

TECHNICAL PROPOSAL

ROUTE 7 AND BATTLEFIELD PARKWAY INTERCHANGE

FROM: 0.75 MILES W. OF BATTLEFIELD PKWY ALONG RTE. 7
TO: 0.75 MILES E. OF BATTLEFIELD PKWY ALONG RTE. 7
FROM: 0.25 MILES S. OF RTE. 7 ALONG BATTLEFIELD PKWY
TO: 0.40 MILES N. OF RTE. 7 ALONG BATTLEFIELD PKWY

TOWN OF LEESBURG, VIRGINIA

STATE PROJECT NO.: 0007-253-009, P101, R201, C501, B601
FEDERAL PROJECT NO.: STP-5A01 (704)

CONTRACT ID NUMBER: C00106573DB101



PREPARED FOR:



SUBMITTED BY:





November 27, 2018

Mr. Stephen D. Kindy, P.E.
Alternative Project Delivery Division
Virginia Department of Transportation
1401 East Broad Street
Richmond, Virginia 23219

RE: Route 7 and Battlefield Parkway Interchange
State Project No.: 0007-253-009, P101, R201, C501, B601
Federal Project No.: STP-5A01 (704)
Contract ID Number: C00106573DB101

Dear Mr. Kindy:

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 18, 2018 and Addenda 1-8.

LANE is teamed with **Johnson, Mirmiran & Thompson, Inc. (JMT)**, Lead Designer, 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. Our Team's experience enables us to deliver the high quality and technically sound project that both VDOT and the public expects. Our Team has taken every opportunity to include enhancements, provide value-added features, diligently manage and mitigate risks, and reduce both construction and long-term maintenance costs. By focusing on our safety, quality, public information, and environmental protection programs, VDOT, the traveling public, business and residential stakeholders will benefit by the successful completion of this Project.

4.1.1 Offeror's Full Legal Name:

The Lane Construction Corporation
90 Fieldstone Court
Cheshire, CT 06410

4.1.2 Declaration of Intent: It is LANE'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 this Technical Proposal will remain in full force and effect for one hundred twenty (120) days after the date the Technical Proposal is submitted to VDOT.

4.1.4 Offeror's Point of Contact: Mr. Ali Alkouraishi is the authorized representative and point of contact for the LANE Team for all matters associated with this submittal.

Ali Alkouraishi, Pursuit Manager
14500 Avion Parkway, Suite 200
Chantilly, VA 20151
Tel: (703) 222-5670 Fax: (703) 222-5960
Email: AAlkouraishi@laneconstruct.com

4.1.5 Offeror's Principal Officer Information: Mr. Richard A. McDonough is a Principal Officer of LANE.
Richard A. McDonough, Senior District Manager
14500 Avion Parkway, Suite 200
Chantilly, VA 20151
Tel: (703) 222-5670 Fax: (703) 222-5960
Email: RAMcdonough@laneconstruct.com

4.1.6 Final Completion Dates: LANE proposes a Final Completion Date of October 15, 2021.

4.1.7 Unique Milestone Dates: LANE does not propose a Unique Milestone Date.

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 13% goal for the design and construction of this Project using Virginia certified DBE companies.

The LANE Team appreciates the opportunity to provide our Proposal for this extremely important project. We look forward to working closely with VDOT and stakeholders in our development and delivery to make the Route 7 and Battlefield Parkway Interchange Project a landmark success for the citizens of Virginia.

Respectfully submitted,



Ali Alkouraishi
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 January 31, 2018, the LANE Team has made the following VDOT-approved Key Personnel change and Non-Key Personnel changes:

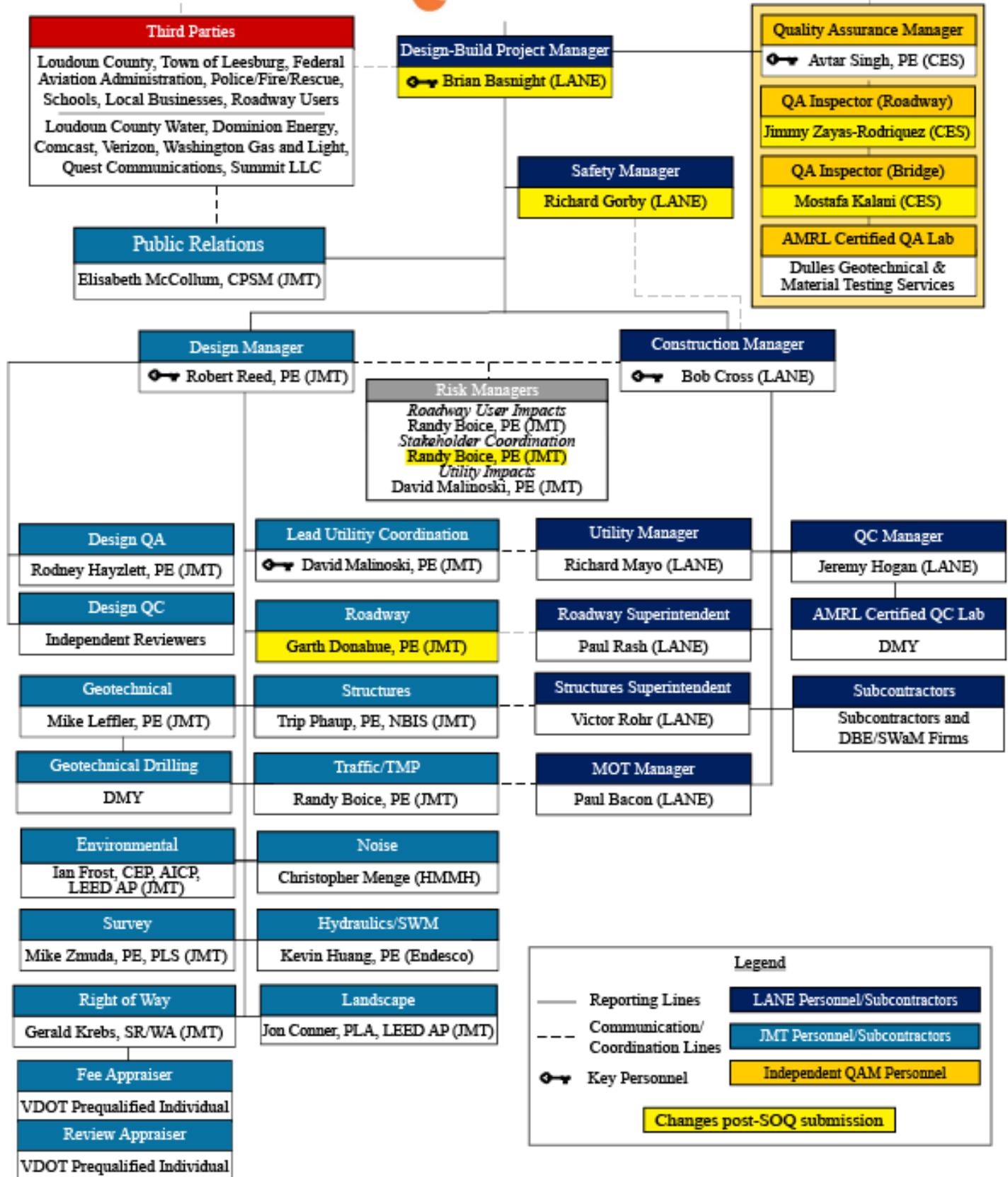
- Mr. Gerry Hargis, the Design-Build Project Manager is no longer with LANE. He has been replaced by Mr. Brian Basnight - (Key Personnel). Modified per VDOT approved letter received on October 16, 2018.
- Mr. Jose Melendez, the construction Safety Manager is no longer with LANE. He has been replaced by Mr. Richard Gorby. (Non-Key Personnel)
- Ms. Kimberly McCool, the design Roadway Lead is no longer with JMT. She has been replaced by Mr. Garth Donahue, PE. (Non-Key Personnel). Ms. McCool was also the Stakeholder Coordination Risk Manager and this position has been filled by Mr. Randy Boice, PE (Non-Key Personnel).
- Mr. Mostafa Kalani (CES) has been added to the organization chart as QA Lead Inspector for Bridge (Non-Key Personnel). Mr. Jimmy Zayas-Rodriquez (identified in the SOQ organization chart) will be dedicated to the QA Lead Inspector for Roadway (Non-Key Personnel).

Quality Assurance Inspectors, Mr. Zayas-Rodriquez (CES) (Roadway Elements) and Mr. Kalani (CES) (Bridge Elements), reports directly to the QAM, and is assigned to the project on a full-time basis for the duration of the project.

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), Mr. Brian Basnight, 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 this 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. 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. Basnight and the VDOT Project Manager. Our updated organization chart with the changes are included on the following page highlighted in yellow.



4.3 | DESIGN CONCEPT

The Route 7 and Battlefield Parkway Interchange project will improve safety, traffic operations, and pedestrian/vehicle flow on the street system in and around the intersection of Route 7 and Battlefield Parkway in Leesburg, VA. Route 7 will be converted to a limited access-freeway within the project limits through the elimination of direct access to Route 7 from driveways and surrounding streets. The intersection of Route 7 and Battlefield Parkway will become grade-separated. The traffic signal at the intersection of Route 7 and Cardinal Park Drive will be removed and become right-in/right-out only. Two new roadways will be constructed to connect the adjacent parcels to Potomac Station Drive redirecting access to Route 7. The Contractor is permitted to detour traffic off of Battlefield Parkway for up to a year with two intersections along the detour route becoming permanently improved to enhance capacity along the detour and after construction. An independent project is underway to complete the Leegate Development in the southwest quadrant of the intersection. This project will provide roadway links and utilities that are vital to the successful completion.

