basins, erosion controls, and permanent stabilization at the conclusion of each phase of work.

E&SC designs will be reviewed by an independent, DEQ certified plan reviewer on our Team, as well as construction staff to review constructability, ensure conformance of the temporary stormwater controls with the construction phasing, and minimize field changes during construction. Storm water run-off will be directed to temporary sediment basins and sediment-laden water will be treated and discharged in accordance with the Virginia Stormwater Management Program (VSMP) permit and the Stormwater Pollution Prevention Plans (SWPPP) prepared by the Design Team. Additional discussion of E&SC is provided in *Section 4.4.1* of this document.

4.4.3 Geotechnical

The Project is located in Virginia’s Coastal Plain Geologic Region. The region presents a variety of challenging geotechnical conditions; ranging from near-surface, wet and soft subgrade soils to deeper soft, compressible, plastic clay soils that are often interbedded with sandier layers of varying fine-grained silt and clay materials to occasional lenses of highly organic peat layers. The LANE Team has carefully reviewed the available geotechnical information provided by VDOT for the Project and has considerable experience with design and construction in similar soil conditions in this region.

ECS will be the Geotechnical Engineer of Record (GER) and will support the design team during construction to take full advantage of the D-B process by integrating geotechnical design concept development with construction practices and means/methods. ECS has supported D-B projects with this approach on I-66/Route 15 DB Interchange, Route 285 over I-64 DB Interchange, and I-64 Widening – Short Pump DB. More specific to Coastal Plain Geology, ECS’ successful approach to identifying problematic soils and providing technical and economical solutions for roadway, embankment, and bridge construction has been used on recent nearby projects including Virginia Capital Trail – Sherwood Forest Phase, Dominion Boulevard, Jordan Bridge, MLK Expressway, Midtown Tunnel, and Gilmerton Bridge.

Geotechnical Design and Analysis Practices: Our Team has thoroughly reviewed the VDOT-provided geotechnical documents including the Geotechnical Data Reports (GDR) by Schnabel Engineering dated December 2, 2106 and July 19, 2017 and the AMEC Pavement Evaluation Report dated April 20, 2015. A total of 189 Standard Penetration Testing (SPT) soil borings, 12 hand auger borings, 8 Cone Penetrometer Test (CPT) soundings, and 1 Flat-Plate Dilatometer (DMT) sounding were completed for the GDR. These values represent

approximately 35% of the geotechnical boring coverage that will ultimately be required to meet minimum requirements in Chapter III of VDOT’s Manual of Instructions (MOI). 51 CBR tests were performed for roadway pavement design and existing pavement evaluation. SPT borings were not drilled for specific noise walls and large pipe/culvert structures.

Prior to acquiring additional geotechnical data, a comprehensive review and evaluation of all available data and information regarding the Project area and subsurface soils will be completed. These data sets typically include the USGS geologic maps and soil survey reports, existing as-built roadway and bridge plans, existing soil test borings, and laboratory data. A thorough site reconnaissance will be conducted to confirm the potential geotechnical risks, to identify any additional site constraints, and to tailor the geotechnical exploration program to address the real geotechnical issues relative to the proposed design.

The supplemental geotechnical investigation program will be developed based on Chapter III MOI minimum requirements and all additional exploration, investigation, and testing will be performed in support of the required final design level geotechnical engineering report (GER). The field exploration will prioritize the SPT borings required for the design of the bridges, retaining walls, and noise walls to allow design activities on critical elements to be advanced while the balance of the exploration is conducted. One of the unique challenges for the geotechnical exploration is that the majority of the field exploration will be completed at night to reduce impacts to the traveling public.

In addition to conventional SPT drilling, sampling and standard soil index testing, we plan to perform CPTu, PMT, DMT, Shelby tube, consolidation tests, direct shear, and triaxial shear testing to support the settlement calculations, global stability analyses, and bridge and retaining wall structure foundation designs. Groundwater monitoring wells are also planned in the potential SWM areas and higher fill embankment and slope locations to document as-drilled and long-term water levels.

Upon completion of the geotechnical field exploration and laboratory testing, the LANE Team will utilize all available geotechnical information (existing VDOT data and additional subsurface exploration) to delineate the subsurface profile into distinct strata, evaluate stratum-specific soil parameters, perform engineering analyses, and provide geotechnical recommendations for the design and construction of bridge foundations, noise walls, drainage structures, retaining walls, slopes, roadway embankments subgrade, pavements, and SWM facilities. The design of geotechnical features will be in accordance with AASHTO LRFD Bridge Design Specifications, 7th Edition, VDOT’s Manual of Instruction, and the Technical Provisions.

Location, lateral and vertical extent, and compressibility of soft soils throughout the Project corridor will be the primary driver of potential ground improvement methods implemented during construction. LANE is prepared to address large embankment footprints with a variety of improvements including over-excavation and replacement, wick drains combined with surcharge fills, aggregate piers and controlled modulus columns or “rigid inclusions”.

Construction Methods: To ensure that all geotechnical design recommendations are implemented during construction, the LANE Team will have members of the geotechnical design team intimately involved during construction. This approach emphasizes the need for an important role in settlement monitoring of the embankment and bridge abutment fills, implementation of the subgrade remediation measures, and ground improvement implementation. Settlement monitoring and instrumentation readings will be provided to the GER, promptly reviewed, and results/recommendations provided to the Construction Team, the QC Team, and VDOT representatives.

Geotechnical Risks and Challenges: The following geotechnical risks and challenges were identified based on our understanding of the geologic setting for the Project; review of the existing information provided by VDOT, additional available soils and geological information for this area explored by the LANE Team, and a review of the potential impacts to quality and schedule.

- Unsuitable subgrade soils
- Settlement and stability of existing and planned embankments

- Bridge foundation elements and downdrag
- Working around existing foundations and structures
- Maintaining existing slopes

The recognition and mitigation of these geotechnical risks could impact the overall schedule, Project cost, and adversely affect the traveling public due to increases in construction truck traffic and alternating traffic patterns. Our proven risk mitigation approach is to identify potential risks as early as possible in the Project, develop a mitigation action plan, and communicate/ implement the action plan with all appropriate parties. To ensure all appropriate safeguards are taken and the mitigation strategy results in a quality product, significant design and construction coordination is required between the GER, RCE, CM, Construction QC Manager, and QAM. The Geotechnical Engineer will provide the appropriate expertise and oversight to ensure the geotechnical risk is appropriately managed.

The geotechnical risks have been appropriately accounted for in the proposal schedule in Section 4.7. The design section of the Project schedule includes activities for geotechnical investigation, analysis, and recommendations. In the construction schedule, roadway productions have been adjusted to account for remediation of unsuitable soils and settlement of the roadway approaches. These geotechnical risks have been vetted based on the available data to date and do not specifically affect the critical path. Following NTP and as preparation of the GER progresses, the schedule will be revisited to ensure that all geotechnical mitigation measures and subsequent geotechnical construction milestones are accurately incorporated.

Unsuitable Subgrade Soils: Based on review of the provided GDR and Pavement Report the LANE Team created an unsuitable soils matrix to identify station ranges of potential unsuitable soils that could be encountered during construction. The near surface soils generally consist of coarse-grained soils (SC, SM, SC-SM and SP-SM) and are generally suitable subgrade materials. Lean clay (CL) with appreciable amount of sands and lower plasticity fines also has the potential to be suitable subgrade material, and was encountered in the near surface at approximately 25% of the existing boring locations. The LANE team evaluated the upper 3 to 5 feet of subgrade soils through the corridor and used four major criteria for identification of potential unsuitable soils including SPT N-values, USCS classification, natural moisture content, and CBR values as described in *Table 4.4-6*.

Table 4.4-6. Potential Unsuitable Soil Criteria

Description	Criteria	Potential Treatment/Application
Loose or Soft Soils	SPT N-values ≤ 4 bpf	Densification or Undercut and Replacement
Highly Plastic or Organic Soils	USCS Classification (CH, MH, OH, and OL)	Undercut and Replacement / In-situ Admixtures
Excess Moisture	MC $\geq 130\%$ of Optimum MC	Scarification/Drying or In-situ Admixtures or Replacement
Low CBR Values	CBR < 7	In-situ Admixture or Undercut and Replacement

Using the available geotechnical data and the criteria above, the LANE Team delineated specific station ranges of potential unsuitable soils throughout the Project corridor. We anticipate that the majority of unsuitable subgrade conditions will be governed by natural moisture conditions of the subgrades, while in isolated locations highly plastic soils and CBR values less than 7 were observed. Together, unsuitable subgrade soils could account for 15 to 20% of the planned subgrade footprints. The subgrade soils that are suitable by USCS classification may exhibit high natural moisture contents; therefore, depending on the time of year, drying through natural and/or chemical processes may be implemented.

Following the design level geotechnical investigation, locations where unsuitable soils are anticipated to be encountered will be delineated on the Project drawings (both area and depth) and discussed with the CM and MOT Coordinator. Collectively the GE, CM and MOT Coordinator will develop an unsuitable soils remediation plan that considers constructability, safety, schedule, and cost. The final unsuitable soils plan will be shared with the RCE and QAM to ensure its compliance with the Project requirements and will show the extents of unsuitable soils, the cause for unsuitability, and availability of multiple viable subgrade treatment options provide to provide maximum construction flexibility.

Settlement and Stability of Existing and Proposed Embankments: There are several areas of the Project that may require ground improvements to address issues of settlement magnitude, settlement duration, and global stability due to the presence of highly compressible clays and/or organic soils at relatively shallow depths and/or shallow soft granular deposits common in the geology.

As expected, the Queens Creek and Colonial Parkway bridge approaches will receive new fills on the order of 10 to 15 feet, and settlements of underlying soils are anticipated to be on the order of 2 to 3 inches. The Lakeshead Drive bridge approaches will receive new fills on the order of 20 to 25 feet to create the MSE walls at the new abutment locations, and the settlements of underlying soils could reach up to 3 to 4 inches. Further the time rate of the anticipated settlement is anticipated to be on the order of 30 to 90 days.

The key to mitigating settlement risk is accurately identifying the location, extent, magnitude and time rate of potential settlement. Accordingly, a thorough geotechnical investigation is planned to confirm locations and extent of the underlying soils and evaluate their potential for settlement. In this geology, particular emphasis should be placed on the soil strata above the Yorktown Formation. The elevation of the top of the Yorktown Formation varies significantly across the Project corridor, ranging from El. 98 ft to El. -35 ft. The testing and sampling program may consist of conventional SPT drilling with PMT and/or DMT testing supplemented by CPT with pore pressure dissipation and groundwater monitoring wells. At critical locations, groundwater monitoring wells will be installed to accurately measure long-term groundwater levels, which will be used to support the analysis and effects of long term consolidation settlement. The in-situ PMT and/or DMT tests along with the consolidation tests will provide the soil parameters to enable accurate estimate of the total settlement, and the consolidation tests paired with the groundwater information will allow the accurate estimate of the time rate of settlement.

Based on the results of the settlement and stability analyses and depending on the contributing factors to the settlement and/or stability, a number of mitigation options or a combination of which are available as summarized in *Table 4.4-7*.

Table 4.4-7. Settlement Mitigation Options

Settlement Mitigation Option	Areas of Potential Application
Light Weight Fill material	Bridge abutments and areas with little schedule flexibility
Removal and replacement	Areas where compressible soils are shallow
Surcharging (with or without wick drains)	Areas with high groundwater and high embankment fills and areas with flexible Project schedule
Wick Drains	Areas with marginal schedule flexibility and large anticipated settlement magnitudes and durations

For slopes greater than 10 feet in height, detailed global stability analyses will be performed using site specific soil strength parameters as obtained from laboratory tests. Slope stabilization measures available include geogrid reinforcement, stabilizing berms, ground improvements including undercut, rammed aggregate piers, and deep foundations. The LANE Team plans to maintain existing slopes and bench into the existing slopes for new embankment filling in lieu of attempting to steepen existing slopes. Final configurations will be analyzed to meet or exceed the minimum factors of safety for stability presented in Table 3-7 of VDOT's Manual of Instruction.

Bridge Foundation Elements and Downdrag: There are three locations along the proposed alignment where widening of I-64 EB and WB bridges are anticipated. As-built bridge plans show that the existing bridge piers and abutments are supported by driven piles or cast-in-place concrete piles. The GDRs and the existing VDOT bridge plans indicate that the subsurface profiles at each bridge location are fairly consistent through the corridor. Further, the Yorktown Formation, the typical bearing stratum in this geology, is relatively consistent in top elevation at each of the structures. Based on the information currently available, we expect to use driven pre-stressed/ pre-cast concrete piles or steel H-piles at the bridge abutments and driven pre-stressed/pre-cast concrete piles at the bridge piers.

When settlement of the existing subsurface soils occurs in the vicinity of the existing and proposed bridge abutments, negative skin friction or downdrag develops which imparts an additional load on the deep foundation elements. This downdrag force will be analyzed and quantified during the design phase. Downdrag forces must also be considered for impacts to the construction schedule as it relates to the time frame under which downdrag will occur.

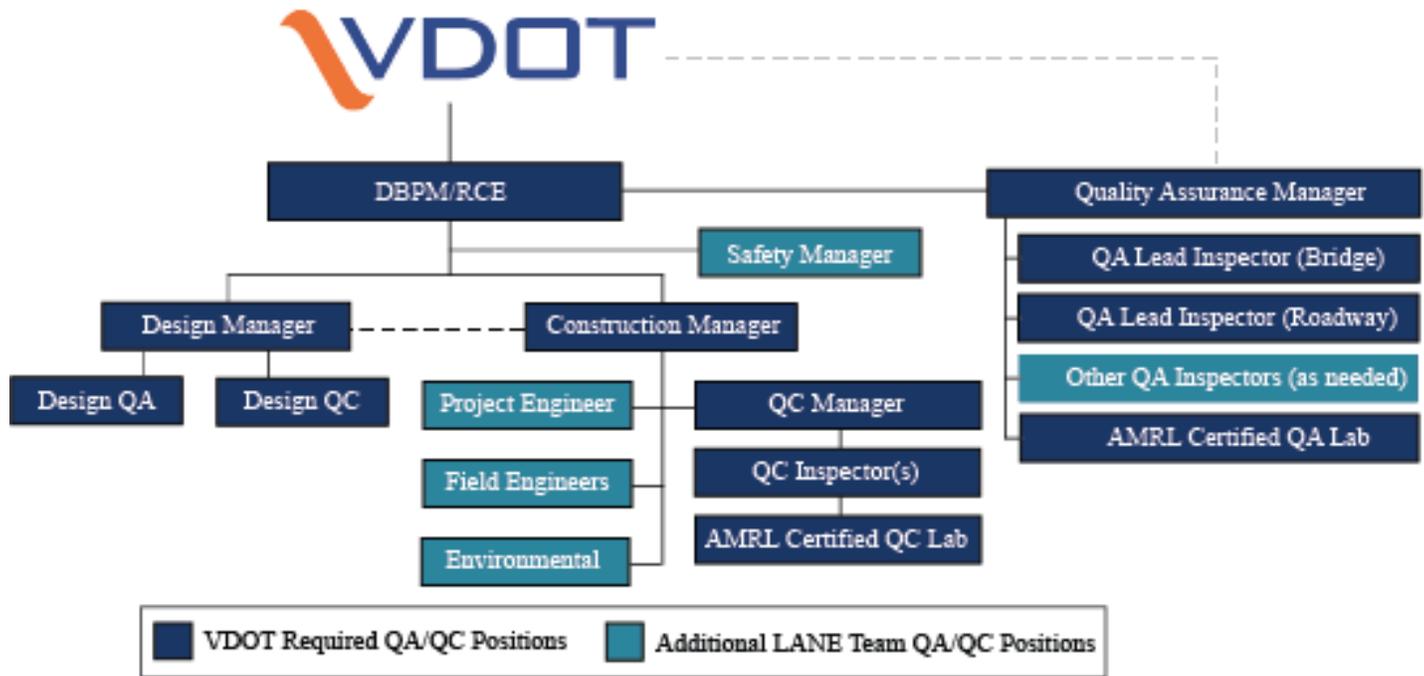
Using the calculated settlement at each abutment, downdrag forces will be calculated on the adjacent existing foundation elements and on the new foundations. If the calculated downdrag forces exceed the structural resistances, mitigation measures will be assessed. The mitigation measures we have analyzed include lightweight fills, surcharge, and wick drains. The Lane Team has applied this evaluation and mitigation approach to the bridges over Queens Creek, Lakeshead Drive, and Colonial Parkway substructures and will be confirmed in final design.

Working around Existing Foundations and Structures: There are isolated locations through the Project corridor where new construction will take place in and around existing foundations and structures. Particular attention will be paid to working around the bridges carrying I-64 over Colonial Parkway due to the sensitive nature of the brick facing of the bridges. The LANE Team has considered foundation options and ground improvement alternatives that will minimize potential impacts to existing structures. Driven piles (PSC and steel H-pile) to support the bridge structures were chosen to avoid potential soil loss that is possible with drilled shaft foundation elements that could negatively impact adjacent existing roadway embankments, and existing bridge structures. The foundations selected for the I-64 over Colonial Parkway widening will be coordinated to avoid conflicts with the existing battered piles. Where required, analytical empirical methods will be used in conjunction with construction monitoring to evaluate potential impacts to existing foundations and structures in the vicinity of driven pile foundations. Existing piers and bridge beams will be protected during construction and construction will be sequenced to ensure global stability of the foundations during construction.

Maintaining Existing Slopes: Steepened slopes have not been designed into the Project as existing slopes will be maintained and benched to support the adjacent new embankment fill. The geotechnical engineer will confirm conformance with the minimum factors of safety for the final slope configurations in accordance with Chapter III of VDOT's MOI, specifically Table 3-7. During construction, the LANE Team will implement an instrumentation and monitoring plan to document settlement of embankment fills and compare the data to estimated values.

4.4.4 Quality Assurance/Quality Control (QA/QC)

The LANE Team's approach to QA/QC focuses on the fundamental objective of exceeding requirements to deliver the highest quality for all aspects of the design and construction of the Project. We will achieve this through implementation of our Quality Management Plan (QMP). Through completion of our numerous D-B projects in the region we understand that VDOT's Minimum Requirements for Quality Assurance and Quality Control on Design-Build and Public-Private Transportation Act Projects provides a complete guide to satisfying both State and Federal design and construction quality requirements. Although this expectation is well understood, LANE's QMP ensures that quality requirements can be exceeded for VDOT. When implemented and enforced, the QMP will lead to the all-around high quality that we are known for and that VDOT expects. It is customary for LANE's QMP to include value added components, including additional QA/QC staffing. By including additional personnel in the QA/QC process, such as our Safety Management and Environmental Management, we can ensure that the quality of our work is not only enhanced but communicated to stakeholders and applied to additional functional areas of the Project outside of the traditional realm of materials and construction. Additionally, our QMP will operate with real-time data collection and on-site reporting with the capability to incorporate digital photos and electronic signatures to forms and reports, thus minimizing additional files or paperwork. Information can then be electronically transmitted from the Project site thru the QA/QC hierarchy thus reducing on site staffing commitments.



The keys to implementing a successful QMP are:

- Independence of Quality Assurance Personnel – Free from any production pressures and with direct access to LANE executive management, empowered to stop work and effect procedural changes
- QA Personnel Access to Work in all Phases – Planning, design, and construction
- QA Personnel Understanding of the DB Process – Accustomed to the fast-moving and intense relationship between design and construction activities

The LANE Team’s approach to QA/QC will create a partnership between the designers, contractor’s field staff, QC inspectors/testers, QA staff, and VDOT. Forming this collaborative environment with a proactive QC testing *and* inspection program as well as an adequate level of QA, is key to implementing a robust QA/QC Plan. Our experience on projects like Route 29 Solutions D-B prove that we can deliver a quality Project while: **1) reducing contractor and designer rework; 2) limiting required QA efforts to perform QC for the Team; 3) limiting VDOT’s need to assign its valuable resources; and, 4) assuring VDOT of a well-maintained, safe construction site with all design criteria, construction and materials meeting specifications.**

Design QA/QC

The Design QA/QC Team will be led by the Design Manager (DM). Our Design QA Manager, Mr. Peery, will implement and oversee the overall design QA/QC program. Owen Peery, PE, brings over 30 years of experience preparing contract documents for VDOT Transportation Projects. As a pendant to quality, he is second to none. He will also verify conformance with the QA/QC Plan by conducting audits of our checking and review processes. Documents identified as “Released for Construction” will include written notification certifying that the documents were reviewed in accordance with the QA/QC Plan.

Our Team will deliver a high-quality product by:

- Designing features that are safe and meet VDOT regulations;
- Conforming to the requirements, standards and reference documents in RFP;
- Ensuring design elements are constructible, durable, economical, easily inspected, and minimize maintenance;
- Meeting the design schedule, budget, and construction staging requirements; and
- Ensuring that an organized and indexed set of design calculations, design criteria and assumptions are provided.

The Design QA/QC plan for this Project will be a tailored combination of RK&K’s QA/QC Manual and QA/QC plans from our past D-B projects like Route 29 Solutions and the I-64 Short Pump D-B. Those plans outline a specific color-coded checking process for all design calculations and plans that is universally followed and results in an easily audited documentation of our QA/QC review. Prior to design, the DM, Design Quality Manager and lead discipline engineers will establish the design criteria and checklists for each design element. To customize those components, the Team incorporates applicable elements from design-bid-build checklists, like VDOT’s LD-436, and creates specialized requirements for unique design features like the aesthetic elements of the Colonial Parkway Bridge. This will tailor the QA/QC plan for the I-64 Segment III Project, thereby ensuring that the goals of each submittal are met and that VDOT reviewers receive a design package that contains an appropriate and familiar level of detail. That familiarity will **streamline VDOT’s review effort** and the structured process tailored to unique Project elements prevents oversights.

Once the design criteria and checklists have been formalized, the QA/QC plan is distributed to the assigned staff engineers and subconsultants. The DM will ensure the plan is implemented and the Design Quality Manager will audit the work to verify the correct standards are followed, checklists are used, and the work is documented. A Design Kickoff Meeting will be held to review the design criteria and QA/QC Plan with the entire Team. This same meeting will include a review of lessons learned on past projects with similar features, and highlight how quality is key to the Project’s success. Design packages will be established to ensure they include logical elements, verified to include all relevant calculations and details, and is coordinated with past and future packages. This process results in design packages that are easily reviewed by VDOT’s staff. The LANE Team understands VDOT’s need to know when design packages will be submitted. **Our Team’s adherence to the QA/QC Plan, and its process, allows us to establish the submittal schedule and notify VDOT well in advance of an upcoming submission.** That early notification will provide VDOT the opportunity to make sure that appropriate staff is available to review the design package and avoid surprises. **This will eliminate the possibility that VDOT needs to expand their review staff for an unanticipated submittal.**

Weekly meetings, led by the DM, will be held throughout the design process and include the lead discipline engineers, QC staff, and the CM. The weekly meetings and reviews integrate the entire LANE Team, including the design and construction QC staff, designers and contractors, during the design process to create a team approach to quality. Our Team’s design reviews include a cross discipline check; as well as, construction staff checking constructability. A flow chart of the design QA/QC process is shown on the following page. Input from the construction staff during the design stage is invaluable because it reduces risk to the schedule, increases efficiency, and increases safety. This particularly holds true for the impact design will have on MOT.

Construction QA/QC

Construction QA/QC is established in our enhanced QMP to provide clear and complete procedures for construction inspection, testing, and the oversight of the Project and its processes. While VDOT will provide verification, our enhanced QMP will continue to reduce their involvement level by providing a streamlined process with readily available access to reports/documents, such as inspection forms and photos that we will create, maintain, and submit through the HCSS Heavy Job Project Management system. All Team members, as well as the subcontractors and suppliers for the Project, will be required to submit corresponding Quality Plans that are compliant with respect to our enhanced QMP. Any variance from the implemented standards will not be tolerated and as such, continuous audits will be performed to verify QA/QC adherence and to deploy updates, betterments, and amendments as the Project progresses.

LANE has established, documented, and maintains a quality system as a means of ensuring that our product conforms to specified requirements. A list of elements will be outlined in the Quality Plan to identify procedures used to uphold LANE’s Mission Statement and provide a quality product to VDOT.

Construction Quality Control (QC) - LANE is responsible for the QC during construction where it begins at the working level with LANE’s QC inspectors. Management and leadership is provided by Mike McGinniss in his role of Construction QC Manager and ultimately with Troy Carter as the DBPM/RCE. All work will be in accordance with the enhanced QMP derived from LANE’s in-house construction QC Plan, the requirements of

the RFP and VDOT’s Minimum Requirements for Quality Assurance and Quality Control on Design-Build and Public-Private Transportation Act Projects. The QC Program will make continuous assessments of all activities and when necessary adjust methods or materials to achieve or exceed the required quality levels. Our QC personnel for this Project will possess and maintain current VDOT certifications. This proven and strong QC program is self-contained with respect to operations, management, and documentation thus requiring minimal oversight by VDOT’s resources.

Construction Quality Assurance (QA) - Led by Quality Assurance Manager (QAM), Julie Perkoski, (CES), the construction Quality Assurance program operates independently from the construction QC program and has oversight/verification responsibilities for all QC testing and monitoring activities. The QAM provides confirmation that all RFP requirements, specifications, and special provisions are being met or exceeded. The QA inspectors (Bridge and Roadway) will be responsible for QA testing and/or inspection of items of work for conformance with plans and specifications. The independent role of the QAM provides direct information to the DBPM/RCE and VDOT outside of the Construction QC chain of command. Additionally, the QA operation will monitor and audit QC procedures and activities to verify proper performance. **A high level of authority is given to the QAM to make certain that the Construction QA function does its job and as such minimizes the requirement of resources and involvement by VDOT.** The QAM is authorized to stop any and all work on this Project if quality measures and controls are not being properly maintained.

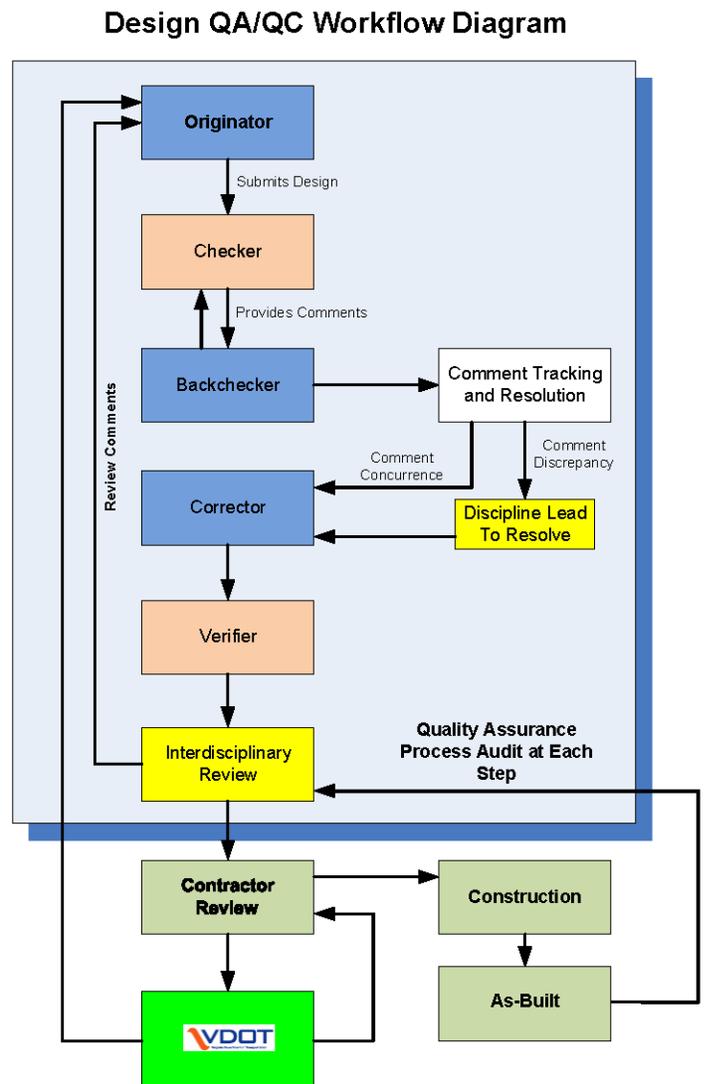
QA/QC Approach to the Unique Design Element: Maintenance of Traffic (MOT)

The element that the LANE Team deems most critical from a designer’s perspective is MOT and the challenges associated with construction as it directly affects; the safety of the traveling public; efficiently maintaining traffic through the work zone; communication with the stakeholders; and ensuring the plan is implemented and carried out through the successful completion of the Project.

Section 4.5.2 details the LANE Team’s plan for the Transportation Management Plan (TMP). The TMP establishes the elements, steps, and MOT details to ensure that our goals are met. Our approach to QA/QC will make certain that the plan is successful because it is established around the principle of creating a partnership between the Team’s designers, contractor’s field staff, QC inspectors/testers, and QA staff. This combined approach along with strong internal communication will ensure that all potential challenges are investigated, reviewed, and vetted from different viewpoints to identify and plan for circumstances before the TMP is implemented.

Design criteria and checklists will be established, in accordance with the QA/QC Plan prior to development of the MOT. The weekly meetings will provide the opportunity for design disciplines and construction staff to coordinate regularly and ensure that working groups include the appropriate design and construction staff. Those working groups will be an integrated part of the design process. This is also

when the design engineers coordinate with other activities and disciplines to verify that the entire LANE Team stays on track and ahead of potential issues and requirements like meeting with stakeholders or special reviews.



Aside from the Contractor’s and RK&K’s in-house QC inspectors, our engineering staff developing the plan have the necessary training to review and evaluate MOT setups in the field and will have the established processes and contacts in place to help the construction team get it right BEFORE the QC inspectors have reviewed it.

Once the MOT design is finalized, it is submitted to independent QC Engineer(s). We utilize checkers with a level of expertise equal to the discipline leaders. This new set of “experienced eyes” will review the design for compliance with the design criteria and design standards, such as lane shifts, and the application of fundamental temporary traffic control principles. The comments from this review are returned to the design engineer and MOT Manager for consideration. After the comments, have been addressed, the plans are backchecked/verified by the QC Engineer or the process is repeated. Once the MOT design has been through the check process, it is distributed to all discipline leaders and the Construction Manager for an inter-disciplinary review. The results of that review are addressed by the MOT Manager and the plans go through a final review by LANE to verify constructability and conformance with the contract requirements. Throughout the entire QC process, the comments, responses and check certifications are documented and saved. The Design Quality Manager is responsible for auditing that the quality control check process is being followed.

Following the final review, the discipline leader will certify to the DM that all QA/QC efforts are in accordance with the required procedures and transmits the certification to the DM for acceptance. At that time, the design package is signed and sealed by the lead engineer, a Professional Engineer registered in the Commonwealth of Virginia, and it is submitted to VDOT for approval using the Project’s document management system. VDOT reviews the design and submits any comments to the LANE Team. If VDOT has any comments, the Team will address them and resubmit the design for VDOT approval. After that, the approved plans are given an Approved For Construction stamp and are ready for use by the construction staff. We know what VDOT expects to see for each submittal and are committed to providing it to minimize the amount of time their reviewers spend reviewing to approve the plans.

Our Design Team recently proved that this process is successful while working with LANE on the Route 29 Solutions, Rio Road GSI D-B Project. We know how these elements get built and know how to design them to achieve VDOT acceptance and allow for the contractor’s desired methods of construction. Our Design QA/QC Plan facilitated rapid VDOT reviews and approval on that project and it helped to accelerate VDOT’s commitment to review plans in nine days to an average of five days. ***That is an average four-day, 50% reduction in VDOT’s submittal review effort.*** The LANE Team will bring the same dedication to the I-64 Segment III Project and minimize VDOT’s QA/QC effort.

QA/QC Approach to the Unique Construction Project Element: Improvements to Structures over the Historic Colonial Parkway

LANE has identified the improvements to the structures over the Historic Colonial Parkway as the single most critical project element from a construction perspective for QA/QC. Our design and construction team has carefully reviewed the existing bridge plans, RFP Part 2 criteria, and current field conditions to prepare a quality design and construction approach. Our plan will ensure all RFP criteria is met, limit disruption to traffic on Colonial Parkway, and maintain structural and aesthetic integrity of the existing bridges.

Our Team will perform a preconstruction survey of the existing conditions to document geometry, elevations, shapes and styles of brick and stone, existing vertical clearances, and other items needed to ensure the widened portion of the existing structure meets or exceeds the structural and aesthetic requirements. A pre-construction condition report will be prepared to summarize the condition of the structure prior to the start of physical construction. LANE and RK&K will plan to meet with VDOT and the National Park Service prior to construction to review the report and outline our planned approach for the widening of the structures.

During all key phases of demolition and reconstruction, the Construction Manager will maintain consistent communication with RK&K’s Design Manager, Geotechnical Engineer, and Structures Lead to ensure the design approach is carried out in the field. Location and installation methods for MOT devices, temporary

support of excavation, shoring, scaffolding, and piling will be reviewed and agreed to for each phase of construction.

To ensure additional Quality and minimize VDOT intervention, we have secured Snow Jr. & King, Inc. Masonry Contractors as a dedicated subcontractor to our construction team. This firm is an award-winning masonry contractor, having successfully completed multiple projects for the Colonial Williamsburg Foundation (CWF). Snow Jr. & King have past experience working on these structures, and will assist the LANE team during all phases of material procurement, demolition, reconstruction, and rehabilitation of existing areas of the bridges.

All sources for material procurement, including brick, stone and mortar will be in accordance with the RFP and coordinated with VDOT and the National Park Service.

Our Quality approach to preserving the integrity of the existing structures and meeting the RFP requirements for the widened portions will provide confidence to VDOT the construction is carried out successfully for all parties and stakeholders involved.

4.5 CONSTRUCTION OF THE PROJECT

4.5 | CONSTRUCTION OF THE PROJECT

The LANE Team’s approach to this Project involves organizing a team that will execute through highly-skilled personnel with exceptional technical knowledge and expertise, utilizing state of the art equipment, that when set into motion will drive the means and methods used to deliver the Project successfully. The LANE Team brings the know-how to avoid adverse impacts, the expertise to plan and execute activities to ensure the travelling public is always safe, informed, uninterrupted and mobile throughout each phase of the Project. The LANE Team’s capacity to self-perform a significant portion of the work provides the control that is needed to ensure timely and safe delivery of the finished product. Additionally, no construction activity will proceed without assurance that all safety and environmental protection measures are implemented.

The LANE Team Offers	Benefit to VDOT
Optimized MOT	<ul style="list-style-type: none"> Phase 1 of roadway construction will be performed with the existing traffic pattern, which equals to approximately 50% of construction duration. Phase 1 – minimize night time lane closure to place temporary pavement. Improve safety for both traveling public and the construction operation. Utilize lane shift transitions designed to meet the full “L” shifting distance, providing a smother and safer route through work zone for travelling public.
Alternate Route Replaces the RFP Proposed Temporary Detour for Route 143 to I-64 WB Loop Ramp	<ul style="list-style-type: none"> Simpler ramp detour reduces potential for travelling public confusion, thus improve safety for all. Considerably shorter route reduces impacts to the travelling public
Self-Performance of Significant Portion of Work	<ul style="list-style-type: none"> Optimal control of safety and quality performance on the project. Minimizes risk of schedule delays by reducing coordination efforts and resource constraints of subcontracting. Optimal utilization and sharing of work forces and equipment contributing to improvements in productivity and safety. Tools and equipment pool readily available to workers resulting in better safety, quality, productivity and project site security.
Reduced Wetland Impact	<ul style="list-style-type: none"> Construct both Queens Creek bridges with 1 trestle. Reduce the number of piers on wetland. Top-down construction to minimize impact to wetland.
Full Replacement of Lakeshead Dr. Bridges	<ul style="list-style-type: none"> Provide up-to-date safety standard with the new structure. Reduce maintenance requirement. Better drivability than the widening of existing bridge.
Elimination of Retaining Wall	<ul style="list-style-type: none"> Eliminate potential fall hazard for both the work forces and the traveling public. Eliminate long-term settlement issues and maintenance of structure. Reduced QA/QC burden on VDOT.

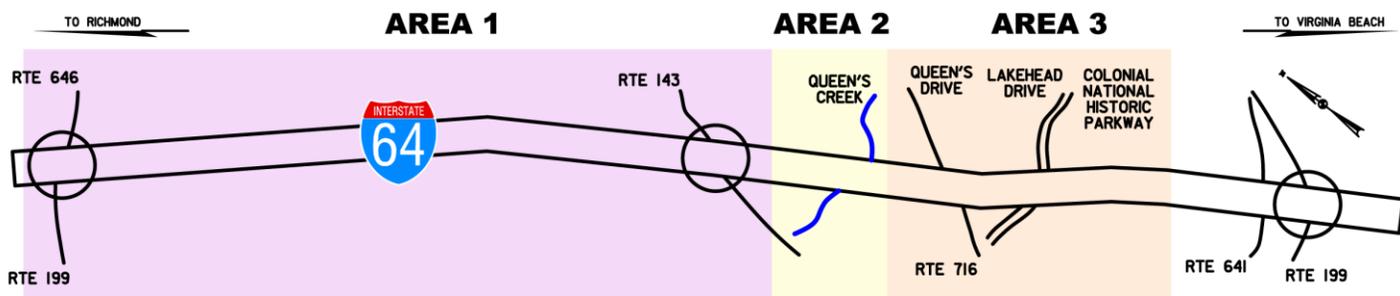
4.5.1 Sequence of Construction (SOC)

General Sequence of Work

Construction operations are organized logically and systematically into three areas of the Project alignment, each with established phases of work. Each area is specifically established to achieve, without delay, our Final Completion Date of September 24, 2021. Dividing the Project into strategically-defined areas allows the LANE Team to effectively coordinate our construction elements and efficiently manage the resources required for environmental permitting, ROW, stakeholder coordination, safety and utility relocations.

The LANE Team organized the construction of the Project into three areas:

- **Area 1** consists of the work from the western terminus of the Project to Queen’s Creek Bridges.
- **Area 2** is Queen’s Creek Bridges replacement.
- **Area 3** consists of the work from Queen’s Creek Bridges to the eastern terminus of the Project.



The LANE Team intends to advance the construction of all three areas simultaneously. Special attention will be given to coordinate the shift of traffic between the Area 1 and 2, and Area 2 and 3. The LANE Team endeavors to synchronize the switch of construction phases between areas, so as to minimize the number of traffic shifts in the Project.

Area 1

Phase 1: For approximately 25% of roadway the LANE Team will utilize overnight single lane closure operations to install the short sections of shoulder strengthening required in this area. Once completed, the existing pavement markings will be eradicated and restriped, providing two 11-foot travel lanes while maintaining the existing 10-foot shoulder. After that, temporary concrete barrier will be placed on the existing shoulder to safely separate workers and the motoring public. Then the LANE Team will construct the inside widening and median improvements.

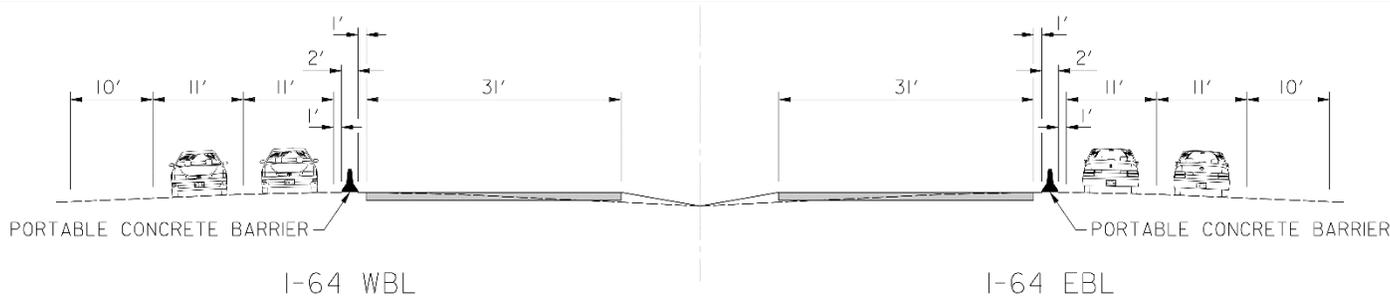


Figure 4.5-1. Area 1, Phase 1

There are no structures to be widened in Area 1. The existing shoulder width will be maintained and will continue to serve as an emergency pull-off during incidents. The median construction will not affect the access

from and to the Route 143 and Route 199 ramps. The existing auxiliary lanes will be maintained in their current configuration and length.

Phase 2: Once the median construction is completed, the LANE Team will relocate the temporary concrete barrier and shift traffic onto the newly constructed shoulder and travel lane. Then the existing roadway and ramps will be reconstructed.

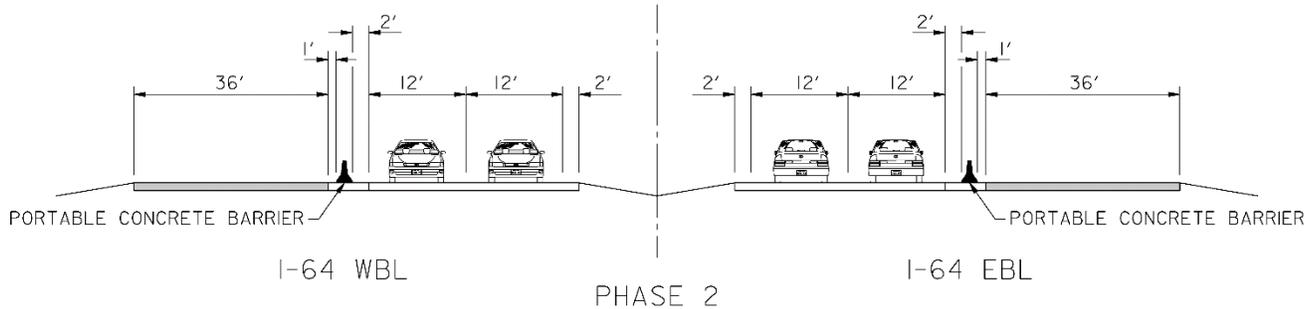


Figure 4.5-2. Area 1, Phase 2

Since the MOT plan will provide two 12-foot travel lanes, without a continuous 9-foot shoulder, the LANE Team will set-up emergency pull-offs on the outside shoulders with maximum spacing less than 1 mile. These pull-off areas present a special challenge to the Project, because it prevents the LANE Team from accessing the area for reconstruction. The LANE Team has developed a solution for this problem, which utilizes sub-phasing. For further description of the solution, refer to the *Special Challenges and the LANE Team Solution* section.

This phase of construction will affect access to the Route 143 and Route 199 ramps. The LANE Team will install temporary ramps to maintain access to the aforementioned ramps. This presents a similar challenge to pull-off areas, where, once again, the ramp prevents the LANE Team from accessing the area for reconstruction. The LANE Team has developed a similar sub-phasing solution for this problem, which is further discussed in the *Special Challenges and the LANE Team Solution* section.