The many benefits of the LANE Concept are summarized in the following table:

The LANE Team *exceeds the project's scope of work and benefits end users in terms of...*



SAFETY	OPERATIONS	SCHEDULE & IMPLEMENTATION	CONSTRUCTION	PUBLIC ACCEPTANCE & INSPECTION	REDUCED MAINTENANCE	TOWN OF LEESBURG
<p>The LANE Plan enhances safety for users and workers by limiting the majority of the work to the outside shoulder in each direction of Route 7:</p> <ul style="list-style-type: none"> Majority of work on one side of the road in each direction Minimizes traffic shifts during construction which reduces crash exposure to roadway workers and users <p>Improved traffic separation on the SPUI layout: more than 10-feet between opposing movements and more than 4-feet between parallel movements</p> <p>Safe application of SPUI concept: more familiar to drivers of the corridor than a DDI</p> <p>Use of MASH Approved Midwest Guardrail System within project limits</p>	<p>Provides many features needed for the future widening of Route 7:</p> <ul style="list-style-type: none"> Outer curbs are set at future locations Storm drains sized and located for future widening Inlets located to accommodate future widening and sized such that the future spread will be easily accommodated Lighting accommodates future widening Retaining walls built in future locations Ramp locations set in future locations <p>SPUI geometry enhanced to provide longer radii on ramps</p> <p>Ramps shifted to enhance landscaping opportunities</p> <p>Battlefield Parkway profile refined to minimize impacts to the existing Russell Branch Parkway intersection</p> <p>Centralized SWM facility addresses the majority of the project's water quality and quantity requirements</p>	<p>Includes only three major phases of construction; minimizing associated shifts in travel patterns.</p> <p>Uses OpenRoads 3D Technology to enhance details and identify potential issues early in the design</p> <p>Avoids utility conflicts through early established utility coordination</p> <p>Accelerates permit schedule based on processes applied on recent projects</p> <p>Prioritizes ROW acquisition process to expedite areas available for construction</p> <p>Incorporates an Early Work Package to construct Keystone Drive, West Driveway, and offsite intersections</p> <p>Establishes protected work areas to help expedite utility relocations along Route 7</p> <p>Uses upsized piles to limit time needed for pre-augers</p>	<p>Designed in 3D under ISO-9001 certified process to minimize construction changes and accelerate field refinements when they are recognized</p> <p>Construction staging areas identified during concept design to optimize access and minimize impacts to traffic</p> <p>Experience working with the geology of the project including intermediate geomaterials</p> <p>Enhanced environmental compliance training provided for all Team members</p> <p>Analyses conducted to limit reconstruction of the existing retaining wall along Battlefield Parkway near the Town of Leesburg utility offices. Risk of damage to the existing wall is reduced</p> <p>Use of upsized piles to limit time needed for pre-augers</p>	<p>Maintains a SPUI concept as approved by the Town Council of Leesburg and as viewed at Public Meetings</p> <p>Emphasis on continued public interaction to maintain public acceptance</p> <p>Extensive experience in stakeholder coordination along the Route 7 corridor</p> <p>Implementation of a TMP that addresses needs for local services such as school bus and emergency vehicle routes, where also providing access to local businesses and activity centers</p> <p>No additional design exceptions or waivers are required for the LANE Concept</p>	<p>Minimized construction and other joints in the bridge deck to improve corrosion resistance</p> <p>Reduced number of bridge girders requiring long term maintenance</p> <p>Shortened retaining walls to reduce amount requiring long term maintenance</p> <p>Enhanced non-corrosive materials in the bridge which exceed the minimum requirements</p> <p>Avoids the need for an open longitudinal joint in the bridge deck</p> <p>Reduced the length need for retaining walls by shifting ramp alignments</p> <p>Eliminates need for ponds along the West Driveway – no need for permanent maintenance access or easements</p> <p>Proprietary BMPs and associated maintenance are not needed</p> <p>Centralized Stormwater Management – one large traditional BMP instead of several smaller facilities</p>	<p>Maintains a SPUI concept approved by the Town Council of Leesburg</p> <p>Enlarged areas available for landscaping</p> <p>Team is experienced at providing the desired aesthetic treatments on recent projects</p> <p>Analyses conducted to limit reconstruction of the existing retaining wall along Battlefield Parkway near the Town of Leesburg utility offices reduces impact on town facilities</p> <p>Tops of wingwalls and retaining walls will provide protective handrails with finishes to match those on the bridge</p>

The LANE Team’s Design Concept for the Route 7 and Battlefield Parkway Interchange has been a coordinated effort between our design and construction teams to comply with the Technical Requirements. The LANE Team has improved the design in a manner that **improves safety in the work zone for construction personnel and the traveling public, improves the effectiveness of operations, and maintains access to local businesses, John W. Tolbert Jr. Elementary School, Harper Park Middle School and nearby recreational facilities. Our proposed design also reduces the need for long-term maintenance, and better prepares the corridor to more easily accommodate future changes in operations and widening along Route 7.** These benefits are described in the table above and are also highlighted on our Conceptual Plans in Volume II.

Preliminary Investigations

The LANE Team has investigated multiple configurations for the Route 7 and Battlefield Parkway Interchange including the concepts presented in the Interchange Justification Report. Our conclusion is that the concept developed for the RFP Concept Plan is the correct approach for this location. In this process, the LANE Team:

- Investigated flipping the profiles of the crossing streets for the SPUI such that Route 7 would cross over Battlefield Parkway. This concept has some advantages, but they were outweighed by the major MOT disruption to traffic along Route 7 and created unnecessary costs for VDOT. Traffic on Route 7 would need to be detoured to accommodate construction of the bridge. The “flip” concept’s longer bridge required deeper girders since the future width of Route 7 would need to be accommodated on the proposed bridge. The flip would potentially require an additional environmental study to investigate potential noise wall installations along the elevated portion of Route 7. These factors increased the construction costs as well as potential operations and maintenance costs. We ultimately determined the flip would not be in the best long-term interest of the Commonwealth. **The LANE Team’s Concept has significantly less impacts to the environment and the traveling public.**
- Investigated a Diverging Diamond Interchange (DDI). The LANE Team has extensive experience with DDIs including the I-66/Route 15 Interchange Reconstruction Project (I-66/Route15) in Haymarket. A DDI has several advantages in operations (less disruption for turning movements; reduced impact to utilities, less complex bridges, etc.). However, all other interchanges along the Route 7 corridor in Loudoun County are either tight urban diamonds or SPUI interchanges; adding a DDI configuration in this context might confuse driver expectations and could potentially create a driver safety issue. The LANE Team rejected a DDI concept due to a concern for safety. We also recognized VDOT had explored the DDI option and the Town expressed concerns for its implementation. **The LANE Team’s Concept is safer and already has the community’s acceptance.**
- **Per our evaluation, VDOT and the Town of Leesburg (TOL) have selected the correct concept for the RFP Concept at this location.** The LANE Team has based our proposal on the RFP’s SPUI Concept with some modifications to provide the best long-term solution for VDOT. **In addition to better value and public acceptance, the LANE Team’s Concept has reduced environmental impact and is safer than other alternatives.**

The LANE Team’s Conceptual Plans fully conform to all TOL, VDOT, IJR, NEPA/Environmental Assessment, AASHTO, and RFP requirements including those defined in RFP Part 2 and attachments plus special provisions. **The LANE Team interprets the RFP and this Technical Proposal as integral components of the scope of services for this project and we hereby commit to full compliance with the RFP for the Route 7 and Battlefield Parkway Interchange.**

Enhancements to the RFP design are highlighted in the following descriptive narrative and in our Conceptual Plans. Our Plans do not include any design elements that require Design Exceptions and/or Design Waivers not identified in the RFP and addenda.

The future plan for Route 7 is to widen the facility to 8 lanes. The LANE Team's design concept will construct Route 7 to meet the cross-sectional requirements stated for this project in the RFP while eliminating the future need to reconstruct the outside shoulders and associated drainage systems.

By shifting the lanes to align with the outer edges of the future configuration of Route 7, we avoid the need to widen into the existing median with the current project. The required 8ft of shoulder adjacent to the median is provided from the existing full depth pavement so the future widening will only need to widen the shoulder into the existing median. Widening to the outside allows us to align the interchange ramps and outer shoulders to their future configuration for Route 7.

Drainage features along the outer roadway edges will be in their future location as well. The drainage systems in our concept are designed to accommodate the 8-lane future condition. Permanent work will be contained within the ROW shown in the VDOT RFP Plans. Median construction for the project will be reduced to be just at the bridge pier area which **enhances roadway user and contractor safety, and minimizes the required lane shifts during construction.**

The LANE Team's Concept also provides a **shorter construction duration with less exposure of drivers to the workzone.** The future work for the ultimate widening will consist of milling and overlaying the existing pavement, introduce composite cross slopes (if needed) to improve drainage, and construction of the shoulder in the median.

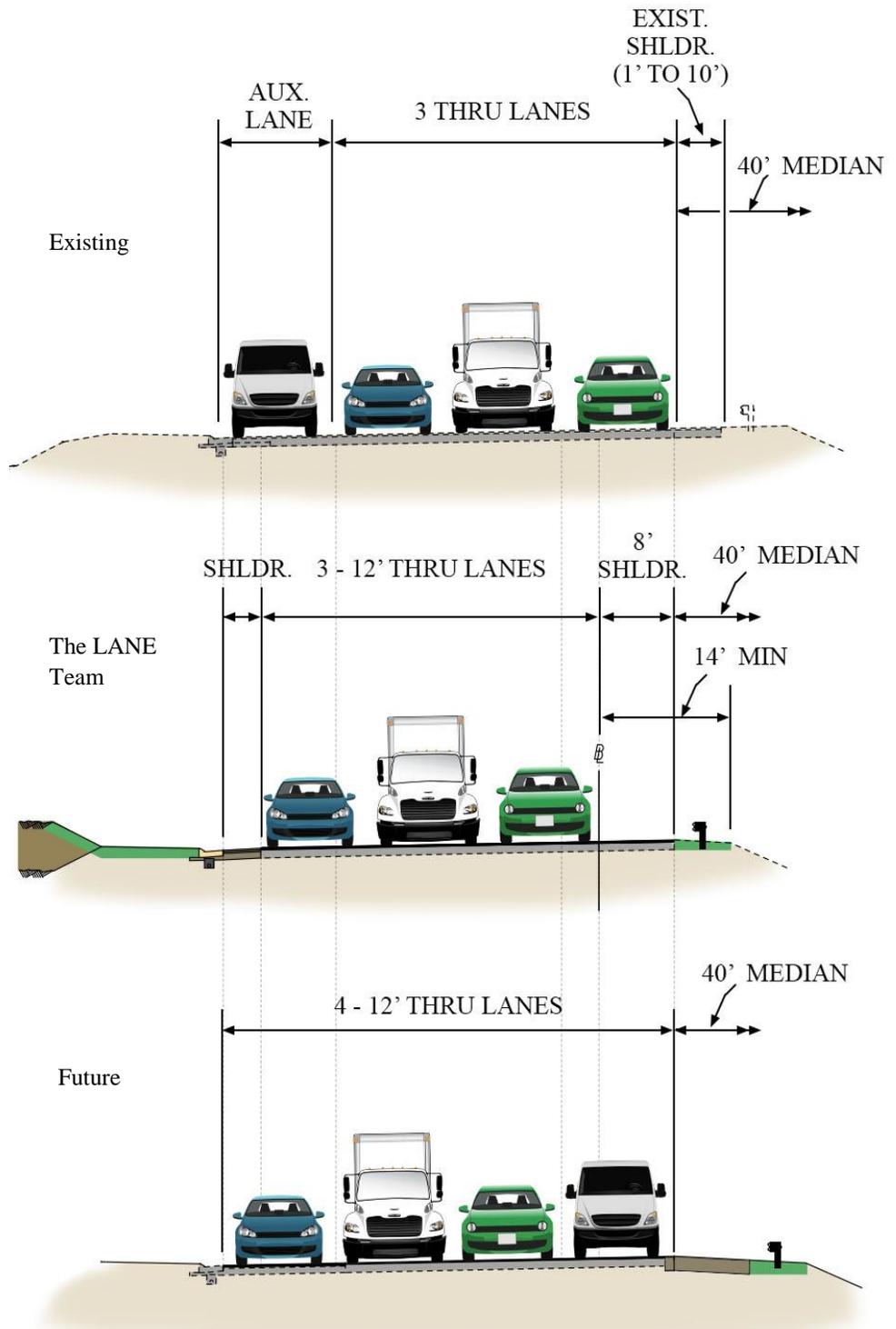


Figure 4.3-1: The LANE Concept establishes the outer shoulder in the same location needed for the Future Widening of Route 7. This allows the pavement, curb and gutter, stormdrain systems, and retaining walls to be built in the LANE Concept in their future locations.