Area 2

Phase 1: The LANE Team will construct the inside half of the proposed eastbound Queen’s Creek Bridge (B-642) as illustrated below. The construction during this phase will not require any shifting of the current traffic pattern on the existing Queens Creek bridges. The LANE Team will mobilize to the median areas on each side of the existing bridges, install erosion and sediment control devices and clear the area for the required construction access. After the construction access roads have been built on each side of the bridges the Team will mobilize the cranes, other equipment, personnel, and construction material required to build the new bridge structure.

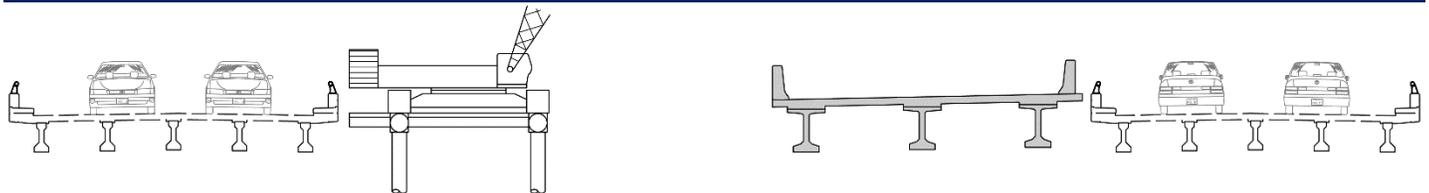


Figure 4.5-3. Area 2, Phase 1

The first step will be to install the piles at Abutment A. After those piles have been installed we will install the crane trestle to Pier 1 utilizing a 200-ton crawler crane as our lead crane. The lead crane will be utilized for installing the trestle, driving the piles and setting of precast pile caps for the substructure work. Once the trestle is installed, the lead crane will drive the piles, and erect the precast pile cap at Pier 1. After Pier 1 is complete, the lead crane will install the trestle to reach pier 2, drive piles and erect the precast pile cap at Pier 2. This construction cycle will repeat itself until it reaches Abutment B, which will mark the completion of substructure

work for the bridge. A 150-ton crawler crane will be utilized as our rear crane that works behind the lead crane on the trestle working with carpenter crews for the construction of the abutments and Virginia pier. The crane trestle is designed with heavy diaphragms and wood mats so it can accommodate the smaller rear crane and the larger lead crane on the same trestle. The crane trestle is also designed for truck loading so the pile and girders can be delivered down the trestle via truck to the lead crane. As shown in the illustration below (Figure 4.5-4) the trestle is designed so that the truck can pass by the rear crane to deliver product to the lead crane. **This eliminates the need for lane closures on the existing bridges for material deliveries.** It also allows the girders to be delivered down the trestle in a position so that both cranes can work together to erect the girders.

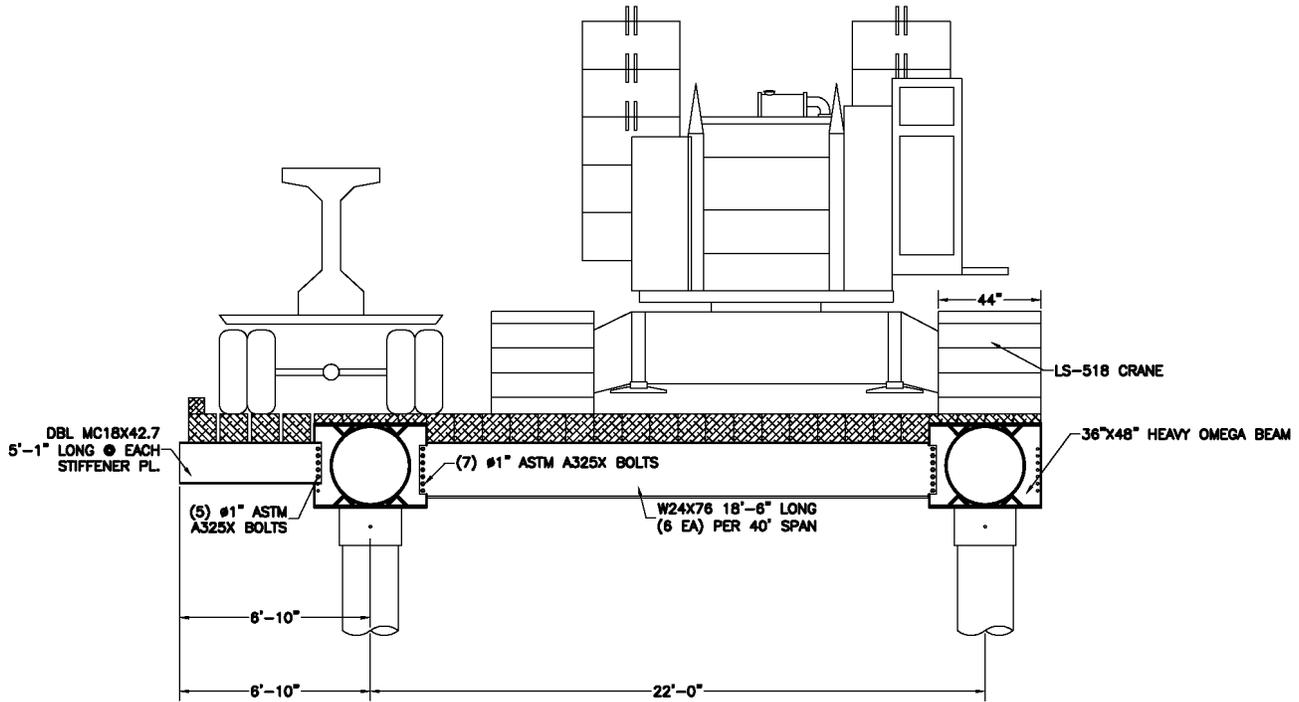


Figure 4.5-4. Trestle diagram

The construction of the superstructure starts with erection of girders from Span 1 to 10 that will be performed by utilizing a two crane pick with both the lead and rear cranes. After erection of the girders, the rear crane will work with the crews to construct the diaphragms and the decks for Units 1 and 2. The LANE Team will finish the work with the construction of the approach slab and roadway, and the construction of the temporary crossover to take traffic from the existing westbound Queen's Creek Bridge (B-643) to the newly constructed eastbound portion of the proposed Queen's Creek Bridge (B-642).

Phase 2A: The LANE Team will install the required MOT and temporary pavement markings, then shift traffic from the existing westbound Queen's Creek Bridge (B-643) to the newly constructed portion of the eastbound Queen's Creek Bridge (B-642). The cranes and equipment will be located on the crane trestle for the traffic shift. The LANE Team will prep the area for construction by rebuilding the access road as needed for the movement of cranes, equipment, personnel, and construction material. The LANE Team will start the demolition of the existing westbound Queen's Creek Bridge (B-643) utilizing the phase 1 trestle as shown in the illustration below. The rear crane will concentrate on the demolition work while the lead crane starts the installation of piles and piers similar to Phase 1. Once the demolition is complete, the rear crane will be relocated behind the lead crane on the crane trestle, so the rear crane can work on the abutment and superstructure work. The construction of the superstructure will proceed like Phase 1, where the operation will start with erection of girders, then the rear crane will work with diaphragm and deck construction for Units 1 and 2.

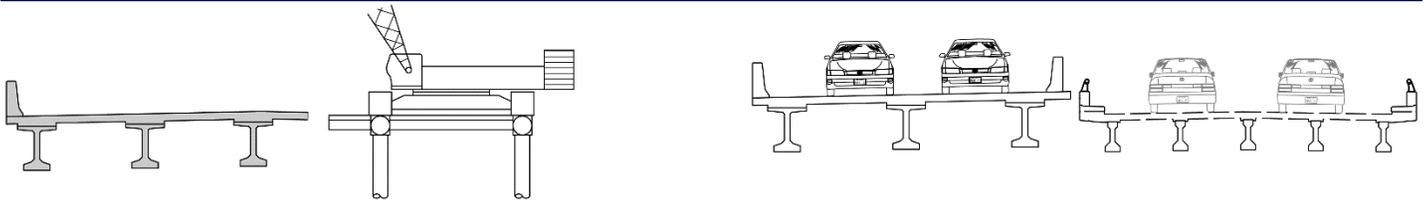


Figure 4.5-5. Area 2, Phase 2A

Phase 2B: The LANE Team will start Phase 2B work once the first deck unit is fully cured and the lead crane has completed all its Phase 2A activities. The switch to Phase 2B will utilize the same site and access as Phase 2A, and no traffic shift is required to perform the work. The lead crane will swap positions on the trestle with rear crane that is working with diaphragm and deck crews. This will allow the lead crane to move from the crane trestle onto a mat system placed on top of the fully cured Phase 2A deck unit. Polyurethane sheeting will be placed on top of the new bridge prior to placing the crane mats to protect the new deck from any potential oil leaks. From the new bridge deck, the lead crane will remove the trestle, drive piles, and erect the precast caps for the remaining portion of the westbound Queen’s Creek Bridge (B-643) as shown in the illustration below. Once the Phase 2A decks are complete, the rear crane will be relocated behind the lead crane on the new bridge deck to complete the superstructure for Phase 2B. The material will be delivered down the new bridge deck utilizing methods similar to Phase 1 and 2A trestle deliveries. The construction of the superstructure will mirror Phase 2A, where the operation will start with erection of girders, then diaphragms, and the construction of deck Unit 1 and 2. The LANE Team will finish work the construction of the approach slabs and roadway. While finishing the bridge, the LANE Team will construct a second crossover for taking both Phase 2 EB and WB traffic on the newly constructed westbound Queen’s Creek Bridge (B-643).



Figure 4.5-6. Area 2, Phase 2B

Phase 3: The LANE Team will install the required MOT and temporary pavement markings and then shift both EB and WB traffic to the newly constructed westbound Queen’s Creek Bridge (B-643). The LANE Team will prep the area for construction by rebuilding the access roads for movement of cranes, equipment, personnel, and construction material. Utilizing the same crane mat and deck protection system, the rear crane will move onto the portion of the new eastbound Queen’s Creek Bridge (B-642) constructed during Phase 1. Similar to Phase 2B from the bridge deck, the rear crane will demolish the existing bridge while the lead crane comes behind that operation driving piles, and erecting the precast pile caps for the remaining eastbound Queen’s Creek Bridge (B-642). Once the demolition is complete the rear crane will be relocated onto the bridge deck behind the lead crane to help with the erection of the girders and deck construction. The construction of the superstructure will mirror Phase 2B, where the operation will start with erection of girders, then diaphragms, and the construction of deck Unit 1 and 2. The LANE Team will finish work the construction of the approach slab and roadway. When the bridge is finished, the LANE Team shift EB and WB traffic into the permanent alignment, and the remove the temporary crossover.

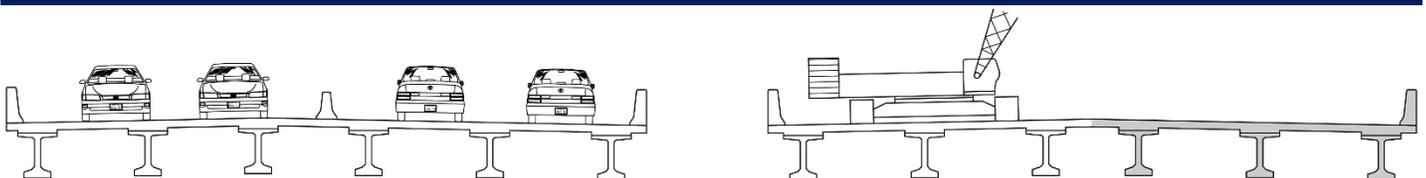


Figure 4.5-7. Area 2, Phase 3

Area 3

Phase 1: The LANE Team will utilize overnight single lane closure operations to construct shoulder strengthening where required. Traffic will be maintained on 11-foot travel lanes where the existing shoulder is maintained, and on the 12-foot travel lanes throughout the remaining locations. The LANE Team will construct the inside widening and median improvements. Temporary concrete barrier will be placed on the existing shoulder to safely separate workers and the motoring public.

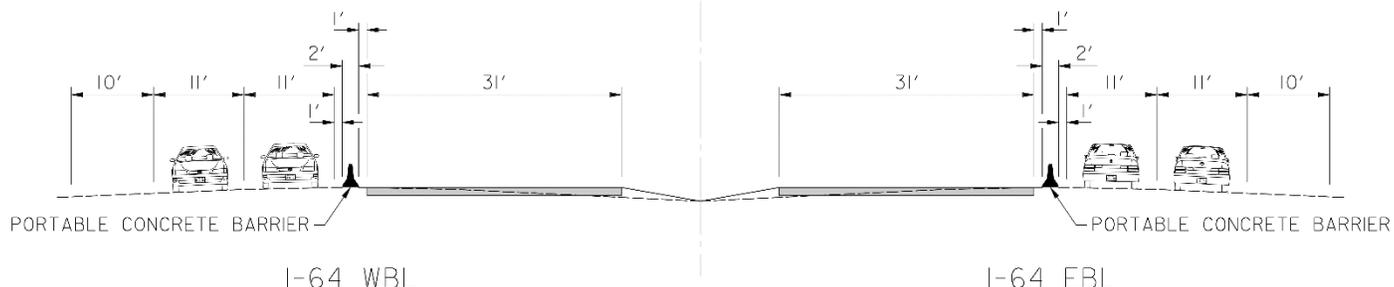


Figure 4.5-8. Area 3, Phase 1

This area does not include any ramps, but there are 2 pairs of bridges within its limits – Lakeshead Drive and Colonial National Historic Parkway (Colonial Parkway):

- **Lakeshead Drive Bridges:** The LANE Team will replace the existing bridges in lieu of widening and rehabilitation. The sequence of work starts with traffic shifted towards the outside edge of the roadway, saw and demolish portion of the existing bridges, then construct the foundations, substructures and the superstructures. The LANE Team will then install the guardrails, and construct the approach slab and the roadway tie-in to the bridges.
- **Colonial Parkway Bridges:** The LANE Team will widen the existing bridges. In addition to the I-64 MOT, the LANE Team will also set-up MOT and temporary signal on the Colonial Parkway to maintain a single lane of traffic under the overpasses. The sequence of work start with the partial demolition of the existing bridge and roadway. Additional protection systems and procedures will be in place to preserve the bridge façade, so the widening portion will match the existing appearance of the bridges. Next, the LANE Team will construct the concrete arch foundation, the arch, and the wing wall. The brick façade will be integrated into the arch and wing wall construction process. Next, the LANE Team will backfill the bridge, construct the parapet and then the pavement over the bridge arches. Once the construction is completed. The LANE Team will remove the temporary signals and MOT devices from Colonial Parkway, and restore the roadway and traffic to the pre-existing condition.

Phase 2: Once the median construction is completed, the LANE Team will relocate the temporary concrete barrier and shifts traffic onto the newly constructed shoulder and travel lanes. Then the existing roadway will be reconstructed. The LANE Team will concurrently construct the sound barrier wall along the shoulder.

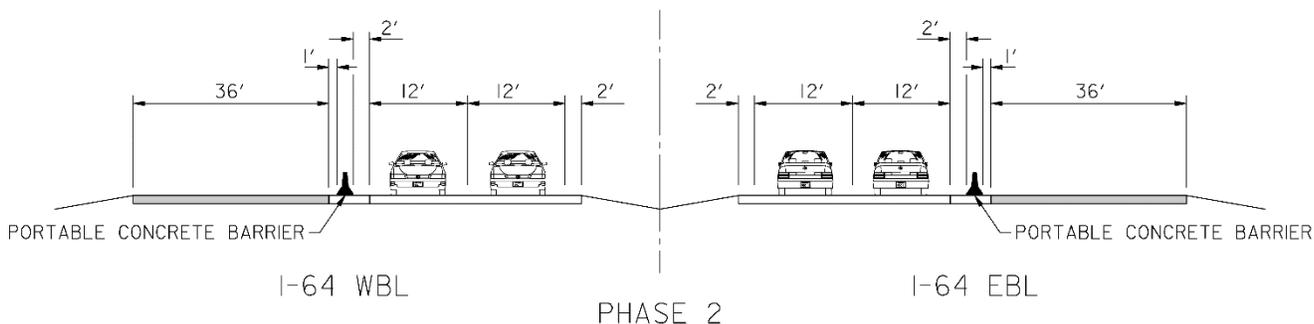


Figure 4.5-9. Area 3, Phase 2

The LANE Team will also perform the next phase of construction on the existing two pairs of bridges:

- **Lakeshead Drive Bridges:** The LANE Team will replace the remainder of the existing bridges. The sequence of work starts with shifting traffic onto the new bridge decks, then demolish the remaining portion of the existing bridges, followed by construction of the foundations, substructures and the superstructures for the remaining portions of the new bridges. Next, the LANE Team will install the guardrails and ITS conduits, and construct the approach slab and the roadway tie-in to the bridges.
- **Colonial Pkwy Bridges:** The LANE Team will shift traffic onto the newly constructed portion of the bridge and demolish the remaining roadway. Then the LANE Team will construct the new bridge roadway.

The MOT plan will provide two 12-foot travel lanes without a continuous 9-foot shoulder. The LANE Team will set-up emergency pull-offs on the outside shoulders with maximum spacing less than 1 mile. These pull-off areas as discussed above present a special challenge to the Project. The proposed solution to the limited work areas is described in the next section.

Special Challenges and the LANE Team Solutions

Emergency Pull-Off Areas – The MOT plan will require the set-up of emergency pull-off areas at various phases and locations of the Project. This creates a special challenge, because the pull-off areas will be set-up on the existing roadway, which prevents the LANE Team accessing the area for construction of the proposed paving. The LANE Team devised a sub-phasing plan to expedite the construction of a strip of roadway in the alignment and immediate adjacent to each pull-off area. Upon the completion of the strip of roadway, the LANE Team will relocate the pull-offs onto the new roadway, and then construct the paving at the old pull-off areas.

Route 143 to I-64 WB loop Ramp Detour – The RFP recommended detour No. 4 from VDOT’s I-64 Segment III IMOA Detour Analysis directs I-64 WB traffic at Exit 238 take I-64 EB to Exit 242, and utilize the loop ramps to switch over to I-64 WB. The LANE Team provides an alternate detour (Figure 4.5-10), which is more direct, and simpler. It reduces potential driver confusion and trips through active work zones – it improves safety and eliminates an eight-mile detour, reducing impacts to the traveling public.

Route 199 Underpass – The LANE Team plans to construct a temporary diamond interchange to detour the WB loop ramps around the Phase II work area under the Route 199 overpass. Eliminating the loop ramp traffic from this area will increase safety by reducing the interaction between construction work and motorists. This will allow construction to proceed more quickly. The detour involves temporary pavement to accommodate the turning vehicle volumes and a temporary signal to provide LOS B traffic operations to limit impact to the traveling public.

Construction Access & Haul Roads – The LANE Team has identified the hauling of material as key challenge for the Project due to its large quantity of earthwork. Haul roads will be taken into consideration in the development of the TMP. For Area 1 Phase 1 construction, the LANE Team will build construction accesses

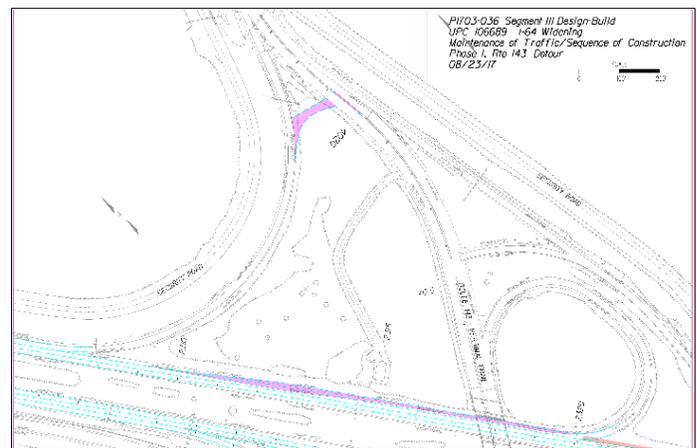


Figure 4.5-10. Route 143 to I-64 WB loop Ramp Detour

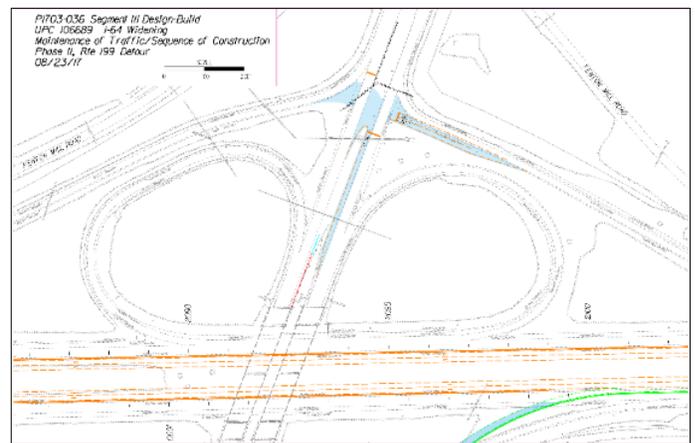


Figure 4.5-11. Route 199 Underpass

per regulation to provide safe entries and exits for haul trucks to enter and exit the work area. For Area 1 Phase 2 and Area 3 construction, the LANE Team will utilize the emergency pull-off areas as construction accesses for haul trucks. Area 3 Phase 1 will have an additional access point at Lakeshead Drive.

Maintain and Modify Existing ITS System

Our proposed approach to construction of the Project will maintain function of the existing ITS devices throughout construction. Impacts to existing ITS devices are limited and the impacted devices, include 4 DMS signs, 2 CCTV camera, 3 TMS cabinets, and 1 Reach the Beach sign will each be installed and connected prior to removal of the impacted device. In areas where existing conduits and fiber optic cables will be impacted by the Project, the new conduit and cables will be installed prior to impacting the existing equipment; allowing communication to be maintained at all times.

Safety Program and Accident Prevention Measure

Approach to Safety Management: The LANE Team will make safety the top priority each and every day. The Safety Manager will manage a stringent Safety Program that will empower employees at all levels to stop work anytime an unsafe action takes place. Our proven and successful Safety Program on the 495 and 95 Express Lanes projects will be implemented on this Project.

Efforts during Design to Avoid/Minimize Potential Safety Impacts to the Construction Workers and the Traveling Public: As previously discussed safety will be first and foremost. We will ensure this by developing the design for the I-64 Segment III using an integrated approach that includes the D-B Team, City of Williamsburg, York County and VDOT. While the design team will utilize the Manual on Uniform Traffic Control Devices (MUTCD) and Virginia Work Area Protection Manual (VWAPM) in the development of the traffic control plan, there could be variables related to means and methods of construction that may require additional considerations in the design of the traffic control plan. By including the construction team in the early identification of these variables through the constructability review process and the weekly design coordination meetings it will allow the design team to incorporate and manage safety and mitigate un-safe conditions prior to finalizing the plans. By doing so, we will greatly improve the safety of the work zone for construction personnel and the traveling public. As an example, due to the restricted and congested corridor, the LANE Team will carefully evaluate and locate all emergency pull-offs to meet VDOT specifications and provide clearly designated locations with ease of access to distressed motorists and first responders.

Efforts during Construction to Avoid/Minimize Potential Safety Impacts to the Construction Workers and the Traveling Public: A Zero Accident Philosophy is a belief that all accidents are preventable, predictable, and unacceptable. Implementing this attitude will increase morale for our employees and enhance safety for all, including the general public. LANE considers the safety of its employees and the general public to be a matter of prime importance.

While safety is mainly thought of with respect to construction operations, we mention above that the LANE Team will activate our safety mindset long before the work begins. During the design process, our Team will involve our operations personnel with their design counterparts so that constructability and safety procedures go hand-in-hand in plan and schedule development. At the same time, the development of our various management plans (TMP, PIP, etc.) will also take place with similar collaboration, coordination and planning meetings among design and construction personnel as well as VDOT. This will ensure that procedures are in place to carry the safety requirements through all aspects of the Project and to make sure that ongoing safety patrols, first responders and incident response factors are incorporated in the safety component of the Project. Stakeholder collaboration will also be key in our management plans when it comes to safety.

We aim to proactively address potential hazards long before losses occur and **we will never sacrifice safety for production and cost savings**. For example, LANE will meet with utilities prior to commencing work to coordinate and provide appropriate overhead utility identification flags, contact protection and warning signs to make obvious avoidance stand out.

Specific Safety Programs, Measures and Practices that will be Adopted by the Team and our Subcontractors: At LANE, every employee has the responsibility to manage safety and a stop work authority to use anytime an unsafe action take place. At any time during the work process, any employee that identifies a condition or conditions that is immediately dangerous to life and health to either employee, property or the general public, the employee has not only the right, but the responsibility to stop work immediately. Safety is a value that is essential in our industry and all those in management positions are in full support of this program.

Safety relies on the public to participate in protecting those working in or traveling through the Project. From past work on the 95 Express Lanes we are familiar with and see the benefit of the Orange Cones – No Phones program and realize that through communication and public involvement this safety initiative can once again be commenced to the benefit of all.

When hired, each employee will be required to participate in a safety orientation course. They will participate in daily pre-shift meetings prior to starting each work day for the purpose of receiving accident advisories and the sharing of near-miss incident reports for everyone to learn from.

Our Safety Assurance Program is another initiative that will be utilized during construction of the I-64 Segment III project which provides industry leading technology to our Safety Supervisors to effectively and adequately ensure safety excellence on all our projects. This program involves our Safety Manager and staff using internally developed LANE computer software on a handheld device to conduct periodic safety audits. This audit process involves all our employees which encourage their engagement and participation in the program. Any deficiencies are noted and corrected and all data is dumped into a universal system that populates and trends findings across the company. Any final audit findings that require abatement have deadlines set and crew member’s work together as a team to implement corrective measures. The trend findings from all audits inputted into the system are shared across our organization and they proactively enable our overall safety management system to identify training opportunities, modifications or additions to procedures/policies, and an overall awareness of safety “focus” areas.

Communications with other projects will also be necessary to ensure that safety proliferates itself not only in the I-64 Segment III operations but on any project in the vicinity that may be influenced by our work or vice versa.

Geotechnical Constraints:

The LANE team is very familiar with the geology in the area, and has carefully evaluated the existing geotechnical data available for the Project with respect to sequencing of construction activities. Our design and construction sequence will account for risks and challenges such as unsuitable subgrade soils, settlement and stability of existing and planned embankments, bridge foundation elements and downdrag forces, working around existing foundations and structures, and maintaining existing slopes during construction. Potential geotechnical risks and constraints have been identified and incorporated into our construction schedule provided in Section 4.7. Early action items and proven risk mitigation practices will ensure the geotechnical requirements are met without impact to the critical path on the schedule.

Environmental Impact and Mitigation:

The LANE Team has identified a number of potential environmental impacts to the Project: cultural resources, Colonial Parkway, Camp Peary, wetland/streams, stormwater, noise, threatened and endangered species, Tidewater fire ant quarantine, hazardous materials, and anadromous fish species. As a result of these potential impacts we have developed a number of appropriate strategies to mitigate their impacts to the project (refer Section 4.4.1 for further discussion). In summary, the LANE approach has identified the potential impact, developed methodology, plans, and design to mitigate / work around / reduce the impact, and comply with environmental requirements by integrating the mitigation into our construction activities.

ROW Acquisition:

The LANE Team has identified six E&S trap/basins in the Project that will require ROW acquisitions. In the schedule, the LANE Team has taken into account the effect of ROW acquisitions on the construction of these E&S facilities. The locations and the roadway that they will treat are as follows:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. EB Station 1107 <ul style="list-style-type: none"> ▶ Station 1104 to 1110 2. WB Station 2132 <ul style="list-style-type: none"> ▶ Station 2124 to 2133 3. WB Station 2149 <ul style="list-style-type: none"> ▶ Station 2144 to 2149 | <ol style="list-style-type: none"> 4. WB Station 2193 <ul style="list-style-type: none"> ▶ Station 2178 to 2200 5. WB Station 2410 <ul style="list-style-type: none"> ▶ Station 2393 to 2427 6. EB Station 1465 <ul style="list-style-type: none"> ▶ Station 1445 to end |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Staging and Storage Areas:

Most of the staging areas will be located in the work zones behind barrier. For instance, in Phase 1, equipment and materials will be staged in the median behind barrier in the work zone. In addition, LANE has identified six locations within the ROW that could be used as staging and storage areas. Two locations at Exit 242 interchange, one location eastbound by Route 604, one location at Route 143 interchange, one location westbound by Queens Creek, and one small location on Lakeshead Drive adjacent to the bridge. Erosion and sediment controls will be placed in these locations, they will be cleared, and construction exits built to control tracking. Any existing storm drain, inlets, or ditches will be protected. Each location will be evaluated for clear zone protection. Barrier wall will be placed or existing guardrail will be used to protect the traveling public. Prior to Project completion all staging and storage areas will be re-graded and converted to forest as required.

Public / Stakeholder Involvement:

LANE and RK&K have teamed with Seventh Point Transportation PR (Seventh Point) to support VDOT in the comprehensive public involvement program for the Project. Seventh Point has experience collaborating with VDOT to achieve public awareness goals throughout Hampton Roads and in Richmond, including extensive experience in the I-64 Widening Segments I and II, I-64/I-264 Pavement Rehab and HR Express Lanes. Seventh Point currently assists VDOT with advertising and media placement in Hampton Roads, Richmond, and Washington D.C. on I-64 Widening Segments I and II that includes radio, video, online digital advertising, and outdoor billboards.

Seventh Point's public affairs expertise aligns directly with the scope of work to support VDOT with public outreach activities to all stakeholders. The highest priority of the communications program is to create an environment for sustained public awareness. Key Project information and travel advisories must be clear and timely. To mitigate impacts, a carefully crafted and VDOT approved outreach approach is required that informs key stakeholders, local communities and the traveling public about Project progress, traffic shifts, detours, lane closures, and ramp impacts.

The LANE Team will create a Communications Plan detailing the project's public involvement goals, strategies, tools, and tactics for communicating impacts and Project information to the public. The plan will clearly demonstrate a schedule of outreach that provides the public with complete Project information, and timely public notice of all traffic impacts at the direction of VDOT. Our team will maintain a master contact list for the Project, and we will reach Hampton Roads (and other regions) motorists through every available channel, including community meetings with first responders, civic leagues and neighborhood associations, businesses, major employers, trucking associations, military networks, local hospitals, universities, elected officials and regional news media outlets. Our communications approach will increase community understanding and create buy-in, as well as educate stakeholders about the benefits of the I-64 Widening Project.

In addition to Seventh Point’s experience with VDOT and in the I-64 corridor, Seventh Point has successfully collaborated with both LANE on RK&K on projects like I-64/264 Hampton Roads Pavement Rehab, the Downtown/ Midtown Tunnels/MLK Project, and GRTC Pulse in Richmond. Seventh Point’s portfolio also includes the following local HR VDOT projects: Engineering Support Services for Hampton Roads District Major Projects (I-64 Widening Segments I and II), Hampton Roads District-Wide IV, Design-Build I-264 Pavement Rehabilitation in Virginia Beach, Gilmerton Bridge in Chesapeake, Military Highway Continuous Flow Intersection Project in Norfolk, and I-64 Battlefield Boulevard.



Figure 4.5-12. I-64 Widening Segment II Billboard and Social Media Advertising Example

The LANE Team is fully aware the importance of public relation to the overall success of the Project. The LANE Team will comply with requirements per RFP part 2 Section 2.11, which can include, but is not limited to the following:

- Provide a point of contact and phone number for public.
- Hold public meetings to present traffic impacts, proposed limits of clearing, landscape plan, storm water management design, and the Final Noise Analysis.
- Hold first responder meetings to present proposed work zones, Project specifics and IMP.
- During construction phase:
 - Coordinate with York County and City of Williamsburg; provide updates and notification to these agencies, and other stakeholders.
 - Provide updates to VDOT regarding construction progress, lane closures, and detour information.
 - Notification of all major impacts will be provided at least one month in advance
 - Provide VDOT’s Project Manager an emergency contact list of Project personnel, onsite emergency response plans and other requirements in accordance with I&IM-241.
- Maintain a communication log / database of questions and comments received from stakeholders and the public. Submit this log to VDOT on a weekly basis.

Risk Management and Delay Mitigation:

The LANE Team has identified potential conflicts, that if not properly addressed, could cause significant impacts. Workarounds and solutions have been developed to mitigate potential issues. Table 4.5-13 lists potential issues and our Team’s mitigation approach.

Table 4.5-13. – Conflict Mitigation

Element (s)	Location	Issue/Conflict	Mitigation/Solution
Camp Peary	R-143 Overpass	Work near Camp Peary ROW and entrance gate	Allow 45-days for reviewing construction submission if required. Coordinate with Camp Peary authority in advance for construction activities
Utilities	Project Wide	ITS Conduits/Noise walls, road widening, drainage pipes	Avoid, where possible. Otherwise, provide new ITS conduits
Utilities	Lakeshead Drive	Gas/CATV/Bridge Abutments	Relocate utilities
ROW	Project Wide	Drainage & SWM Facilities	Construct the work requiring ROW in Phase 2, which minimizes the effect of ROW acquisition on the schedule

Permit	Queens Creek Bridge	Construction requires USACE permit	Utilize top down construction and 1 trestle to minimize environmental impact, thus expedite permit approval process
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4.5.2 Transportation Management Plan (TMP)

This segment of I-64 is a critical transportation link with an average annual daily traffic volume that exceeds 70,000 vehicles. During the summer months, daily volumes far exceed that. The Project also has the potential to impact Colonial Parkway, a critical link for the National Park Service, Lakeshead Drive, primary access to New Quarter Park and residential neighborhoods, and Route 143, which serves as a direct access to Camp Peary. The LANE Team will maintain access to all roads during construction and understands the essential role of this corridor. We will develop our TMP to efficiently communicate with and guide motorists and other Project stakeholders during construction. The TMP will ensure that all construction activities are performed in accordance with the Virginia Work Area Protection Manual (VWAPM), applicable VDOT standards, and Part 2 of the RFP. It will also detail all phases of work, impacts to travel ways, haul routes, construction access, incident management, impacts to Project stakeholders, maintenance of access, methods to communicate with the stakeholders and coordinate with adjacent projects. Our recent work on the Route 29 Solutions and the I-64 Short Pump Design-Build projects prove that our Team has the knowledge, understanding and experience to develop a complex TMP that safely and effectively manages traffic and communications with the Project stakeholders during construction.

The TMP for this Project is classified as a Type C, Category V project and consists of three general elements, 1) Temporary Traffic Control Strategies, 2) Public Communication Strategies, and 3) Transportation Operations Strategies.

The LANE Team has identified the following maintenance of traffic enhancements for the Project:

Design Concept Enhancement Location	Enhancement	Result	Benefit to VDOT and the End User
I-64 Majority of Alignment – (Western terminus to Queens Road overpass)	Shift EB and WB horizontal alignment 5’ towards median and maintain traffic on the existing “right” edge of travel lane during Phase I Construction	<ul style="list-style-type: none"> Eliminates shoulder strengthening 	<ul style="list-style-type: none"> Night time lane closures are eliminated for this purpose which decreases impacts to motorists. Eliminates maintenance of temporary pavement. Reduces schedule risk by allowing median construction to begin sooner. Fewer lane shifts; resulting in increased driver safety.
		<ul style="list-style-type: none"> Maintains existing shoulders during Phase I Construction 	<ul style="list-style-type: none"> Maintains a continuously paved emergency pull-off area, increasing level of service and safety during incidents and normal operations. Increases driver familiarity and consistency.
		<ul style="list-style-type: none"> Maintains existing 70mph horizontal geometry 	<ul style="list-style-type: none"> Increases driver familiarity, consistency and safety.
		<ul style="list-style-type: none"> Maintains existing auxiliary lanes designed to 70mph 	<ul style="list-style-type: none"> Auxiliary lane lengths exceed requirements for the 55mph construction speed, which results in more room for those maneuvers. Increases driver familiarity and consistency.
I-64 Phase I Construction	Utilize N.C. reverse curves or lane shifts designed for the full “L” instead of the	<ul style="list-style-type: none"> Smoother transitions 	<ul style="list-style-type: none"> Increases motorist safety. Provides twice the minimum transition length.

	instead of VAWAPM “ $\frac{1}{2}$ L” minimum		
I-64 Phase II Construction	I-64 through traffic will follow the proposed 75mph roadway alignment	<ul style="list-style-type: none"> • Transitions exceed the minimum required for 55mph 	<ul style="list-style-type: none"> • Increases motorist safety. • Eliminates the need to sign lane shifts which reduces motorist distraction and “sign clutter”.
	Replace the RFP detour route for Route 143’s WB loop ramp (Exit 238)	<ul style="list-style-type: none"> • Detour route that begins at the point of closure 	<ul style="list-style-type: none"> • Simple detour which reduces motorist frustration. • Eliminates an 8-mile detour route, reduces motorist travel time and repeat trips though active work zones.
	Create a temporary diamond interchange between WB ramps and Route 199 (Exit 234)	<ul style="list-style-type: none"> • Remove loop ramp entry and exit traffic from the work zone under Route 199’s overpass 	<ul style="list-style-type: none"> • Increases safety by reducing interaction between construction work and motorist using the ramps. • Eliminates the need for motorists on both sides of a narrow work zone under Route 199’s overpass, accelerating construction. • Provides operations of LOS B with temporary signalization to further limit the impact to the traveling public.
I-64 Phase I and II Construction	Utilize thermoplastic for temporary lane markings	<ul style="list-style-type: none"> • Provide improved delineation through the work zone 	<ul style="list-style-type: none"> • Increases driver safety • Reduces the need to maintain lane markings during construction, resulting in fewer off-peak lane closures.

The Temporary Traffic Control strategies, referred to as the maintenance of Traffic plan (MOT) in this document, have been specifically developed to maintain access at all times and minimize impacts to the traveling public and stakeholders, while providing an efficient and safe work zone to rapidly complete the project. Our MOT plan follows the phasing for Sequence of Construction as described in Section 4.5.1.

Phase I: Median Lane and Shoulder Widening

As described in Section 4.3.1, the LANE Team has shifted the proposed baseline 5’ toward the median between the beginning of the Project and the Queens Road overpass. That will allow traffic to generally be maintained on the existing alignment, and the existing shoulders can be utilized for incident management. Traffic will be shifted onto the outside shoulder between the Queens Road overpass and the end of Project. Transitions will be designed using either reversing curves (normal crown) or lane shifts meeting the full “L” transition length instead of the minimum $\frac{1}{2}$ L distance.

The design will maintain the appropriate acceleration and deceleration lane length at each interchange; as well as, emergency vehicle crossover access along the corridor. As detailed in Section 4.5.1, we will utilize an alternate detour in place of the RFP recommended detour route for the Route 143 WB loop ramp closure. The alternate detour is substantially shorter than the recommended 8-mile detour route and will minimize construction impacts on the traveling public while rebuilding the roadway under the Route 143 overpass. Phase I’s alignment and work activities will be designed to coordinate with I-64 Segment II.

The existing shoulder will be available for incident management over the majority of the project, while emergency pull-off areas will be provided to meet VWAPM requirements between the Queens Road overpass and end of Project. All work zone access points will be designed to comply with the guidance detailing ingress and egress lanes listed in Section 6G-72 in the VWAPM.

Phase II: Pavement Reconstruction

Traffic will be shifted onto the newly constructed inside lane and shoulder. Reconstruction of the pavement at the directional ramp gores will be accomplished by constructing a temporary ramp adjacent to the existing, along with a full auxiliary lane. This will provide a safe area for motorists to complete their movements while the workers and work area are fully protected. Full length auxiliary lanes will be maintained at all ramps.

The LANE Team will construct a temporary signalized intersection at the point where the Exit-234 WB directional ramps intersect Route 199. This will allow traffic that would ordinarily utilize the WB loop ramps to be detoured while the area under the overpass is reconstructed. The temporary signal provides LOS B operations to further limit the impact to the traveling public. The expense of the temporary intersection is justified by the increased safety gained removing loop ramp traffic from this area. It will also allow the work to be completed more quickly and lessen the impact on the traveling public.

Emergency vehicles will have full access to the proposed crossover locations during this phase of construction. All work zone access points will be designed to comply with the guidance detailing ingress and egress lanes listed in Section 6G-72 in the VWAPM.

Once the proposed work in this phase is complete, the final paving will be placed during night time off-peak hours using lane closures.

Our Team understands the seasonal nature of traffic along the I-64 corridor and the additional needs that a large number of unfamiliar users will present to a maintenance of traffic plan. We will utilize permanent count station data to assess this seasonal variation and we will strive to schedule temporary lane closures and other potentially impactful activities when the impacts will be minimized.

All of these items help to mitigate impacts on the traveling public and minimizing the potential for accidents within the construction work zone. The LANE Team will use our experience to develop a quality MOT strategy for this Project and ensure that it is implemented.

Communications Plan: The TMP will establish a Communications Plan to coordinate and communicate with VDOT and the Project stakeholders to keep them informed about impacts before and during construction, as well as options to avoid construction-related delays. This plan is a critical component to successfully handling construction and public acceptance and will be managed by Ms. Windy Campbell. She will have a direct, independent line of communication to the DBPM and VDOT. As the Team’s Public Communications Manager, Ms. Campbell will manage all aspects of our public communication policy and will rely the LANE Team’s staff and the support of top level managers to exceed all contract requirements and to maintain consistent levels of interaction with VDOT and Project stakeholders, including those listed on the LANE Team’s organizational chart. Additional details on our Team’s public involvement strategies are described at the end of Section 4.5.1. Our communications approach is one of “no surprises” for VDOT, other key stakeholders, and the travelling public.

The LANE Team believes that developing and maintaining good relations with the Project stakeholders is critical to developing a thorough Communications Plan. This plan will identify roles and responsibilities, establish lines of communication and protocols for media and public outreach, timelines for all outreach, and proactively develop key messages which will need to be disseminated during construction. Several elements of this plan will include:

- Clearly establish responsibilities for implementing each aspect of the Communications Plan
- Provide information to VDOT’s Hampton Roads Communications Team to update the I-64 Widening website
- Provide information to update the VA 511 system on planned and active work activities.
- Facilitate early and frequent communication with Project stakeholders including James City County, York County, City of Williamsburg, Camp Peary, first responders and local residents.
- Proactively work with VDOT Traffic Operations Center staff to develop strategies and specific messages to be used for both day-to-day work activities and in the event of incidents, special events or other emergencies. By scripting these messages in advance and identifying the devices to be used in various situations, they can be deployed more efficiently during the Project and more quickly get information out to the public.
- Establish methods to coordinate messaging with the adjacent I-64 Segment II project

Traffic Operations / Incident Management Plan: The TMP will also establish the Traffic Operations/Incident Management Plan (IMP) to detail the response to incidents, weather impacts such as accommodating the hurricane evacuation plan, special events, establishing emergency detour routes and more. The IMP will have a plan in place for all events, exceed the requirements detailed in Part 2, Section 2.10.2 and coordinate with the appropriate VDOT, emergency personnel and other stakeholders to ensure their ideas and suggestions are sought and incorporated into the plan. I-64 is a primary hurricane evacuation route for the Hampton Roads region and it will be important to ensure that the IMP for this project is fully coordinated with the existing hurricane evacuation plans. Slight modifications to the hurricane evacuation plan will be needed for ramp closures and temporary ramp reconfigurations. Our Team will work with VDOT to identify these locations and develop solutions.

The LANE Team believes the best approach to managing incidents is to utilize an Incident Prevention Plan which reduces the risk for incidents in the first place. This incident prevention plan will form a key part of the IMP and would include:

- Review of crash history to identify existing high crash locations along the corridor and implement targeted countermeasures.
- Use of thermoplastic markings to provide improved delineation through the work zone, increase driver safety, and reduce the need to maintain lane markings during construction.
- Removal of trees within the clear zone at the start of the project
- Daily review of MOT setups to ensure that all signage, barrier, and channelization devices are in place as intended.
- Clear communications with all personnel regarding safe ingress and egress to the work zone
- Development of an MOT plan which exceeds the minimum requirements for lane shifts and other “high risk” locations
- A communications plan which provides motorists with key information in advance of activities.

If incidents do occur, our Incident Management Plan will be designed to enable first responders access to the incident location, disseminate information to motorists regarding the incident and alternative routes, clear the incident as efficiently as possible, and restore all lanes to traffic. Our plan will also include an “after action” review to evaluate the effectiveness of each incident response and adjust the plan based on these lessons learned. While we do not anticipate the use of extended detour routes for regular activities (by maintaining traffic on ramps or reconfiguring ramps to provide short alternate routes), we will evaluate potential detour routes for use in incident management; we will coordinate with VDOT and other stakeholders regarding potential modifications along potential detour routes. The plan will also detail our process to review incidents and adjust the TMP to reduce the frequency and/or severity.

In the end, we understand that an effective TMP is a living document. We will review and update the plan throughout construction, responding to the needs of VDOT and the traveling public. If certain elements of the TMP are not functioning as intended, or circumstances change, our approach is flexible and enables us to make adjustments that enhance the safety and mobility of the traveling public.

4.7 PROPOSAL SCHEDULE

4.7 | PROPOSAL SCHEDULE

4.7.1 Proposal Schedule

The Proposal Schedule outlines the LANE Team’s plan to successfully construct the I-64 Capacity Improvements – Segment III Project in compliance with the RFP. The schedule depicts the activities, tasks, overall sequence of work, and major deliverables required to complete the Project. This proposal schedule is broken down into major phases using the hierarchical Work Breakdown Structure (WBS), showing major phases of Work, including but not limited to project milestones, project management, Scope Validation, design, public involvement, environmental, right-of-way, utility and construction impacts. It demonstrates the anticipated Critical Path (based on the longest path), review responsibilities by VDOT, FHWA and other regulatory agencies, as well as activities for the LANE Team and their suppliers and subcontractors.

4.7.2 Proposal Schedule Narrative

The LANE Team has developed the following Proposal Schedule narrative explaining the overall sequencing of the Project, Critical Path, and other key assumptions the Proposal Schedule is based upon. The Proposal Schedule and narrative are included in the Technical Proposal. The LANE Team has also provided a back-up copy of the Proposal Schedule and narrative source documents in Primavera version 16.2.2 electronically on a CD attached to the original Technical Proposal.

Sequence of Work

The LANE Team will work diligently to achieve Final Completion on or before the required dates. The LANE Team measures the Project in three stages of progress:

1. **Design and Permitting** – The objectives of this stage are to complete all preliminary and final design for the Project, obtain approval of all permits, resolve all utility conflicts, and perform ROW acquisitions.
2. **Procurement** – The objective of this stage is to procure all lead items for the projects, which includes shop drawing development and approval, fabrication of material and its delivery.
3. **Construction** - The objective of this stage is to physically construct, in its entirety, 100% of the Project. This also includes the VDOT inspection and acceptance of Work, system testing, punchlist, burn-in periods, and Project close-out.

In summary, these three stages of progress are sequential. In order to optimize the Project, the LANE Team will prioritize Design and Permitting as follow:

- Focus on the design that is required for permit application. The goal is to apply for permits as soon as possible from NTP, which in-turn will start Construction sooner.
- Knowing that the bridge girders are major long lead items of the Project. The LANE Team will develop work packages for these girders, so the procurement of this material can start as early as possible. The goal is to prevent procurement of material from becoming part of critical path.
- RFP states that all final design plans, that utilize the geotechnical report, cannot be submitted until at least 90 days after VDOT is in receipt of the geotechnical report. The LANE Team will expedite the development of the geotechnical report, so it will have minimum impact on the progress of final design.

Construction of the Project is to concentrate on completing the Project on or before the Final Completion milestones. In an overview, there are three areas of work in the Project. The LANE Team will tackle these areas as follow:

Incentive for Early Completion: The Proposal Schedule currently depicts the LANE Team achieving the Final Completion on the RFP milestone date –September 24, 2021. VDOT has offered a “No Excuse” incentive for

early completion of the Final Completion date. The provision clearly dictates the terms and conditions required for collecting this payment, and the LANE Team intends to modify our sequence of work and achieve early completion post award. The modifications can be summarized as follow:

- Start design at risk after Notice of Intent to Award. The goal is to perform as much design as possible between Notice of Intent to Award and NTP, thus the overall design period of the Project can be reduced.
- Early start of existing shoulder strengthening can reduce the overall construction duration of Phase 1 in Areas 1 and 3, and potentially reduce the overall duration of the project.
- Early clearing of trees on the outside during shoulder strengthening. This will reduce the clearing time for Phase 1 of Areas 1 and 3, and potentially the overall duration of the project.

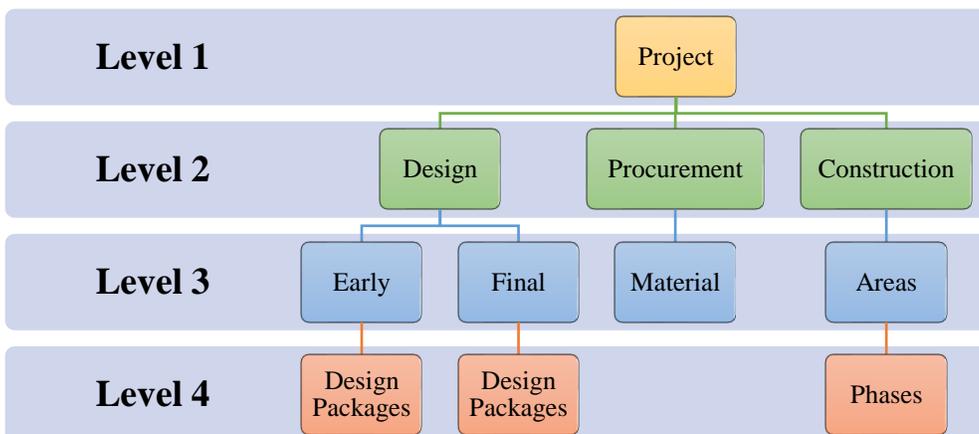
The LANE Team can only determine the feasibility of the aforementioned modifications post award, thus it is intentionally omitted from the proposal.

Milestones: The LANE Team is committed to the Completion Date of September 24, 2021. The table below identifies Key Milestone dates which, to be met, will require coordination not only between the Team and VDOT, but also other reviewing agencies (FHWA, USFWS, etc.).

Key Milestone	Milestone Date
Notice of Intent to Award	October 30, 2017
CTB Approval / Notice to Award	December 06, 2017
Design-Build Contract Execution	January 09, 2018
NTP	January 17, 2018
Scope Validation Period Complete	May 9, 2018
Final Completion Date	September 24, 2021

Work Breakdown Structure (WBS): The WBS is a multi-level, hierarchical arrangement of the work to be performed on the Project. Through a collaborative process with the design and construction teams, the overall Project is subdivided into manageable units of work for efficient and effective planning and control. Each WBS level not only identifies Project level details but also implies a level of management responsibility. The disciplines are further divided into Segments, Phases, and respective components such as Milestones, Project Management, Scope Validation, Environmental/Permitting, ROW, Design, Public Involvement, Utility Relocation, and Construction.

The WBS has been developed as a collaborative effort between the design and construction teams by evaluating the components of the overall Project including consideration of the type of work along the alignment, design-related considerations, and approach to management of the construction operations.



Level 1 is the Project, while Levels 2, 3, 4 and above of the WBS, as depicted in the Proposal Schedule, include but are not limited to the following items for the respective Project components:

- Project design and permitting.
- Procurement of long lead time items
- Project Construction are organized in three (3) Areas
 - Area 1 and 3 have Phases – 1, 2 and 3
 - Area 2 has Phases 1, 2A, 2B and 3
- Construction phases for Area 1 and 3 have sub-areas for bridges, ramps, and emergency pull-offs.
- Construction phases for Area 2 are organized by approach, substructure and superstructure.

Calendars: The LANE Team uses five different calendars to represent a variety of work scenarios:

- **“Calendar Days”** – Based on seven days per week. It is used for review periods and milestones.
- **“5 Days / Wk with Holiday”** – Based on five working days per week and includes standard holidays. It is used for design activities and work not impacted by adverse weather and holiday restrictions and is used for design and document development.
- **“5 Days / Wk with Holiday & Weather”** – Based on five (5) working days per week, specified holiday restrictions, and anticipated weather days. It is used for construction activities.
- **“5 Days / Wk with Holiday & Paving”** – Based on the “5 Days / Week with Holiday & Weather” with non-working periods from December through February. It is used for asphalt paving activities and bridge deck pours.
- **“5 Days / Wk for Final Paving”** – Based on the “5 Days / Week with Holiday & Weather” with non-working periods from December through March. It is used for surface asphalt paving activities.

For weather analysis, the LANE Team has reviewed the weather data (November 2011 to October 2016) provided by the NOAA observation center located at Williamsburg, VA. Using 0.1 inch of participation per day as the threshold for impact for normal and low weather sensitive construction activity; and with weekends taken into consideration, the LANE Team schedule allows for the following number of weather days, by respective months:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Normal Sensitivity	5	4	6	5	6	6	7	4	5	4	4	5

The LANE Team will observe New Year’s Day, Memorial Day, 4th of July, Labor Day, Thanksgiving and the Friday after, and Christmas holidays from 2017 to 2021, with these dates reflected as non-work days within the schedule.

Plan and Strategy: The LANE Team will develop a comprehensive plan to complete the I-64 Segment III roadway and bridge widening, in a timely and professional manner. Our goal is to minimize the number of construction phases, traffic pattern changes, and interruptions to the travelling public. We will coordinate our MOT staging for smooth transitions between the bridge and roadway construction operations. The Team’s design and construction plan is based on the following concepts:

- Phasing of bridge and roadway construction are coordinated to minimize the number of traffic shifts on the Project.
- Additional sub-phases are incorporated in the MOT plan to maintain all emergency pull-offs in the project.
- No access ramps will be closed for construction with the exception of Route 143 loop ramp onto I-64 WB. The LANE Team has incorporated sub-phasing to maintain ramp accesses throughout the construction of the Project.
- The full replacement of the Lakeshead Road bridges in-lieu of RFP proposed bridge widening – provide a more efficient construction method, superior quality of end product, up-to-date bridge safety features, and reduce long-term maintenance.

Design: The design phase includes preparation, QA/QC reviews, and submissions of 30%, 60% and Final Construction Plans. The schedule includes 21-day review activities for VDOT review periods. Included to support the plan preparation is survey coordination and geotechnical investigations during the 120-day scope validation period. Activities are included for the geotechnical investigations, reports and a 90-day period for VDOT review of the geotechnical report prior to submitting the final roadway package. The design phase will begin immediately upon Notice of Intent to Award, starting with the Advanced Work Package, 30% Roadway Plans, and Bridge Stage I plans.

Environment and Permitting: Our Team has established schedules for environmental studies completion and the acquisition of the water quality permit with milestone dates. These milestone dates are established as environmental hold points in the project schedule to ensure that any regulatory issues that may arise are dealt with quickly and efficiently. Our environmental lead will participate in scheduled team meetings to report the status of the environmental milestones and ensure the environmental commitments are incorporated into the design. Our team will use an environmental commitments database to track the Project’s environmental commitments and establish a detailed construction schedule that considers many variables such as seasonal time of year restrictions, required permit water quality monitoring, phased erosion and sediment controls and stormwater management implementation.

The project schedule includes activities related to the preparation, submission and approval of the Individual Permits, agency coordination and environmental commitment implementation. These activities will be reviewed and modified once avoidance and minimization efforts of the design have been completed, environmental impacts quantified, and confirmation from the Agencies on the application type. To minimize the possibility of delays to the Project due to environmental concerns, a conservative approach has been taken for scheduling environmental permitting activities, agency coordination for Cultural Resources issues, noise studies and abatement, hazardous materials clearances, submission of a SPCC Plan, inspection and potential abatement of Asbestos in the existing bridges, inspection of bridges for bat use, and activities to address the Fire Ant Quarantine presence on the Project.

Right of Way Acquisition: ROW acquisition will be performed in accordance with VDOT requirements and the RFP. The initiation of the ROW Acquisition phase is dependent on approval of the ROW Acquisition Plan and obtaining the Notice to Commence Acquisition from VDOT. Our Project schedule reflects the required durations to perform all ROW acquisition tasks. The LANE Team has minimized schedule risk due to ROW acquisition by:

- Utilizing an Advanced Construction Plan to begin work activities that do not rely on acquisition of ROW, allowing construction to begin more quickly
- Reducing the number of ROW takes

Utility Relocation: The Project schedule includes all utility relocation activities needed to clear existing utilities from the work areas. Schedule risk due to utility relocation has been minimized by:

- Designing proposed improvements to minimize utility conflicts
- Obtaining utility test holes to confirm depth of existing utilities in areas where VDOT has not already provided data.

Public Involvement: The LANE Team will comply with the Public Involvement / Public Relations service as required by the RFP Part 2 Section 2.11. The Proposal Schedule depicts the LANE Team providing VDOT, York County, and City of Williamsburg Project update information and support throughout both the design phase and the construction phase; as well as, the LANE Team conducting public meetings to present the traffic impacts and Project designs prior to final design. The LANE Team will also conduct first responder meetings to present MOT plans, IMP and other Project designs prior to start of construction.

Procurement: The LANE Team has identified a number of long term material needs that are significant in value and potentially critical for the Project. The procurement process for these materials are depicted in the Proposal schedule, and they are as follows:

- Lakeshead Bridges – timely procurement of precast girders is critical to the on-time completion of the proposed bridges
- Queens Creek Bridges – timely procurement of concrete girders and noise barrier wall are critical to the on-time completion of the proposed bridges
- Noise Barrier Wall – timely procurement of noise barrier wall is critical to the on-time completion of Area 3 Phase 2 roadway work.

Construction: The construction of the three areas in the Project base scope can start when the corresponding permits are approved, and the final design plans have been reviewed by VDOT. The individual construction activity duration accounts for the construction operation, any incidental environmental protection work, and any QC/QA inspection and testing for the construction operation. The LANE Team intends to construct the three areas of the Project as follows:

Area 1 - West of Queens Creek Bridge

Phase 1 – Construct the proposed inside lanes in I-64 EB and WB

- Install erosion and sediment control.
- Relocate existing ITS in conflict with proposed roadway.
- Shoulder strengthening as required.
- Temporary stripe to shift traffic onto the strengthened shoulder, and install MOT and temporary concrete barrier wall.
- Clear and grub existing median, and demolish existing roadway if required.
- Perform earthwork.
- Install drainage system.
- Construct proposed pavement per RFP requirements.
- Construct pier protection for overpass bridges.
- Temporary striping.
- Install sign foundations.
- Install guardrail.

Phase 2 – Reconstruct existing roadway of I-64 EB and WB

- Remove temporary concrete barrier and shift traffic onto the new inside lanes.
- Demolish the existing roadway
- Perform earthwork
- Install drainage system.
- Install sign and ITS foundations.
- Install electrical and ITS conduits.
- Construct proposed pavement per RFP requirements.
- Construct pier protection for overpass bridges.
- Install signage and ITS structure.
- Temporary striping.
- Reconstruct Route 199 and Route 143 ramps
- Install guardrail.
- Install traffic signal at the intersection of I-64 off-ramp to Route 143

Area 2 - Queens Creek Bridge

Phase 1 – Construct inside half of Queens' Creek EB Bridge (B-642) in new alignment

- Install E&S and Site Prep

- Construct access road for personnel, cranes, material, and other equipment.
- Install Piles for Abutment A, Pier 1 to 9, and Abutment B.
- Install trestle for Pier 1 to 9 and Abut B.
- Construct Abutment A, Pier 1 to 9, and Abutment B.
- Construct riprap for Abutment A and B.
- Erect girders.
- Construct diaphragms at Pier 1 to 9.
- Construct deck Unit 1 and Unit 2.
- Construct parapet and approach slabs.
- Construct roadway tie-in and install guardrail.
- Groove deck.
- Remove construction access and restore site.
- Construct cross-over from existing B-643 to the new B-642.

Phase 2A – Remove and replace existing Queen’s Creek WB Bridge (B-643)

- Shift traffic from existing WB bridge (B-643) to the new EB bridge (B-642).
- Install E&S and Site Prep
- Construct access road for personnel, cranes, material, and other equipment.
- Continue to utilize trestle from Phase 1 as construction access.
- Demolish the existing bridge.
- Install Piles for Abutment A, Pier 1 to 9, and Abutment B.
- Construct Abutment A, Pier 1 to 9, and Abutment B.
- Construct riprap for Abutment A and B.
- Erect girders.
- Construct diaphragms at Pier 1 to 9.
- Construct deck Unit 1 and Unit 2.
- Construct parapet and approach slabs.
- Construct roadway tie-in and install guardrail.
- Groove deck.

Phase 2B – Construct the remaining Queen’s Creek WB Bridge (B-643)

- Move the crane to bridge deck
- Remove the trestle with the pile driving operation at each pier.
- Install Piles for Abutment A, Pier 1 to 9, and Abutment B.
- Construct Abutment A, Pier 1 to 9, and Abutment B.
- Construct riprap for Abutment A and B.
- Erect girders.
- Construct diaphragms at Pier 1 to 9.
- Construct deck Unit 1 and Unit 2.
- Construct parapet and approach slabs.
- Construct roadway tie-in and install guardrail.
- Groove deck.
- Remove construction access and restore site.
- Construct cross-over from existing EB bridge (B-642) to the new WB bridge (B-643).

Phase 3 – Remove and replace remaining portion of existing Queen’s Creek EB Bridge (B-642)

- Shift both EB and WB traffic to the new WB bridge (B-643).
- Install E&S and Site Prep.
- Construct access road for personnel, cranes, material, and other equipment.
- Move the crane to Bridge B-642 site.

- Utilizing the bridge B-642 bridge built in Phase 1 for construction access.
- Install Piles for Abutment A, Pier 1 to 9, and Abutment B.
- Construct Abutment A, Pier 1 to 9, and Abutment B.
- Construct riprap for Abutment A and B.
- Erect girders.
- Construct diaphragms at Pier 1 to 9.
- Construct deck Unit 1 and Unit 2.
- Construct parapet and approach slabs.
- Construct roadway tie-in and install guardrail.
- Groove deck.
- Shift both EB and WB traffic to permanent alignment.
- Remove crossover, construction access and restore site.

Area 3 - East of Queens Creek Bridge

Phase 1 – Construct the proposed inside lanes in I-64 EB and WB

- Install erosion and sediment control.
- Relocate existing ITS in conflict with proposed roadway.
- Shoulder strengthening as required.
- Temporary stripe to shift traffic onto the strengthened shoulder, and install MOT and temporary concrete barrier wall.
- Clear and grub existing median, and demolish existing roadway.
- Remove and replace Lakeshead Dr. bridges
 - Install demolition shield
 - Partially demolish the existing bridges.
 - Construct new bridge foundations and substructures.
 - Construct new bridge superstructures.
 - Construct new approach slabs, and roadway tie-in.
 - Install guardrail.
- Widened Colonial Parkway bridges
 - Install MOT and temporary signal on Colonial Pkwy.
 - Partially demolish bridge wing wall and parapets.
 - Partially demolish Colonial Pkwy shoulder for foundation construction.
 - Construct new foundations for arch and wing walls.
 - Construct new arch with façade.
 - Construct wing wall with façade.
 - Construct parapet with façade.
 - Construct roadway on bridge.
 - Reconstruct Colonial Pkwy
 - Remove MOT and temporary signal on Colonial Pkwy.
- Perform earthwork.
- Install drainage system.
- Construct proposed pavement per RFP requirements.
- Construct pier protection for overpass bridges.
- Temporary striping.
- Install sign foundations.

Phase 2 – Reconstruct existing roadway of I-64 EB and WB

- Remove temporary concrete barrier and shift traffic onto the new inside lanes.
- Demolish the existing roadway.
- Remove and Replace Lakeshead Drive bridges:

- Install demolition shield
- Demolish the remainder of the existing bridges.
- Construct new bridge foundations and substructures.
- Construct new bridge superstructures.
- Construct new approach slabs, and roadway tie-in.
- Install guardrail.
- Modify Colonial Parkway bridges.
 - Demolish existing bridge roadway.
 - Construct new bridge roadway.
- Perform earthwork
- Install drainage system.
- Install sign and ITS foundations.
- Install electrical and ITS conduits.
- Install proposed noise barrier wall.
- Construct proposed pavement template per RFP requirements.
- Construct pier protection for overpass bridges.
- Install guardrail.

Means and Methods

Emergency Pull-Offs: The Proposal schedule depicts the LANE Team’s approach to resolve the issue of emergency pull-off areas in the proposed construction zone:

- Emergency pull-off areas are installed over the existing roadway as part of the initial MOT set-up.
- Expedite the earthwork and pavement construction adjacent to the emergency pull-off areas.
- Shift the emergency pull-area onto the newly constructed roadway.
- Demolish the existing roadway previously utilized as emergency pull-off areas.
- Construct the new roadway at the initial emergency pull-off areas.
- Construction of the second emergency pull-off areas, and the construction of the initial emergency pull-off areas must be completed at same time as the mainline roadway construction.

Reconstruct Ramp Pavement: The LANE Team has developed a special phasing plan to reconstruct the existing pavement at the ramp gore area during Phase 2, where the accesses to and from the various ramps must be maintained. The Proposal depicts the LANE Team’s phasing plan as follow:

- Utilize the existing roadway as a temporary ramp during the initial MOT set-up.
- Expedite the earthwork and pavement construction adjacent to the temporary ramps.
- Shift the ramp traffic onto the newly constructed ramps.
- Demolish the existing roadway previously utilized as temporary ramps.
- Construct the new roadway and ramps at the temporary ramps.
- The two stages of ramp construction must be performed concurrently with the mainline roadway construction.

Route 143 Overpass: Route 143 Overpass presented a unique challenge of confining the maximum roadway width to the distance between the existing bridge piers. It prevented the Project from constructing the loop ramp on I-64 WB within the proposed phasing plan. Thus, a temporary detour and 5-week ramp closure is required. The proposal schedule depicts the LANE Team’s approach to construct the roadway and ramp:

- Construct ramp detour and shift traffic
- Demolish existing roadway.
- Perform earthwork.
- Construct pavement.
- Construct pier protection.

- Permit - Estimating the permit acquisition schedule was based on the type of structure proposed at each wetland and stream crossing, the method of construction at each crossing, the permanent wetlands and streams impacts and the compensation requirements at each crossing, and regulatory defined permit issuance timeframes.
- Utility Relocation – Estimates of schedule impacts for utility relocation are based primarily on the input from the utility stakeholders and historical data from the VDOT data base.

We have developed a Proposal Schedule and Narrative that demonstrates our understanding of the complexities and interrelationships of the phasing elements of the project scope. Our Proposal Schedule considers: design plan development, internal plan reviews, VDOT plan reviews and approvals, environmental permitting, right of way acquisitions, utility relocations, and construction sequencing, staging and activities.

The LANE Team is committed to develop an accurate and robust Baseline Schedule to better serve VDOT, all associated stakeholders, and the traveling public. Once NTP is issued, all team members will actively work together to make this a high quality, efficient and award winning Project.

Schedule Management

Effective management and control of a Project of this scope and complexity requires a properly managed scheduling program, documentation control, cost control, and design functions of the integrated team concept to the Design-Build approach. The LANE Team will develop and maintain the Project Schedule in accordance with the VDOT Special Provision for Design-Build Project Schedule (RFP Exhibit 11.1).

The LANE Team will use Primavera P6 (P6) scheduling software to plan, schedule, and monitor this Project. The Project Schedule will be developed, maintained, and updated by the Project scheduler, who will report to the Project Engineer. The schedule development and management will be supported by Deputy Design-Build Manager, the Design Manager and the Construction Manager.

Upon award of the contract, LANE Team will collaborate with VDOT to develop a detailed, time-phased Project Schedule based on the proposal design plans. After an internal analysis and review of the general schedule logic and Critical Path, the schedule is completed. The Project scheduler will generate the Baseline Schedule document, as required, for submission to VDOT.

The Baseline Schedule will indicate the necessary procurement and construction activities for the Project. Various calendars will be incorporated into the Project Schedule to reflect holidays, seasonal work, temperature, and other requirements. The activities within the Project Schedule will be organized by WBS. An Activity Coding Structure will be utilized in the project schedule to organize data output. The Schedule will be the tool used for coordination by the LANE Executive Management team. Schedule updates will be used by managers to review progress and coordinate the efforts of all entities involved.

Separate short-term (3 week look-ahead) detailed schedules (Level 5) will be used to plan and monitor specific items of work and will be prepared, as necessary, to deal with specific work packages or smaller work activities as the need arises. As the work progresses, start dates, finish dates, percent complete, and remaining durations will be updated to report the progress of each work activity. The Construction Manager will incorporate updated data into the CPM schedule on a monthly basis, review the results internally and with VDOT, and prepare the required reports for submittal. Monthly updates of the CPM schedule provide the foundation of progress reports utilized by the Team.

When changes or unforeseen circumstances arise that impacts the Project Schedule, the LANE Team will immediately notify VDOT (and other appropriate stakeholders) and begin incorporating changes into the “live” CPM schedule. If any changes result in schedule slippage, the DBPM will evaluate the issue to determine if additional manpower, equipment, multiple shifts, a change in subcontractor, or additional subcontractors is required. If so, the necessary resources will be mobilized to correct the slippage and maintain the schedule. Throughout the Project, the Schedule will be clearly communicated to all subcontractors and key suppliers. Delays and schedule slippage will not be tolerated.

Conclusion

The LANE 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. The LANE Team Proposal Schedule offers the following:

- Construct Queen’s Creek Bridge replacement with two traffic switches.
- Utilize 1 trestle to build Queens Creek bridges which minimizes impact to wetlands, and effort in temporary work.
- Synchronize bridge and roadway construction phase – reduce impact to travelling public, improve public safety, and reduce overall construction risk.
- Construct roadway with 2 phases and minimize disruption to travelling public.

The LANE Team is committed to develop an accurate and robust Baseline Schedule to better serve VDOT, all associated stakeholders, and the traveling public. Once we have notice to proceed and the final design process begins, all team members will actively work to make this Project more efficient, high quality and award winning.

ATTACHMENT 4.0.1.1
TECHNICAL PROPOSAL CHECKLIST

ATTACHMENT 4.0.1.1 – ADDENDUM NO. 2
I-64 CAPACITY IMPROVEMENTS – SEGMENT III
VDOT PROJECT NO.: 0064-965-229
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 - Appendix
Acknowledgement of RFP, Revisions, and/or Addenda	Attachment 3.6 (Form C-78-RFP)	Sections 3.6, 4.0.1.1	no	Vol I- Appendix
Letter of Submittal	NA	Sections 4.1		Vol I:
Letter of Submittal on Offeror's letterhead	NA	Section 4.1.1	yes	Page 1
Offeror's official representative information	NA	Section 4.1.1	yes	Page 1
Authorized representative's original signature	NA	Section 4.1.1	yes	Page 2
Declaration of intent	NA	Section 4.1.2	yes	Page 1
120 day declaration	NA	Section 4.1.3	yes	Page 1
Principal Officer information	NA	Section 4.1.5	yes	Page 2
Final Completion Date	NA	Section 4.1.6	yes	Page 2
<u>Provide any Unique Milestone Dates</u>	<u>NA</u>	<u>Section 4.1.7</u>	<u>yes</u>	Page 2
Proposal Payment Agreement or Waiver of Proposal Payment	Attachment 9.3.1 or 9.3.2	Section 4.1. 78	no	Vol I Appendix
Certification Regarding Debarment Forms	Attachment 11.8.6(a) Attachment 11.8.6(b)	Section 4.1. 89	no	Vol I Appendix
<u>Written statement of percent DBE participation</u>	<u>NA</u>	<u>Section 4.1.10</u>	<u>yes</u>	Page 2

ATTACHMENT 4.0.1.1 – ADDENDUM NO. 2

I-64 CAPACITY IMPROVEMENTS – SEGMENT III

VDOT PROJECT NO.: 0064-965-229

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Offeror’s Qualifications	NA	Section 4.2		Pages 3-4
Confirmation that the information provided in the SOQ submittal remains true and accurate or indicates that any requested changes were previously approved by VDOT.	NA	Section 4.2.1	yes	Page 3
Design Concept	NA	Section 4.3		Vol I Pages 5-16
Conceptual Roadway Plans and description	NA	Section 4.3.1.1	yes	Vol I Pages 5-12 Vol II Pages 52-70
Conceptual Structural Plans and description	NA	Section 4.3.1.2	yes	Vol I Pages 12-16 Vol II Pages 71-81
Project Approach	NA	Section 4.4		Pages 17-36
Environmental Management	NA	Section 4.4.1	yes	Pages 17-22
Hydraulics	NA	Section 4.4.2	yes	Pages 22-27
Geotechnical	NA	Section 4.4.3	yes	Pages 27-31
Quality Assurance/ Quality Control (QA/QC)	NA	Section 4.4.4	yes	Pages 31-36
Construction of Project	NA	Section 4.5		Pages 37-51

ATTACHMENT 4.0.1.1 – ADDENDUM NO. 2

I-64 CAPACITY IMPROVEMENTS – SEGMENT III

VDOT PROJECT NO.: 0064-965-229

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Sequence of Construction	NA	Section 4.5.1	yes	Pages 38-48
Transportation Management Plan	NA	Section 4.5.2	yes	Pages 48-51
Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Disadvantaged Business Enterprises (DBE)	NA	Section 4.6		--
—Written statement of percent DBE participation	NA	Section 4.6	yes	--
—DBE subcontracting narrative	NA	Section 4.6	yes	--
Proposal Schedule	NA	Section 4.7		Vol I – Vol II
Proposal Schedule	NA	Section 4.7	no	Vol II Pages S-12 – S-27
Proposal Schedule Narrative	NA	Section 4.7	no	Vol I Pages S-1 – S-11
Proposal Schedule in electronic format (CD-ROM)	NA	Section 4.7	no	CD ROM

ATTACHMENT 3.6
FORM C-78-RFP

ATTACHMENT 3.6**COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION**

RFP NO. C00106689DB97
 PROJECT NO.: 0064-965-229

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 June 21, 2017 – RFP
(Date)
2. Cover letter of RFP Addendum No. 1 – July 24, 2017
(Date)
3. Cover letter of RFP Addendum No. 2 – August 14, 2017
(Date)
4. Cover letter of RFP Addendum No. 3 – September 1, 2017
(Date)


 SIGNATURE

9/14/2017

DATE

John Havel

PRINTED NAME

Pursuit Manager

TITLE

ATTACHMENT 9.3.1
PROPOSAL PAYMENT AGREEMENT

ATTACHMENT 9.3.1
PROPOSAL PAYMENT AGREEMENT

THIS PROPOSAL PAYMENT AGREEMENT (this “Agreement”) is made and entered into as of this 14th day of September, 2017, by and between the Virginia Department of Transportation (“VDOT”), and The Lane Construction Corporation (“Offeror”).

WITNESSETH:

WHEREAS, Offeror is one of the entities who submitted Statements of Qualifications (“SOQs”) pursuant to VDOT’s **March 29, 2017** Request for Qualifications (“RFQ”) and was invited to submit proposals in response to a Request for Proposals (“RFP”) for the **I-64 Capacity Improvements – Segment III, Project No. 0064-965-229** (“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 Thousand and 00/100 Dollars (\$100,000.00)** ("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: _____

THE LANE CONSTRUCTION CORPORATION

By:  _____

Name: John Havel

Title: Pursuit Manager

ATTACHMENT 11.8.6(a)
DEBARMENT FORM- PRIMARY COVERED
TRANSACTIONS

ATTACHMENT 11.8.6(a)
CERTIFICATION REGARDING DEBARMENT
PRIMARY COVERED TRANSACTIONS

Project No.: 0064-965-229
Contract ID: C00106689DB97

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

9/14/2017

Date

Pursuit Manager

Title

The Lane Construction Corporation

Name of Firm

ATTACHMENT 11.8.6(b)
DEBARMENT FORM- LOWER TIER COVERED
TRANSACTIONS

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

Project No.: 0064-965-229
Contract ID: C00106689DB97

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

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

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

<u>gen Kowdhy</u>	<u>9/6/2017</u>	<u>PRINCIPAL</u>
Signature	Date	Title

CES CONSULTING LLC
Name of Firm

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

Project No.: 0064-965-229
Contract ID: C00106689DB97

- 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	9/14/2017 _____ Date	VICE PRESIDENT _____ Title
----------------------------------------------------------------------------------------------------------	----------------------------	----------------------------------

DMT Engineering Consultant

Name of Firm

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

Project No.: 0064-965-229
Contract ID: C00106689DB97

- 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.

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

J. Randy Wirt 09-06-17 Vice President
Signature Date Title

ECS Mid-Atlantic, LLC
Name of Firm

RECEIVED
SEP 11 2017
COMMONWEALTH TRANSPORTATION BOARD

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

Project No.: 0064-965-229
Contract ID: C00106689DB97

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 _____ Signature	<u>9/6/17</u> _____ Date	<u>PRESIDENT</u> _____ Title
----------------------------------------------------------------------------------------------------------	--------------------------------	------------------------------------

KDR REAL ESTATE SERVICES

Name of Firm

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

Project No.: 0064-965-229
Contract ID: C00106689DB97

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

	09/06/2017	President
Signature	Date	Title

Precision Measurements, Inc.

Name of Firm

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

Project No.: 0064-965-229
Contract ID: C00106689DB97

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



Signature

9/6/2017

Date

Director, Transportation

Title

Rummel, Klepper & Kahl, LLP

Name of Firm

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

Project No.: 0064-965-229
Contract ID: C00106689DB97

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	9-6-17	President
Signature	Date	Title

Seventh Point
Name of Firm

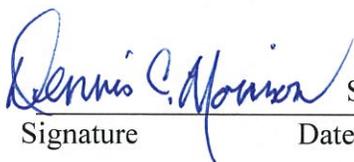
ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project No.: 0064-965-229
Contract ID: C00106689DB97

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



Signature

September 6, 2017

Date

Senior Vice President

Title

Volkert, Inc.

Name of Firm

LANE

14500 AVION PARKWAY
SUITE 200
CHANTILLY, VA 20151
703.222.5670

www.laneconstruct.com

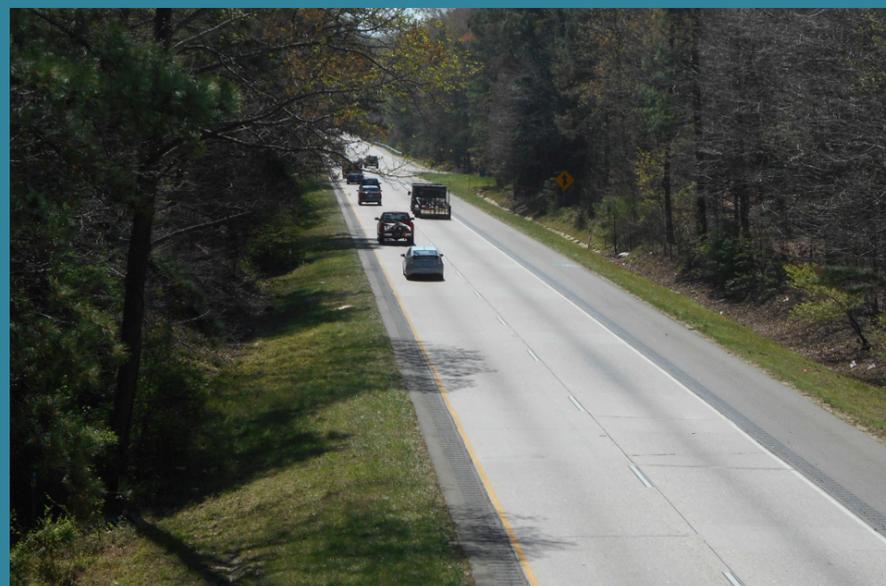
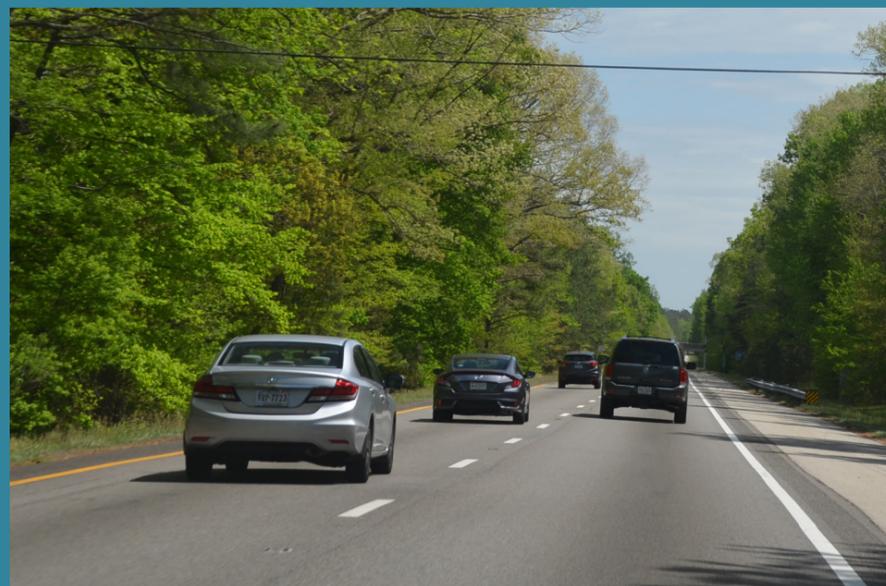
TECHNICAL PROPOSAL - VOLUME II

INTERSTATE 64 CAPACITY IMPROVEMENTS - SEGMENT III

YORK COUNTY, VIRGINIA

STATE PROJECT NO.: 0064-965-229, P101, R-201, C-501, B-638, B-639, B-640, B-641,
B-642, B-643, D-609, D-610, D-611

FEDERAL PROJECT NO.: NHPP-064-3 (498)



PREPARED FOR:

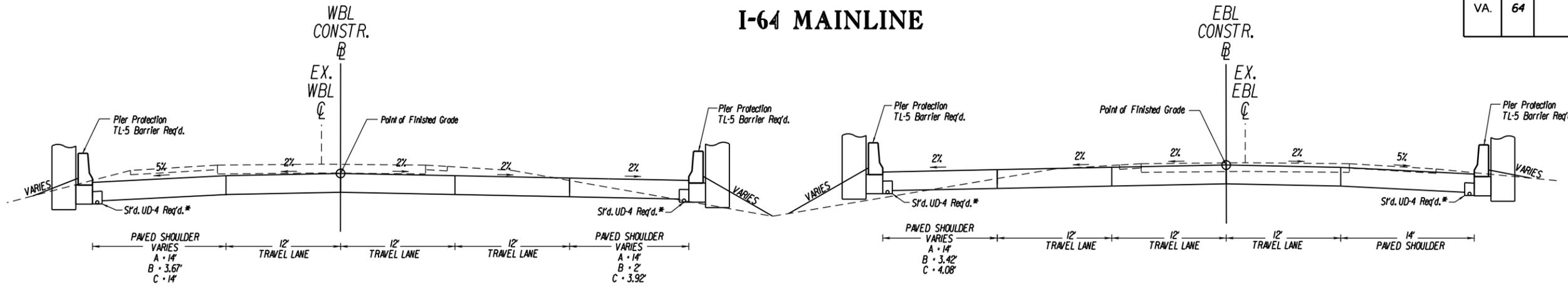


SUBMITTED BY:

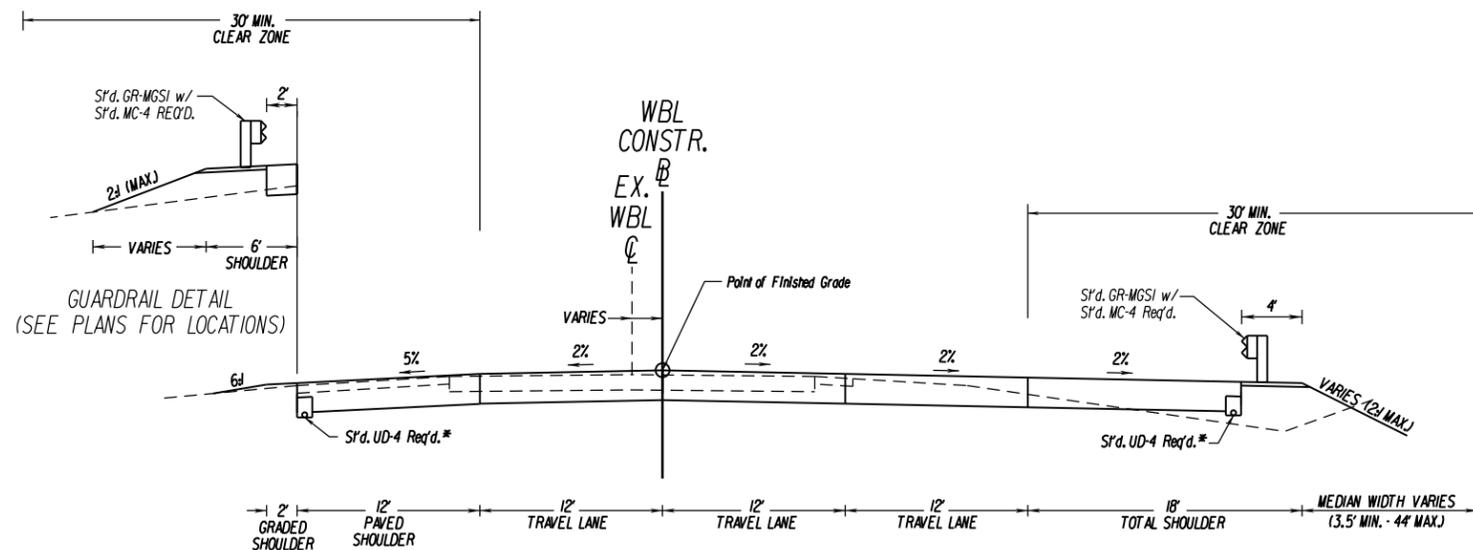


STATE	ROUTE	STATE PROJECT	SHEET NO.
VA.	64	0064-965-229; R-201,C-501	1

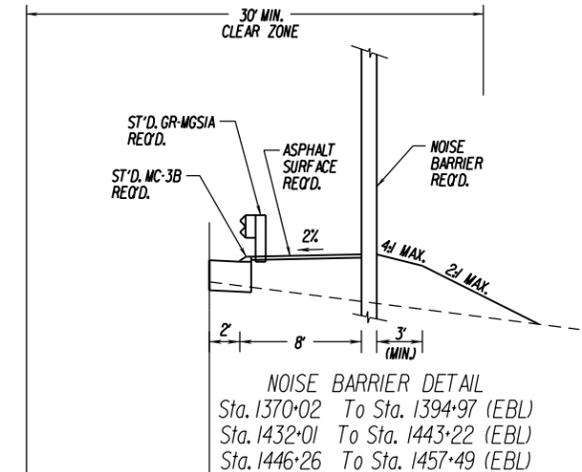
TYPICAL SECTIONS I-64 MAINLINE



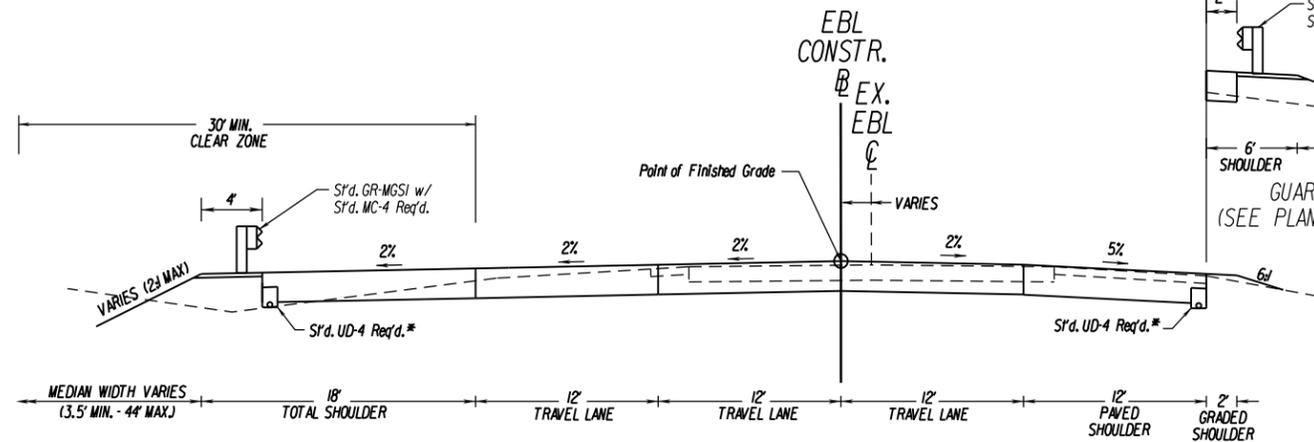
A. Barlow Rd. (Rte. 604) 2205+70 - 2206+38 WBL 1205+97 - 1206+66 EBL
 B. Merrimac Trl. (Rte. 143) 2317+41 - 2318+73 WBL 1318+01 - 1319+33 EBL
 C. W. Queens Dr. (Rte. 716) 2397+28 - 2398+33 WBL 1397+99 - 1399+05 EBL



WESTBOUND I-64 Sta. 2030+35 - Sta. 2466+13.32
(Excluding Bridges and Underpasses)



NOISE BARRIER DETAIL
 Sta. 1370+02 To Sta. 1394+97 (EBL)
 Sta. 1432+01 To Sta. 1443+22 (EBL)
 Sta. 1446+26 To Sta. 1457+49 (EBL)



EASTBOUND I-64 Sta. 1030+88 - Sta. 1466+47.29
(Excluding Bridges and Underpasses)

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



* - The Lateral Location Relative to the Edge of the Travel Way Pavement is Modified by the Technical Requirements of the RFP.