4.3.1 Conceptual Roadway Plans

Table 4.3.1-1: General Criteria

Roadway	Design Speed	Lanes/Widths	Shoulders	Sidewalk/ Paths
Route 7 Urban Other Principal Arterial (GS-5)	60 MPH	6 lanes/12ft	YES ⁽⁴⁾	N/A
Battlefield Parkway Urban Minor Arterial (GS-6)	45 MPH	6 lanes/12ft	NO	5ft / 8ft ⁽¹⁾
Ramps Interchange Ramp (GS-R)	35 MPH	1 lane/16ft 2 lanes/24ft	YES	N/A
SPUI ⁽³⁾ Single Point Urban Interchange	25 MPH	1 lane/18ft ⁽¹⁾ 2 lanes/24ft ⁽¹⁾	NO	N/A
Cardinal Park Drive Urban Minor Collector (GS-7)	30 MPH	2 lanes/12ft	NO	N/A
West Driveway and Keystone Drive Urban Local Street (GS-8)	25 MPH	2 lanes/11ft	NO	5ft ⁽²⁾ / N/A
Fort Evans Road Urban Minor Collector (GS-7)	40 MPH	2 lanes/12ft	NO	5ft / N/A
Potomac Station Drive Urban Minor Collector (GS-7)	30 MPH	2 lanes/12ft	NO	5ft / 10ft
Russell Branch Parkway Urban Minor Collector (GS-7)	40 MPH	4 lanes/12ft	NO	5ft / N/A

(1) Per RFP; (2) May Not Apply; (3) RFP Attachment 2.2.b SPUI Design Criteria; (4) Inside shoulders with outside curb

(a) General Geometry Including Horizontal Curve Data and Associated Design Speeds, the Number and Widths of Lanes, Shoulders, Sidewalks & Shared-Use Paths

This project will widen Route 7 from two lanes to three 12ft lanes in each direction. The widening will also include additional 12ft auxiliary lanes as needed for ramp acceleration and deceleration. The LANE Team has provided a 4-inch curb on the outside of the pavement and is using MGS guardrail to provide protection from obstructions along the roadside.

Where possible the LANE Team has incorporated the 10.5ft outside lateral offset, behind the curb, for the clear area. The inside shoulder will comply with the minimum 8ft paved shoulder requirement; minimal grading in the median will occur as needed to accommodate the MGS guardrail upgrades.

The LANE Team has enhanced and modified the geometric layout of the ramps within the parameters provided in RFP Attachment 2.2.a through c.



Figure 4.3.1.a-1: Project Overview – The LANE Concept was designed using OpenRoads 3D technology to reduce risks to VDOT.

The LANE Team has enhanced and modified the geometric layout of the ramps within the parameters provided in RFP Attachment 2.2.a through c.

The LANE Team's design widens Route 7 to the outside which allows for enhanced safety in the work area, shorter construction duration, and expedited construction of the future 8-lane configuration. **The outside curb will be built within the intersection diamond accommodating the future condition allowing for drainage systems to remain and function when the future widening project is constructed.** The existing 40ft median will be maintained with minimal grading required to add the new MGS Guardrail. This allows the future widening of Route 7 to use the median in the same footprint as outlined in the RFP documents.

The ramps for the SPUI interchange have been designed according to *RFP Attachment 2.2.a and 2.2.b*. The typical sections for Ramps A through D have been refined to allow for the grading needed for MGS Guardrail as well as the addition of curbs along the inside of the ramps. These curbs are added to minimize erosion and redirect runoff that would otherwise impact adjacent retaining walls. All ramp grading has been designed to optimize reuse in the future condition, accommodate the retaining walls, and reduce the need for additional limit of disturbance.

The horizontal geometry for Ramps C & D has been modified from the RFP Concept to allow for greater separation from Route 7 and avoid extensive needs for future retaining walls otherwise required to separate Route 7 from the ramp slopes. The shift for Ramp D is limited due to the need for a 25ft clear offset from the Dominion Energy transmission tower. This refinement meets the RFP criteria and **enables better operation within the SPUI**; opposing traffic paths are separated by more than 10ft. The shift also **enhances the grading** between Route 7 and the ramps expanding the 3:1 slope area requested by the TOL for future landscape features. The geometry has been updated within the SPUI to enhance vehicular operation and meet the requirements set forth in *RPP Attachment 2.2.b*.



Figure 4.3.1.a-2: Conceptual SPUI Overpass remains consistent with the Town of Leesburg's goals and objectives.

We have retained the overall planimetric layouts for Battlefield Parkway, Cardinal Park Drive, Keystone Driveway, and the West Driveway as shown in the RFP. Vertical geometry on Battlefield Parkway was refined to provide required vertical clearance under the bridge and reduce impacts to the Russell Branch Parkway intersection as compared to the VDOT RFP Concept Plans. Minor adjustments to entrances and turning lanes have been made to accommodate design improvements and fully meet design criteria set forth in *RFP Attachments 2.2.a through c*. Table 4.3.1.a-1 (located on the page above) details the design criteria and configurations required by the RFP; the LANE Team Concept meets or exceeds all of these required criteria.

The project includes improvements to two offsite intersections to provide permanent capacity increases to better accommodate detour traffic and future growth within the TOL.

- The intersection of Fort Evans Road and Battlefield Parkway will be improved. A double left-turn lane will be provided along southbound Battlefield Parkway to eastbound Fort Evans Road by constructing an additional 12ft left-turn lane adjacent to the existing turn lane. A triangular island in the southeast

quadrant of the intersection and adjacent pedestrian access ramps will be modified slightly to provide the extra width needed for receiving the dual left-turn.

- The second intersection to be modified is Fort Evans Road and River Creek Parkway. A double left-turn lane will be activated on northbound River Creek Parkway to westbound Fort Evans Road. The dual left-turn lane exists as a stripped-out lane. The stripped-out lane will be milled and overlaid to accommodate the revised striping to incorporate the additional lane. The receiving lanes in the northwest corner of the intersection will be modified to provide two 15ft receiving lanes per VDOT standards by adjusting the curb return, sidewalk, ADA ramp, and relocating a drainage inlet.

(b) Horizontal Alignments

The horizontal alignments shown in our design are consistent with the RFP Plans for Battlefield Parkway, Cardinal Park Drive, West Driveway, and Keystone Drive. Minor horizontal changes have been made to these roadways to improve the tie-ins all the while remaining in conformance with the RFP criteria. Route 7 alignments have been shifted 8ft to the outside; this allows for the median shoulder to be positioned on the existing full depth pavement and all widening to occur on the outside. Shifting the alignment to the outside is

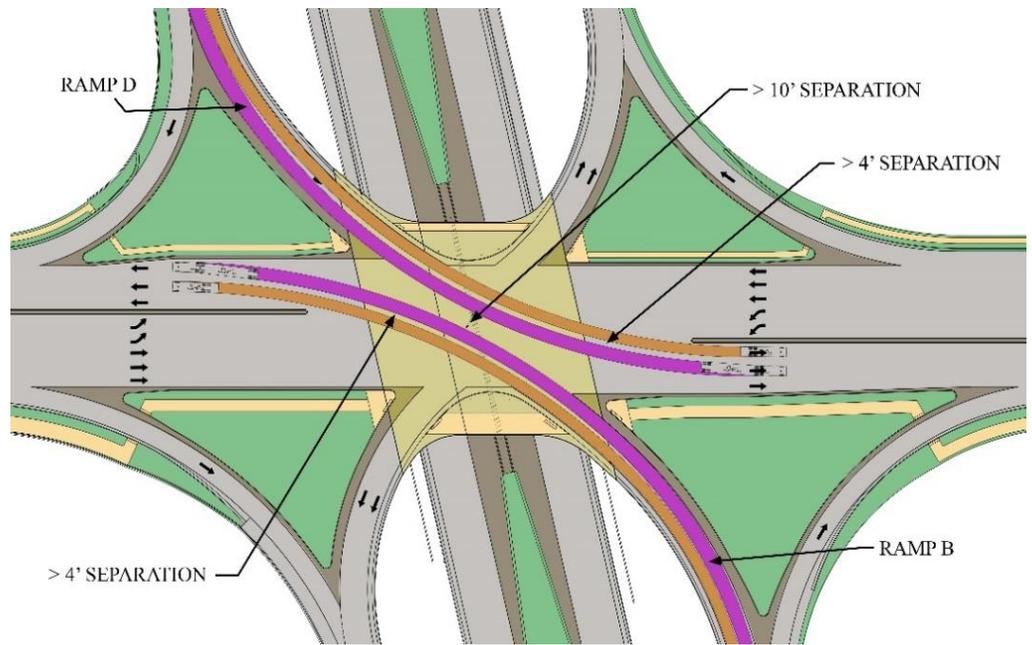


Figure 4.3.1.b-1: SPUI Vehicle separation fully meets AASHTO and VDOT requirements which exceed RFP requirements

done by modifying the entry and exit curvature at the project limits. This adjustment complies with the RFP criteria set forth in *RFP Attachment 2.2.a*, an ATC was not required.

Our Team's adjustment to the horizontal alignment for Ramp D significantly improves the operating geometry of the SPUI. Our design adjusted Ramp D's horizontal tangent bearing angle in a manner to bring the ramp 20ft closer to the transmission pole but still complying with the required utility offsets. This change enabled us to enhance the compound radius for the SPUI Spur D by flattening the secondary radius from 453ft to 520ft. **This improves the geometry of the SPUI to ensure opposing traffic 10ft offsets and 4ft offsets between parallel traffic.** The current RFP Concept geometry did not supply the full 10ft separation needed. Our concept exceeds the 10ft of separation requirement. This improvement modifies the bridge bow-tie structure slightly to allow for this movement. The improvement also improves the overall grading between Route 7 and the ramp.

Our Team also adjusted the tangent bearing angle of Ramp C which shifts the top of the ramp approximately 5ft. This enhancement allows for grading to be improved in the diamond area and enhances the operation within the SPUI. More landscape space can be provided at a 3:1 slope.