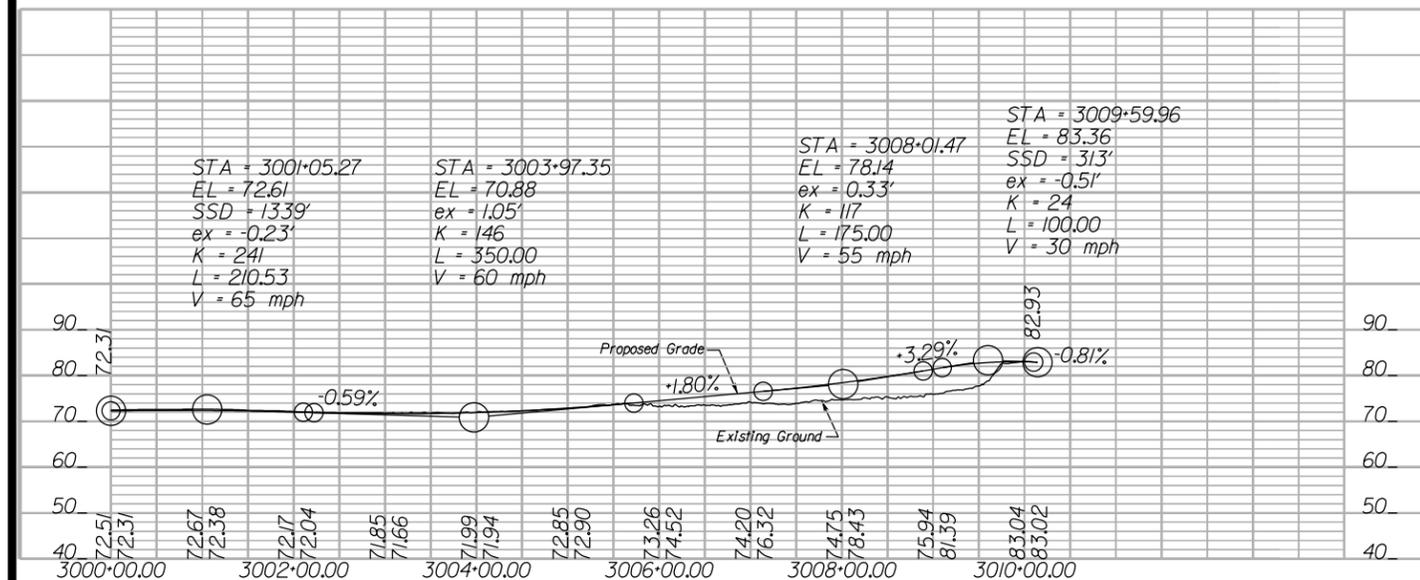
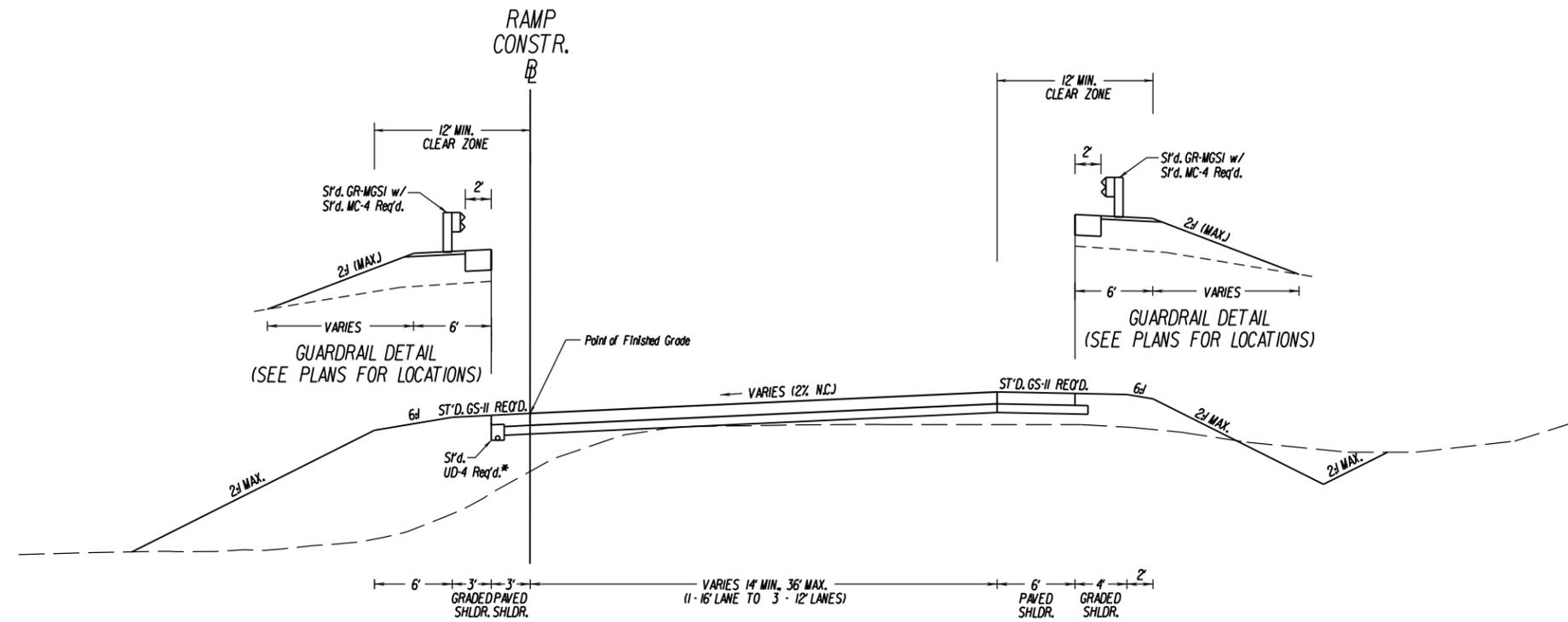
NOTE: Proposed Acceleration and Deceleration Lanes Not Shown in Typical Sections. See Plans for Locations.

Not To Scale	PROJECT 0064-965-229	SHEET NO. 1
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TYPICAL SECTIONS & PROFILE I-64 EASTBOUND OFF RAMP TO RTE. 143

STATE	STATE		SHEET NO.
	ROUTE	PROJECT	
VA.	64	0064-965-229; R-201,C-501	2

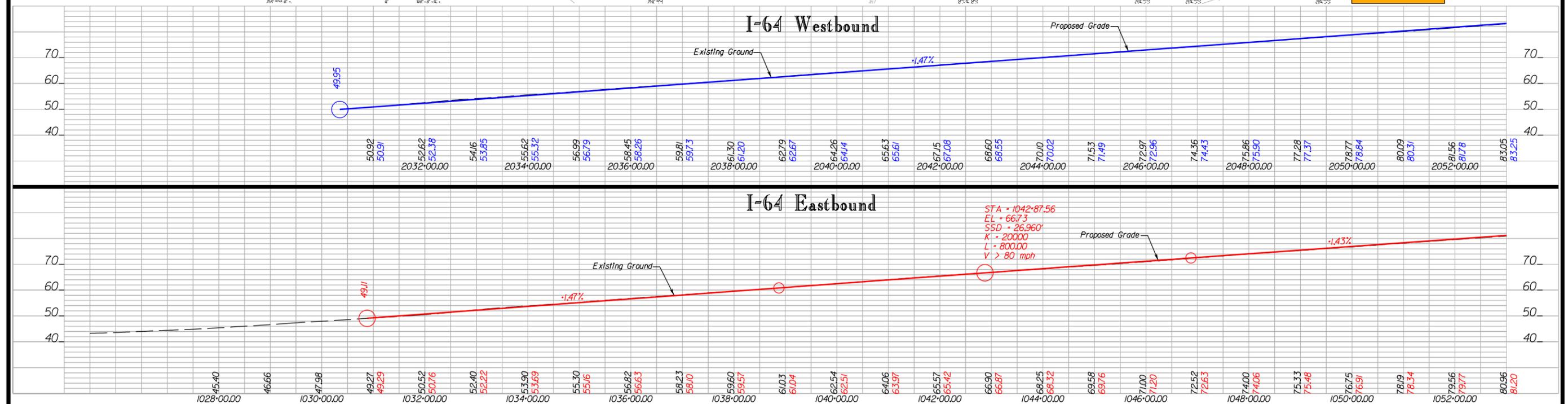
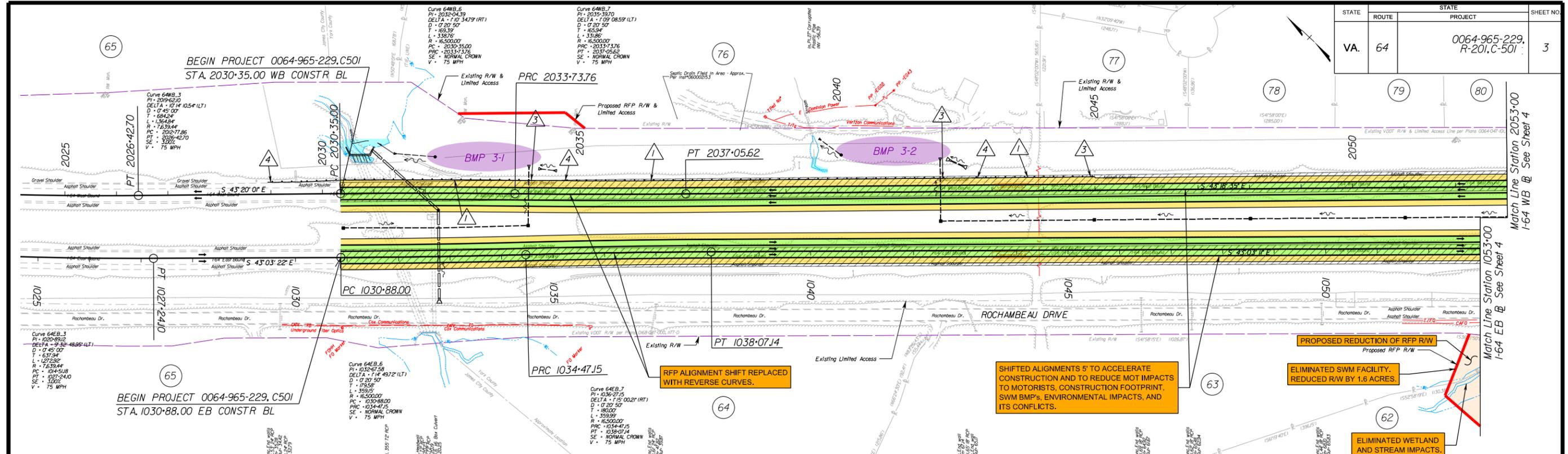
RFP PLANS
THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.



* - The Lateral Location Relative to the Edge of the Travel Way Pavement Is Modified by the Technical Requirements of the RFP.

Not To Scale	PROJECT 0064-965-229	SHEET NO. 2
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STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	3



RFP PLANS

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

- Denotes Water Quantity Swale
- Denotes Proposed Paved Shoulder
- Denotes Proposed Paved Travel Lane
- Denotes Proposed Bridge
- Denotes Wetland/Stream Impact
- Denotes Proposed SWM BMP
- Denotes Existing Pavement

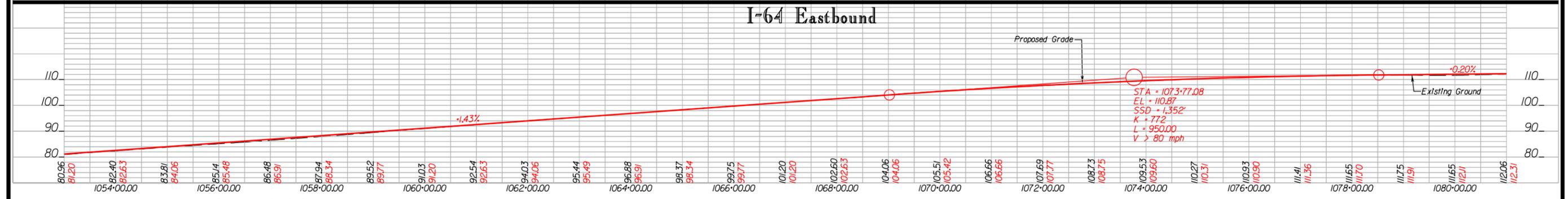
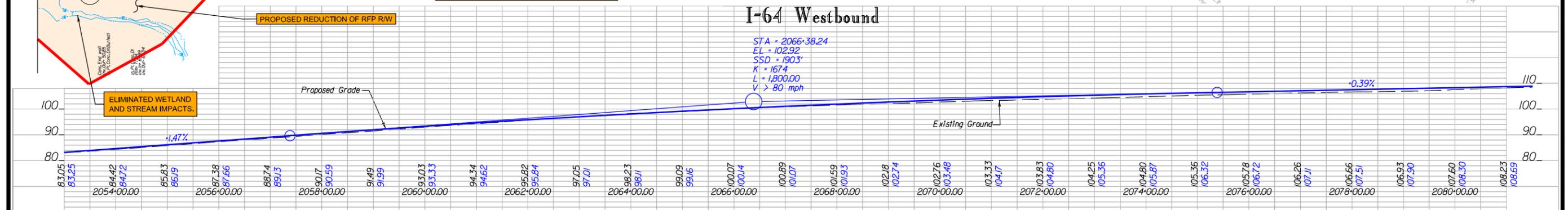
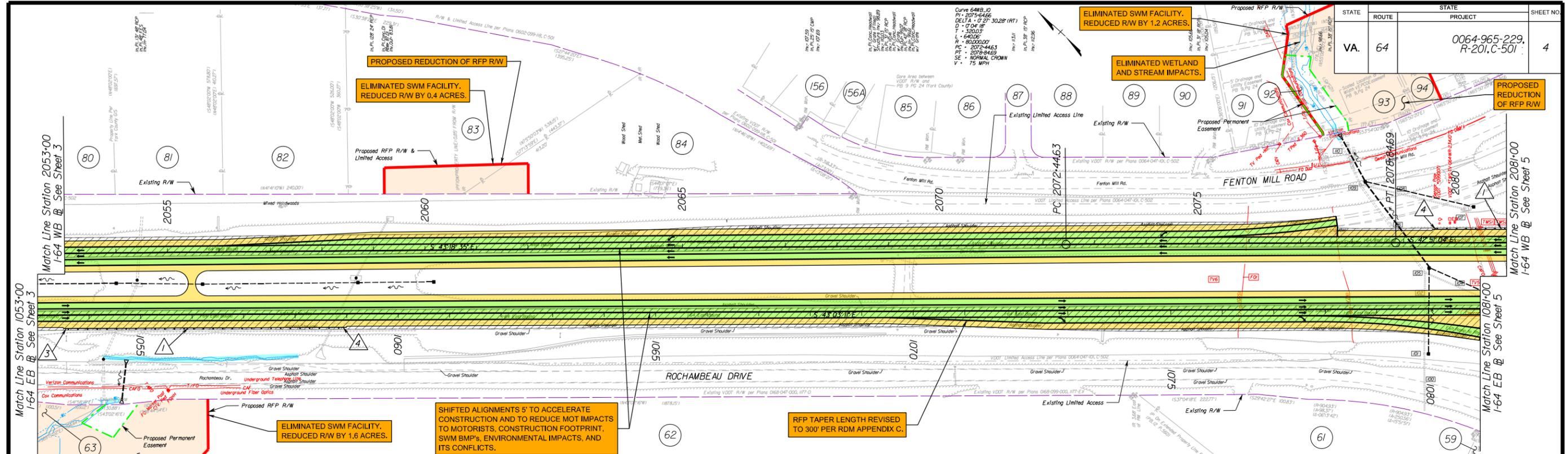
- 1 Std. GR-MGS1 Guardrail Req'd.
- 2 Std. GR-MGS1A Guardrail Req'd.
- 3 Std. GR-MGS2 Guardrail Terminal Req'd.
- 4 Std. GR-MGS3 Guardrail Terminal Req'd.
- 5 Std. GR-MGS4 Guardrail Transition Req'd.
- 6 Std. GR-F0A-2 Fixed Object Attachment Req'd.
- 7 Std. BPPS-1 Pier Protection Req'd.
- 8 Std. MC-3B Asphalt Curb Req'd.

SCALE: 0 100' 200'



PROJECT	SHEET NO.
0064-965-229	3

STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	4



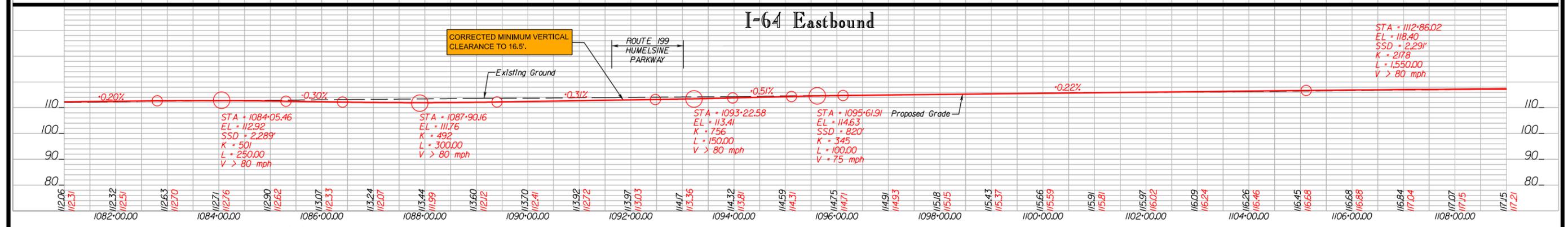
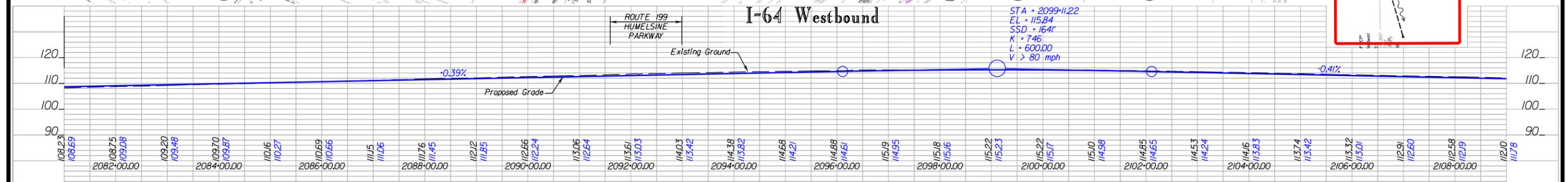
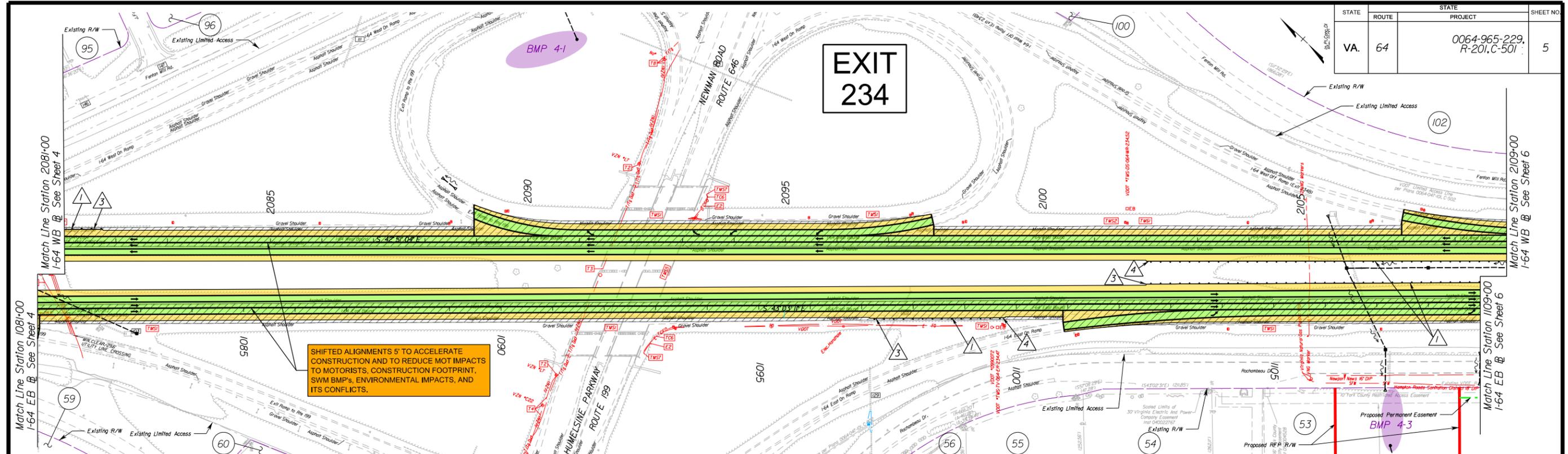
- Denotes Water Quantity Swale
- Denotes Proposed Paved Shoulder
- Denotes Proposed Paved Travel Lane
- Denotes Proposed Bridge
- Denotes Wetland/Stream Impact
- Denotes Proposed SWM BMP
- Denotes Existing Pavement
- 1 Std. GR-MGS1 Guardrail Req'd.
- 2 Std. GR-MGS1A Guardrail Req'd.
- 3 Std. GR-MGS2 Guardrail Terminal Req'd.
- 4 Std. GR-MGS3 Guardrail Terminal Req'd.
- 5 Std. GR-MGS4 Guardrail Transition Req'd.
- 6 Std. GR-FOA-2 Fixed Object Attachment Req'd.
- 7 Std. BPPS-1 Pier Protection Req'd.
- 8 Std. MC-3B Asphalt Curb Req'd.

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



PROJECT	SHEET NO.
0064-965-229	4

STATE	ROUTE	STATE PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	5



RFP PLANS

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

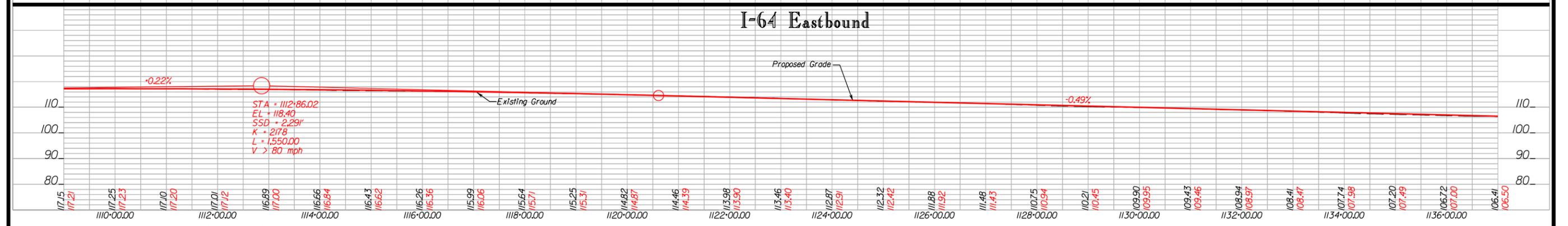
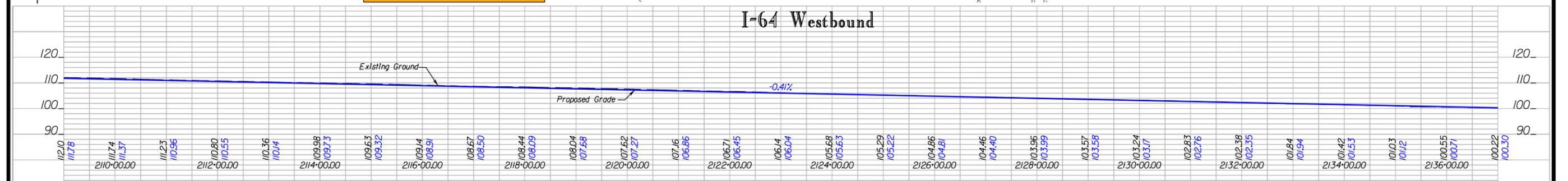
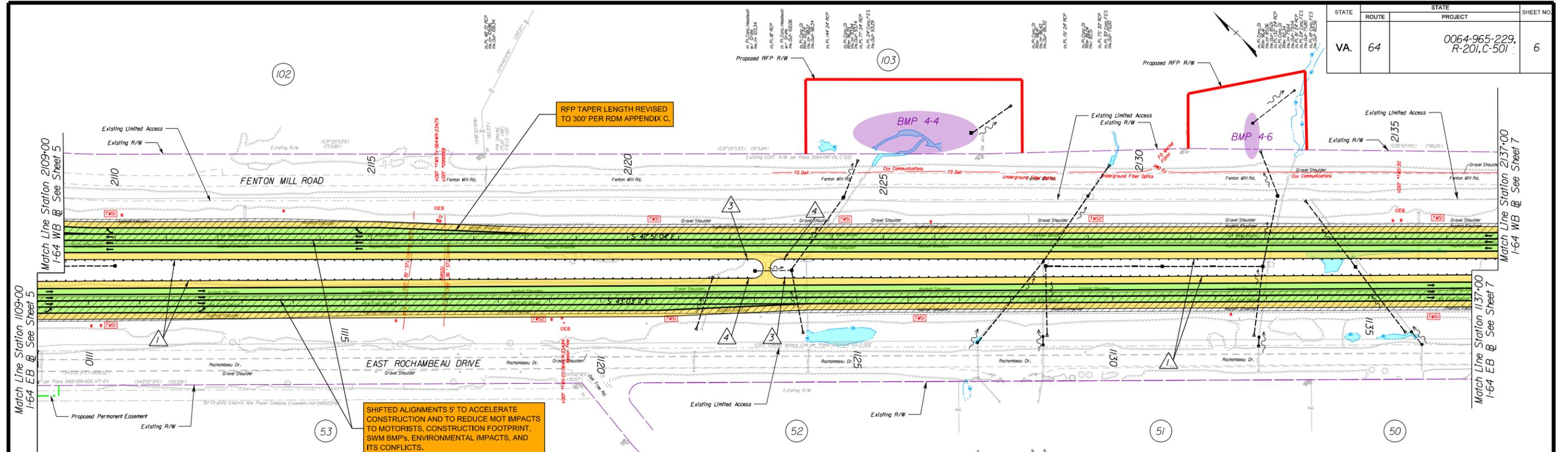
- Denotes Water Quantity Swale
- Denotes Proposed Paved Shoulder
- Denotes Proposed Paved Travel Lane
- Denotes Proposed Bridge
- Denotes Wetland/Stream Impact
- Denotes Proposed SWM BMP
- Denotes Existing Pavement

- Std. GR-MGS1 Guardrail Req'd.
- Std. GR-MGS1A Guardrail Req'd.
- Std. GR-MGS2 Guardrail Terminal Req'd.
- Std. GR-MGS3 Guardrail Terminal Req'd.
- Std. GR-MGS4 Guardrail Transition Req'd.
- Std. GR-FOA-2 Fixed Object Attachment Req'd.
- Std. BPPS-1 Pier Protection Req'd.
- Std. MC-3B Asphalt Curb Req'd.



PROJECT	SHEET NO.
0064-965-229	5

STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	6



- | | | | | | | | | |
|------------------------------|---------------------------------|------------------------------------|---------------------------|-------------------------------|---------------------------|---------------------------|------------------------------------------|----------------------------------------------|
| Denotes Water Quantity Swale | Denotes Proposed Paved Shoulder | Denotes Proposed Paved Travel Lane | Denotes Proposed Bridge | Denotes Wetland/Stream Impact | Denotes Proposed SWM BMP | Denotes Existing Pavement | Std. GR-MGS1 Guardrail Req'd. | Std. GR-FOA-2 Fixed Object Attachment Req'd. |
| Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Std. GR-MGS1A Guardrail Req'd. | Std. BPPS-1 Pler Protection Req'd. |
| Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Std. GR-MGS2 Guardrail Terminal Req'd. | Std. MC-3B Asphalt Curb Req'd. |
| Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Std. GR-MGS3 Guardrail Terminal Req'd. | |
| Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Denotes Existing Pavement | Std. GR-MGS4 Guardrail Transition Req'd. | |

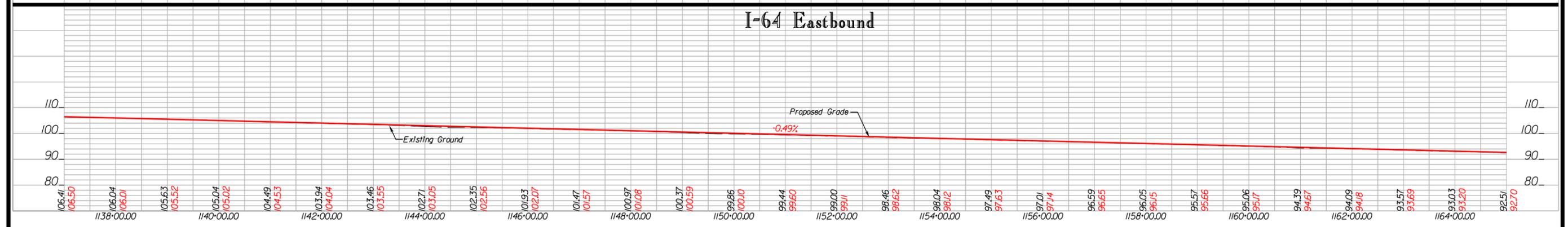
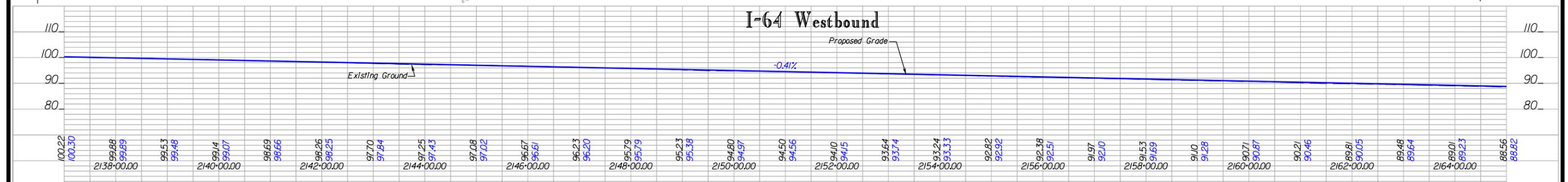
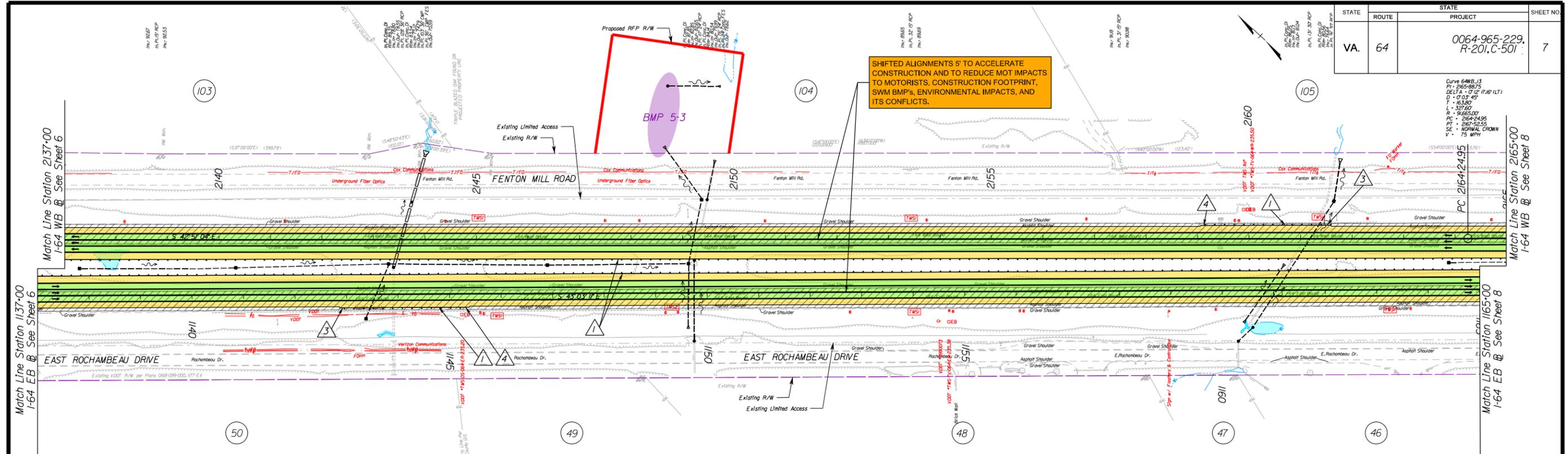
RFP PLANS

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



PROJECT	SHEET NO.
0064-965-229	6

STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	7



- Denotes Water Quantity Swale
- Denotes Proposed Paved Shoulder
- Denotes Proposed Paved Travel Lane
- Denotes Proposed Bridge
- Denotes Wetland/Stream Impact
- Denotes Proposed SWM BMP
- Denotes Existing Pavement

- 1 Std. GR-MGS1 Guardrail Req'd.
- 2 Std. GR-MGSIA Guardrail Req'd.
- 3 Std. GR-MGS2 Guardrail Terminal Req'd.
- 4 Std. GR-MGS3 Guardrail Terminal Req'd.
- 5 Std. GR-MGS4 Guardrail Transition Req'd.
- 6 Std. GR-FOA-2 Fixed Object Attachment Req'd.
- 7 Std. BPPS-1 Pier Protection Req'd.
- 8 Std. MC-3B Asphalt Curb Req'd.

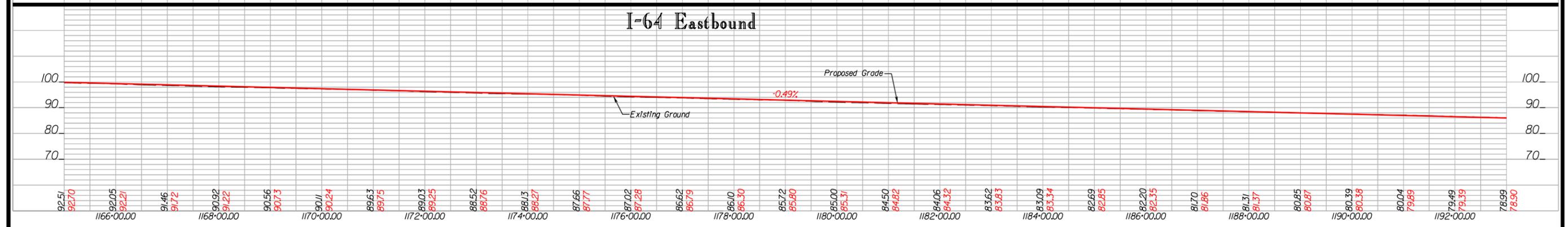
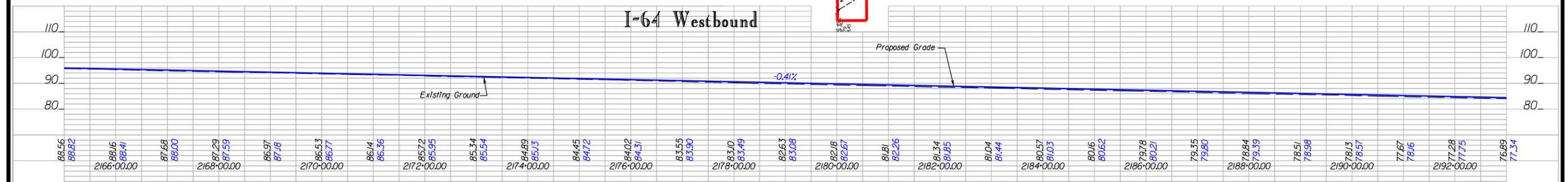
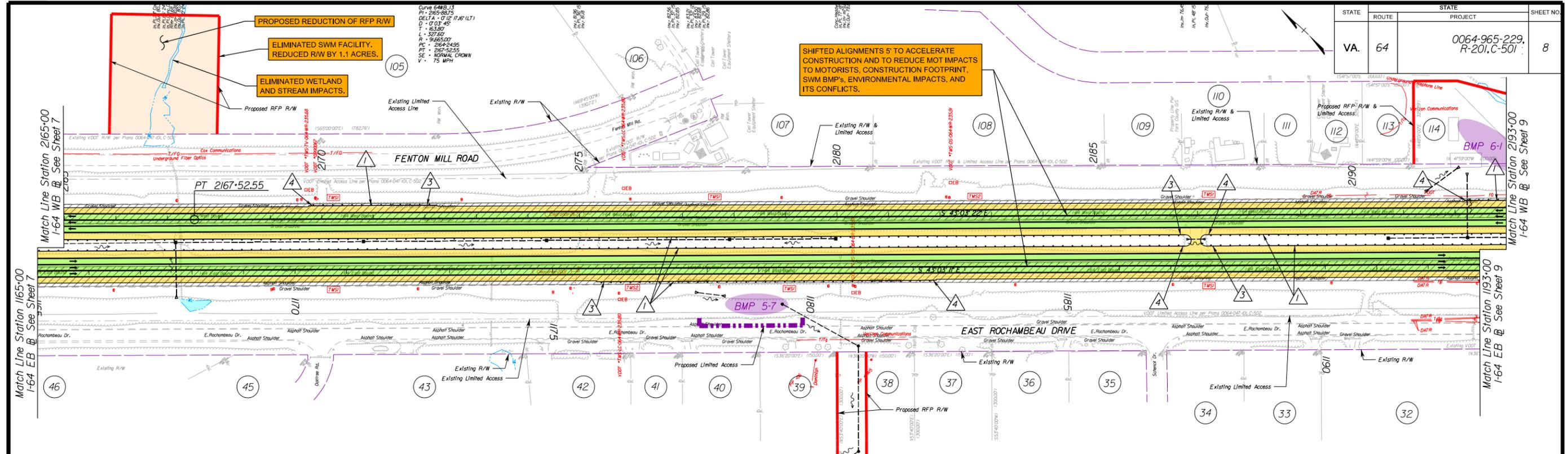
RFP PLANS

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PROJECT	SHEET NO.
0064-965-229	7

STATE	ROUTE	STATE	PROJECT	SHEET NO.
VA.	64		0064-965-229, R-201,C-501	8



RFP PLANS

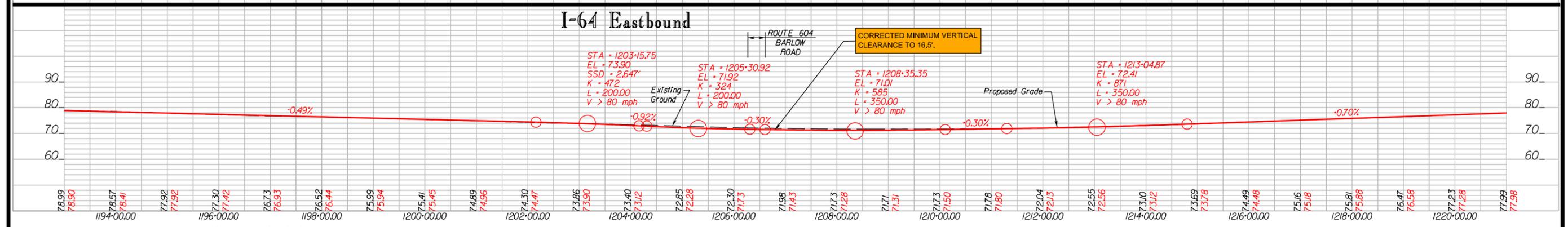
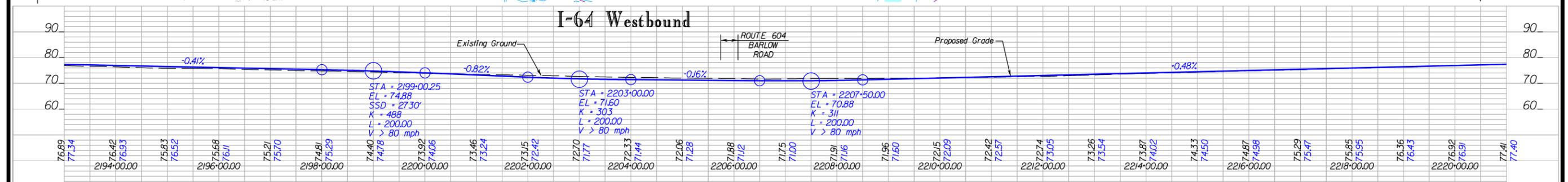
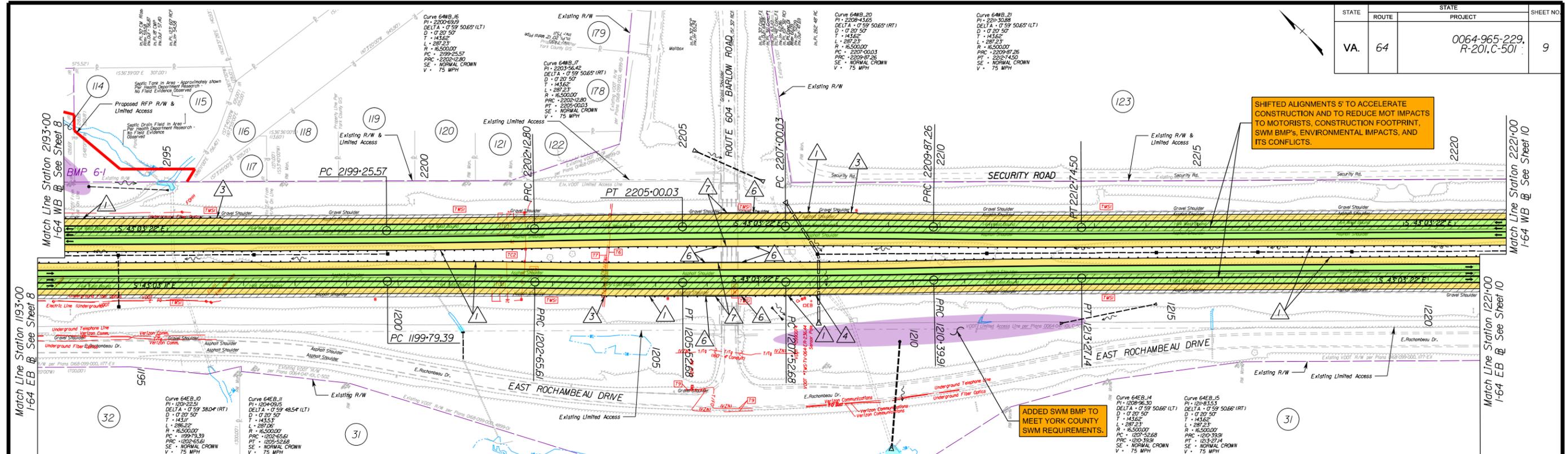
THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

- Denotes Water Quantity Swale
- Denotes Proposed Paved Shoulder
- Denotes Proposed Paved Travel Lane
- Denotes Proposed Bridge
- Denotes Wetland/Stream Impact
- Denotes Proposed SWM BMP
- Denotes Existing Pavement
- 1 Std. GR-MGS1 Guardrail Req'd.
- 2 Std. GR-MGS1A Guardrail Req'd.
- 3 Std. GR-MGS2 Guardrail Terminal Req'd.
- 4 Std. GR-MGS3 Guardrail Terminal Req'd.
- 5 Std. GR-MGS4 Guardrail Transition Req'd.
- 6 Std. GR-FOA-2 Fixed Object Attachment Req'd.
- 7 Std. BPPS-1 Pier Protection Req'd.
- 8 Std. MC-3B Asphalt Curb Req'd.