(c) Maximum Grade for all Segments and Connectors

The LANE Team’s Conceptual Plan meets the RFP requirements and follows the profiles for the associated roadways. Our design maintains the existing profile along Route 7 with no corrections required. Our design modifies the profile of Battlefield Parkway, within the RFP design criteria, to balance bridge structural depth and vertical clearance on Route 7. The refinement to Battlefield Parkway delays the start of the vertical curve at Russell Branch so that only the north sides are affected. The profiles along West Driveway, Cardinal Point Drive, and Keystone Drive have been maintained with only slight improvements for tie-ins and drainage. All roadways meet or exceed design criteria as shown in *Table 4.3.1.c-1: Vertical Criteria*

Table 4.3.1.c-1: Vertical Criteria

Roadway	Max Longitudinal Grade	Min “K” Crest	Min “K” Sag	Min Length	SSD
Route 7	6%	151	136	180ft	570ft
Battlefield Parkway	7%	61	73*	135ft	360ft
Ramps	6%	29	49	105ft	250ft
SPUI	Per RFP Plans				
Cardinal Park Drive	9%	19	37	90ft	200ft
West and Keystone Drive	11%*	12	26	75ft	155ft
Fort Evans Road	9%	19	37	90ft	200ft
Potomac Station Drive	9%	19	37	90ft	200ft
Russell Branch Parkway	8%	44	64	120ft	305ft

(*) Exceeds Design Requirements

(d) Typical Sections of the Roadway Segments to include Shared Use Paths and Sidewalks, Retaining Walls and Bridge Structures

The lane widths, cross slopes, superelevation and pavement depths for all roadways and features will meet or exceed the criteria listed in the RFP and associated documents. Typical sections for affected roadways are shown in our technical proposal Volume II.

Widening to the outside along Route 7 allows for the curb line within the diamond interchange to be constructed for the future condition thereby eliminating any need for modifications to ramp side slopes in the future. Future widening of the roadway will primarily occur in the median. The future typical section from the RFP is fully compatible with the LANE Team design. The median will be graded for new MGS Guardrail.



Figure 4.3.1.d-1: Eastbound Route 7 Cross Section

The LANE Team has enhanced and minimized retaining structures. By minimizing retaining structures, we can accomplish more with grading and reduce maintenance. As discussed in the previous sections, Ramp C and D alignments have been modified. The simple modifications allow for the future widening section with the intersection diamond without the need for longer walls or future modifications to those walls. MSE retaining

walls adjacent to developments have been modified for the vertical and horizontal alignment changes. The Team has also enhanced the segmental wall alignment along Battlefield to be compatible with the existing retaining wall and provided the shared-use path with MGS Guardrail and Railing.

(e) Conceptual Hydraulic and Stormwater Management (SWM) Design

The drainage and SWM design for this project will meet or exceed the criteria stipulated in the RFP. This includes application of the Commonwealth of Virginia Code, the VDOT Drainage Manual, applicable IIM's, the TOL Design and Construction Standards Manual (which includes Design of Stormwater Management Facilities within Tuscarora Creek Watershed), and specifically the technical criteria outlined in Part II B of the Virginia Stormwater Management Program (VSMP) Permit Regulations. **The LANE Team's conceptual plans include stormwater management enhancements that are described below.**

Table 4.3.1.e-1: Drainage Conveyance Design Criteria for Route 7 and Battlefield Parkway

Functional Classification	Geometric Standards	Design Speed	VDOT Design Criteria <i>Drainage Manual Storm Culvert</i>	Storm Drain	Inlets <i>Rainfall Intensity</i>	Max Spread <i>w/shoulder</i>
Urban Principal Arterial	GS-5 (Rolling)	60 MPH	25 year	10 year	Actual	On Grade Shoulder Sag Shoulder + 3ft
Urban Minor Arterial	GS-6	45 MPH	25 year	10 year	4-Inch	Shoulder + 3ft

Stormwater Quantity: The existing dry detention facility will be impacted by the proposed interchange improvements. The LANE Team has redesigned and will upgrade this facility as part of our Technical Concept. This facility is proposed to be an Enhanced Extended-Detention basin for quality and is proposed to serve as the main stormwater detention facility for the project. The basin will be designed to slightly reduce the existing discharge rates out of the facility even though the drainage area will increase. This will require an increase in the footprint of the facility; but the basin remains within available right of way. By modifying the existing pond, the increase in runoff due to increased impervious area is mitigated. Existing outfalls and flow rates will be maintained to eliminate increased impacts to downstream channels.



Figure 4.3.1.e-2: Enhanced Extended-Detention Basin in northeast quadrant of the interchange

Project Runoff Quantity:

Runoff from most of the project area will be managed by the Enhanced Extended-Detention basin to reduce the runoff back to pre-development levels. Based on our preliminary site observations, the existing outfall channels are in good condition and do not demonstrate erosion. This approach addresses many of the water quantity concerns for the project. The ultimate discharge point for a majority of the project is Tributary 16 of the Tuscarora Creek. Tributary 16 is considered in the lower sub-basin and has less stringent water quantity requirements. Requirements will be met by the approach outlined above. There are only two outlying areas not fully managed by the reconstructed pond; the southwest quadrant of the interchange adjacent to the Leegate development and runoff from Keystone Drive.

Southwest Quadrant: There could be a minimal increase in runoff to the stormwater system along the west side of Battlefield Parkway. The LANE Team will take advantage of the topography in this area and use small weir walls within the roadside swale to slow and impound runoff prior to its discharge point.

Keystone Drive: The runoff from Keystone Drive is discharged to an existing open and closed drainage system that ultimately enter Tributary 17 of the Tuscarora Creek. This tributary is part of the lower sub-basin. To address the stormwater quantity needs, stormwater detention will be provided within the proposed right-of-way using slightly oversized pipes for detention.

The stormwater BMPs shown on the VDOT RFP Concept Plans were removed from along the West Driveway. The main extended detention facility will be designed to reduce the flow to offset the increase in runoff from the West Driveway to the inlet of the downstream extended 6'x6' box culvert and proposed 48-inch pipe. The channels that convey runoff from the driveway do not show signs of erosion and based off LiDAR mapping to determine drainage basins, appear to have adequate capacity. **This is a benefit to VDOT as it reduces the amount of right of way and easements needed for the project and reduces VDOT maintenance requirement for VDOT's long-term benefit.**

Culvert Analysis and Design: Our proposed design for the Route 7 drainage system accommodates the ultimate 8-lane configuration, including the pipe and inlet sizes. This is a long-term benefit and savings for VDOT as replacing the stormwater pipes in the future should not be required.

The LANE Team analyzed the upstream drainage area for three major culverts; one crossing Route 7 west of the interchange, one east, and one culvert crossing Battlefield north of the interchange. Where possible, runoff rates were determined from approved site plans. Where site plans were not available, the Town of Leesburg Zoning and Land Use Maps were consulted to determine an appropriate curve number. Using this information, runoff rates were determined and culvert capacity calculations were completed. Existing culverts were evaluated for capacity. Where existing culverts did not meet design standards parallel culverts are being proposed. The proposed culvert crossing is sized for future development based on Town master planning documents. **This is a benefit to VDOT since additional culvert or pipe crossings of Route 7 and Battlefield should not be required as the area north of the interchange is developed. "**

Water Quality: The LANE Team thoroughly investigated the existing drainage systems within the project corridor. The plans for existing developments were all reviewed. From this review, it was determined that the existing dry detention stormwater facility in the north-east quadrant of the Route 7 and Battlefield Boulevard intersection was constructed only for stormwater quantity control; quality control was not considered.

The project area is approximately 53.0 acres. As permitted under IIM-LD-195.10, approximately 15.5 acres of that area will be mill and overlay which can be removed from the water quality calculations. The required pollutant removal is 19.75 lbs. The landscaped Enhanced Extended-Detention basin will treat approximately 18.0 acres. There is an additional area draining to the facility from Potomac Station and other private developments; this offsite area was not included in the water quality calculations but was accounted for in the water quantity calculations. A total of 16.15 lbs of total phosphorus will be removed by the facility, nutrient credits will be purchased for the remaining 3.6 lbs.

The VDOT RFP Concept plans showed multiple constructed and manufactured BMPs. **The LANE Concept reduces VDOT long-term maintenance by using only a single BMP used for water quality and most water quantity control.** Purchasing nutrient credits also helps reduce VDOT's long-term maintenance requirements. Another benefit to the proposed BMP is that it does not require any bio-retention media or specialty materials like some other BMP types. The LANE Team will be responsible for the plantings within the pond and will coordinate their selection with the TOL to ensure continuity through the corridor.

(f) Proposed ROW Limits

The design concept for the roadway, including SWM facilities, will be contained within the ROW or permanent easement limits shown on the RFP Concept Plans. The LANE Team refined the VDOT RFP Concept using 3D

design; this disclosed more detail on the limits of disturbance than shown on the VDOT RFP Concept plans. For example, more work would be required for the entrance to the Clarion Hotel than shown on the less-detail RFP Plans. Maintenance easements will be required adjacent to some retaining walls. Permanent utility easements and temporary construction easements will be identified during the design process and approved by VDOT prior to land acquisitions. **The LANE Team intends to fully incorporate previous proffers as described in the RFP and supplemental information provided by VDOT.**

The RFP requires that the West Driveway and Keystone Drive be completed prior to closing direct private access to Route 7. The LANE Team proposes an early construction package that would require rapid approval and acquisition of properties affected by these two roadways meeting the requirements of the *VDOT ROW Manual, Section 10.2.1*. Fortunately, most of the ROW for Keystone Drive has been proffered by the Loudoun County School Board and our team will take immediate action to complete this portion of the proffer and convey the land through the Loudoun County Supervisors to the TOL. **The LANE Team's Conceptual plan avoids the need for ponds and permanent drainage easements along the West Driveway; all work along this driveway will require only temporary easements and access to ponds along the driveway is not required.**

(g) Proposed Utility Impacts

The LANE Team's design concept for utilities is based on the Subsurface Utility Exploration (SUE) mapping provided by VDOT for utilities within the Project limits. Supplemental utility information has been collected from the TOL and from meetings we have held with each potentially affected utility owner along the corridor where mitigation options were discussed. Additional SUE work to supplement the RFP data will be performed by the LANE Team early in the project. A utility conflict matrix provided in Section 4.4.2 demonstrates the comprehensive array of utilities, impacts, and mitigation strategies being considered during design.

The LANE Team is focused on minimizing potential conflicts and creating solutions that would best benefit VDOT while reducing disruption to the general public and the utility owners. See the Concept Plans in Volume II for the location of more specific benefits provided by the LANE Team design.

Washington Gas operates a 6-inch gas main within the Route 7 median. Sections of the gas main could need to be adjusted to avoid conflicts with the proposed drainage and sanitary sewer and where it crosses Ramp C. The location of the proposed guard rail does not conflict the existing gas main running along eastbound Route 7. The future typical section is also not expected to significantly impact the gas main as it will run along the outside edge of the paved shoulder. The section of pipe between stations 1041+00 and 1048+00 may need to be relocated; Accurately locating the gas main may allow sections of the guardrail to be blocked and reduce the amount of relocation needed. The location of the bridge pier foundation avoids conflicts with the gas main in the median of Route 7. Excavation and construction of the bridge pier will be done within a trench box to limit the impact to the 6-inch gas main.

Early in the project, traffic barriers will be placed along the outside edges of Route 7 allowing safer relocations of communication duct banks along the northern edge of Route 7 and a clear work zone to abandon the Town's existing 8-inch waterline including thrust block construction if needed. Coordination with the Leegate Development will allow our Team to divert flow to their new, larger watermain early in the project.