PROJECT	SHEET NO.
0064-965-229	8

STATE	ROUTE	STATE	PROJECT	SHEET NO.
VA.	64		0064-965-229, R-201.C-501	9



RFP PLANS

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

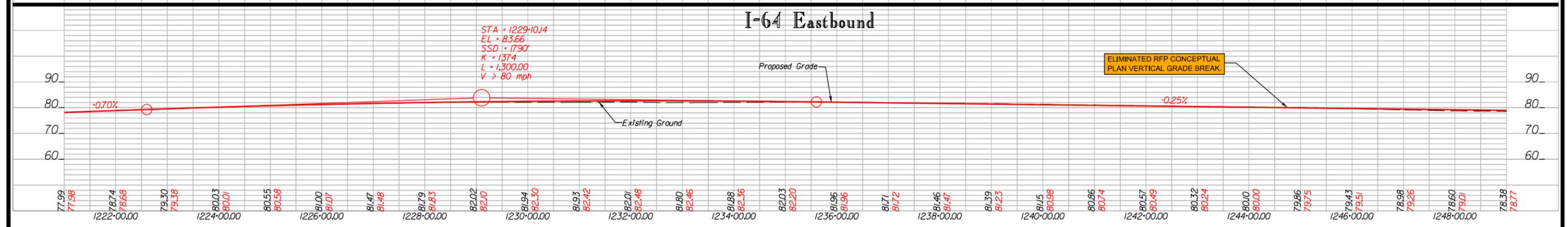
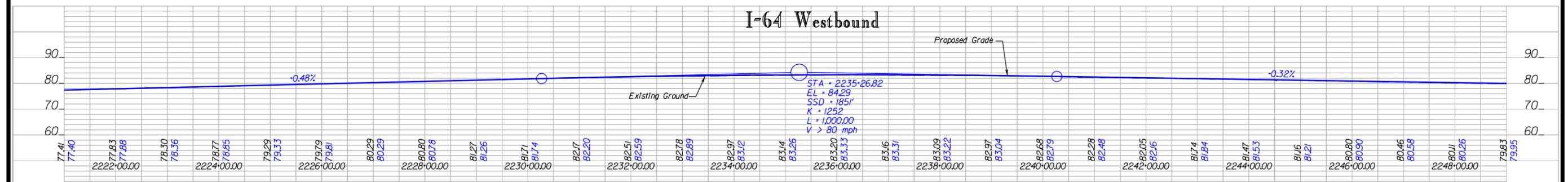
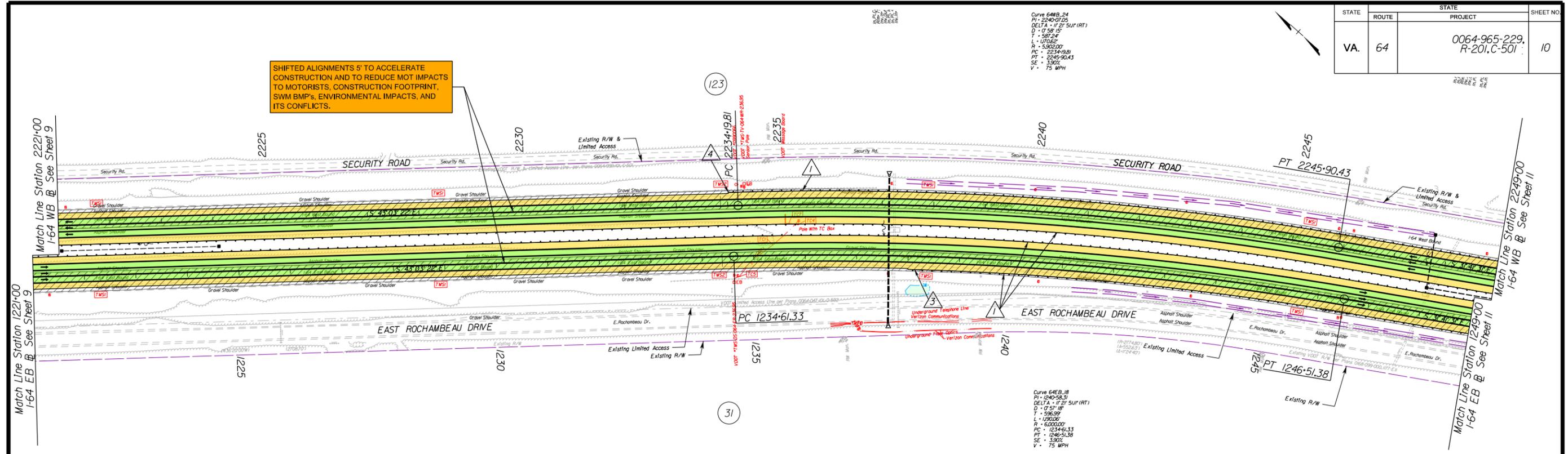
Denotes Water Quantity Swale	Std. GR-MGS1 Guardrail Req'd.	Std. GR-FOA-2 Fixed Object Attachment Req'd.
Denotes Proposed Paved Shoulder	Std. GR-MGS1A Guardrail Req'd.	Std. BPPS-1 Pier Protection Req'd.
Denotes Proposed Paved Travel Lane	Std. GR-MGS2 Guardrail Terminal Req'd.	Std. MC-3B Asphalt Curb Req'd.
Denotes Proposed Bridge	Std. GR-MGS3 Guardrail Terminal Req'd.	
Denotes Wetland/Stream Impact	Std. GR-MGS4 Guardrail Transition Req'd.	
Denotes Proposed SWM BMP		
Denotes Existing Pavement		

SCALE: 0 100' 200'



PROJECT	SHEET NO.
0064-965-229	9

STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	10



Denotes Water Quantity Swale

Denotes Proposed Paved Shoulder

Denotes Proposed Paved Travel Lane

Denotes Proposed Bridge

Denotes Wetland/Stream Impact

Denotes Proposed SWM BMP

Denotes Existing Pavement

1 Std. GR-MGS1 Guardrail Req'd.

2 Std. GR-MGS1A Guardrail Req'd.

3 Std. GR-MGS2 Guardrail Terminal Req'd.

4 Std. GR-MGS3 Guardrail Terminal Req'd.

5 Std. GR-MGS4 Guardrail Transition Req'd.

6 Std. GR-FOA-2 Fixed Object Attachment Req'd.

7 Std. BPPS-1 Pier Protection Req'd.

8 Std. MC-3B Asphalt Curb Req'd.

RFP PLANS

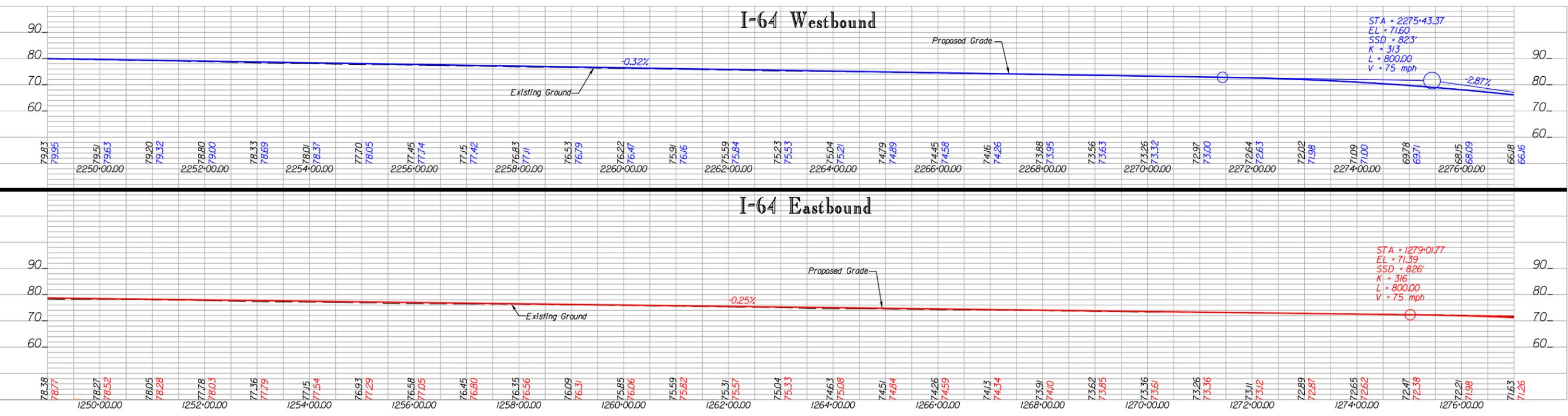
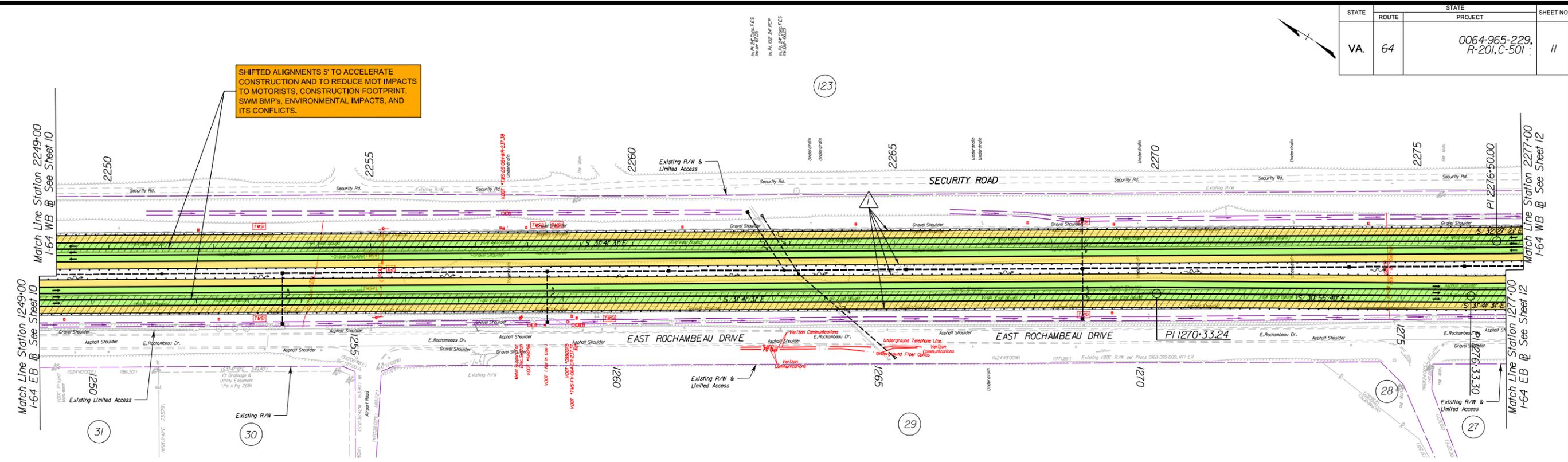
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PROJECT	SHEET NO.
0064-965-229	10

STATE	ROUTE	STATE PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	11

SHIFTED ALIGNMENTS S' TO ACCELERATE CONSTRUCTION AND TO REDUCE MOT IMPACTS TO MOTORISTS, CONSTRUCTION FOOTPRINT, SWM BMP's, ENVIRONMENTAL IMPACTS, AND ITS CONFLICTS.



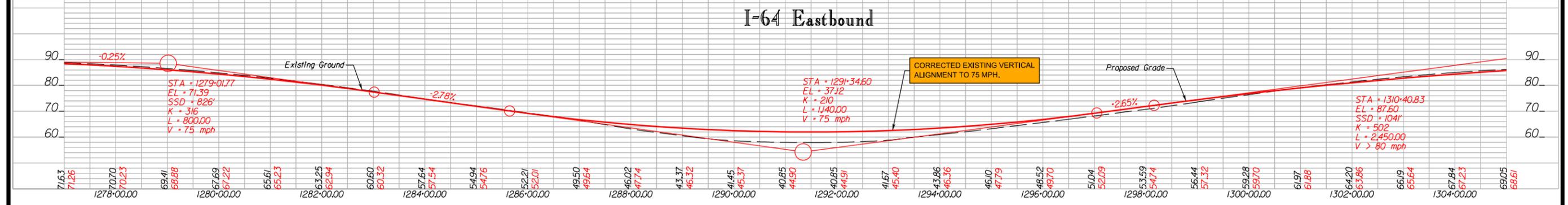
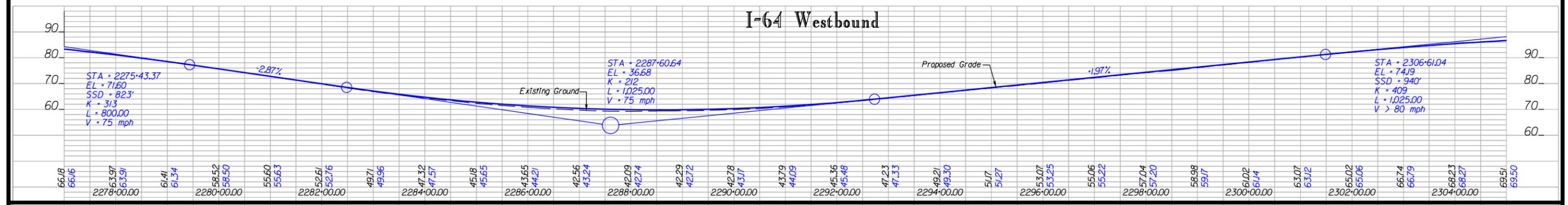
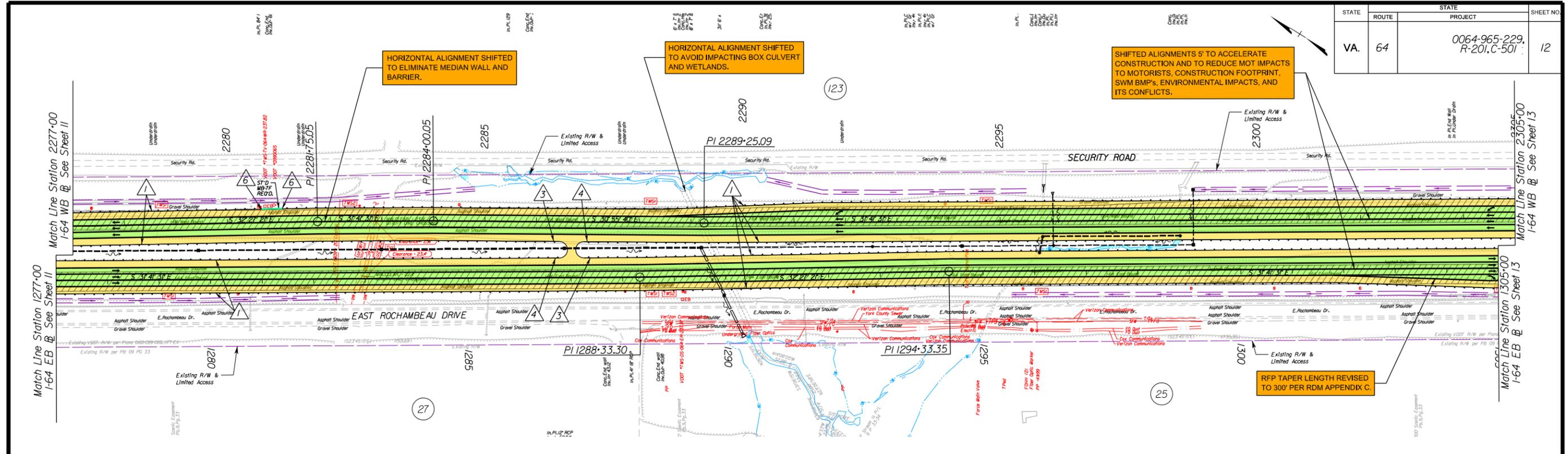
- Denotes Water Quantity Swale
- Denotes Proposed Paved Shoulder
- Denotes Proposed Paved Travel Lane
- Denotes Proposed Bridge
- Denotes Wetland/Stream Impact
- Denotes Proposed SWM BMP
- Denotes Existing Pavement
- 1 Std. GR-MGS1 Guardrail Req'd.
- 2 Std. GR-MGS1A Guardrail Req'd.
- 3 Std. GR-MGS2 Guardrail Terminal Req'd.
- 4 Std. GR-MGS3 Guardrail Terminal Req'd.
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- 6 Std. GR-FOA-2 Fixed Object Attachment Req'd.
- 7 Std. BPPS-1 Pier Protection Req'd.
- 8 Std. MC-3B Asphalt Curb Req'd.

RFP PLANS
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PROJECT	SHEET NO.
0064-965-229	11

STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	12



RFP PLANS

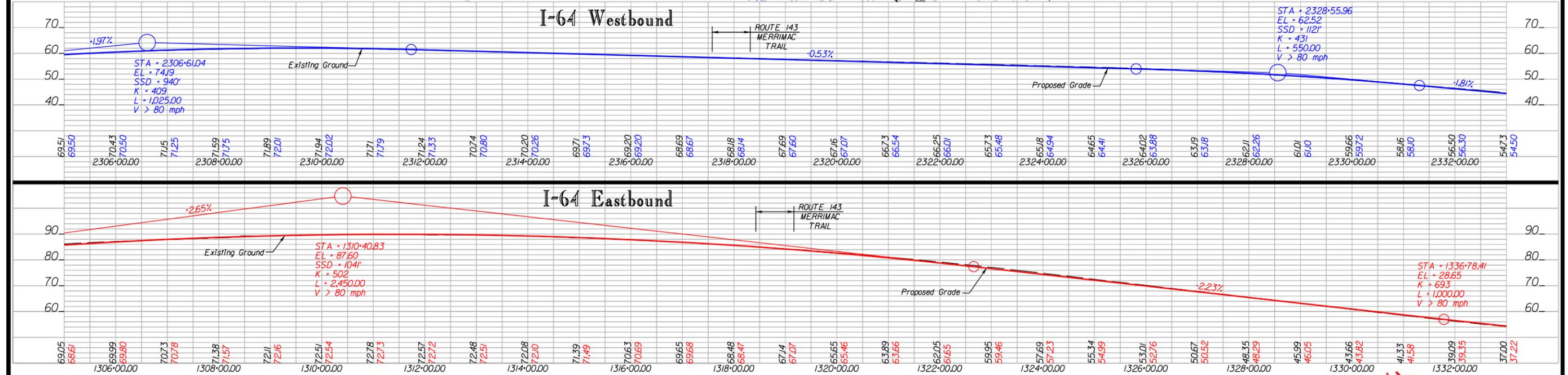
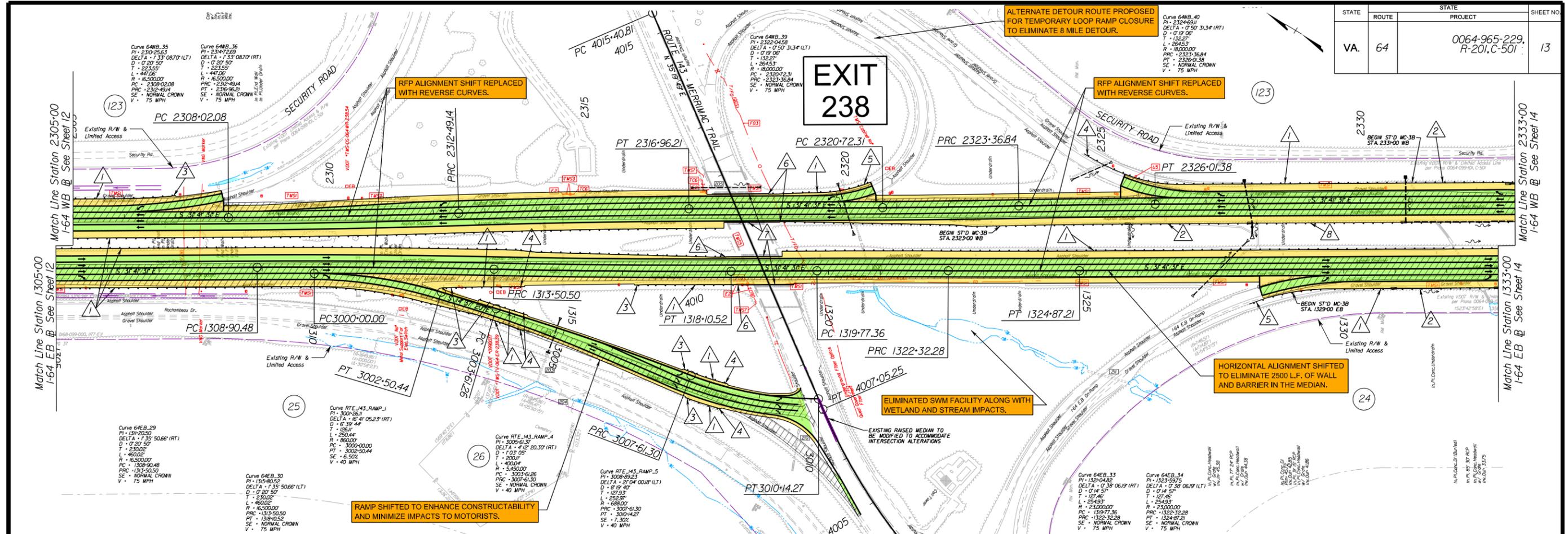
THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

	Denotes Water Quantity Swale		Denotes Proposed Paved Shoulder		Std. GR-MGS1 Guardrail Req'd.		Std. GR-FOA-2 Fixed Object Attachment Req'd.
	Denotes Proposed Paved Travel Lane		Denotes Proposed Bridge		Std. GR-MGS2 Guardrail Terminal Req'd.		Std. BPPS-1 Pier Protection Req'd.
	Denotes Wetland/Stream Impact		Denotes Proposed SWM BMP		Std. GR-MGS3 Guardrail Terminal Req'd.		Std. MC-3B Asphalt Curb Req'd.
	Denotes Existing Pavement				Std. GR-MGS4 Guardrail Transition Req'd.		



PROJECT	SHEET NO.
0064-965-229	12

STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	13



RFP PLANS

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

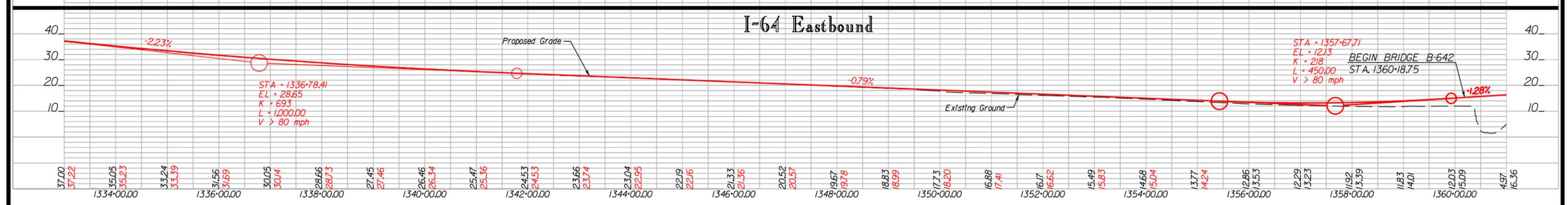
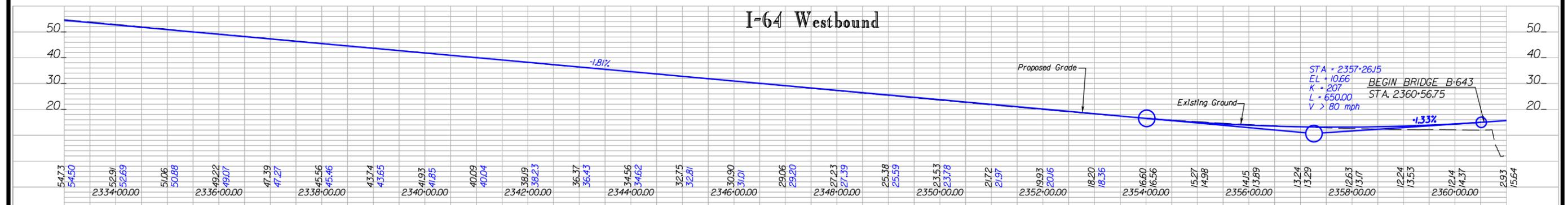
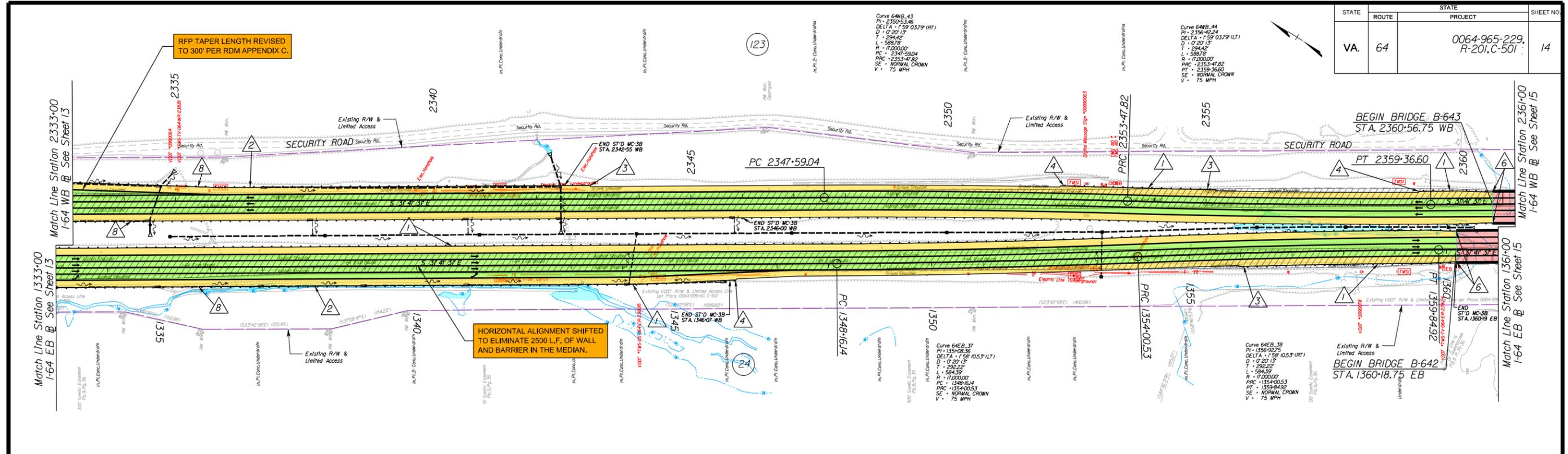
- Denotes Water Quantity Swale
- Denotes Proposed Paved Shoulder
- Denotes Proposed Paved Travel Lane
- Denotes Proposed Bridge
- Denotes Wetland/Stream Impact
- Denotes Proposed SWM BMP
- Denotes Existing Pavement
- Std. GR-MGS1 Guardrail Req'd.
- Std. GR-MGSIA Guardrail Req'd.
- Std. GR-MGS2 Guardrail Terminal Req'd.
- Std. GR-MGS3 Guardrail Terminal Req'd.
- Std. GR-MGS4 Guardrail Transition Req'd.
- Std. GR-FOA-2 Fixed Object Attachment Req'd.
- Std. BPPS-1 Pier Protection Req'd.
- Std. MC-3B Asphalt Curb Req'd.

SCALE: 0 100' 200'

LANE **RK&K**

PROJECT: 0064-965-229
SHEET NO.: 13

STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	14



RFP PLANS

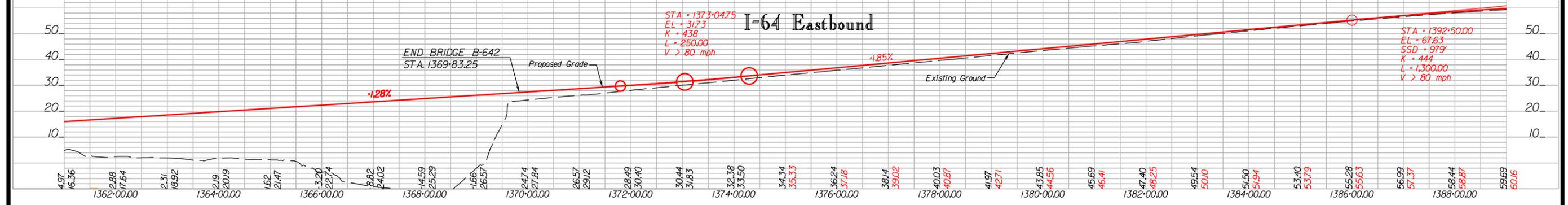
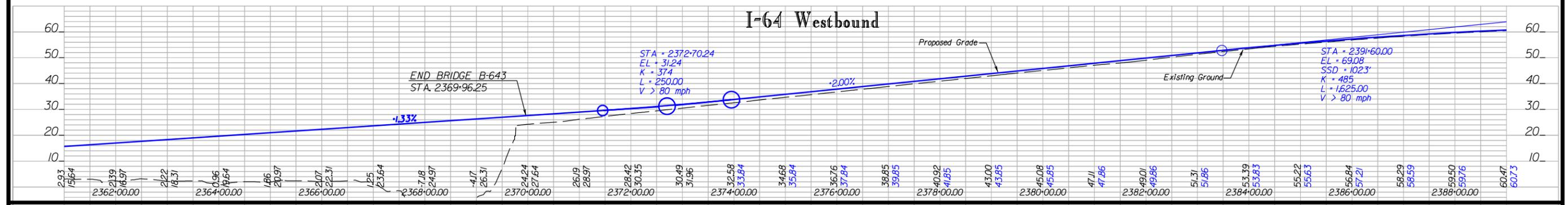
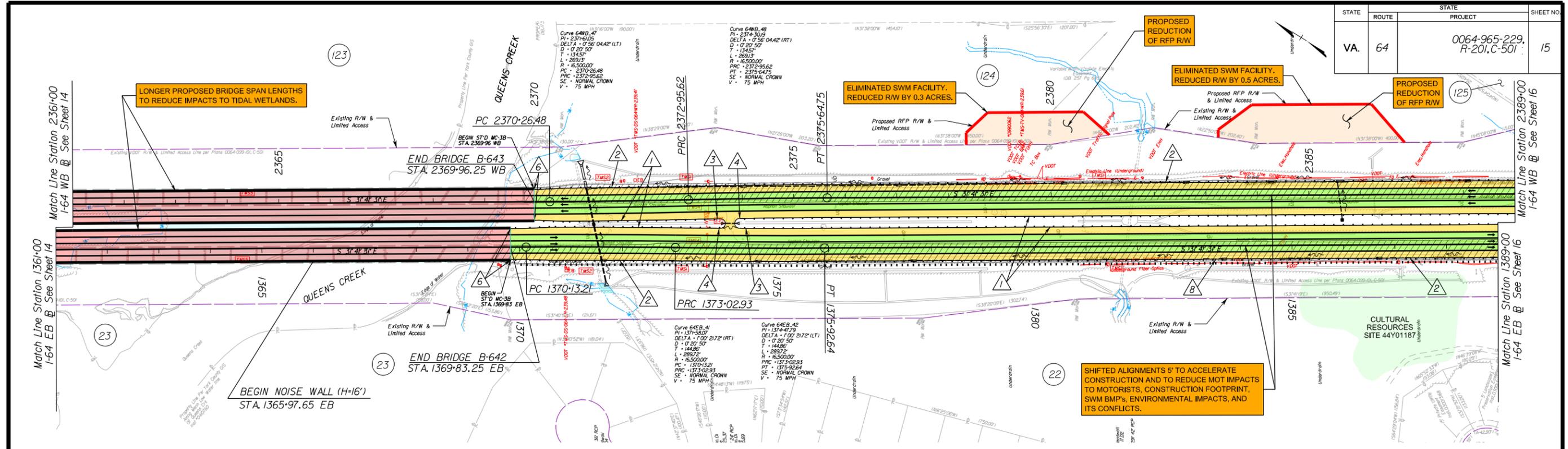
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- Denotes Water Quantity Swale
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- Denotes Proposed SWM BMP
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- 2 Std. GR-MGS1A Guardrail Req'd.
- 3 Std. GR-MGS2 Guardrail Terminal Req'd.
- 4 Std. GR-MGS3 Guardrail Terminal Req'd.
- 5 Std. GR-MGS4 Guardrail Transition Req'd.
- 6 Std. GR-FOA-2 Fixed Object Attachment Req'd.
- 7 Std. BPPS-1 Pier Protection Req'd.
- 8 Std. MC-3B Asphalt Curb Req'd.



PROJECT	SHEET NO.
0064-965-229	14

STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	15



RFP PLANS

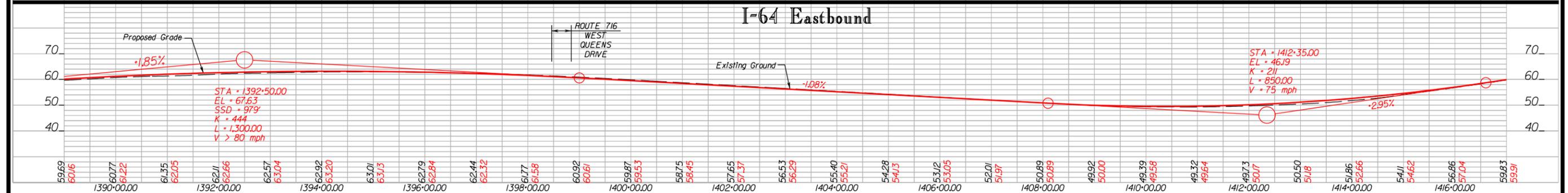
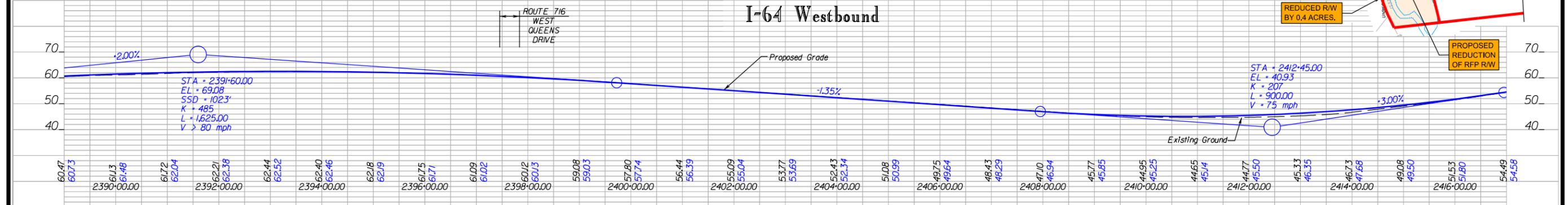
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- Denotes Wetland/Stream Impact
- Denotes Proposed SWM BMP
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- 3 Std. GR-MGS2 Guardrail Terminal Req'd.
- 4 Std. GR-MGS3 Guardrail Terminal Req'd.
- 5 Std. GR-MGS4 Guardrail Transition Req'd.
- 6 Std. GR-FOA-2 Fixed Object Attachment Req'd.
- 7 Std. BPPS-1 Pier Protection Req'd.
- 8 Std. MC-3B Asphalt Curb Req'd.