Summit IG has a buried fiber optic conduit bundle primarily on the north side of Route 7. The RFP plans show this FO bundle and handholes in conflict with the proposed Ramps B and C including the north bridge abutment and retaining walls. Summit IG is looking to use a lift and lay method of relocating to minimize the impact to their operations. They will be able to prioritize the relocations to accommodate early work by the LANE Team.

Duct banks for Dominion, Verizon and Comcast were built by others from Battlefield Parkway along eastbound Route 7. At this time, only Dominion has relocated their overhead lines to their duct bank. Temporary relocations of Verizon and Comcast may be required to accommodate the construction schedule.

Pipes under Route 7 (stormwater and sanitary sewer) are being designed to allow jack and bore construction thus avoiding traffic closures for Route 7. All jack and bored pipes will be high-strength circular shapes. The profiles for jack and bored pipes have been established to be above the approximate top of rock provided in the Geotechnical Report. While not so critical for the higher stormwater culverts, the relationship of the top of rock to the bottom of the sanitary sewer encasement is a critical element of the design (See Figure 4.3.1.g-1 below: Sanitary Sewer Encasement under Route 7). The profile for the proposed sanitary sewer will be adjusted after the elevation of the Intermediate Geomaterials (IGM) is identified with more detailed test hole data collected following award of the Contract.

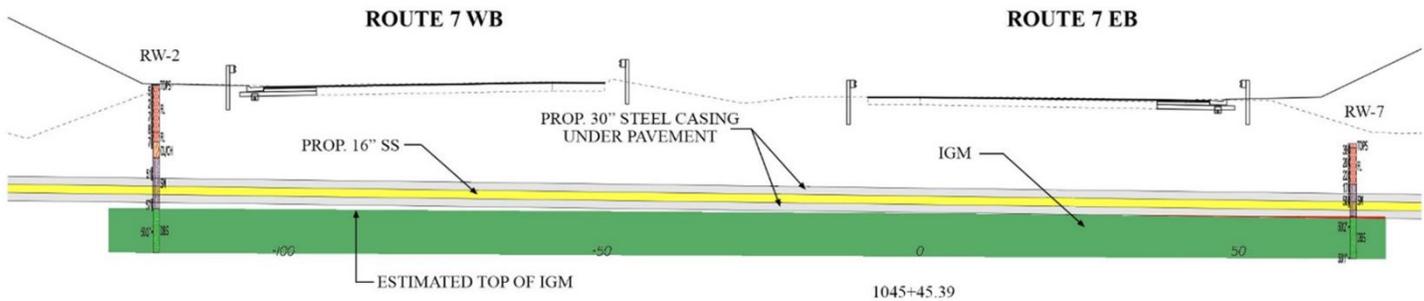


Figure 4.3.1.g-1: Sanitary Sewer Encasement under Route 7

(h) Noise Barrier Locations

The LANE Team will perform a Final Design Noise Analysis and submit it to VDOT for review and approval. Changes due to traffic volumes and lane locations may affect the results of the preliminary analysis. If the results of the Final Design Noise Analysis dictates; the LANE Team will provide permanent noise mitigation in compliance with applicable State and Federal policies and regulations. **However, our concept does not significantly change from the RFP Concept and due to the types of existing receptors and their locations as described in the Preliminary Noise Analysis, we do not anticipate that noise barriers will be feasible and reasonable.**

(i) Any Other Key Project Features

Landscape Features. The TOL considers the new interchange as a gateway to the town and aesthetic design is a key component of the project. Many of the features on the bridge will incorporate aesthetic treatments such as bollards, pedestrian scale lighting, ornamental fences, colored pavements, textured concrete, and a lighted, non-structural panel identifying the gateway to the TOL. **Retaining walls near the bridge abutments have been heightened to provide graded landscape areas at no more than a 3:1 slope which are larger in area than the RFP due to improved ramp geometry.** Tops of the walls will incorporate handrails with finishes to match the bridge details to provide safety for maintaining the future landscaping without limiting views of the landscaped areas. **The LANE Team will provide landscaping as an integral part of the Enhanced Extended-Detention Basin; the native plants used for the basin will enhance removal of phosphorus and other pollutants while requiring a minimum of long-term maintenance.** Native trees and shrubs will be selected that complement the landscaping for the interchange.

Survey/Subsurface Utility Engineering (SUE). Upon notice to proceed, JMT will conduct supplemental SUE including test holes to precisely locate and identify underground dry and wet utilities that appear to conflict with the planned Project construction. Simultaneously, we will schedule utility meetings with all utility stakeholders that have active utility infrastructure near or within the Project limits. **The LANE Team provides the advantage of in-house SUE services readily available for any additional SUE and test hole needs.**

Public Acceptance. Stakeholder involvement is crucial to successfully achieve project objectives and deliver a high quality, rapid construction, and minimally disruptive project. The potential impact of not adequately coordinating with stakeholders includes significant schedule delays and the need for re-designing project elements. The needs of the stakeholders will be communicated with the LANE Team to ensure that they are

incorporated into the final project. The following groups of stakeholders have been identified for the Route 7 and Battlefield Parkway Interchange project:

The LANE Team retains a SPUI concept as recommended at the Public Hearing and as preferred by the Town of Leesburg

- Public Agencies:** In addition to VDOT there are many public agencies from all levels involved in this project. The TOL is the key external stakeholder – they will participate in reviews, approvals and decision making as the project evolves. It will be vital to document decisions as they occur in case Town leaders and staff change. All permitting agencies will have key roles. The FAA has critical communications lines along Route 7 and the access to their facility will be modified. Loudoun County and the NVRVP are expected to be project stakeholders. The needs of emergency services such as police and fire, and other services such as Loudoun County Transit and Loudoun County Public Schools including school buses with routes through the project will be considered.
- Property Owners:** Three private businesses along the north side of Route 7 will have their existing access relocated. Another impacted property is Tolbert Elementary School which includes an existing proffer to provide a future access road to Potomac Station Drive for the businesses east of Battlefield Parkway. All the businesses and properties accessing Route 7 from Cardinal Park Drive will be impacted. Included among those are two car dealerships (taking deliveries via low-slung car carriers), the FAA, and the VDOT maintenance office on Lawson Road. The modification of the Cardinal Park Drive intersection will require these facilities to access Route 7 from Battlefield Parkway. The different types of vehicles used in the VDOT maintenance facility, as well as the car dealerships will be considered in the project design.
- Private Developers:** The Leegate development at the southwest corner of the proposed interchange and the Lowes development at the southeast corner of the interchange will be considered and accommodated during project design. These developments are in different stages, however any changes to Route 7 or Battlefield Parkway that affect the current or future development potential will be avoided or minimized.
- Road Users:** The users of the roadway are always essential stakeholders. Keeping the public informed during design and construction is key; this includes the bicycle and pedestrian community. Battlefield Parkway provides a link between residences, businesses, and the W&OD Trail for Leesburg residents.

The LANE Team has extensive experience in coordinating with stakeholders along the Route 7 corridor.

Early and timely meetings ensure that a comprehensive list of stakeholders is developed and that their needs can be accommodated as efficiently as possible into the final design. Communication with stakeholders is expected to take various forms, including public forums, one-on-ones with single property owners, social and print media. The LANE Team will coordinate initial meetings with stakeholders to request input, open the lines of communication, and identify their concerns soon after Notice to Proceed. This information will be used to develop the required project work plan and improve the design concept for all concerned.



Figure 4.3.1.i-1: The LANE Team has conducted extensive outreach with stakeholders along the Route 7 corridor

Plan Preparation/Plan Submittals.

Final plans will be prepared using Bentley MicroStation CADD software utilizing Geopak SS4 with OpenRoads

Technology. The LANE Team has years of experience in 3D modeling with proven success in 3D design on multiple Design-Build projects. These models contain existing and proposed data that is geometrically ruled and coordinated across disciplines to ensure accurate construction documents with construction risks minimized or eliminated. The LANE Team has found 3D models invaluable for optimizing deliverable workflows, coordinating between design and construction, analyzing risk, and capturing accurate quantities efficiently. Within the OpenRoads suite of tools, the LANE Team also specializes in Subsurface Utilities Design and Analysis (SUDA) to design proposed stormwater facilities and model existing utilities.

Modeling experts on the LANE Team are personally familiar with the Department’s goals of reaching 3D and 4D Model Requirements while also understanding the unique challenges of VDOT’s internal staff capabilities. LANE Team specialists have helped the Department reach numerous project milestones through Staff Augmentation on-call contract tasks. Our 3D experts have provided on-site and remote training and support on Location and Design projects in Central Office, Richmond District, and Suffolk District offices. LANE Team professionals are also adept with the Department’s ProjectWise platform.



Figure 4.3.1.i-2: LANE’s Concept was developed using advanced modeling techniques in OpenRoads to best meet the Department’s goals.

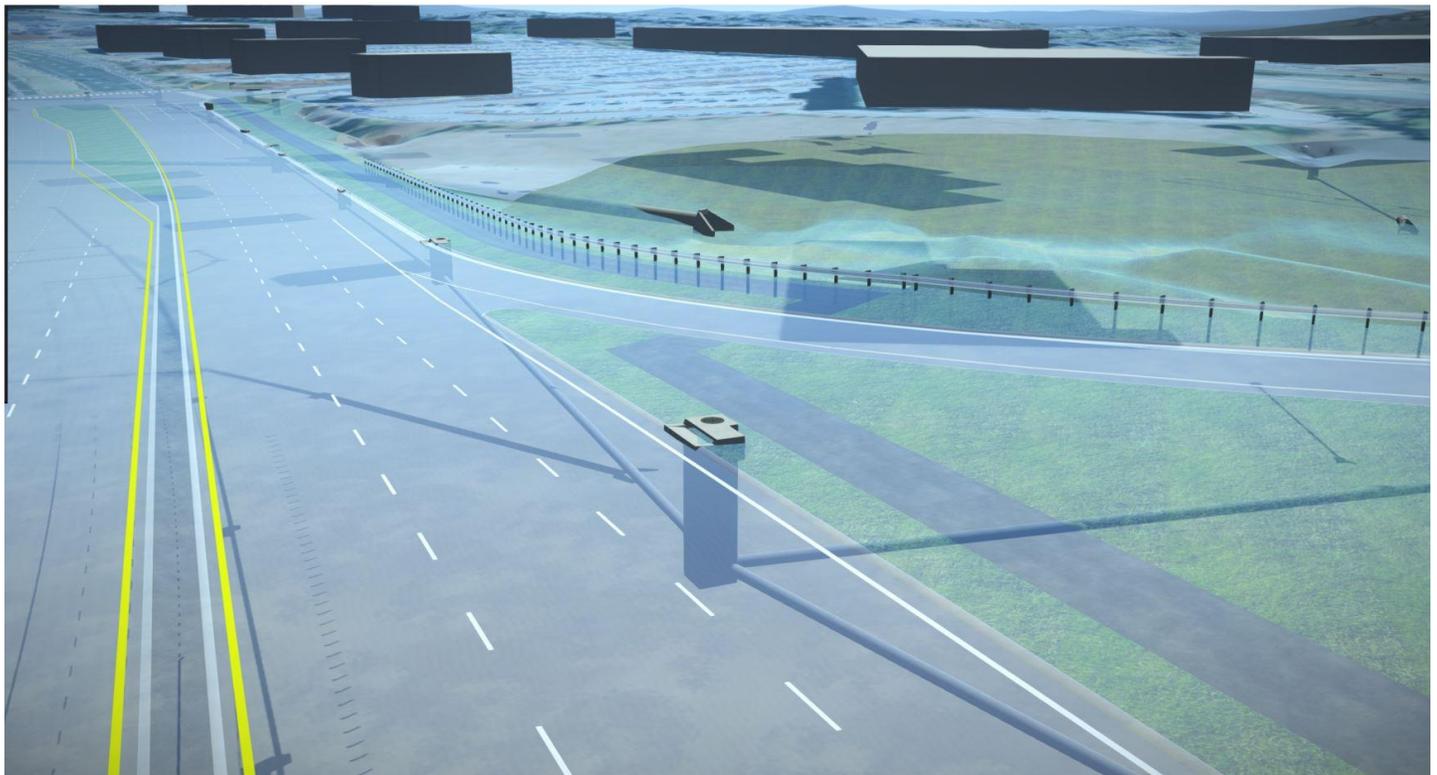


Figure 4.3.1.i-3: Existing and proposed utilities modeled in OpenRoads SUDA to optimize design and identify risks