PROJECT	SHEET NO.
0064-965-229	15

STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	16



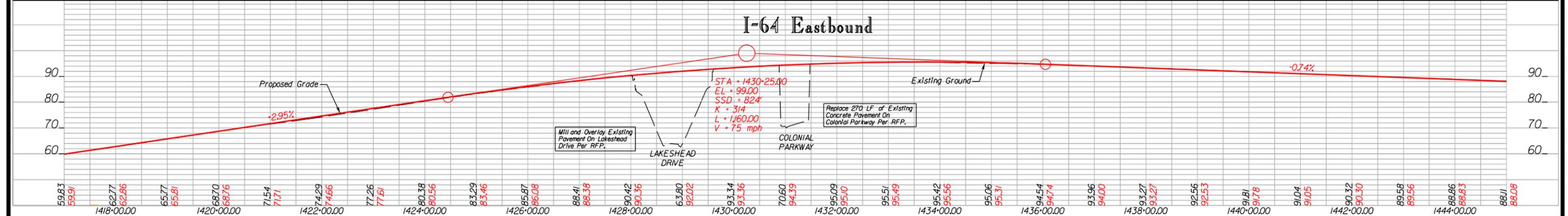
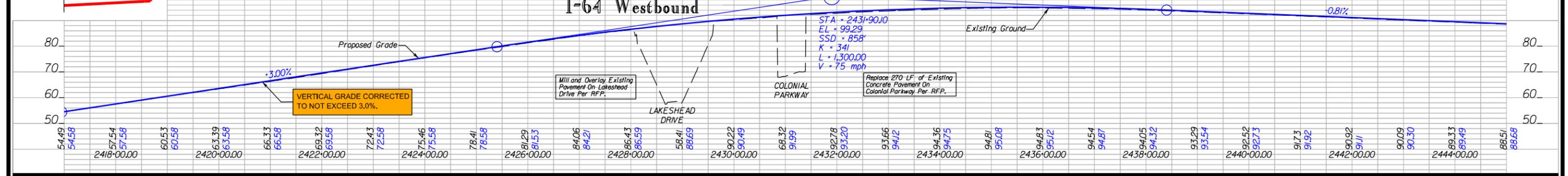
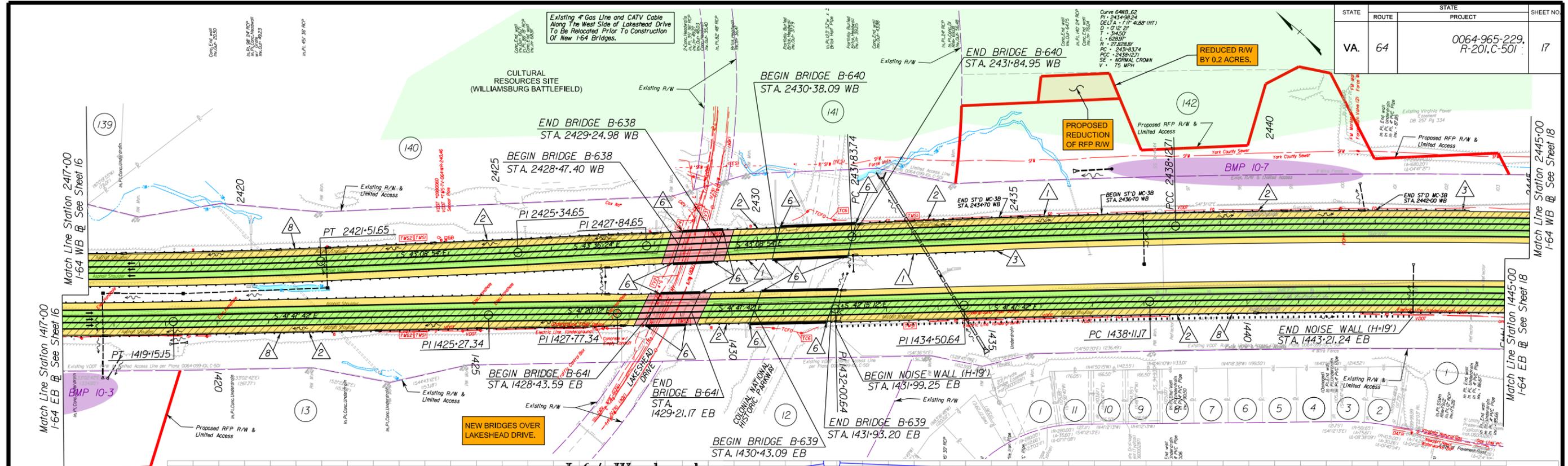
- Denotes Water Quantity Swale
- Denotes Proposed Paved Shoulder
- Denotes Proposed Paved Travel Lane
- Denotes Proposed Bridge
- Denotes Wetland/Stream Impact
- Denotes Proposed SWM BMP
- Denotes Existing Pavement
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- 3 Std. GR-MGS2 Guardrail Terminal Req'd.
- 4 Std. GR-MGS3 Guardrail Terminal Req'd.
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PROJECT	SHEET NO.
0064-965-229	16

STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201,C-501	17



RFP PLANS

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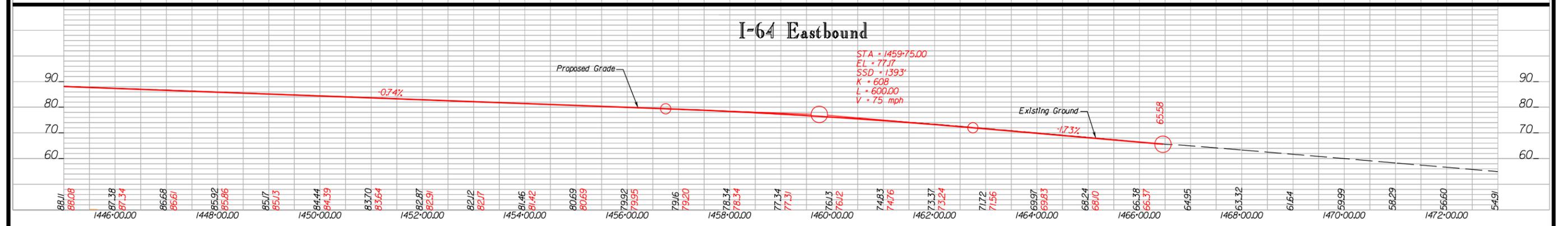
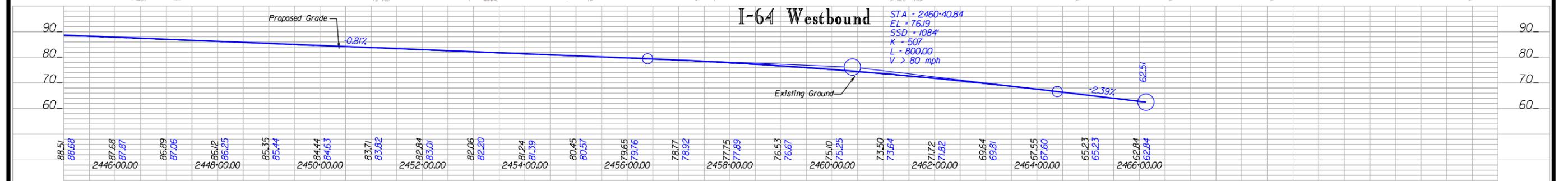
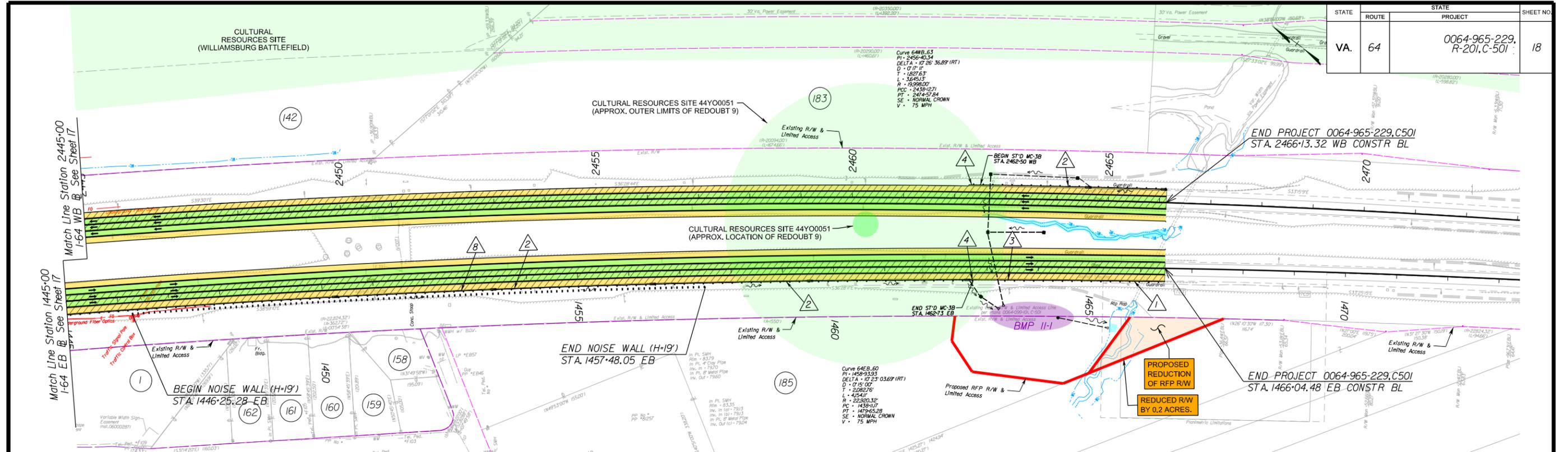
- Denotes Existing Pavement
- Denotes Proposed Paved Shoulder
- Denotes Proposed Paved Travel Lane
- Denotes Proposed Bridge
- Denotes Wetland/Stream Impact
- Denotes Proposed SWM BMP
- Denotes Water Quantity Swale

- ① Std. GR-MGS1 Guardrail Req'd.
- ② Std. GR-MGS1A Guardrail Req'd.
- ③ Std. GR-MGS2 Guardrail Terminal Req'd.
- ④ Std. GR-MGS3 Guardrail Terminal Req'd.
- ⑤ Std. GR-MGS4 Guardrail Transition Req'd.
- ⑥ Std. GR-FOA-2 Fixed Object Attachment Req'd.
- ⑦ Std. BPPS-1 Pier Protection Req'd.
- ⑧ Std. MC-3B Asphalt Curb Req'd.



PROJECT	SHEET NO.
0064-965-229	17

STATE	ROUTE	PROJECT	SHEET NO.
VA.	64	0064-965-229, R-201, C-501	18



RFP PLANS

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- Denotes Water Quantity Swale
- Denotes Proposed Paved Shoulder
- Denotes Proposed Paved Travel Lane
- Denotes Proposed Bridge
- Denotes Wetland/Stream Impact
- Denotes Proposed SWM BMP
- Denotes Existing Pavement
- 1 Std. GR-MGS1 Guardrail Req'd.
- 2 Std. GR-MGS1A Guardrail Req'd.
- 3 Std. GR-MGS2 Guardrail Terminal Req'd.
- 4 Std. GR-MGS3 Guardrail Terminal Req'd.
- 5 Std. GR-MGS4 Guardrail Transition Req'd.
- 6 Std. GR-FOA-2 Fixed Object Attachment Req'd.
- 7 Std. BPPS-1 Pier Protection Req'd.
- 8 Std. MC-3B Asphalt Curb Req'd.

SCALE: 1" = 100'



PROJECT	SHEET NO.
0064-965-229	18

PROPERTY OWNERS

STATE	ROUTE	STATE	PROJECT	SHEET NO
VA.	64		0064-965-229; R-201,C-501	19

RFP PLANS

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ACQUISITION OF RIGHT OF WAY.

- | | | | | | | | |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 1 FELGATES WOODS HOME ASSOC LLC
INST *06003179
GPN 040-285-3559
15.94 AC. | 11 JAMES M CZEISZPERGER ETUX
INST *06022829
GPN F154-008-012
0.6 AC. | 20 GREGORY JAMES WELLS
INST *0602632
GPN 030-445-1918
0.74 AC. | 30 COMMONWEALTH OF VIRGINIA
GPN E10-2487-4697
2.0 AC. | 40 WILLIE EUGENE & ANNA R RICHARDS TRUSTEE
INST *03000915
GPN D9c-2424-013
2.15 AC. | 50 JEANETTE B BRADY TRUSTEE
INST *0600555
GPN C9b-468-3095
4.6 AC. | 60 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-100-1808
2.26 AC. | 70 MARTELL L DUNCAN ET UX
DB 255 PG 309
GPN 04b-3445-3353
0.36 AC. |
| 2 GABRIEL R HARVEY ETUX
INST *06000101
GPN 04b-285-3920
0.17 AC. | 12 UNITED STATES OF AMERICA
GPN 04b-008-012
55.8 AC. | 21 JOHN R JR & HEATHER L WALTERS
INST *04000726
GPN 05c-0363-218
1.9 AC. | 31 CITY OF WILLIAMSBURG
GPN D8a-285-1609
62421 AC. | 41 STEPHEN A DURHAM ETUX
DB 465 PG 524
GPN D9c-2306-073
1.8 AC. | 51 JEANETTE B BRADY TRUSTEE
INST *05005154
GPN C9b-4285-3748
4.4 AC. | 61 WILLIAMSBURG POTTERY FACTORY INC
INST *04000741
GPN C20-07-31-2553
2.97 AC. | 71 ADELL H TYLER ETALS
INST *0600182
GPN 04b-3385-3413
0.37 AC. |
| 3 DANIEL EDOMWANDGBO
INST *07001436
GPN 04b-2940-3973
0.6 AC. | 13 FRANCES G & HUGH M HOLT TRUSTEE
INST *02008961
GPN 05c-1337-0510
13.3 AC. | 22 CREEKSIDE LANDING HOMEOWNERS ASSOCIATION
INST *07002293
GPN F150-4482-3280
18.21 AC. | 32 FRANCES M KNIGHT
DB 648 PG 157
GPN D8b-3580-3720
18.84 AC. | 42 WILLIE EUGENE & ANNA R RICHARDS TRUSTEE
INST *03000514
GPN D9c-2320-0358
1.87 AC. | 52 JEANETTE B BRADY TRUSTEE
INST *05006378
GPN C9b-3925-490
2.98 AC. | 62 WILLIAMSBURG POTTERY FACTORY INC
DB 99 PG 235
GPN 050-4403-329
97.57 AC. | 72 WILLIE JAMES & CHARLOTTE SAUNDERS
GPN 04b-3343-3474
0.37 AC. |
| 4 SYLVIA DOZIER
INST *00005796
GPN 04b-2896-4024
0.6 AC. | 14 MICHAEL W STEPHENS
INST *06000562
GPN 05c-0880-089
1.984 AC. | 23 CREEKSIDE LANDING HOMEOWNERS ASSOCIATION
INST *07002293
GPN F150-383-4894
1.93 AC. | 33 CHRISTOS FOTIADIS
GPN D8b-3304-4440
1.033 AC. | 43 R S U LLC
INST *08001038
GPN D8b-1870-038
12.8 AC. | 53 GREAT WOLF WILLIAMSBURG SPE LLC
INST *080002308
GPN C20-0403-4804
78.07 AC. | 63 TED M III & GEORGIA LEA HOLTZ
INST *06004209
GPN B20-389-4888
13.25 AC. | 73 CARLOS J & YAZMIN C TRICOCHÉ
INST *06006303
GPN F154-0404-1493
0.79 AC. |
| 5 GABRIEL M & MARIA A RAMIREZ
INST *060025702
GPN 04b-285-4074
0.6 AC. | 15 YORK COUNTY
DB 557 PG 227
GPN 05c-0757-1327
0.63 AC. | 24 COLONIAL WILLIAMSBURG FOUNDATION
DB 737 PG 293
GPN F150-383-4894
1.93 AC. | 34 CIMON SMART INVESTING LLC
INST *13009192
GPN D8b-3084-4547
1.033 AC. | 44 WILLIAMSBURG MEADOWS LLC
INST *030025064
GPN C20-242-0774
1.5 AC. | 54 WILLIAMSBURG LANDLORD PAR C LLC
INST *08000663
GPN C20-0201-0920
1.69 AC. | 64 TED M III & GEORGIA LEA HOLTZ
INST *06004209
GPN B20-389-4888
13.25 AC. | 74 ROCHAMBEAU PROPERTY LLC
INST *06007413
GPN C9b-1170-4865
20.4 AC. |
| 6 ISAIAM KISSOON ETUX
INST *060025704
GPN 04b-285-4024
0.6 AC. | 16 SCOTT A CASH ETUX
INST *99009622
GPN 05c-0753-149
1.46 AC. | 25 COLONIAL WILLIAMSBURG FOUNDATION
DB 737 PG 293
GPN E16-4481-3507
28.38 AC. | 35 EVON C & CASEY P LEMON
DB 766 PG 367
GPN D8b-308-4723
0.68 AC. | 45 KONSTANTIN & MARINA FOTIADIS TRUSTEE
INST *05002649
GPN D9c-1956-0983
0.39 AC. | 55 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-0880-1911
4.78 AC. | 65 HILL PLEASANT FARM, INC
INST *06000025
GPN 24000000
6.0 AC. | 75 FRANCIS P NORSWORTHY JR ETUX
INST *030023805
GPN C20-0897-0932
0.02 AC. |
| 7 ERNEST R JAMISON ETUX
INST *06001915
GPN 04b-276-4074
0.6 AC. | 17 GARY E YATES ETUX
DB 501 PG 311
GPN 05c-063-1562
1.31 AC. | 26 OAK GROVE BAPTIST CHURCH CEMETERY
INST *03001783
GPN F150-0534-4471
1.9 AC. | 36 A O JONES
DB 590 PG 469
GPN D8b-2868-4800
1.03 AC. | 46 KONSTANTIN & MARINA FOTIADIS TRUSTEE
INST *05002649
GPN D9c-1345-1572
1.01 AC. | 56 GREAT WOLF WILLIAMSBURG SPE LLC
INST *09000712
GPN C20-097-0991
1.571 AC. | 66 DONALD L HAZELWOOD INC
INST *020027996
GPN 24000026
1.982 AC. | 76 FRANCIS P NORSWORTHY JR
INST *060007835
GPN C20-0873-0821
0.74 AC. |
| 8 MARY A WILLIAM
INST *06002880
GPN 04b-2719-4224
0.6 AC. | 18 AUSTIN R ZILTZ
INST *05000913
GPN 05c-0513-1659
0.99 AC. | 27 YORK COUNTY SCHOOL BOARD
DB 277 PG 36
GPN E70-3753-1574
5144 AC. | 37 KIMBERLEY C NAZARIO
GPN D8b-2868-4911
1.03 AC. | 47 YONG H STONE
INST *08000004
GPN D9c-1013-957
4.95 AC. | 57 CASEY & ASSOCIATES LP
INST *00007479
GPN C20-0236-052
8.83 AC. | 67 JOHN & MARY H ROBERTS
GPN 24000002
0.82 AC. | 77 FRANCIS P NORSWORTHY JR
INST *06007835
GPN C20-0833-0572
2.33 AC. |
| 9 DOUGLAS C & KARLA M FUCHS
INST *130001680
GPN 04b-2676-4274
0.6 AC. | 19 ALISON J SCOTT
INST *050003091
GPN 05c-0462-1770
0.94 AC. | 28 YORK COUNTY SCHOOL BOARD
DB 277 PG 36
GPN E70-3753-1574
5144 AC. | 38 DEANE T & RUTH K A GORDON
INST *02009475
GPN D9c-2761-0023
1.03 AC. | 48 THE J C P COMPANY LLC
INST *08002575
GPN D8b-1013-957
4.95 AC. | 58 WILLIAMSBURG POTTERY FACTORY INC
DB 99 PG 235
GPN C20-096-1533
3.92 AC. | 68 BRANCH BANKING AND TRUST COMPANY
GPN 24000001
6.0 AC. | 78 FRANCIS P NORSWORTHY JR
INST *06007835
GPN C20-0550-0403
3.52 AC. |
| 10 JOHN G STAUFFER ETUX
INST *06002811
GPN 04b-2632-4323
0.5 AC. | 29 CITY OF WILLIAMSBURG
GPN D10-4414443
10863.3 AC. | 29 CITY OF WILLIAMSBURG
GPN D10-4414443
10863.3 AC. | 39 CLARENCE HARVEY PRICE ET UX
GPN D9c-2544-0020
2.19 AC. | 49 LEWIS HARRIS JR ETUX
GPN D9c-0488-2515
2.19 AC. | 59 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-0880-1911
4.78 AC. | 69 HUGH L MARTIN ESTATE
GPN 24000002
66.36 AC. | 79 FRANCIS P NORSWORTHY JR
INST *06007835
GPN C20-0536-018
4.01 AC. |
| 70 JOE H MOREAU TRUSTEE
DB 653 PG 766
GPN 24000007
0.41 AC. | 80 CYNTHIA L DANIEL TRUSTEE
INST *0600091
GPN B20-4648-4942
3.01 AC. | 90 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-1050-3230
0.62 AC. | 100 JMW LLC
INST *07002004
GPN C20-2945-1791
2.43 AC. | 110 JOHN H FULTON JR ETUX
DB 417 PG 764
GPN D8b-3651-4926
0.54 AC. | 120 COMMONWEALTH OF VA
GPN D8b-469-3963
0.23 AC. | 130 MARTIN D & KIMBERLY ZAHN
INST *06001433
GPN 05c-0686-2611
0.61 AC. | 140 SCOTT HAWKINS
INST *05001948
GPN C20-0126-0968
1.08 AC. |
| 71 RUSSELL & SARAH K WAD
GPN 24000006
0.51 AC. | 81 ROBERT A RESCIGNO ETUX
DB 654 PG 19
GPN B20-4742-4736
2.19 AC. | 91 TIM & G SCHRECONGOST COGNETTI
INST *02000904
GPN C20-4180-1137
1.179 AC. | 101 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-4180-1137
1.179 AC. | 111 G7 PROPERTIES LLC
INST *070005758
GPN D8b-3737-4835
0.35 AC. | 121 KATE P WHITE EST
WB 93 PG 521
GPN 05c-095-3889
0.22 AC. | 131 MARY S GALLIMORE TRUSTEE
INST *02001070
GPN B20-0715-2481
1.27 AC. | 141 HELENS PLACE LLC
INST *060009315
GPN B20-0991-1546
3.07 AC. |
| 72 JERROLD BRINKLEY
INST *06002039
GPN 24000004A
0.75 AC. | 82 JOHN M ALLGOOD ETUX
INST *04002251
GPN B20-4855-4551
1.83 AC. | 92 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-1039-3091
0.25 AC. | 102 CROSS REAL ESTATE DEV LLC
INST *030038913
GPN C20-4157-0590
52.37 AC. | 112 G7 PROPERTIES LLC
INST *070005758
GPN D8b-3825-4762
0.35 AC. | 122 KATE P WHITE EST
WB 93 PG 521
GPN D8b-4680-3806
0.24 AC. | 132 BILLIE M HUFFMAN
GPN 05c-0627-2363
0.81 AC. | 142 WILLIAMSBURG POTTERY FACTORY
DB 464 PG 197
GPN C20-0141-484
5.36 AC. |
| 73 JAMES I DUNNWAY & TRUSTEE
DB 653 PG 766
GPN 24000003
4.17 AC. | 83 MARTIN R LOPEZ
INST *05007194
GPN C20-0070-4299
3.32 AC. | 93 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-1318-3035
0.62 AC. | 103 SCRUGGS VENTURES LLC
INST *06001788
GPN C9b-4975-4224
28.91 AC. | 113 G7 PROPERTIES LLC
INST *070005758
GPN D8b-3873-4689
0.35 AC. | 123 USA CAMP PEARY
GPN 05c-1244-3044
8645.85 AC. | 133 NICHOLAS J SOTACK ETUX
GPN 05c-0844-2242
0.75 AC. | 143 WILLIAMSBURG POTTERY FACTORY
DB 459 PG 459
GPN C20-0489-1255
0.63 AC. |
| 74 ROBERT A & SHELLY M FISCHER
INST *07001490
GPN 24000026A
4.41 AC. | 84 EULAN & WALTRAUD A CHISM TRUSTEE
INST *05001506
GPN C20-0280-3928
2.5 AC. | 94 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-1428-2982
0.51 AC. | 104 WILLIAMSBURG POTTERY FACTORY INC
GPN D9c-138-3152
3.176 AC. | 114 COMMONWEALTH OF VA
GPN D9c-1959-4979
0.66 AC. | 124 CHARLOTTE DETCH DIETZ
INST *06001320
GPN F150-4585-4429
13.29 AC. | 134 CARLY J MORRIS
INST *06001897
GPN 05c-0897-2086
0.79 AC. | 144 64 ENTERPRISES LLP
INST *06001897
GPN C20-3696-2909
8.78 AC. |
| 75 DEVENDRA S & VENKATARAMAN M PARMAR
INST *08000491
GPN 240000003
9.55 AC. | 85 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-0685-3652
0.69 AC. | 95 ROBERT E JR & A E COLON WASHINGTON
INST *020004252
GPN *02007948
GPN C20-1525-2942
1.11 AC. | 105 WILLIAMSBURG POTTERY FACTORY INC
GPN D9c-2545-2534
78.38 AC. | 115 EDWARD W SWICK
INST *00000004
GPN D8b-408-4432
1.36 AC. | 125 CHARLOTTE DETCH DIETZ
INST *06001320
GPN 05c-0897-2086
1.24 AC. | 135 ROBERT F WILKINSON JR ETUX
INST *05009882
GPN 05c-1831-1750
2.65 AC. | 145 YORK COUNTY
DB 562 PG 644
GPN C20-0135-2444
2.71 AC. |
| 76 BILLY J SR & JOYCE D BOUTWELL
INST *00007308
GPN B20-350-1020
11.62 AC. | 86 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-0758-3553
0.64 AC. | 96 WILLIAMSBURG POTTERY FACTORY INC
DB 464 PG 197
INST *02002845
GPN C20-2223-3156
16.56 AC. | 106 EDWIN LESTER WILSON
INST *030006023
GPN D9c-3024-1077
2.6 AC. | 116 GEORGE W BROXTON ETUX ETALS
INST *020007581
GPN D8b-4610-4251
1.89 AC. | 126 PROSANT AKAT ETUX
DB 384 PG 649
GPN 05c-1528-3247
1.91 AC. | 136 TIM SPEEGLE TRUSTEE
INST *040018066
GPN 05c-1528-1674
1.28 AC. | 146 KATE P WHITE EST
WB 93 PG 521
GPN D8b-4630-4020
3.2 AC. |
| 77 ROBERT M CUMMING III
INST *05001865
GPN B20-3995-0346
1.3 AC. | 87 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-1259-3614
12.65 AC. | 97 THE OAKS AT FENTON MILL HOMEOWNER'S ASSOCIATION
DB 192 PG 611
GPN C20-3347-4107
45.64 AC. | 107 COMMONWEALTH OF VA
GPN D9c-3018-0563
1.8 AC. | 117 EDWARD W SWICK
INST *00000004
GPN D8b-4229-4242
0.14 AC. | 127 MARK H PHINNEY ETUX
INST *08016853
GPN 05c-0283-3054
0.77 AC. | 137 DOUGLAS J GABEL ETUX
INST *05002507
GPN 05c-1506-1524
0.77 AC. | 147 LINDA A & PHILIP R GUNTHERP
INST *06003049
GPN D8b-4820-4022
0.75 AC. |
| 78 BRANDON M SHARE ETAL
INST *09000543
GPN B20-4252-0145
1.83 AC. | 88 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-0880-3412
0.63 AC. | 98 THE OAKS AT FENTON MILL HOMEOWNER'S ASSOCIATION
DB 192 PG 611
GPN C20-3297-2926
3.71 AC. | 108 CARL F ROY TRUST
DB 1035 PG 378
GPN D9c-3358-0257
1.8 AC. | 118 COMMONWEALTH OF VA
DB 192 PG 436
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0.32 AC. | 128 CHARLOTTE DETCH DIETZ
INST *05002321
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1.81 AC. | 138 WILLIAM L GROSE TRUSTEE
INST *080000933
GPN 05c-1582-1333
1.32 AC. | 148 DAVID & MARIANGELA DAFASHY
INST *0500124
GPN D8b-4952-4042
0.37 AC. |
| 79 DONALD M STAFFORD ETUX
INST *030029347
GPN B20-4547-0125
3.14 AC. | 89 WILLIAMSBURG POTTERY FACTORY INC
GPN C20-0969-3323
0.57 AC. | 99 SIXTY FOUR ENTERPRISES
INST *06001593
GPN C20-384-2547
5.08 AC. | 109 BOKENTON PROPERTIES LLC
INST *05009362
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0.54 AC. | 119 COMMONWEALTH OF VA
GPN D8b-4422-4055
0.31 AC. | 129 KENNETH L MILTON ETUX
DB 785 PG 139
GPN 05c-0562-2665
0.47 AC. | 139 JASON A & ELISE M FRENCH
INST *02006890
GPN 05c-1737-1196
1.73 AC. | 149 CIVIL WAR PRESERVATION TRUST
INST *05002134
GPN H1c-0514-1246
23.78 AC. |
| 140 BRUCE A CLAYTON
INST *02002234
GPN 05c-2199-0646
7.84 AC. | 143 JOHN R JR & HEATHER L WALTERS
INST *04000726
GPN 05c-0363-218
0.55 AC. | 146 ARTHUR L JEBSON ETUX
DB 473 PG 795
GPN 05c-0072-1693
0.58 AC. | 149 MARK H HOWELL ETUX
INST *04002933
GPN 05c-1075-2797
6.65 AC. | 152 LYN S MILLER
GPN 240000029
0.59 AC. | 155 MICHAEL K & FELECIA E MARLE
GPN 240000005
1.5 AC. | 157 CAROL ECKHARDT HARRISON TRUSTEE
DB 983 PG 876
GPN 05c-0603-3234
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INST *05002314
GPN H1c-0514-1246
23.78 AC. |
| 141 UNITED STATES OF AMERICA
GPN 02b-1340-4229
536.39 AC. | 144 AYANEH T AMERA & TESSEMA BERGA
INST *060023285
GPN 05c-0200-1932
0.53 AC. | 147 YORK COUNTY SCHOOL BOARD
DB 277 PG 36
GPN F150-4695-5009
16.82 AC. | 150 CYNTHIA L GILLIAM TR
INST *02000941
GPN C20-0707-2745
1.28 AC. | 153 WRIGHT FAMILY TRUST
GPN 24000002C
0.499 AC. | 156 RICHARD EGGLESTON & JERI HARSLEY
INST *02001149
GPN C20-017-3770
0.62 AC. | 158 GEORGE T HARPER
INST *0000000796
GPN 04b-3573-3285
0.27 AC. | 155 CIVIL WAR PRESERVATION TRUST
INST *05002314
GPN H1c-0514-1246
23.78 AC. |
| 142 AMEE JONES TR & EGGER
INST *00000961
GPN H1c-0339-4585
247.86 AC. | 145 DAVID S & DARCI HANSON
INST *04007938
GPN 05c-0165-1815
0.59 AC. | 148 SHAUN R POTTER ETUX
INST *08000009
GPN 05c-0533-306
0.65 AC. | 151 LARRY KEITH & VERONIKA HINES
GPN 24000001
1.04 AC. | 154 ELIZABETH ANN BOLEY TRUSTEE
GPN 24000002A
2.0 AC. | 159 RICHARD EGGLESTON & JERI HARSLEY
INST *02001149
GPN C20-0609-3833
1.479 AC. | 159 BENNIE PARKER JR ET UX
INST *000000796
GPN 04b-3474-3278
0.29 AC. | 156 ROBERT TRAVIS JR, AND KAY ARMISTEAD
DB 539, PG. 36
P.B. 6, PG. 125
GPN 04b-3985-2606
4.67 AC. |



Not To Scale	PROJECT 0064-965-229	SHEET NO. 19
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STATE	FEDERAL AID	STATE	SHEET NO.
VA.	PROJECT	ROUTE PROJECT	
NBIS Number:	00000000019836 00000000019834	64 0064-965-229, B642, B643	1
Federal Oversight Code:	N/A	UPC No. 106689	
		FHWA Construction and Scour Code:	X281-SN

DESIGN EXCEPTION(S):

None

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 rails.

Span layout:

Capacity: HL-93 loading. (Widened portion only)

Drainage area: Tidal

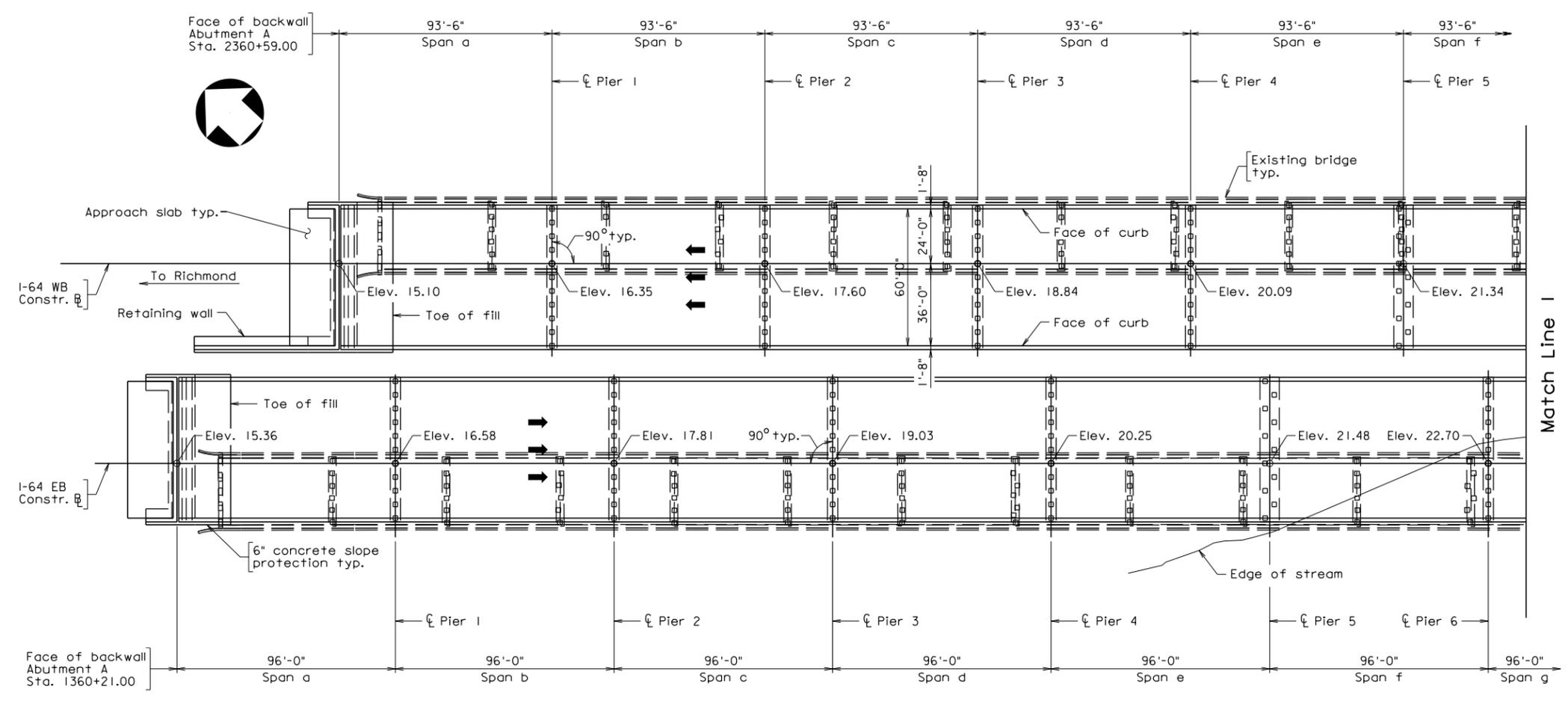
Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2016.

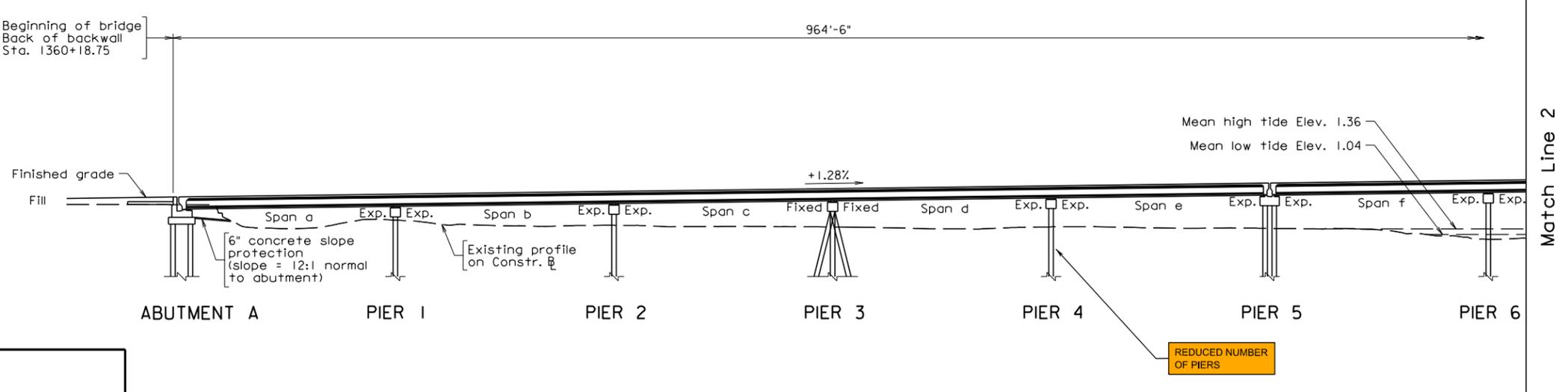
Design: AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014; and VDOT Modifications.

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

Bridge No. of existing bridge are 2007 (EB) and 2008 (WB). Existing Plan No. is 163-16.



PLAN



DEVELOPED SECTION ALONG CONSTR.
(Eastbound shown, Westbound similar)

Match Line 1

Match Line 2

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
 PROPOSED BRIDGE ON
 RTE. 64 OVER QUEENS CREEK
 YORK COUNTY
 PROJ. 0064-965-229

PLANS BY:	RK&K
COORDINATED:	
SUPERVISED:	
DESIGNED:	M. Chris Vaught
DRAWN:	Jill R. Boxley
CHECKED:	Sagar P. Adivarekar



PRELIMINARY PLANS
 THESE PLANS NOT TO BE USED
 FOR CONSTRUCTION

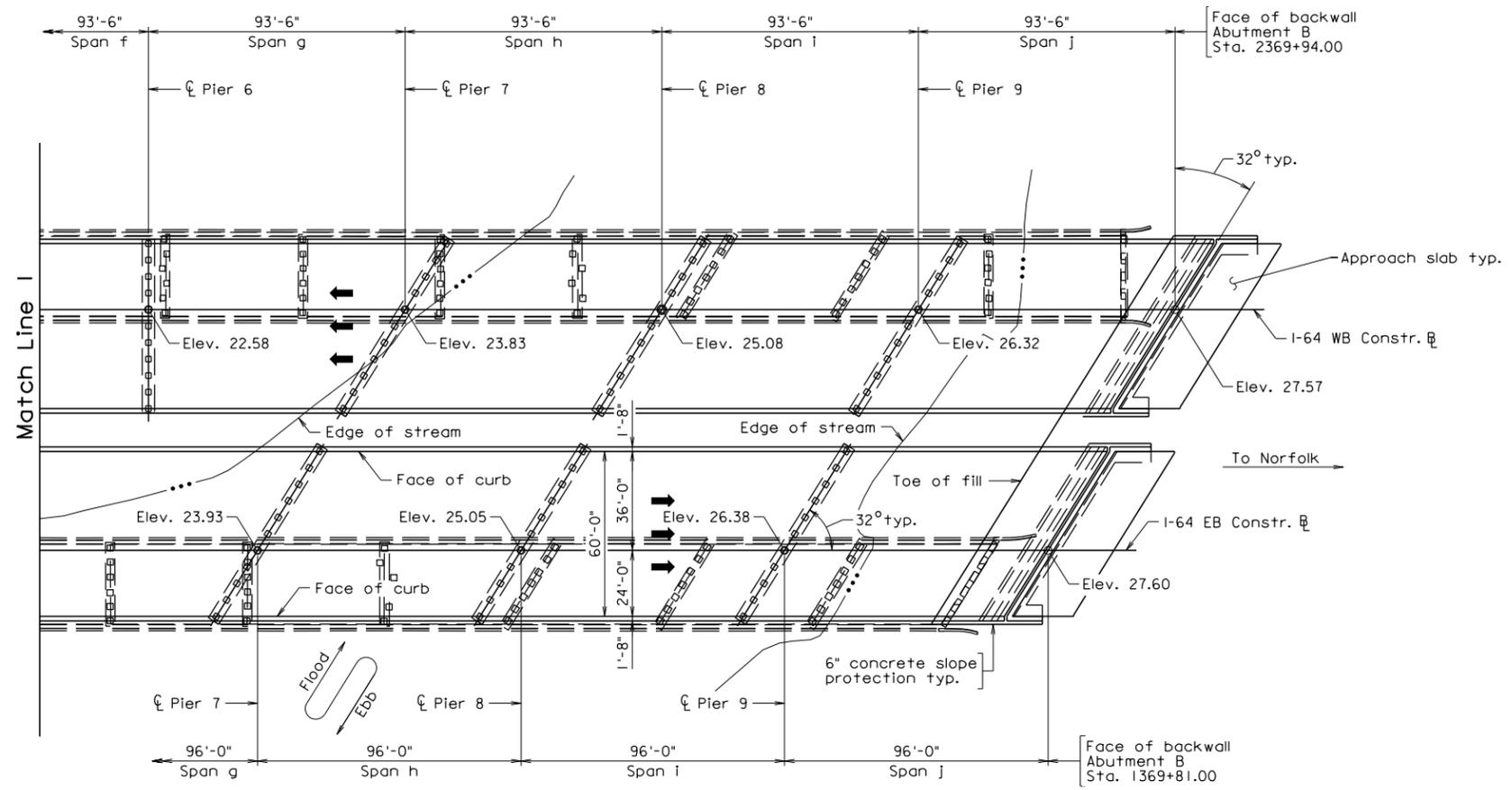
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No.	Description	Date
REVISIONS		
For Table of Revisions, see Sheet 2.		