VDOT's goals in modeling and animation is ambitious. The LANE Team is fully prepared to assist VDOT in achieving this reality. LANE Team specialists have built many large, complex models and have performed image and animation video rendering to achieve outstanding products that include 360-degree virtual reality (VR) outputs that are compatible with YouTube and VR headsets. The LANE Team has used numerous Bentley modeling products on this Project to provide an innovative solution that reduces risk and cost for VDOT while increasing quality and communication capability. The LANE Team's GIS experts and other technology professionals can further support VDOT's goals in 3D and 4D implementation.

Electronic submissions of plans, reports, and calculations will follow VDOT's process, including an associated LD-436 quality checklist. Plans will be provided in "dgn" and "pdf" formats, as well as paper copies, at the milestones outlined in the RFP. Each submission will undergo an internal quality review process prior to submission. As-built plans of the Project will be provided in accordance with VDOT requirements.

Traffic and Intelligent Transportation Systems (ITS).

Signs. The LANE Team performed a comprehensive review of the existing overhead signing along the Route 7 corridor using the provided conceptual signing plan from the Interchange Justification Report, field observations, and the RFP. The proposed sign structure locations shown on the conceptual signing plan will be optimized to consolidate the new sign structure locations and place them with proper clearances to other roadside features including accommodating the future widening along Route 7. The proposed signing, including the replaced sign panels will be designed and fabricated in accordance with the 2016 VDOT Road and Bridge Specifications, the TOL DCSM (for local roadway signs), 2009 MUTCD, the 2011 Virginia Supplement to the 2009 MUTCD, and all applicable Traffic Engineering Division Numbered memoranda.

All new signing will use Type IX or higher retroreflective sheeting in accordance with Traffic Engineering Division Instructional & Informational Memorandum Overhead Sign Lighting (IIM-TE-380). This will lower operating costs to VDOT as well as provide enhanced safety to the motoring public.

The removal of the existing overhead sign structures and the installation of the proposed overhead sign structures will be phased throughout the construction staging. In some cases, overhead signs will have to be placed on temporary ground mounted bases along the side of the roadway as appropriate. Proper sign messaging will remain throughout construction using overlays or temporary guide signs. In other cases, the new overhead sign structure will be placed into service prior to removing the existing sign structure and overhead signing. Either solution will be coordinated with VDOT and done to enhance the safety of all users and employees in the work area.

Signals. New traffic signal structures at the Battlefield Parkway and Route 7 interchange intersection plus traffic signal modifications at Battlefield Parkway and Fort Evans Road, Shopping Center and Russell Branch Parkway/Trailview Boulevard; and Battlefield Parkway, and River Creek Parkway at Fort Evans Road will be installed. The signal improvements along the detour route will be constructed in two phases – temporary alignments to match traffic operations during the MOT phases and permanent locations once traffic has been aligned into its ultimate configuration.

Intelligent Transportation System (ITS). A stand-alone CCTV camera will be installed to provide continuous surveillance of the interchange and corridor operations. The CCTV camera will be placed at a strategic location to maximize visibility of the interchange limits, including Route 7 approaches, Battlefield Parkway approaches and the bridge deck. The camera will be located and installed such that lane closures will not be required for long term inspection and maintenance. A broadband connection will be established using a broadband network switch per the RFP. The camera will be installed per current VDOT standards and will be located near the signal cabinet to share power and communication connections as appropriate; saving VDOT capital and providing a long-term benefit for the Department.

Lighting. Roadway lighting on Battlefield Parkway will be replaced with new direct buried conventional poles with arms and LED luminaires from the signalized entrance at the Market Place at Potomac Station to Russell

Branch Parkway. The existing roadway lights from the signalized entrance for the Market Place at Potomac Station to Potomac Station Drive will be retrofitted with new LED luminaires. Conduit and junction boxes will be installed for use by Dominion Energy for installation of conductor wiring. This system will be owned and operated by VDOT through an agreement with Dominion Energy. **Roadway lighting will accommodate the future conditions for Route 7.**

The option of using high mast lighting along Route 7 in the interchange area was evaluated during the procurement process of this project. Our Team determined that high mast lighting would neither provide cost savings nor long term benefits to VDOT. The use of high mast lighting did not reduce the initial cost of lighting on the project compared to low level lighting and the high mast system would be owned and maintained by VDOT (as opposed to Dominion and the Town having responsibility for the low-level lighting). Also, the high voltage power lines along the south side of Route 7 presented particular challenges to installation and maintenance.

Roadway lighting on Route 7, including the interchange ramps, will use new direct buried conventional poles with arms and LED luminaires. This lighting will be installed between the Battlefield Parkway ramps tie in points. Any necessary conduit and junction boxes will be installed during the roadway construction for use by Dominion Energy. This system will be owned and operated by the TOL through an agreement with Dominion Energy.

LED underbridge lighting will be used to illuminate Route 7 under Battlefield Parkway. The underbridge lighting system will be connected using conduit, junction boxes and conductors energized by a standard VDOT electrical service which is planned to be near the existing traffic signal power drop. This system will be owned and operated by VDOT.

Pedestrian lighting conforming to the TOL requirements, will be installed on Battlefield Parkway for the sidewalk and shared use path at the interchange between the Route 7 ramp tie in points. Conduit and junction boxes will be installed during the roadway construction for use by Dominion Energy. The pedestrian lighting system will be separate from the roadway lighting system and be owned and operated by the TOL through an agreement with Dominion Energy.

Keystone Drive will have pedestrian lighting installed that conforms to the TOL requirements to illuminate the sidewalk. Conduit and junction boxes will be installed during roadway construction for use by Dominion Energy. This system will be owned and operated by the TOL through an agreement with Dominion Energy.

The Bridge Architectural Panel will use LED luminaires to illuminate the “LEESBURG” letters at night. Conduit and junction boxes will be installed during roadway construction for use by Dominion Energy. This system will be owned and operated by the TOL through an agreement with Dominion Energy.

Overhead Signs on Route 7 will be lighted per IIM-TE-380 and equipped with LED luminaires per VDOT standards. Existing service drop locations from the removed sign structures are planned to be re-used if lighting is required. This system will be owned and operated by VDOT.

4.3.2 Conceptual Structural Plans

The LANE Team proposes to span the future Route 7 typical section with a two-span continuous steel plate girder bridge. Following the abandonment of the existing water utility under Span A, and relocating the existing fiber optic utility near the MSE retaining wall in Span B, the LANE Team design positions both abutments as close as permissible to the centerline of Route 7, reducing the spans lengths down to 91'-6". The proposed bridge design accommodates the future Route 7 typical section, provides bridge fixed object protection systems in front of both abutments and both sides of the Pier, and is consistent with VDOT's minimum offset dimensions for deck slab abutments behind MSE retaining walls.



Figure 4.3.2-1: SPUI Bridge looking East (some details omitted for clarity)

The key design element of the Battlefield Parkway bridge is what the LANE Team refers to as the “bowtie flare” as shown in *Figure 4.3.2-1* above. The plan view shape of the bridge is similar to a bowtie and the geometry of the flared corners dictates multiple items such as: pouring sequence for the concrete deck, girder framing, abutment lengths, number of piles, and approach slab limits.

During development of the Concept Plans, the LANE Team revised the geometry of the turning movements through the single point urban interchange to maintain 10ft clearance between opposing turning movements and a 4ft clearance between parallel movements. The LANE Team evaluated the deck pouring sequence to limit the number of construction joints and minimize the total construction time of the deck.

The LANE Team evaluated two plate girder options for the main section of the bridge. The first option included a thinner deck with tightly spaced girders with a shallow depth. The second option included a thicker deck with deeper girders spaced farther apart. The LANE Team has based the concept plans on the second option which results in fewer steel plate girders to be maintained and shorter MSE walls, providing for less long-term maintenance. For the bowtie flare, the LANE Team will utilize similar depth steel plate girders that connect to the exterior girder in the main section and flare out to the abutments as shown in the graphic below (*Figure 4.3.2-2*). This framing plan is very similar to the framing plan being constructed on the Jones Branch Connector that JMT developed for VDOT. To minimize differential deflections between the main section and the bowtie flare, all girders share the same web depth. Additional bridge details are provided below:

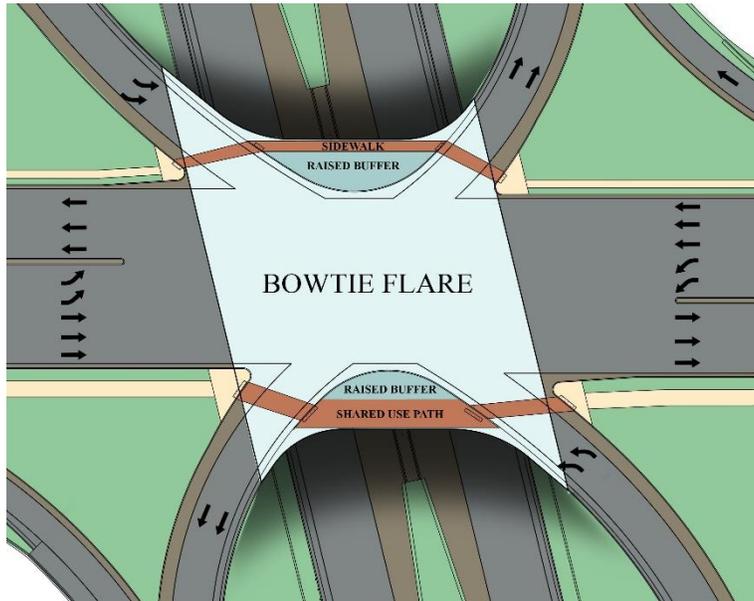


Figure 4.3.2-2: Bowtie Flare

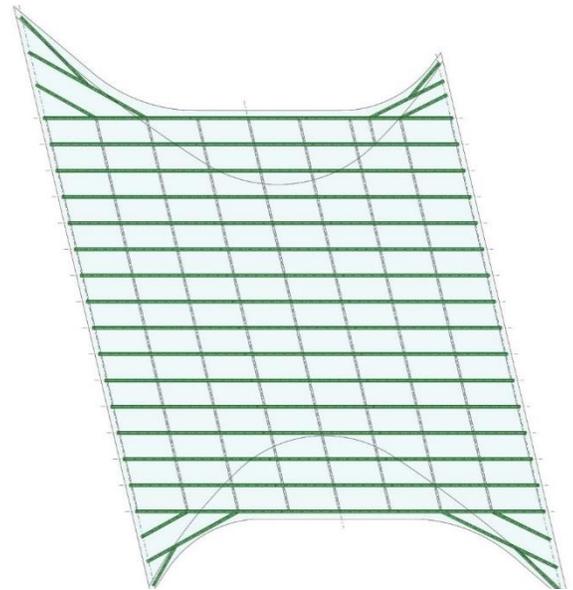


Figure 4.3.2-3 Framing Plan

General Bridge

The Battlefield Parkway bridge over Route 7 will be designed using *AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014*, including 2015 and 2016 interim modifications and VDOT modifications per IIM-S&B-80. Bridge and approach settlement will be designed to be less than the requirements in the Additional Foundation Criteria found in *Attachment 2.3.1*. The superstructure will be designed to meet the minimum vertical clearance of 16'-6".