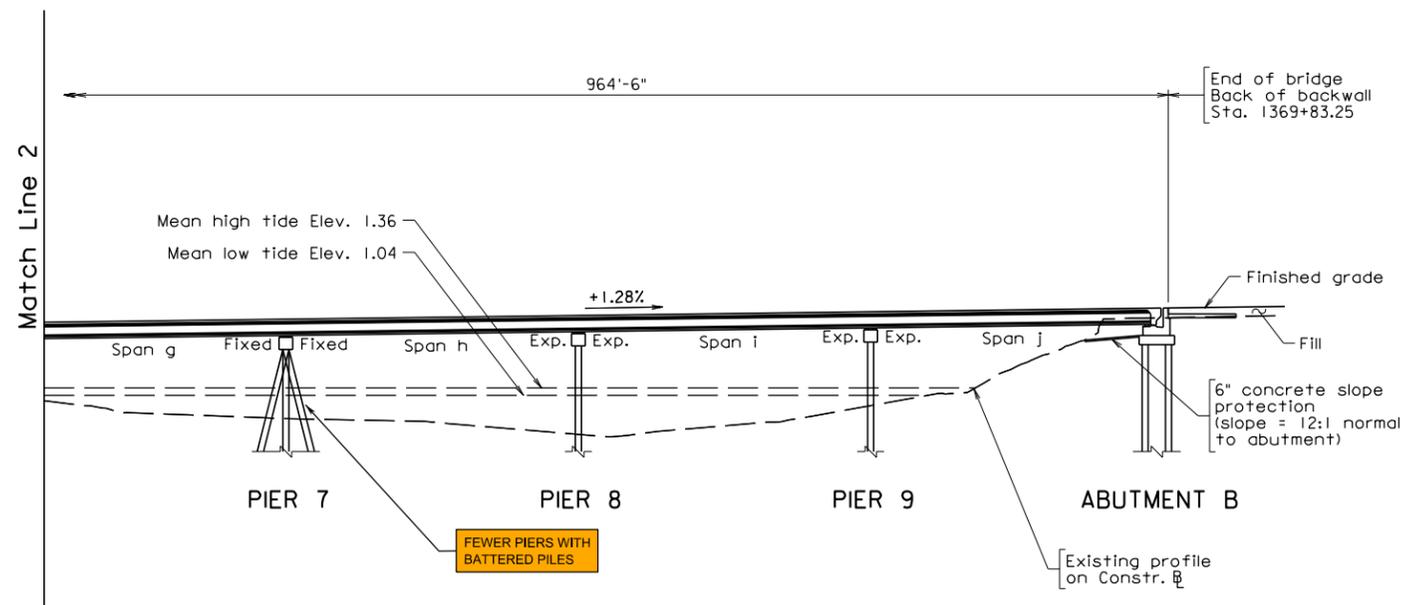
Recommended for Approval: _____
State Structure and Bridge Engineer Date

Approved: _____
Chief Engineer Date

STATE	FEDERAL AID	STATE	SHEET NO.
ROUTE	PROJECT	ROUTE	PROJECT
VA.		64	0064-965-229, B642, B643
			2



PLAN



DEVELOPED SECTION ALONG CONSTR. B
(Eastbound shown, Westbound similar)



PRELIMINARY PLANS
THESE PLANS NOT TO BE USED FOR CONSTRUCTION

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION				
STRUCTURE AND BRIDGE DIVISION				
GENERAL PLAN AND ELEVATION - 2 (I-64 OVER QUEENS CREEK)				
No.	Description	Date	Designed: MCV	Sheet No.
			Drawn: JFB	2
			Checked: SPA	
Revisions			Date	Plan No.
			Sept. 2017	

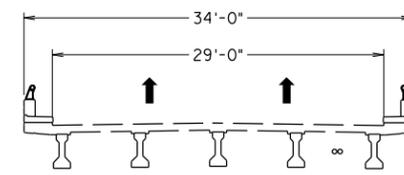
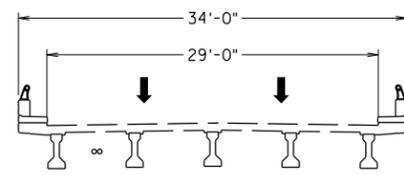
Queens Creek_002.dgn

RK&K
RICHMOND, VA
STRUCTURAL ENGINEER

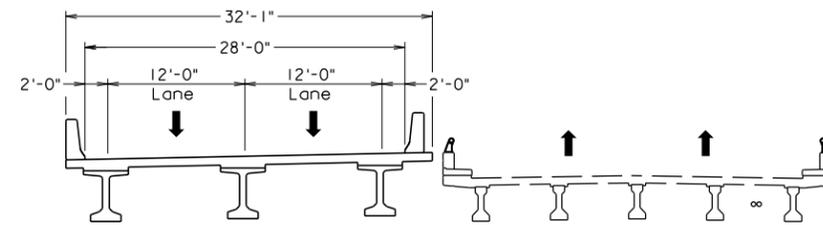
Scale: 1" = 30'

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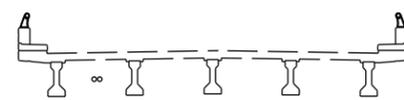
STATE	FEDERAL AID	STATE	SHEET NO.
ROUTE	PROJECT	ROUTE	PROJECT
VA.		64	0064-965-229, B642, B643
			3



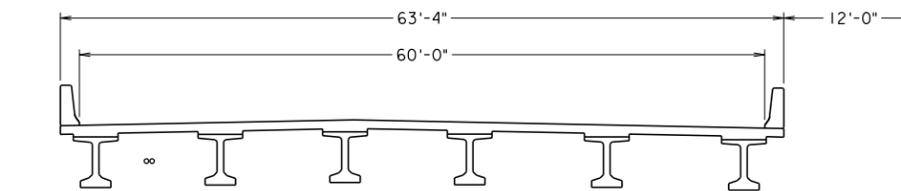
EXISTING CONDITION



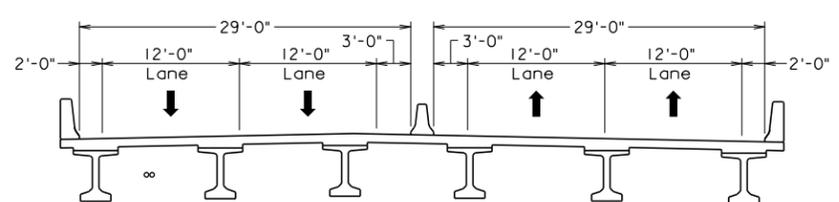
PHASE I CONSTRUCTION



PHASE I DEMOLITION



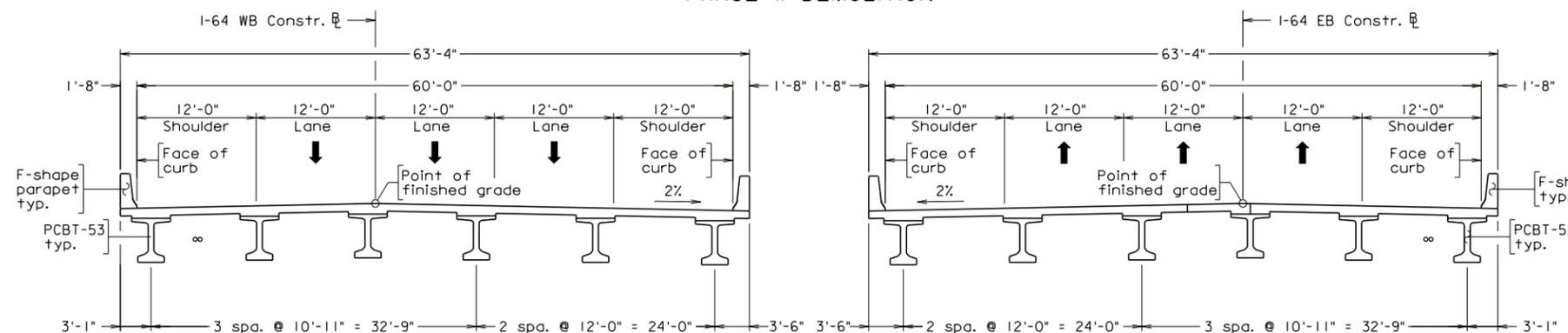
PHASE II CONSTRUCTION



PHASE II DEMOLITION



 Demolition of existing bridge



FINAL CONDITION

PRELIMINARY PLANS
THESE PLANS NOT TO BE USED FOR CONSTRUCTION



COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION STRUCTURE AND BRIDGE DIVISION			
SEQUENCE OF CONSTRUCTION (I-64 OVER QUEENS CREEK)			
No.	Description	Date	Sheet No.
	Designed: MCV	Date	Plan No.
	Drawn: JFB	Sept. 2017	163-16A
	Checked: SPA		3
Revisions			

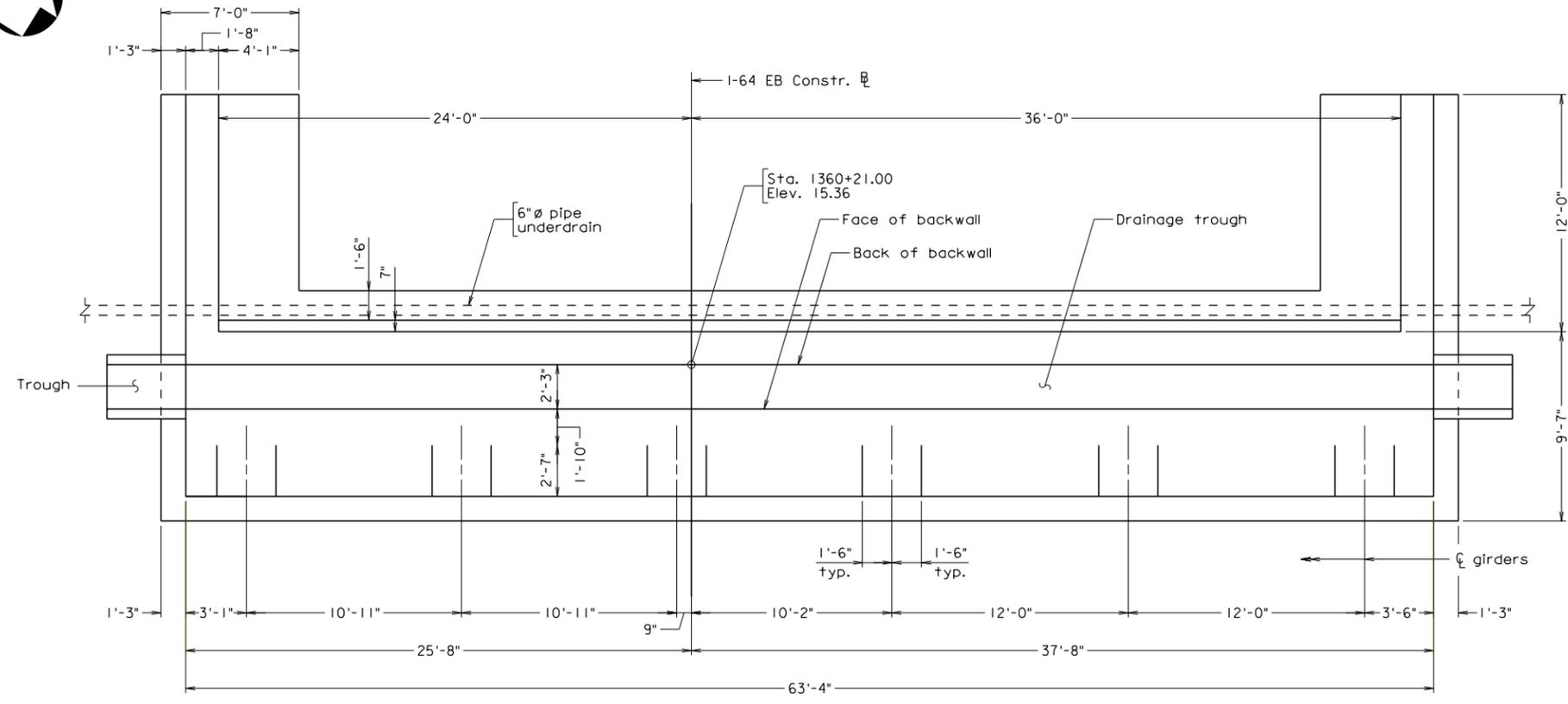
Queens Creek_003.dgn

RK&K
RICHMOND, VA
STRUCTURAL ENGINEER

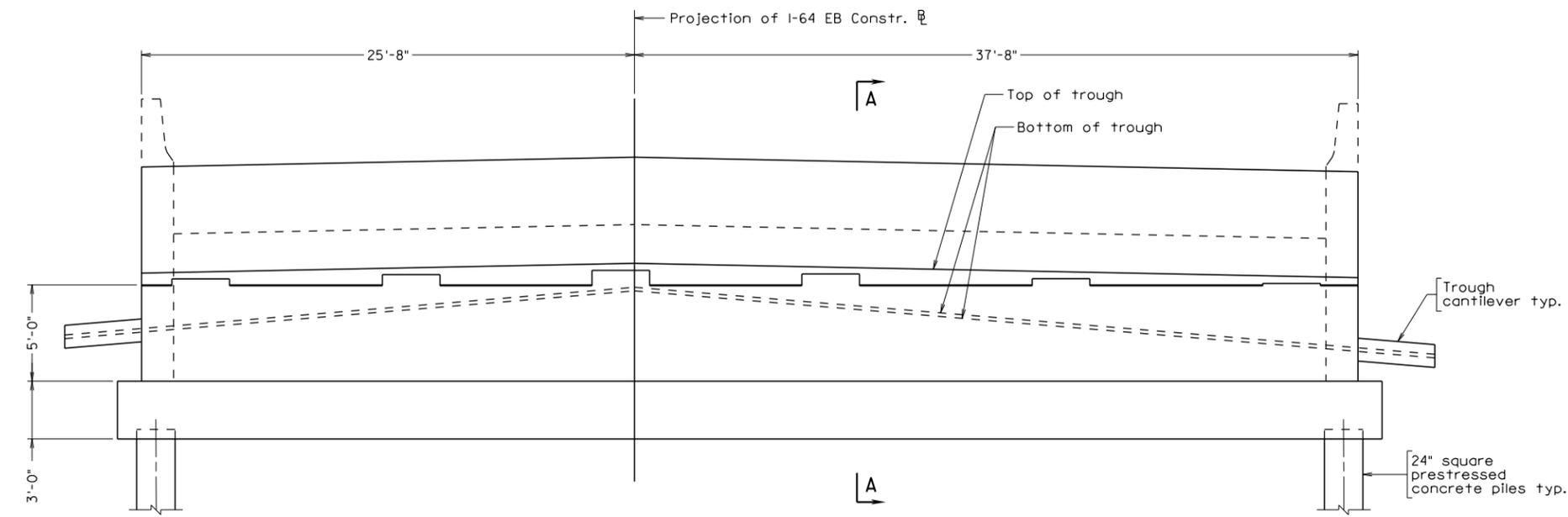
Scale: 1/8" = 1'-0"

© 2011, Commonwealth of Virginia

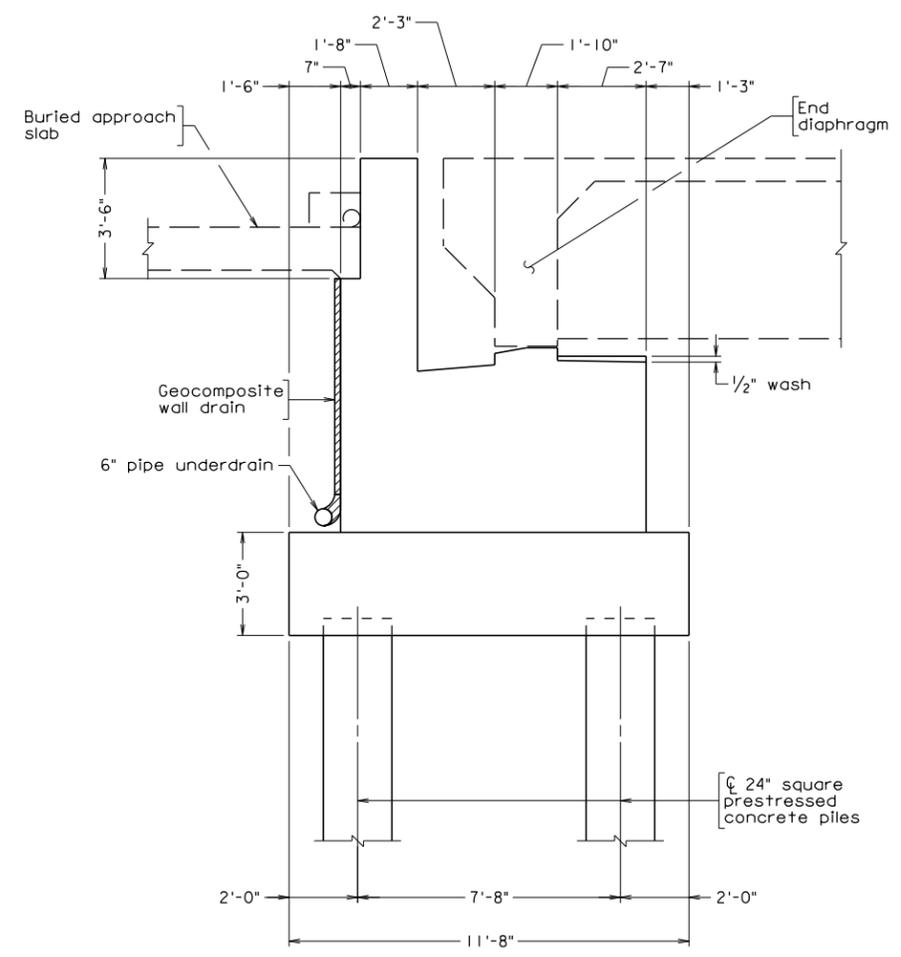
STATE	ROUTE	FEDERAL AID PROJECT	STATE ROUTE	PROJECT	SHEET NO.
VA.	—		64	0064-965-229, B642, B643	4



PLAN
(EB Abutment A shown, others similar)



ELEVATION



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



PRELIMINARY PLANS
THESE PLANS NOT TO BE USED FOR CONSTRUCTION

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION				
STRUCTURE AND BRIDGE DIVISION				
TYPICAL ABUTMENT (I-64 OVER QUEENS CREEK)				
No.	Description	Date	Designed: MCV.....	Plan No.
			Drawn: JFB.....	Sheet No.
			Checked: SPA.....	4
Revisions			Date: Sept. 2017	

Scale: 1/4" = 1'-0" unless otherwise noted

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Queens Creek_004.dgn

RK&K
RICHMOND, VA
STRUCTURAL ENGINEER

STATE	FEDERAL AID	STATE	SHEET NO.
ROUTE	PROJECT	ROUTE	PROJECT
VA.		64	0064-968-229, B638, B641
NBIS Number:	00000000019836 00000000019834	UPC No.	106689
Federal Oversight Code:	N/A	FHWA Construction and Scour Code:	X281-SN

DESIGN EXCEPTION(S):

None

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'-4" face-to-face of curbs.

Span layout: 1 unit of 77'-7" prestressed concrete 45" deep bulb T beam

Capacity: HL-93 loading.

Specifications:

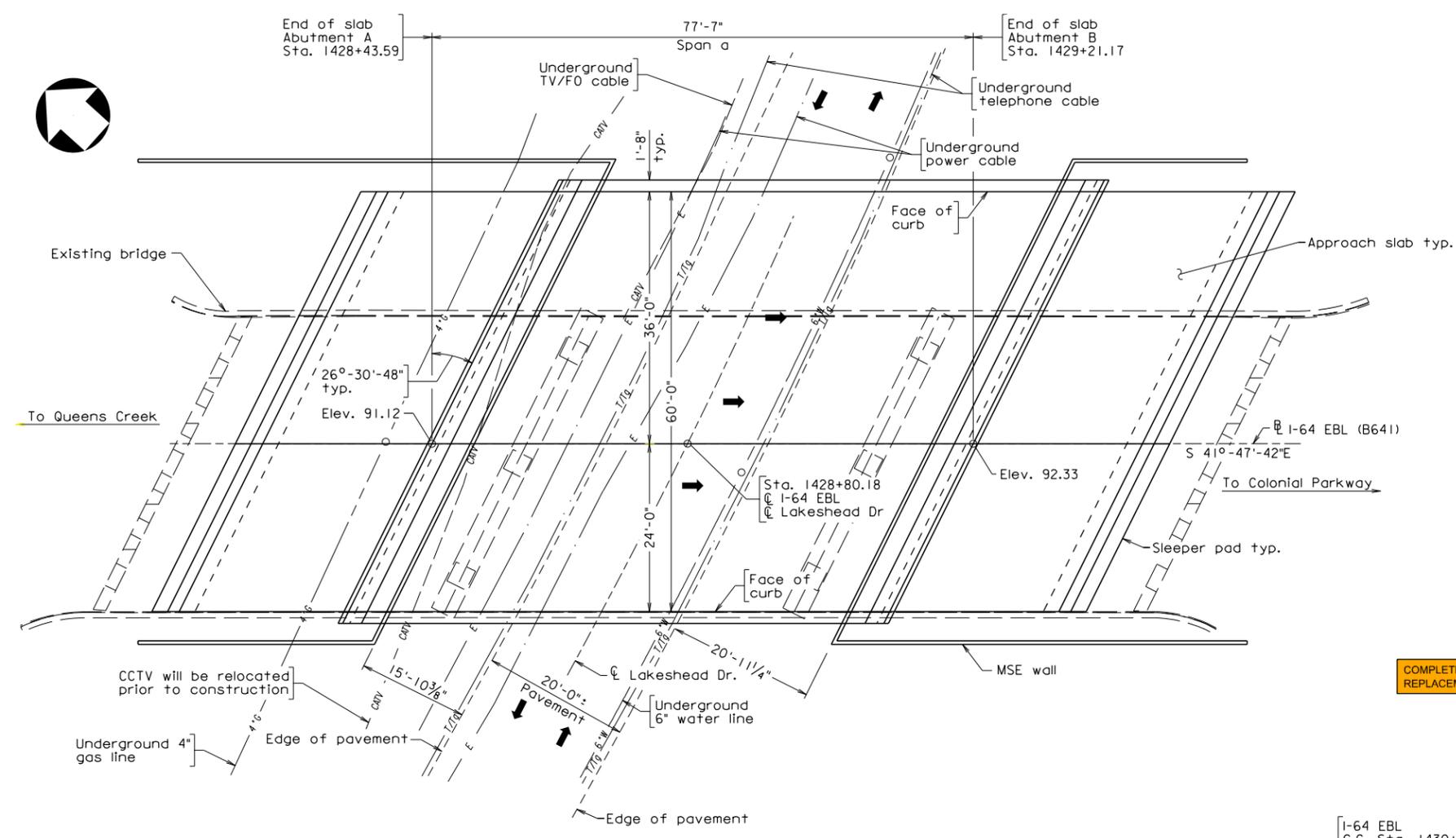
Construction: Virginia Department of Transportation Road and Bridge Specifications, 2016.

Design: AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014; and VDOT Modifications.

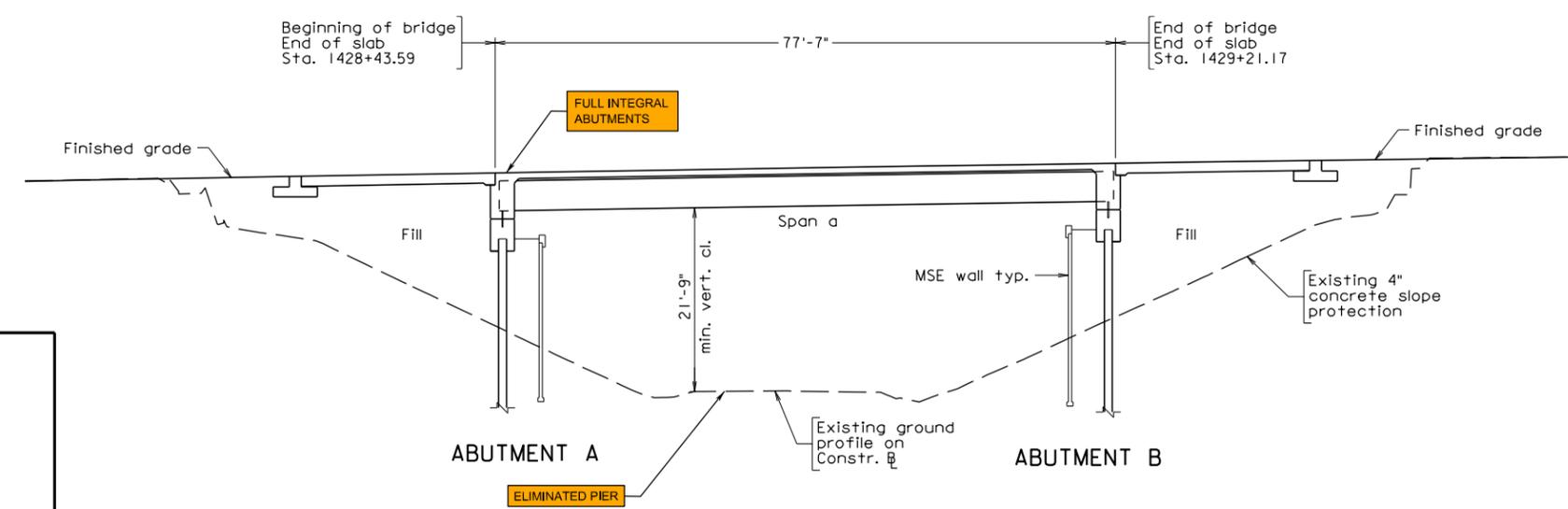
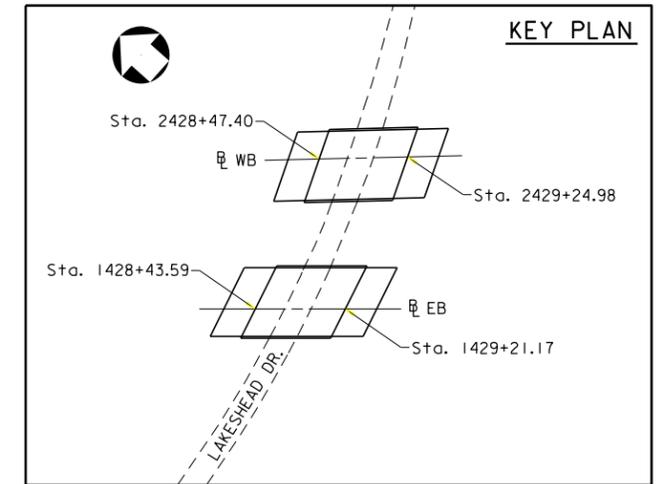
Standards: Virginia Department of Transportation Road and Bridge Standards, 2016; including all current revisions.

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

Bridge No. of existing bridge are 2004 (WB) and 2003 (EB). Plan No. is 163-18.



COMPLETE BRIDGE REPLACEMENT



DEVELOPED SECTION ALONG CONSTR. CL.
(Eastbound shown, Westbound similar)

PRELIMINARY PLANS
THESE PLANS NOT TO BE USED FOR CONSTRUCTION

Scale: 3/32" = 1'-0" unless otherwise noted

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

Recommended for Approval: _____
State Structure and Bridge Engineer Date

Approved: _____
Chief Engineer Date

Date: September 2017 © 2017, Commonwealth of Virginia Sheet 1 of 3

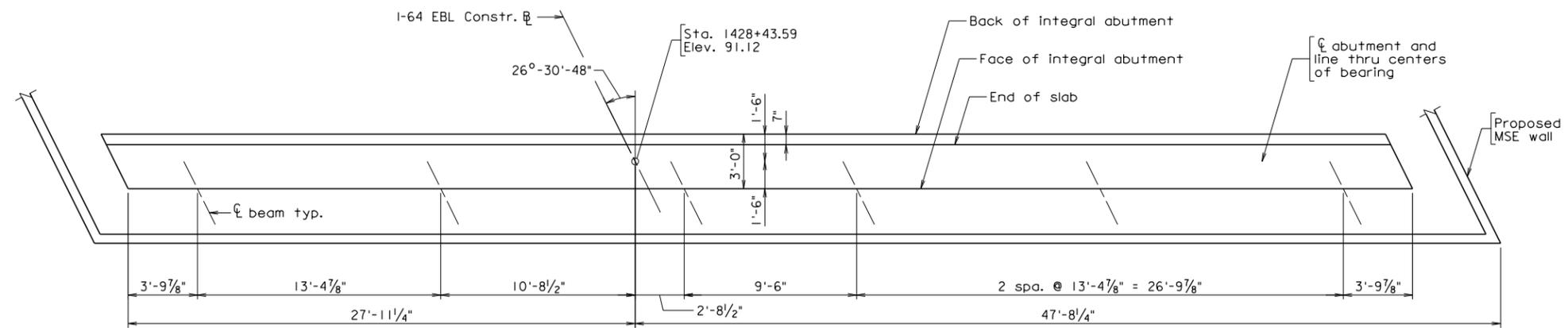
Lakeshead.001.dgn

RK&K RICHMOND, VA STRUCTURAL ENGINEER	
PLANS BY:	RK&K
COORDINATED:	
SUPERVISED:	
DESIGNED:	Sagar P. Adivarekar
DRAWN:	Jill R. Boxley
CHECKED:	M. Chris Vaught

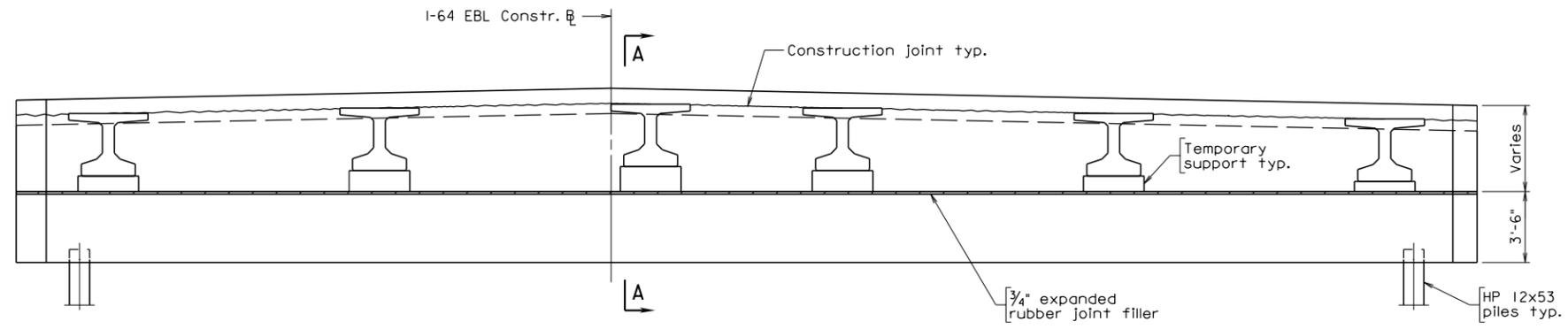


STATE	FEDERAL AID	STATE	SHEET NO.
ROUTE	PROJECT	ROUTE	PROJECT
VA.		64	0064-968-229, B638, B641
			3

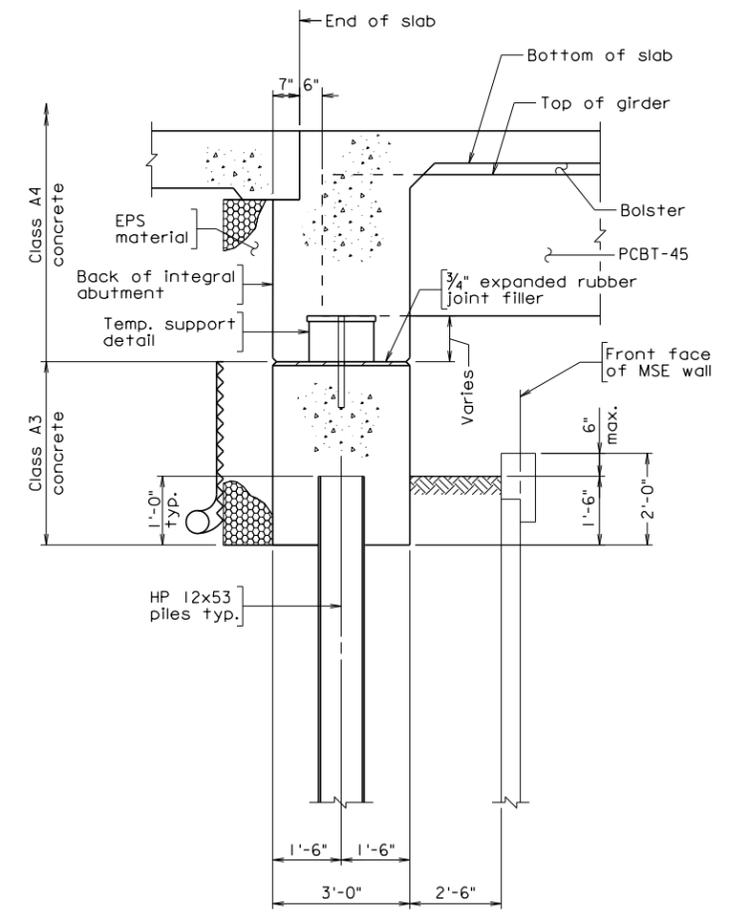
Notes:
All chamfers shall be 3/4".



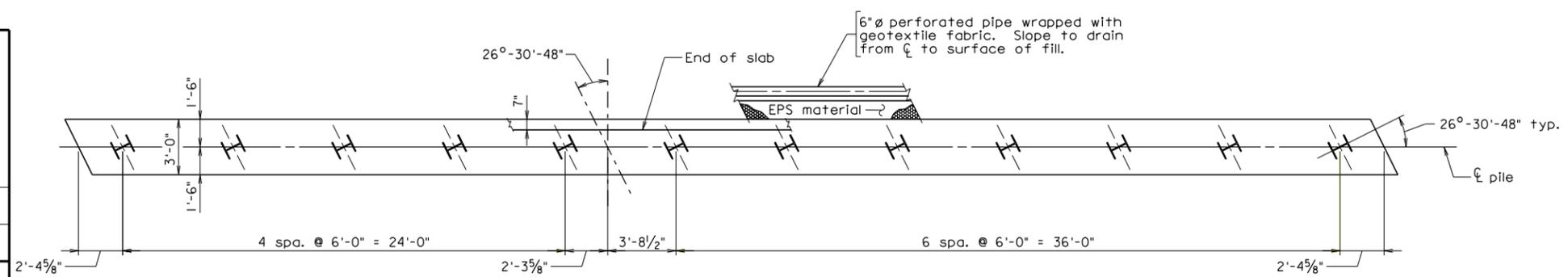
PLAN
(EB shown, WB opposite hand)
Abutment A shown, Abutment B similar



ELEVATION
(EB shown, WB opposite hand)
Abutment A shown, Abutment B similar

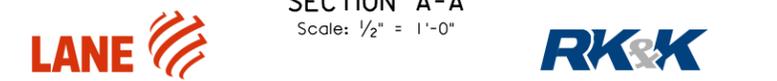


SECTION A-A
Scale: 1/2" = 1'-0"



FOOTING PLAN
(EB shown, WB opposite hand)
Abutment A shown, Abutment B similar

PRELIMINARY PLANS
THESE PLANS NOT TO BE USED FOR CONSTRUCTION



COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION	
STRUCTURE AND BRIDGE DIVISION	
ABUTMENT (I-64 OVER LAKESHEAD DRIVE)	
No.	Description
Revisions	
Designed: SPA	Date
Drawn: JBR	Sept. 2017
Checked: MXX	
Plan No.	Sheet No.
	3

Scale: 1/4" = 1'-0"

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Lakeshead_003.dgn

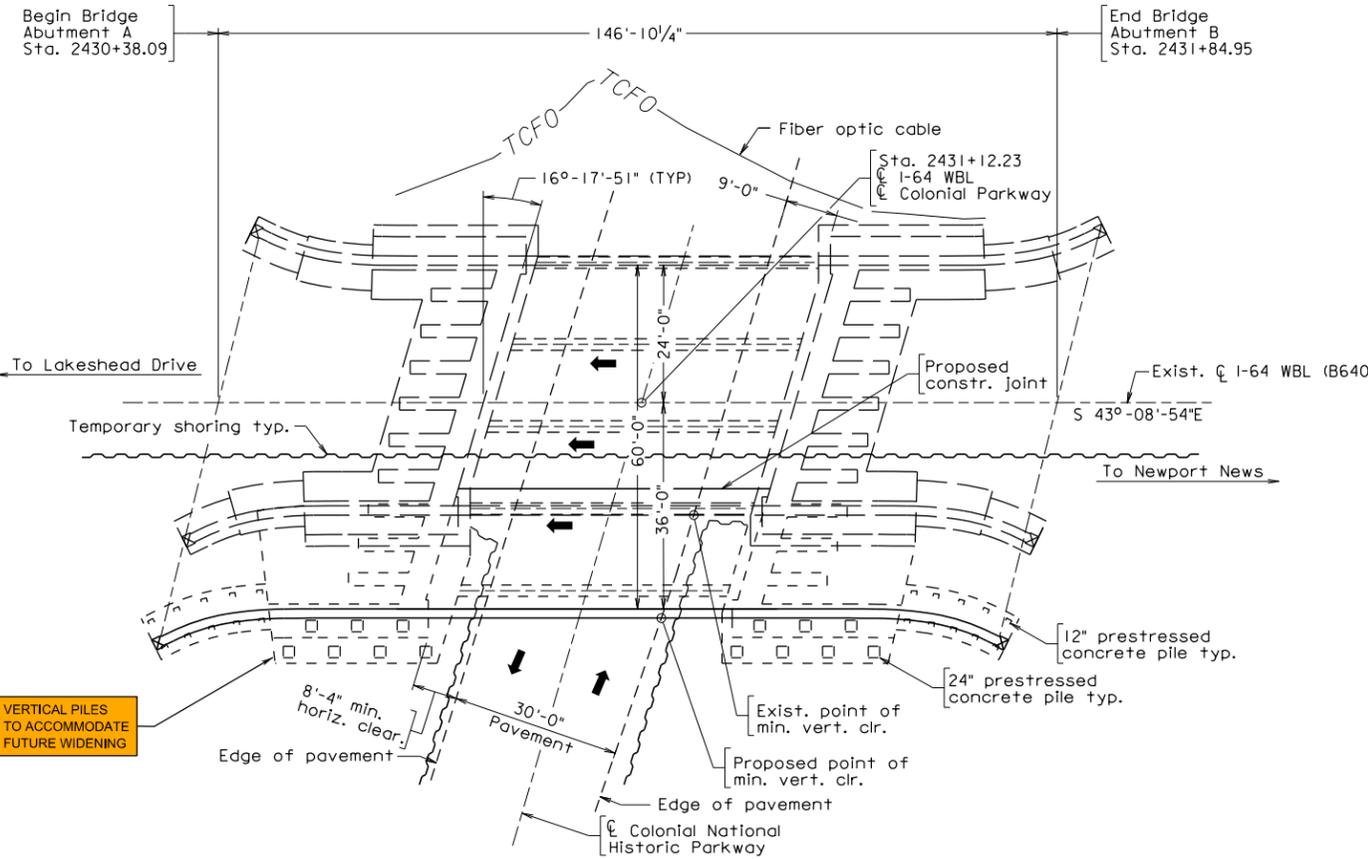
RK&K
RICHMOND, VA
STRUCTURAL ENGINEER

STATE	FEDERAL AID	STATE	SHEET NO.
VA.	PROJECT	ROUTE PROJECT	
		64 0064-965-229, B640, B639	I
NBIS Number: 00000000019840 00000000019838		UPC No. 106689	
Federal Oversight Code: N/A		FHWA Construction and Scour Code: X224-SN	

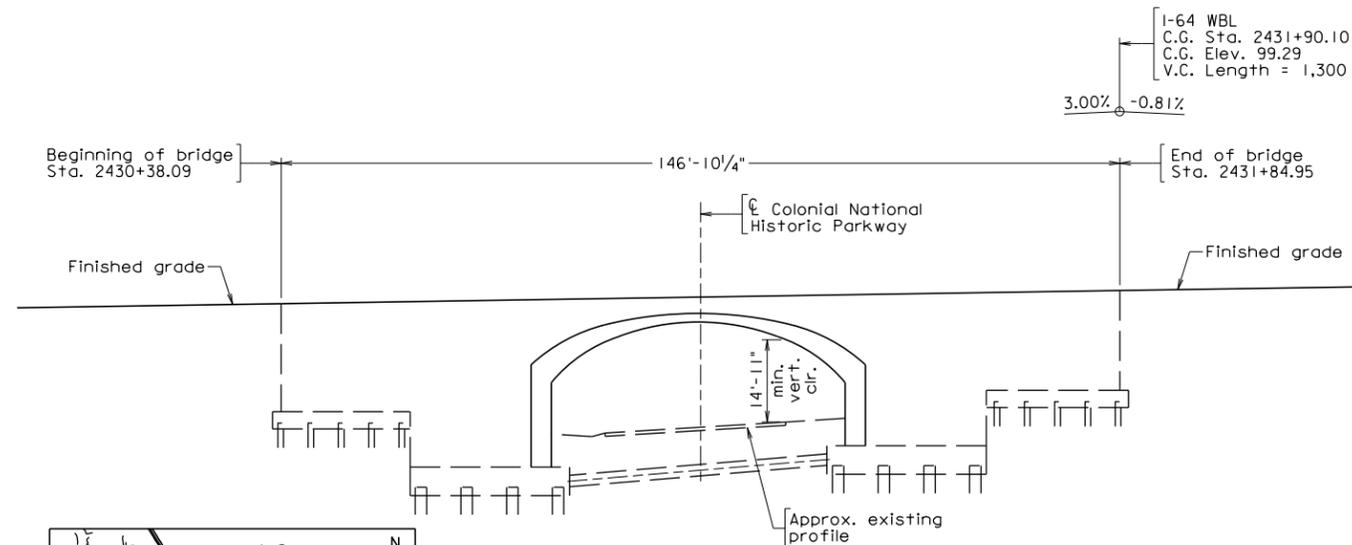
DESIGN EXCEPTION(S):

GENERAL NOTES:

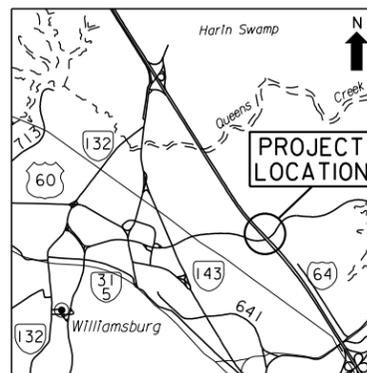
Width: 60'-0" face-to-face of rails.
 Span layout: 146'-10¹/₄" WBL, 150'-1³/₈" EBL
 Capacity: HL-93 loading. (Widened portion only)
 Specifications:
 Construction: Virginia Department of Transportation Road and Bridge Specifications, 2016.
 Design: AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014; and VDOT Modifications.
 Standards: Virginia Department of Transportation Road and Bridge Standards, 2016.
 These plans are incomplete unless accompanied by the Supplemental Specifications and Special Provisions included in the contract documents.
 Bridge No. of existing bridge are 2006 (WBL) and 2005 (EBL). Plan No. is 163-19.



PLAN - WBL



DEVELOPED SECTION ALONG WIDENING



LOCATION MAP
Not to scale

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



COMMONWEALTH OF VIRGINIA
 DEPARTMENT OF TRANSPORTATION
 PROPOSED BRIDGE WIDENING ON
 RTE. 64 OVER
 COLONIAL NATIONAL HISTORICAL PARKWAY
 YORK COUNTY
 PROJ. 0064-965-229

PRELIMINARY PLANS
 THESE PLANS NOT TO BE USED
 FOR CONSTRUCTION

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

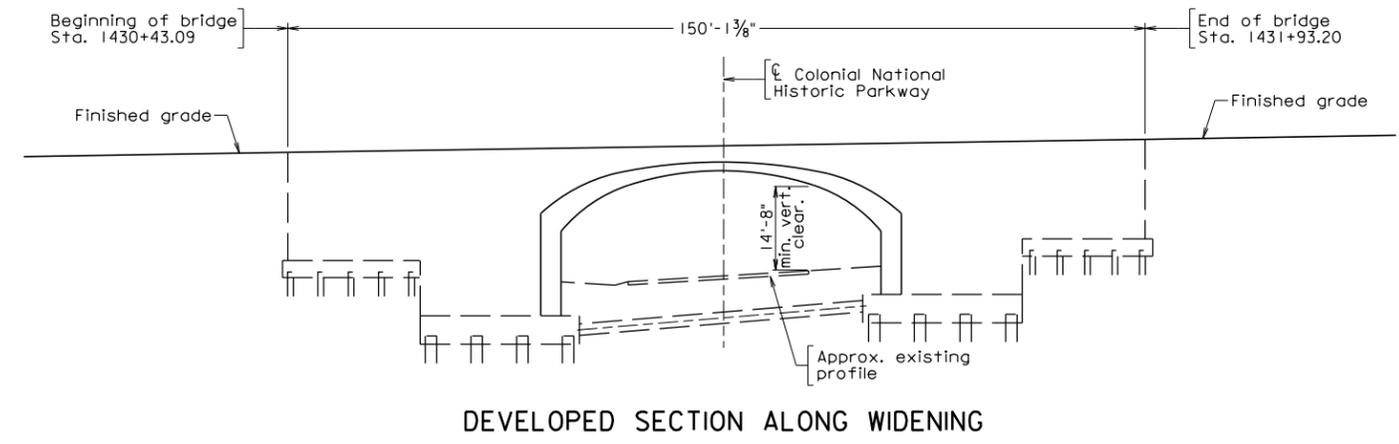
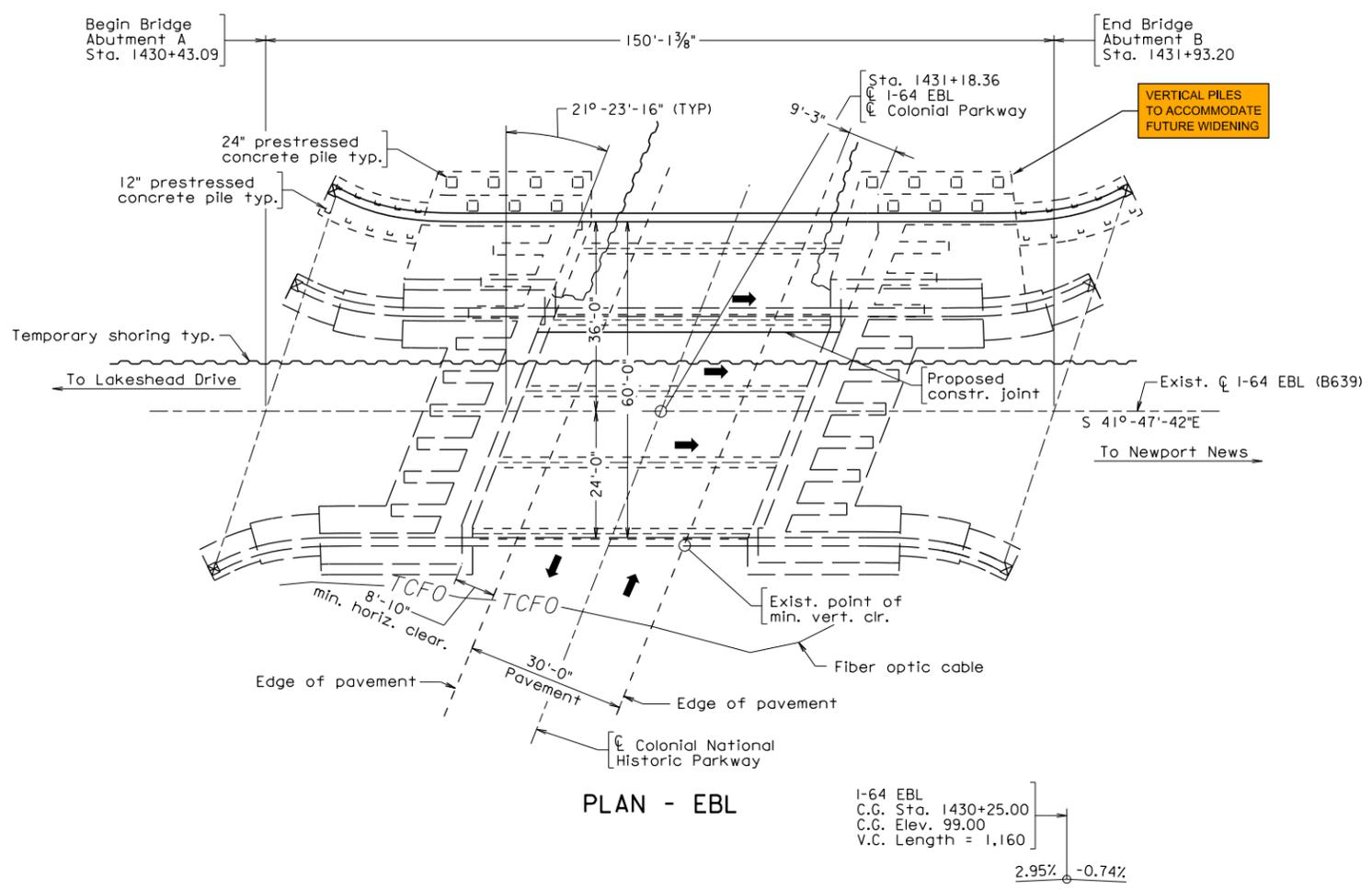
Recommended for Approval: _____ Date _____
 District Project Development Engineer

Approved: _____ Date _____
 District Administrator

CB-64 WB over Colonial Parkway.dgn

VOLKERT, INC. SPRINGFIELD, VA STRUCTURAL ENGINEER
PLANS BY:
COORDINATED:
SUPERVISED:
DESIGNED:
DRAWN:
CHECKED:

STATE	FEDERAL AID	STATE	SHEET NO.
ROUTE	PROJECT	ROUTE	PROJECT
VA.		64	0064-968-229, B640, B639
			2



PRELIMINARY PLANS
 THESE PLANS NOT TO BE USED FOR CONSTRUCTION



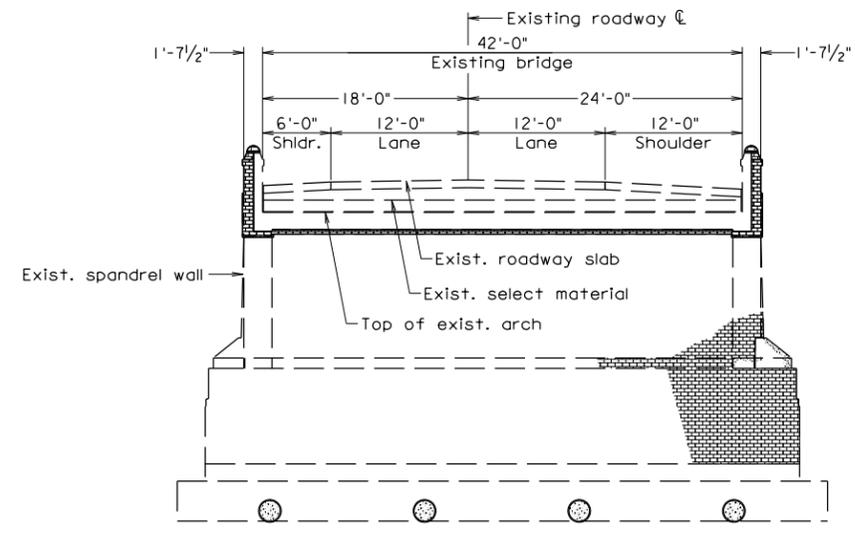
VOLKERT, INC.
 SPRINGFIELD, VA
 STRUCTURAL ENGINEER

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

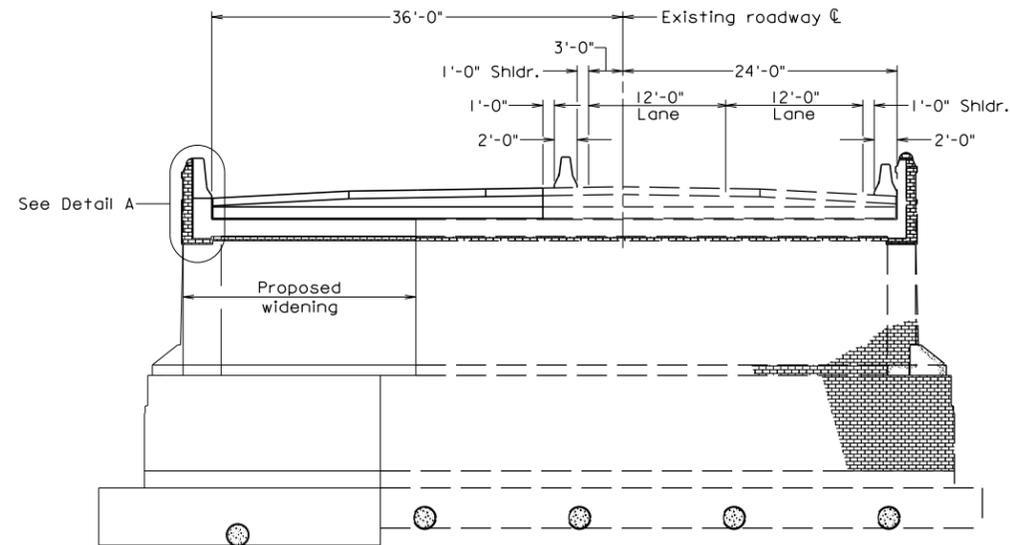
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COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION			
STRUCTURE AND BRIDGE DIVISION			
EBL PLAN AND SECTION (I-64 OVER COLONIAL PARKWAY)			
No.	Description	Date	Designed:
			Drawn:
			Checked:
			Date
			Plan No.
			Sheet No.
Revisions		Sept. 2017	163-19A
			2 of 3

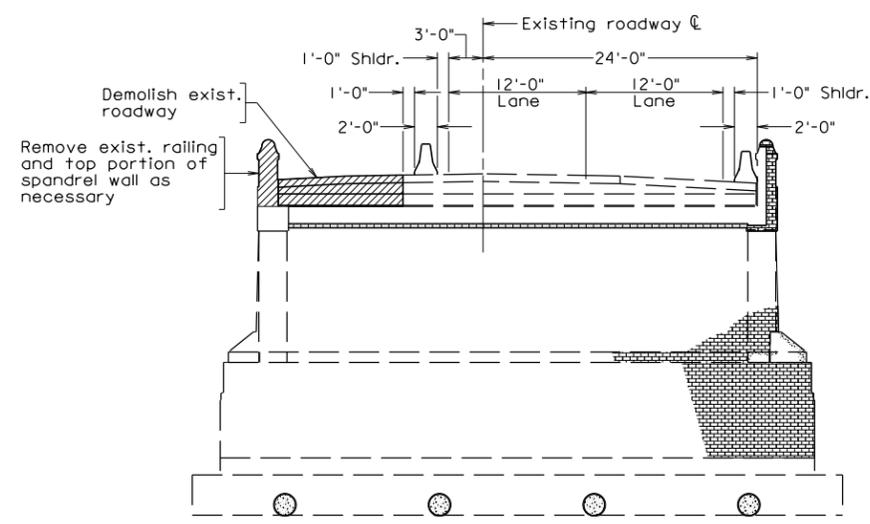
STATE	FEDERAL AID	STATE	SHEET NO.
ROUTE	PROJECT	ROUTE	PROJECT
VA.		64	0064-968-229, B640, B639
			3



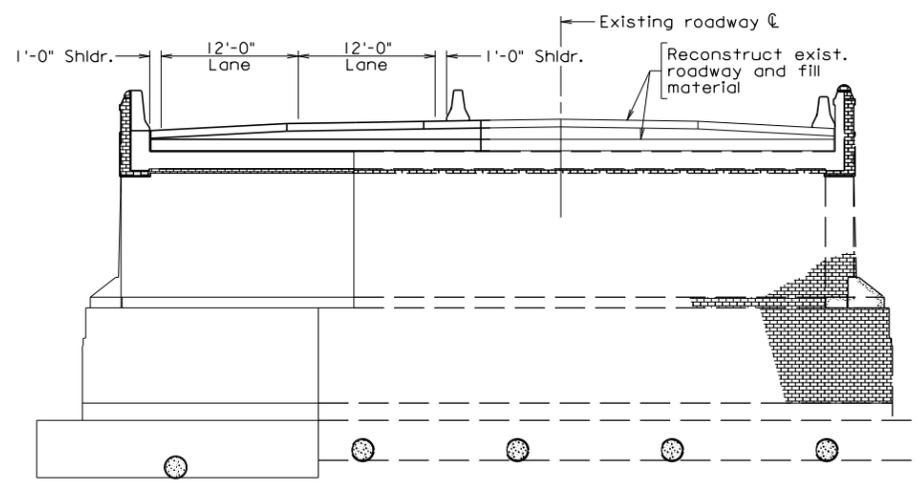
EXISTING BRIDGE - TRANSVERSE SECTION
(EBL shown, WBL opposite hand)



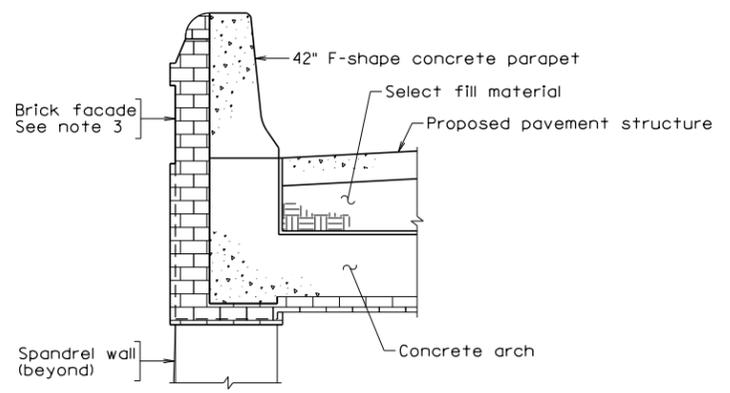
2 CONSTRUCTION - TRANSVERSE SECTION
(EBL shown, WBL opposite hand)



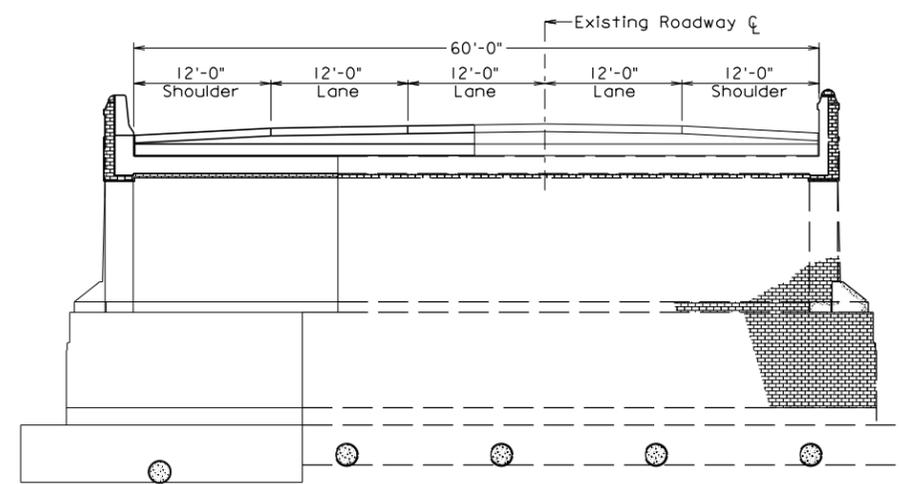
1 DEMOLITION - TRANSVERSE SECTION
(EBL shown, WBL opposite hand)



3 CONSTRUCTION - TRANSVERSE SECTION
(EBL shown, WBL opposite hand)



DETAIL A
(Not to scale)



4 FINAL - TRANSVERSE SECTION
(EBL shown, WBL opposite hand)

Notes:

- All sections shown looking station ahead (to the east).
- Sequence of Construction
 - Stage 1: Install temporary traffic controls and shift traffic towards the outside of the existing bridge, maintaining two 12'-0" lanes. Remove existing railing and spandrel wall as necessary and portion of the existing roadway from median side of existing bridge.
 - Stage 2: Construct proposed bridge widening by matching geometry of the existing arch. Proposed arch shall be cast-in-place concrete.
 - Stage 3: Shift traffic to the previously constructed widening, providing two 12'-0" lanes. Replace the remaining portion of the existing roadway and fill material.
 - Stage 4: Remove temporary barrier and shift traffic to final alignment.
- Masonry and aesthetics of proposed widening shall match the existing bridge in accordance with the special provision provided with the RFP, and must be approved by VDOT and the National Park Service.

PRELIMINARY PLANS
THESE PLANS NOT TO BE USED FOR CONSTRUCTION



COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION			
STRUCTURE AND BRIDGE DIVISION			
SEQUENCE OF CONSTRUCTION (I-64 OVER COLONIAL PARKWAY)			
No.	Description	Date	Designed:
			Drawn:
			Checked:
			Date
			Plan No.
			Sheet No.
			Sept. 2017
			163-19A
			3 of 3

Typ Section.64 over Colonial Parkway.dgn

VOLKERT, INC.
SPRINGFIELD, VA
STRUCTURAL ENGINEER

Activity ID	Activity Name	Original Duration	Start	Finish	2018																															2019												2020												2021					2022				
					Oct	N	D	Jan	F	M	Apr	M	Jun	Jul	A	S	Oct	N	D	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	D	Jan	F	M	Apr	M	Jun	Jul	A	S	Oct	N	D	Jan	F																								
I-64 Capacity Improvement - Segment III					771	30-Oct-17	06-Oct-21																																																														
A000-1000	Notice of Intent to Award	0	30-Oct-17*		◆ Notice of Intent to Award																																																																
A000-1010	CTB Approval / Notice to Award	0	06-Dec-17*		◆ CTB Approval / Notice to Award																																																																
A000-1020	Design-Build Contract Execution	0	09-Jan-18*		◆ Design-Build Contract Execution																																																																
A000-1030	NTP	0	17-Jan-18*		◆ NTP																																																																
A000-1040	Final Completion Milestone (9/24/2021)	0		06-Oct-21*																																																													◆ Final Completion Milestone				
Design					704	17-Jan-18	08-Sep-21																																																														
Early Design					704	17-Jan-18	08-Sep-21																																																														
Schedule Milestones					0																																																																
Scope Validation Period					112	17-Jan-18	16-Aug-18																																																														
D000-1040	Scope Validation Investigations	120	17-Jan-18	05-Jul-18	█ Scope Validation Investigations																																																																
D000-1050	Scope Validation Submission	0	06-Jul-18		◆ Scope Validation Submission																																																																
D000-1060	Scope Validation Discussions	30	06-Jul-18	16-Aug-18	█ Scope Validation Discussions																																																																
Environmental Permitting					211	17-Jan-18	16-Feb-19																																																														
D000-1070	Hazardous Materials Phase 1 (and Phase 2 if needed)	40	17-Jan-18	13-Mar-18	█ Hazardous Materials Phase 1 (and Phase 2 if needed)																																																																
D000-1080	Complete Wetland Delineations	40	17-Jan-18	13-Mar-18	█ Complete Wetland Delineations																																																																
D000-1100	Threatened and Endangered Species	20	17-Jan-18	13-Feb-18	█ Threatened and Endangered Species																																																																
D000-1110	Cultural Resources	20	17-Jan-18	13-Feb-18	█ Cultural Resources																																																																
D000-1170	Final Noise Study and Report	103	17-Jan-18	11-Jun-18	█ Final Noise Study and Report																																																																
D000-1150	VSMP Permit for Advance Package	90	20-Feb-18	20-May-18	█ VSMP Permit for Advance Package																																																																
D000-1090	Confirmed Jurisdictional Determination	120	14-Mar-18	11-Jul-18	█ Confirmed Jurisdictional Determination																																																																
D000-1120	Virginia Water Protection (VWP) Permit	150	21-Aug-18	17-Jan-19	█ Virginia Water Protection (VWP) Permit																																																																
D000-1130	VMRC Permit	90	21-Aug-18	18-Nov-18	█ VMRC Permit																																																																
D000-1140	USACE Individual Wetland Permit	180	21-Aug-18	16-Feb-19	█ USACE Individual Wetland Permit																																																																
D000-1160	VSMP Permit	90	21-Aug-18	18-Nov-18	█ VSMP Permit																																																																
Right of Way Acquisition					214	17-Jan-18	21-Feb-19																																																														
D000-2510	Right-of-Way Acquisition Plan	5	17-Jan-18	23-Jan-18	█ Right-of-Way Acquisition Plan																																																																
D000-2520	VDOT Review of ROW Acquisition Plan	21	24-Jan-18	13-Feb-18	█ VDOT Review of ROW Acquisition Plan																																																																
D000-2530	Comment Resolution & Revise	5	14-Feb-18	20-Feb-18	█ Comment Resolution & Revise																																																																
D000-2540	VDOT Approved as Final	0	21-Feb-18		◆ VDOT Approved as Final																																																																
D000-1180	Environmental Assessments Complete (Hold Point)	0	14-Mar-18		◆ Environmental Assessments Complete (Hold Point)																																																																
D000-1190	Title Research and Reports	20	20-Apr-18	17-May-18	█ Title Research and Reports																																																																
D000-1200	Appraisals	60	18-May-18	16-Jul-18	█ Appraisals																																																																
D000-1230	Prepare Right of Way Plans	30	25-May-18	09-Jul-18	█ Prepare Right of Way Plans																																																																
D000-1240	QA / QC Right of Way Plans	5	10-Jul-18	16-Jul-18	█ QA / QC Right of Way Plans																																																																
D000-1210	Appraisal Review	10	17-Jul-18	26-Jul-18	█ Appraisal Review																																																																
D000-1220	VDOT / FHWA Review and Approval of Appraisals	21	27-Jul-18	16-Aug-18	█ VDOT / FHWA Review and Approval of Appraisals																																																																
D000-1250	Submit RW Plans	0	17-Aug-18		◆ Submit RW Plans																																																																
D000-1260	VDOT / FHWA Review of Right of Way Plans	21	17-Aug-18	06-Sep-18	█ VDOT / FHWA Review of Right of Way Plans																																																																
D000-1270	Incorporate VDOT Comments to Right of Way Plans	15	07-Sep-18	27-Sep-18	█ Incorporate VDOT Comments to Right of Way Plans																																																																
D000-1280	VDOT / FHWA Review and Approval of Right of Way Plans	21	28-Sep-18	18-Oct-18	█ VDOT / FHWA Review and Approval of Right of Way Plans																																																																
D000-1290	Notice to Proceed with ROW Acquisition	0	19-Oct-18		◆ Notice to Proceed with ROW Acquisition																																																																
D000-1300	Offers / Negotiations	45	19-Oct-18	02-Dec-18	█ Offers / Negotiations																																																																
D000-1310	Certificates of Take	30	03-Dec-18	15-Jan-19	█ Certificates of Take																																																																
D000-1320	ROW Certified	5	16-Jan-19	22-Jan-19	█ ROW Certified																																																																
D000-1330	Recordations Completed	30	23-Jan-19	21-Feb-19	█ Recordations Completed																																																																
Public Involvements / Relations					1238	20-Apr-18	08-Sep-21																																																														
D000-2550	Conduct 1-3 Public Meetings	200	20-Apr-18	05-Nov-18	█ Conduct 1-3 Public Meetings																																																																
D000-2560	Hold First Responder Meetings	170	18-May-18	03-Nov-18	█ Hold First Responder Meetings																																																																
D000-2570	Coordinate with and Provide Updates to York County & City of Williamst	1200	28-May-18	08-Sep-21	█ Coordinate with and Provide Updates to York County & City of Williamst																																																																
D000-2580	Coordinate with and Provide Updates to VDOT for Construction Progress	1200	28-May-18	08-Sep-21	█ Coordinate with and Provide Updates to VDOT for Construction Progress																																																																
Utility Relocations (Private)					209	17-Jan-18	12-Feb-19																																																														
D000-1340	Prepare UT9 Forms for Each Utility	20	17-Jan-18	13-Feb-18	█ Prepare UT9 Forms for Each Utility																																																																
D000-1350	Preliminary Utility Status Report	0	17-Jan-18		◆ Preliminary Utility Status Report																																																																
D000-1360	Meet with VDOT Regional Utility Manager	0	17-Jan-18		◆ Meet with VDOT Regional Utility Manager																																																																
D000-1370	UFI Meeting - All Utilities	0	22-Aug-18		◆ UFI Meeting - All Utilities																																																																
Virginia Natural Gas					95	22-Aug-18	12-Feb-19																																																														
D000-1380	UT-9 Review and PE Estimate	15	22-Aug-18	12-Sep-18	█ UT-9 Review and PE Estimate																																																																
D000-1390	Utility Design	35	13-Sep-18	31-Oct-18	█ Utility Design																																																																

█ Remaining Level of Effort █ Remaining Work ◆ Milestone
█ Actual Work █ Critical Remaining Work

Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020												2021												2022				
					Oct	N	D	Jan	F	M	Apr	M	Jun	Jul	A	S	Oct	N	D	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	D	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	D	Jan	F	M	Apr	M	Jun	Jul	A	S	Oct	N	D	Jan	F
C160-1000	Start Milestone, Ph 1 Bridge B-642	0	17-Feb-19														◆ Start Milestone, Ph1 Bridge B-642																																								
C160-1010	Install E&S, Clear & Site Prep, Ph 1 Bridge B-642	5	18-Feb-19	25-Feb-19													■ Install E&S, Clear & Site Prep, Ph 1 Bridge B-642																																								
C160-1020	Build Construct Access, Ph 1 Bridge B-642	5	26-Feb-19	05-Mar-19													■ Build Construct Access, Ph1 Bridge B-642																																								
C160-1490	Construct Approach Slab, Ph 1 Bridge B-642	5	25-Oct-19	31-Oct-19																									■ Construct Approach Slab, Ph 1 Bridge B-642																												
C160-1500	Install Underdeck Conduits, Ph 1 Bridge B-642	10	25-Oct-19	11-Nov-19																									■ Install Underdeck Conduits, Ph 1 Bridge B-642																												
C160-1520	Construct Approach Roadway, Ph 1 Bridge B-642	5	01-Nov-19	11-Nov-19																									■ Construct Approach Roadway, Ph 1 Bridge B-642																												
C160-1860	Construct Crossover, Ph 1 Bridge B-642	10	01-Nov-19	20-Nov-19																									■ Construct Crossover, Ph 1 Bridge B-642																												
C160-1040	Remove Construct Access & Restore Area, Ph 1 Bridge B-642	5	14-Nov-19	20-Nov-19																									■ Remove Construct Access & Restore Area, Ph 1 Bridge B-642																												
C160-1510	Groove Deck, Ph 1 Bridge B-642	3	19-Nov-19	21-Nov-19																									■ Groove Deck, Ph 1 Bridge B-642																												
C160-1530	Install Guardrail, Ph 1 Bridge B-642	2	19-Nov-19	20-Nov-19																									■ Install Guardrail, Ph 1 Bridge B-642																												
C160-1540	Finish Milestone, Ph 1 Bridge B-642	0		21-Nov-19																																					◆ Finish Milestone, Ph 1 Bridge B-642																
Substructure		109	06-Mar-19	01-Oct-19																																																					
Abut A		29	06-Mar-19	29-Apr-19																																																					
C160-1070	Install Piles - Abut A, Ph 1 Bridge B-642	6	06-Mar-19	18-Mar-19													■ Install Piles - Abut A, Ph 1 Bridge B-642																																								
C160-1080	Construct Abut A, Ph 1 Bridge B-642	20	21-Mar-19	22-Apr-19													■ Construct Abut A, Ph 1 Bridge B-642																																								
C160-1085	Cure Abut A, Ph 1 Bridge B-642	5	23-Apr-19	27-Apr-19													■ Cure Abut A, Ph 1 Bridge B-642																																								
C160-1090	Construct Riprap Abut A, Ph 1 Bridge B-642	3	25-Apr-19	29-Apr-19													■ Construct Riprap Abut A, Ph 1 Bridge B-642																																								
Pier 1		10	21-Mar-19	06-Apr-19																																																					
C160-1550	Install Trestle - Pier 1, Ph 1 Bridge B-642	4	21-Mar-19	26-Mar-19													■ Install Trestle - Pier 1, Ph 1 Bridge B-642																																								
C160-1100	Install Piles - Pier 1, Ph 1 Bridge B-642	2	28-Mar-19	29-Mar-19													■ Install Piles - Pier 1, Ph 1 Bridge B-642																																								
C160-1110	Construct Pier 1, Ph 1 Bridge B-642	2	01-Apr-19	03-Apr-19													■ Construct Pier 1, Ph 1 Bridge B-642																																								
C160-1115	Cure Pier 1, Ph 1 Bridge B-642	3	04-Apr-19	06-Apr-19													■ Cure Pier 1, Ph 1 Bridge B-642																																								
Pier 2		10	04-Apr-19	18-Apr-19																																																					
C160-1560	Install Trestle - Pier 2, Ph 1 Bridge B-642	3	04-Apr-19	08-Apr-19													■ Install Trestle - Pier 2, Ph 1 Bridge B-642																																								
C160-1120	Install Piles - Pier 2, Ph 1 Bridge B-642	3	09-Apr-19	11-Apr-19													■ Install Piles - Pier 2, Ph 1 Bridge B-642																																								
C160-1130	Construct Pier 2, Ph 1 Bridge B-642	2	12-Apr-19	15-Apr-19													■ Construct Pier 2, Ph 1 Bridge B-642																																								
C160-1135	Cure Pier 2, Ph 1 Bridge B-642	3	16-Apr-19	18-Apr-19													■ Cure Pier 2, Ph 1 Bridge B-642																																								
Pier 3		11	16-Apr-19	03-May-19																																																					
C160-1570	Install Trestle - Pier 3, Ph 1 Bridge B-642	3	16-Apr-19	19-Apr-19													■ Install Trestle - Pier 3, Ph 1 Bridge B-642																																								
C160-1140	Install Piles - Pier 3, Ph 1 Bridge B-642	3	22-Apr-19	26-Apr-19													■ Install Piles - Pier 3, Ph 1 Bridge B-642																																								
C160-1150	Construct Pier 3, Ph 1 Bridge B-642	2	29-Apr-19	30-Apr-19													■ Construct Pier 3, Ph 1 Bridge B-642																																								
C160-1155	Cure Pier 3, Ph 1 Bridge B-642	3	01-May-19	03-May-19													■ Cure Pier 3, Ph 1 Bridge B-642																																								
Pier 4		10	01-May-19	17-May-19																																																					
C160-1580	Install Trestle - Pier 4, Ph 1 Bridge B-642	3	01-May-19	03-May-19													■ Install Trestle - Pier 4, Ph 1 Bridge B-642																																								
C160-1160	Install Piles - Pier 4, Ph 1 Bridge B-642	3	06-May-19	10-May-19													■ Install Piles - Pier 4, Ph 1 Bridge B-642																																								
C160-1170	Construct Pier 4, Ph 1 Bridge B-642	2	13-May-19	14-May-19													■ Construct Pier 4, Ph 1 Bridge B-642																																								
C160-1175	Cure Pier 4, Ph 1 Bridge B-642	3	15-May-19	17-May-19													■ Cure Pier 4, Ph 1 Bridge B-642																																								
Pier 5		19	16-May-19	22-Jun-19																																																					
C160-1590	Install Trestle - Pier 5, Ph 1 Bridge B-642	3	16-May-19	20-May-19													■ Install Trestle - Pier 5, Ph 1 Bridge B-642																																								
C160-1180	Install Piles - Pier 5, Ph 1 Bridge B-642	3	22-May-19	28-May-19													■ Install Piles - Pier 5, Ph 1 Bridge B-642																																								
C160-1190	Construct Pier 5, Ph 1 Bridge B-642	10	29-May-19	17-Jun-19													■ Construct Pier 5, Ph 1 Bridge B-642																																								
C160-1195	Cure Pier 5, Ph 1 Bridge B-642	5	18-Jun-19	22-Jun-19													■ Cure Pier 5, Ph 1 Bridge B-642																																								
Pier 6		9	31-May-19	17-Jun-19																																																					
C160-1600	Install Trestle - Pier 6, Ph 1 Bridge B-642	3	31-May-19	04-Jun-19													■ Install Trestle - Pier 6, Ph 1 Bridge B-642																																								
C160-1200	Install Piles - Pier 6, Ph 1 Bridge B-642	3	06-Jun-19	11-Jun-19													■ Install Piles - Pier 6, Ph 1 Bridge B-642																																								
C160-1210	Construct Pier 6, Ph 1 Bridge B-642	2	12-Jun-19	14-Jun-19													■ Construct Pier 6, Ph 1 Bridge B-642																																								
C160-1215	Cure Pier 6, Ph 1 Bridge B-642	3	15-Jun-19	17-Jun-19													■ Cure Pier 6, Ph 1 Bridge B-642																																								
Pier 7		9	17-Jun-19	04-Jul-19																																																					
C160-1610	Install Trestle - Pier 7, Ph 1 Bridge B-642	3	17-Jun-19	20-Jun-19													■ Install Trestle - Pier 7, Ph 1 Bridge B-642																																								
C160-1220	Install Piles - Pier 7, Ph 1 Bridge B-642	3	21-Jun-19	26-Jun-19													■ Install Piles - Pier 7, Ph 1 Bridge B-642																																								
C160-1230	Construct Pier 7, Ph 1 Bridge B-642	2	28-Jun-19	01-Jul-19													■ Construct Pier 7, Ph 1 Bridge B-642																																								
C160-1235	Cure Pier 7, Ph 1 Bridge B-642	3	02-Jul-19	04-Jul-19													■ Cure Pier 7, Ph 1 Bridge B-642																																								
Pier 8		9	02-Jul-19	22-Jul-19																																																					
C160-1620	Install Trestle - Pier 8, Ph 1 Bridge B-642	3	02-Jul-19	08-Jul-19													■ Install Trestle - Pier 8, Ph 1 Bridge B-642																																								
C160-1240	Install Piles - Pier 8, Ph 1 Bridge B-642	3	10-Jul-19	15-Jul-19													■ Install Piles - Pier 8, Ph 1 Bridge B-642																																								
C160-1250	Construct Pier 8, Ph 1 Bridge B-642	2	16-Jul-19	19-Jul-19													■ Construct Pier 8, Ph 1 Bridge B-642																																								
C160-1255	Cure Pier 8, Ph 1 Bridge B-642	3	20-Jul-19	22-Jul-19													■ Cure Pier 8, Ph 1 Bridge B-642																																								
Pier 9		10	22-Jul-19	07-Aug-19																																																					
C160-1630	Install Trestle - Pier 9, Ph 1 Bridge B-642	3	22-Jul-19	25-Jul-19													■ Install Trestle - Pier 9, Ph 1 Bridge B-642																																								
C160-1260	Install Piles - Pier 9, Ph 1 Bridge B-642	3	26-Jul-19	31-Jul-19													■ Install Piles - Pier 9, Ph 1 Bridge B-642																																								

■ Remaining Level of Effort ■ Remaining Work ◆ Milestone
■ Actual Work ■ Critical Remaining Work

Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020												2021												2022																										
					Oct	N	D	Jan	F	M	Apr	M	Jun	Jul	A	S	Oct	N	D	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	D	Jan	F	M	Apr	M	Jun	Jul	A	S	Oct	N	D	Jan	F																																		
C260A2630	Construct Deck Unit 2, Ph 2A Bridge B-643	35	13-Aug-20	13-Oct-20																																																	Construct Deck Unit 2, Ph 2A Bridge B-643																										
C260A2670	Erect Girders Span 10, Ph 2A Bridge B-643	1	21-Sep-20	21-Sep-20																																																	Erect Girders Span 10, Ph 2A Bridge B-643																										
C260A2680	Construct End Diaphragm Abut B, Ph 2A Bridge B-643	8	22-Sep-20	05-Oct-20																																																	Construct End Diaphragm Abut B, Ph 2A Bridge B-643																										
C260A2690	Cure Deck Unit 2, Ph 2A Bridge B-643	7	14-Oct-20	20-Oct-20																																																	Cure Deck Unit 2, Ph 2A Bridge B-643																										
C260A2700	Construct Parapets, Ph 2A Bridge B-643	5	23-Oct-20	29-Oct-20																																																	Construct Parapets, Ph 2A Bridge B-643																										
Phase 2B - Bridge B-643 (Queens Creek EB)					111	15-May-20	11-Dec-20																																																	◆ Start Milestone, Ph 2B Bridge B-643																							
C260B1000	Start Milestone, Ph 2B Bridge B-643	0	15-May-20																																																		◆ Start Milestone, Ph 2B Bridge B-643																										
C260B1810	Move Crane to Bridge Deck, Ph 2B Bridge B-643	2	15-May-20	18-May-20																																																	■ Move Crane to Bridge Deck, Ph 2B Bridge B-643																										
C260B1320	Construct Approach Slab, Ph 2B Bridge B-643	5	01-Oct-20	08-Oct-20																																																	■ Construct Approach Slab, Ph 2B Bridge B-643																										
C260B1330	Install Underdeck Conduits, Ph 2B Bridge B-643	10	01-Oct-20	16-Oct-20																																																	■ Install Underdeck Conduits, Ph 2B Bridge B-643																										
C260B1820	Construct Crossover, Ph 2B Bridge B-643	10	01-Oct-20	16-Oct-20																																																	■ Construct Crossover, Ph 2B Bridge B-643																										
C260B1350	Construct Approach Roadway, Ph 2B Bridge B-643	5	09-Oct-20	16-Oct-20																																																	■ Construct Approach Roadway, Ph 2B Bridge B-643																										
C260B1030	Remove Construct Access & Restore Area, Ph 2B Bridge B-643	5	19-Oct-20	27-Oct-20																																																	■ Remove Construct Access & Restore Area, Ph 2B Bridge B-643																										
C260B1340	Groove Deck, Ph 2B Bridge B-643	3	08-Dec-20	11-Dec-20																																																	■ Groove Deck, Ph 2B Bridge B-643																										
C260B1360	Install Guardrail, Ph 2B Bridge B-643	2	08-Dec-20	10-Dec-20																																																	■ Install Guardrail, Ph 2B Bridge B-643																										
C260B1370	Finish Milestone, Ph 2B Bridge B-643	0		11-Dec-20																																																	◆ Finish Milestone, Ph 2B Bridge B-643																										
Trestle					51	01-Jun-20	03-Sep-20																																																																								
C260B1710	Remove Trestle - Pier 1, Ph 2B Bridge B-643	2	01-Jun-20	02-Jun-20																																																	■ Remove Trestle - Pier 1, Ph 2B Bridge B-643																										
C260B1720	Remove Trestle - Pier 2, Ph 2B Bridge B-643	2	12-Jun-20	15-Jun-20																																																	■ Remove Trestle - Pier 2, Ph 2B Bridge B-643																										
C260B1730	Remove Trestle - Pier 3, Ph 2B Bridge B-643	2	24-Jun-20	26-Jun-20																																																	■ Remove Trestle - Pier 3, Ph 2B Bridge B-643																										
C260B1740	Remove Trestle - Pier 4, Ph 2B Bridge B-643	2	06-Jul-20	07-Jul-20																																																	■ Remove Trestle - Pier 4, Ph 2B Bridge B-643																										
C260B1750	Remove Trestle - Pier 5, Ph 2B Bridge B-643	2	17-Jul-20	20-Jul-20																																																	■ Remove Trestle - Pier 5, Ph 2B Bridge B-643																										
C260B1760	Remove Trestle - Pier 6, Ph 2B Bridge B-643	2	04-Aug-20	06-Aug-20																																																	■ Remove Trestle - Pier 6, Ph 2B Bridge B-643																										
C260B1770	Remove Trestle - Pier 7, Ph 2B Bridge B-643	2	12-Aug-20	13-Aug-20																																																	■ Remove Trestle - Pier 7, Ph 2B Bridge B-643																										
C260B1780	Remove Trestle - Pier 8, Ph 2B Bridge B-643	2	21-Aug-20	24-Aug-20																																																	■ Remove Trestle - Pier 8, Ph 2B Bridge B-643																										
C260B1790	Remove Trestle - Pier 9, Ph 2B Bridge B-643	2	27-Aug-20	28-Aug-20																																																	■ Remove Trestle - Pier 9, Ph 2B Bridge B-643																										
C260B1800	Remove Trestle - Abut B, Ph 2B Bridge B-643	2	02-Sep-20	03-Sep-20																																																	■ Remove Trestle - Abut B, Ph 2B Bridge B-643																										
Substructure					84	19-May-20	27-Oct-20																																																																								
Abut A					28	19-May-20	13-Jul-20																																																																								
C260B1040	Install Piles - Abut A, Ph 2B Bridge B-643	5	19-May-20	29-May-20																																																	■ Install Piles - Abut A, Ph 2B Bridge B-643																										
C260B1050	Construct Abut A, Ph 2B Bridge B-643	20	01-Jun-20	07-Jul-20																																																	■ Construct Abut A, Ph 2B Bridge B-643																										
C260B1060	Construct Riprap Abut A, Ph 2B Bridge B-643	3	08-Jul-20	13-Jul-20																																																	■ Construct Riprap Abut A, Ph 2B Bridge B-643																										
C260B1380	Cure Abut A, Ph 2B Bridge B-643	5	08-Jul-20	12-Jul-20																																																	■ Cure Abut A, Ph 2B Bridge B-643																										
Pier 1					5	03-Jun-20	12-Jun-20																																																																								
C260B1070	Install Piles - Pier 1, Ph 2B Bridge B-643	2	03-Jun-20	05-Jun-20																																																	■ Install Piles - Pier 1, Ph 2B Bridge B-643																										
C260B1080	Construct Pier 1, Ph 2B Bridge B-643	2	08-Jun-20	09-Jun-20																																																	■ Construct Pier 1, Ph 2B Bridge B-643																										
C260B1390	Cure Pier 1, Ph 2B Bridge B-643	3	10-Jun-20	12-Jun-20																																																	■ Cure Pier 1, Ph 2B Bridge B-643																										
Pier 2					5	16-Jun-20	25-Jun-20																																																																								
C260B1090	Install Piles - Pier 2, Ph 2B Bridge B-643	2	16-Jun-20	18-Jun-20																																																	■ Install Piles - Pier 2, Ph 2B Bridge B-643																										
C260B1100	Construct Pier 2, Ph 2B Bridge B-643	2	19-Jun-20	22-Jun-20																																																	■ Construct Pier 2, Ph 2B Bridge B-643																										
C260B1400	Cure Pier 2, Ph 2B Bridge B-643	3	23-Jun-20	25-Jun-20																																																	■ Cure Pier 2, Ph 2B Bridge B-643																										
Pier 3					4	29-Jun-20	05-Jul-20																																																																								
C260B1110	Install Piles - Pier 3, Ph 2B Bridge B-643	2	29-Jun-20	30-Jun-20																																																	■ Install Piles - Pier 3, Ph 2B Bridge B-643																										
C260B1120	Construct Pier 3, Ph 2B Bridge B-643	2	01-Jul-20	02-Jul-20																																																	■ Construct Pier 3, Ph 2B Bridge B-643																										
C260B1410	Cure Pier 3, Ph 2B Bridge B-643	3	03-Jul-20	05-Jul-20																																																	■ Cure Pier 3, Ph 2B Bridge B-643																										
Pier 4					5	08-Jul-20	18-Jul-20																																																																								
C260B1130	Install Piles - Pier 4, Ph 2B Bridge B-643	2	08-Jul-20	10-Jul-20																																																	■ Install Piles - Pier 4, Ph 2B Bridge B-643																										
C260B1140	Construct Pier 4, Ph 2B Bridge B-643	2	13-Jul-20	15-Jul-20																																																	■ Construct Pier 4, Ph 2B Bridge B-643																										
C260B1420	Cure Pier 4, Ph 2B Bridge B-643	3	16-Jul-20	18-Jul-20																																																	■ Cure Pier 4, Ph 2B Bridge B-643																										
Pier 5					14	21-Jul-20	18-Aug-20																																																																								
C260B1150	Install Piles - Pier 5, Ph 2B Bridge B-643	2	21-Jul-20	24-Jul-20																																																	■ Install Piles - Pier 5, Ph 2B Bridge B-643																										
C260B1160	Construct Pier 5, Ph 2B Bridge B-643	10	27-Jul-20	13-Aug-20																																																	■ Construct Pier 5, Ph 2B Bridge B-643																										
C260B1430	Cure Pier 5, Ph 2B Bridge B-643	5	14-Aug-20	18-Aug-20																																																	■ Cure Pier 5, Ph 2B Bridge B-643																										
Pier 6					25	07-Aug-20	21-Sep-20																																																																								
C260B1170	Install Piles - Pier 6, Ph 2B Bridge B-643	2	07-Aug-20	10-Aug-20																																																	■ Install Piles - Pier 6, Ph 2B Bridge B-643																										
C260B1180	Construct Pier 6, Ph 2B Bridge B-643	2	16-Sep-20	18-Sep-20																																																	■ Construct Pier 6, Ph 2B Bridge B-643																										
C260B1440	Cure Pier 6, Ph 2B Bridge B-643	3	19-Sep-20	21-Sep-20																																																	■ Cure Pier 6, Ph 2B Bridge B-643																										
Pier 7					25	17-Aug-20	28-Sep-20																																																																								
C260B1190	Install Piles - Pier 7, Ph 2B Bridge B-643	2	17-Aug-20	18-Aug-20																																																	■ Install Piles - Pier 7, Ph 2B Bridge B-643																										
C260B1200	Construct Pier 7, Ph 2B Bridge B-643	2	24-Sep-20	25-Sep-20																																																	■ Construct Pier 7, Ph 2B Bridge B-643																										

■ Remaining Level of Effort ■ Remaining Work ◆ Milestone
■ Actual Work ■ Critical Remaining Work

LANE

14500 AVION PARKWAY
SUITE 200
CHANTILLY, VA 20151
703.222.5670

www.laneconstruct.com