The proposed bridge will accommodate the Battlefield Parkway typical section which includes the following:

- Six 12'-0" wide travel lanes
- Two 12'-0" wide turn lanes in each direction
- Variable width raised buffers
- 6'-6" sidewalk
- 17'-6" shared use path

The proposed bridge will accommodate the future Route 7 typical section which includes the following:

- Eight 12'-0" wide travel lanes
- 15'-0" wide inside shoulders
- 10'-0" wide outside shoulders for the future condition
- 16'-6" vertical clearance is provided for future conditions

The proposed bridge will accommodate conduit and cable for roadway and pedestrian lighting, ITS, and traffic signal communications. In addition, the pier will be located along the centerline of Route 7 to accommodate future widening. Fixed object protection will be located along both sides of the pier in the median and in front of both abutments. The location of the bridge pier foundation has been designed to avoid conflicts with the gas main in the median of Route 7. Excavation and construction of the bridge pier will be done within a trench box to avoid impacting to the 6-inch gas main. The Summit IG ductbank will be relocated to avoid conflicts with Abutment B.

In general, the architectural treatment planned for the bridge and retaining walls is very similar to the architectural treatment used on the Jones Branch Connector project that JMT developed for VDOT. Throughout the Jones Branch Connector, JMT coordinated with Fairfax County to implement drystrack formliner on the concrete elements, an ornamental fence, and raised buffer areas with staining. In addition, **JMT developed the project Special Provision that addresses galvanized and powder coated metal elements and ornamental fence.**

Superstructure

A two-span continuous steel structure with deck slab extension abutments will be used to provide a jointless bridge. Although allowed by the RFP, the LANE Team has eliminated open longitudinal joints on the bridge to reduce future maintenance to VDOT. Closed longitudinal construction joints will be used in the deck slab to limit concrete placements to no more than 80'-0" wide.

The LANE Team's bridge concept reduces long-term maintenance by avoiding the use of longitudinal joints

Low permeability, low shrinkage concrete and corrosion resistant reinforcing steel, Class III (solid stainless steel) will be used in the deck slab, sidewalks, buffers, parapets, and terminal walls. Note that Battlefield Parkway is an Urban Minor Arterial which only requires Class II reinforcing **the LANE Team will use higher grade Class III reinforcing.**

Structural steel plate girders will be Grade 50 (fy = 50 ksi) weathering steel. Per the RFP bridge concept plans, only the outside of the fascia girder will be painted brown. **Since the bridge is jointless, the remaining girders do not need to be painted which reduces long-term maintenance.**

Bearings will be laminated elastomeric pads. Since the bridge is wider than it is long, lateral expansion and contraction of the superstructure due to thermal forces must be accommodated. Similar to the Jones Branch Connector project that JMT developed for VDOT, bearing types will include fixed, expansion, and guided expansion. The bearings will be fixed at the pier and provide longitudinal expansion at the abutments. Near the bridge rails, bearings will be fixed at the pier with guided lateral expansion. Near the bridge rails and at the abutments, bearings will accommodate longitudinal and lateral expansion.



Figure 4.3.2-4 Bridge Parapet with tri-colored Drystack Architectural Treatment: Example from Lane's I-66/Route 15 project.

A CPSR rail with dry stacked stone pattern aesthetic treatment will be provided on both sides of the bridge parapet. The dry stack will be tri-colored and the bridge railing will be galvanized and powder coated black. After installation, the bridge railing will be grounded and bonded using details JMT refined for the Jones Branch Connector project.

An ornamental fence that accommodates roadway lighting blisters will be provided on both side of the bridge. The ornamental fence will be galvanized and powder coated black. Similar to the Jones Branch Connector project that JMT developed for VDOT, the ornamental fence will wrap around the blister on the bridge parapet to **accommodate maintenance and future inspections of the anchor bolts** for the light pole base. See an example below in *Figure 4.3.2-5*. The ornamental fence will also be grounded and bonded after installation.

Roadway lighting and pedestrian lighting will be provided on the bridge. Pedestrian lighting will be located adjacent to the sidewalk or shared use path and outside of the lateral offset to reduce vehicular collision as well. Roadway lighting will be located on blisters on the back side of the bridge parapet.

A raised buffer will be constructed adjacent to the sidewalk on the west side of the bridge and adjacent to the shared use path on the east side of the bridge. The raised buffer will be stained medium to dark grey.

Bollards will be installed on the raised buffer and will be **located outside of the lateral offset to reduce the potential for vehicular collisions.**



Figure 4.3.2-5: Ornamental Fence proposed for this project

A deck slab drainage system will not be required. Drainage of the bridge deck was analyzed but the spread of the stormwater from the curb was less than half of the travel lane width. Therefore, deck slab drains are not required on the bridge, inlet spacing off the bridge will be located near the ends of the approach slabs. Eliminating the deck slab drainage system **will reduce long-term maintenance costs associated with cleaning out the system and replacing corroding components.**

Substructure

Deck slab extension abutments will be provided at both locations to provide a **jointless bridge**. The abutments will be founded on vertical, steel H-piles driven to refusal behind MSE retaining walls. **Oversized steel H-piles will be used to drive piles into intermediate geomaterial (IGM) and reduce construction time and noise by eliminating pre-augering.** With IGM near the surface, the LANE Team has calculated a rockline at each abutment to verify a minimum 10 ft. of pile can be embedded below the reinforced soil zone. Pile points will be used to lock the piles into the IGM, a WEAP analysis will be performed to determine hammer size, and a dynamic pile analysis will be conducted to avoid overstressing the pile. **In addition, buried approach slabs will be provided at both abutments to improve rideability at the bridge approaches.**

The face of the abutment stem and all sides of the cheek wall will be stained to complement the architectural treatment on the superstructure. Between the MSE wall and the cheek wall an MSE closure panel, with stained dry stack architectural treatment, will be installed to retain the fill adjacent to the bridge.

Higher-grade corrosion resistant reinforcing steel, Class III (solid stainless steel) will be used in the neat abutment concrete. Class I (low carbon, chromium) will be used throughout the pier concrete as all elements are located within the splash zone.

According to the RFP plans, the existing fiber optic utility near Abutment B is located near the front face of the proposed MSE retaining wall. The existing fiber optic utility exhibits a minimum clearance from the finished grade to the top of the utility of 4'-0". To **protect this utility during construction**, the LANE Team proposes to relocate the utility. In addition, per *Section 2.14.2 of RFP Part 2*, the existing 8" diameter water utility located near Abutment A will be abandoned. Since both existing utilities will be either abandoned or relocated, the LANE Team proposes to **reduce the length of both spans** from 100'-2" to 91'-6" by shifting the abutments closer to the pier centerline. By moving the abutments "in", the geometry of the bow tie flare will be reduced in width and length. This will ultimately **reduce the long-term maintenance and construction schedule** of the bridge for the following reasons:

- Abutment length will be reduced
- Steel plate girder length and number of cross-frames will be reduced
- Bridge deck surface area and volume of concrete in deck pours will be reduced

- o Fascia girder will need to support less deck area which reduces the section depth and increases the vertical clearance over Route 7

The pier will consist of rectangular caps supported by round columns and a continuous, spread footing founded on IGM. Multiple caps along the pier will be used to limit the effects of thermal forces. A full-height, architectural panel with lettering to say "LEESBURG" will be located at both ends of the pier and will be founded on the pier footing. The structural excavation for the pier footing will use **trench boxes to protect the existing 6" diameter gas line** located within the footprint of the inside shoulder for eastbound Route 7.

Retaining Walls

Retaining walls in accordance with VDOT & AASHTO LRFD specifications and requirements will be provided. Only retaining walls with FHWA and VDOT approval will be provided. **100-year service life** with respect to soil reinforcement will be provided for MSE walls within 100'-0" from the edge of the bridge abutment. Moment slabs for retaining walls will be designed according to crash test level TL-4. **Corrosion Resistant Reinforcing steel**, Class I (low carbon, chromium) will be used in moment slabs, wall coping, and panels within the splash zone. **An impervious membrane** will be provided below the pavement and just above the first row of reinforcement to intercept any surface drainage containing deicing chemicals. Drainage details, such as perforated pipe and/or drainage blankets will be evaluated to minimize hydrostatic pressure. MSE wall panels will incorporate the **dry stack, stone architectural surface finish**. Per the RFP plans, the leveling pad will be buried 3'-0" below finished grade.

Near Russell Branch Parkway, the RFP plans depict a proposed segmental block wall next to the existing RW3 retaining wall to retain the additional fill from widening Battlefield Parkway. The RFP plans also depict excavating the existing embankment so that layered geogrid reinforcement can be attached to the back of the RW3 wall. Lastly, the RFP plans depict an HR-1 Type III handrail on top of the segmental block wall to address OSHA requirements regarding fall hazards.

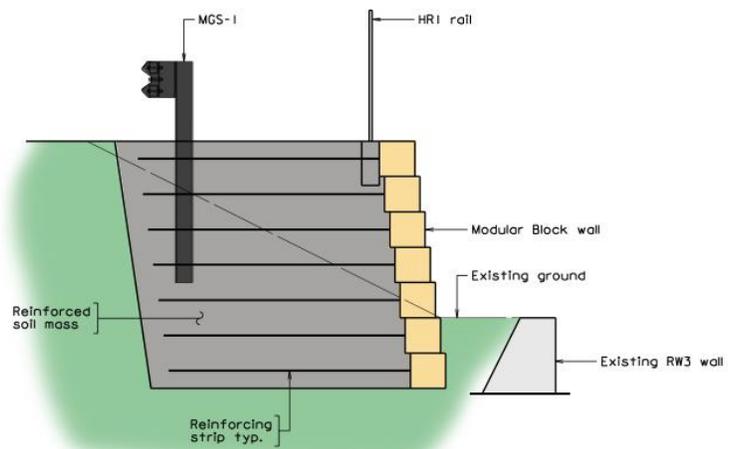


Figure 4.3.2-6: Block Wall near Russell Branch Parkway

The LANE Team has analyzed this wall and will use the HR-1 Type III handrail and the segmental blocks with a reinforced zone. Our analysis indicates that adding geogrid reinforcement to the existing RW3 wall is not necessary. The proposed wall section, as shown on the RFP plans, satisfies the AASHTO LRFD criteria for sliding, overturning, and bearing pressure. This approach eliminates over-excavation behind the existing RW3 wall, installing geogrid reinforcement, and backfilling behind the RW3 wall. Since the existing RW3 wall does not need to be modified and the previously mentioned steps can be eliminated, the **construction duration and associated impacts to the Town's maintenance area will be reduced and the risk of damage to the existing wall is mitigated.**

4.4 | PROJECT APPROACH

The LANE Team's integrated approach to managing the Route 7 and Battlefield Parkway Interchange project throughout its lifecycle from design through construction and ultimately final acceptance is summarized below. The LANE Teams approach meets and/or exceeds the RFP requirements; we have developed an innovative design and construction concept based on the LANE Team's extensive experience performing design and construction for VDOT and the Town of Leesburg (TOL).

4.4.1 Environmental Management

The LANE Team has developed a thorough and integrated approach to environmental management, and environmental permitting. Our approach anticipates, minimizes, and/or mitigates potential project delays for impacts to resources/areas of concern. The LANE Teams schedule integrates environmental activities and key milestones, including several strategies to ensure the environmental permitting and environmental constraints do not delay the project. **These strategies illustrated in Figure 4.4.1-1 provide significant benefits to VDOT.**

Approach to Environmental Management During Design & Construction

The LANE Team has developed an integrated and thorough environmental management approach for implementation during the design and construction to avoid, minimize, and mitigate impacts to environmental resources, meet NEPA commitments, and secure all required environmental permits expeditiously to prevent potential project delays.

This approach will benefit VDOT because it will ensure the LANE Team meets all environmental commitments and permit conditions, compliments the project schedule and reduces project costs. The LANE Team will employ the same successful environmental management strategies that we have used for other complex environmental roadway D-B projects (i.e., I-66/Route 15 Reconstruction, 495 and 95 Express Lanes, Route 29 Solutions). The LANE Team completed early constructability reviews to ensure all potential environmental risks were identified. **The specific environmental management efforts that the LANE Team will use are summarized below:**

Streamline NEPA re-evaluation by minimizing disturbance outside existing ROW. The LANE Team's design avoids disturbance outside of the NEPA Study Area. **As our design progresses, we will ensure that the**



Figure 4.4.1-1: LANE Team Benefits

limits of disturbance and ROW do not expand beyond those evaluated in the Categorical Exclusion; thereby avoiding the need for additional NEPA studies and avoiding potential project delays.

Prepare Environmental Management Document (EMD) During Design. The LANE Team has prepared an EMD, which identifies all required environmental permits and environmental commitments made in the RFP and the Categorical Exclusion. This will be incorporated into the Team’s comprehensive Site-Specific Environmental Health and Safety Plan (EHSP) and include the commitments and conditions in tabular form to: track environmental permit acquisitions, minimize potential project delays, ensure that each environmental permit/approval is accounted for in the Project schedule, and ensure environmental compliance throughout the life of the project.

Environmental Training During Design and Construction. Before construction begins, our environmental team will develop a project specific environmental training session program concerning sensitive environmental resources, NEPA commitments, and permit compliance. This training will identify the resources that will be avoided and highlight the permit compliance requirements and NEPA commitments. The training session will be video recorded. The LANE Team will require all new project personnel including subcontractors to receive a formal orientation prior to working on the site including a review of the EHSP and the environmental training video. This will ensure the construction team is aware of all environmental conditions, environmental resources, and commitments and will **minimize potential delays due to environmental non-compliance issues**. All LANE staff will be authorized to stop work for any environmental concerns raised during construction.

Approach to Environmental Permitting During Design and Construction

The LANE Team will use the following environmental permitting approach during design and construction to avoid, minimize, and mitigate for impacts to environmental resources and anticipate and minimize potential project delays during the permitting process.

Complete Environmental Resource Surveys/Phase II Environmental Site Assessments Early in the Design. To minimize chances of project delays, upon NTP, we will immediately coordinate with the regulatory/consulting agencies to determine if special status species surveys or habitat assessments are required (potentially northern long-eared bat and mussel species). Early coordination will be important because some species surveys have constrained survey windows. We will also complete any additional environmental studies (i.e. wetlands, WOUS, and special status species) shortly after NTP for borrow/disposal sites, staging and laydown areas to ensure that completion of these studies do not hold up the schedule

Complete Phase II Environmental Site Assessments for the Six Properties required by the RFP. We will complete this work soon after NTP so that the results of the studies can be considered in the design and the ROW plans. By completing this work early in the process, if contamination is found by these studies, we can design to avoid or minimize subsurface work in these areas, thereby reducing costs and construction delays that are routinely associated with construction in contaminated media.

Develop Avoidance and Minimization Measures including Agency Workshops Early in the Design and Secure SPGP and GP to Reduce Permit Issuance Duration. Our Environmental Lead, Ian Frost will continue to collaborate with the design and construction teams to avoid and minimize impacts to important environmental resources. We will invite the regulatory agencies to participate in workshops to obtain agency “buy-in” on the avoidance and minimization measures early in the design process. This will benefit the project, by identifying agency concerns early and minimizing potential delays in permit issuance.

We will ensure wetland impacts are avoided or at least minimized to reduce the impacts below the thresholds provided in the NEPA CE. Our concept plan reduces wetland impacts compared to the impacts in the RFP Concept plan. In addition, based on research and review of the original design plans, we are confident that the stormwater BMP located in the northeast quadrant of the intersection should not be a jurisdictional feature because it was constructed in an upland and has been maintained as a stormwater BMP. The LANE

Team will coordinate with the USACE for a revised Preliminary Jurisdictional Determination (PJD) that should eliminate this jurisdictional feature. By eliminating this feature and reducing impacts to other jurisdictional wetlands and streams, the LANE Team’s Concept plan should qualify for a Virginia Water Protection General Permit from the DEQ and a State Programmatic General Permit (SPGP) instead of an Individual Permit from the DEQ and USACE. **Our design currently reduces the impacts to jurisdictional features by over 300 linear feet of stream and 0.50 acres of wetlands. This should reduce the environmental permit duration from about 7 months to about 3 months.** Because this approach is not guaranteed, our schedule reflects a more conservative permit duration of about 6 months for the Individual permits. The LANE Team will continue to analyze and implement additional cost-effective avoidance and minimization measures, to reduce the potential for project delays from permitting.

Early Agency Involvement in Design. The LANE Team will begin coordination with the permitting agencies (USACE, DEQ, VMRC) and the other consulting/approval agencies (EPA, USFWS, NMFS, DHR, DGIF, DCR, VDACS, VIMS) immediately upon NTP. This will allow us to pro-actively address avoidance and minimization measures and to gain buy-in for the mitigation measures and compensation requirements, eliminate potential Time of Year Restrictions (TOYR) by relying upon the findings of the Programmatic Biological Opinion for Final 4(d) Rule and the self-certification process to minimize potential project delays. Coordination with USFWS and DHR will be done in concert with VDOT, to respect the lead role of VDOT/FHWA in Section 7 and Section 106 coordination and compliance.

Identify Suitable Mitigation Early in the Design. The LANE Team will work with the regulatory agencies to find acceptable compensation for unavoidable impacts to jurisdictional wetlands and waters. We have consulted with the approved banks in the appropriate HUC codes to ensure that available credits for all the types of wetland and stream impacts are available. In addition, we will get concurrence from the agencies that in-kind compensation for temporary wetland impacts and impacts to jurisdictional ditches will not be required. This will ensure our permit application is processed quickly and minimize potential for project delays due to permitting.

Environmental Permit Compliance Monitoring During Construction. The LANE Team will monitor environmental compliance during construction as required by the environmental permits to minimize potential compliance issues and potential delays due to environmental deficiencies. In accordance with our EHSP, the LANE Team will use exclusion fencing and signage around non-impacted wetlands and streams, and other resources/areas of concern to ensure they are not impacted by construction.

Approach & Solution to Environmental Conditions/Areas of Concern within the Project Footprint

As shown in *Table 4.4.1-2* below, the LANE Team has identified key Environmental Conditions/Areas of Concern within the Project footprint, analyzed the risks, and identified avoidance and mitigation strategies to avoid adverse effects.

Table 4.4.1-2: Environmental Mitigation Strategies for Areas of Concern/ Environmental Conditions

Environmental Condition/Area of Concern	Avoidance, Minimization, and Mitigation Strategy
Cultural Resources	<ul style="list-style-type: none"> • Ensure design does not affect the Ball’s Bluff Battlefield architectural resource. This resource will be identified in the EMD as an area of concern to be avoided to further protect the resource. • Complete any cultural resource studies for construction access, laydown, staging, and borrow sites.
Water Quality Permitting	<ul style="list-style-type: none"> • Pursue a revised PJD with the USACE to eliminate the stormwater BMP within northeast quadrant of the intersection as a jurisdictional feature. • Continue to incorporate avoidance and minimization measures into design to remain under Individual Permit impact thresholds and qualify for a VA Water Protection General Permit and SPGP, thereby shrinking permit issuance duration by about 4 months

Table 4.4.1-2: Environmental Mitigation Strategies for Areas of Concern/ Environmental Conditions

Environmental Condition/Area of Concern	Avoidance, Minimization, and Mitigation Strategy
Noise	<ul style="list-style-type: none"> • Complete and furnish a final Noise Analysis Design Report (NADR) for all noise sensitive receptors identified in the project area. • Conduct final design noise analysis in compliance with the VDOT State Noise Abatement Policy, VDOT Highway Traffic Noise Impact Analysis and Abatement Guidance Manual. Design and construct noise walls recommended by FHWA, Chief Engineer and Noise Abatement Design Report.
Wetlands and Waters of the US (WOUS)	<ul style="list-style-type: none"> • Continue to incorporate avoidance and minimization measures through agency workshops to minimize permanent impacts. • Use exclusion fencing along the non-impacted jurisdictional wetlands and streams within 50ft of LOD to protect during construction. • Coordinate with agencies early in the environmental permitting process, update IPaC etc. information, conduct surveys/habitat assessments of borrow sites, staging, and laydown areas. • Pursue revised PJD which eliminates the stormwater BMP as a jurisdictional feature. This strategy and other avoidance and minimization measures should expedite permit issuance and reduce the permit acquisition duration by approximately 4 months.
Hazardous Materials	<ul style="list-style-type: none"> • The LANE Team will prepare a Spill Prevention Control & Countermeasure Plan • Conduct Phase II ESAs in accordance with ASTM Standard E 1527-13 for ROW and VDOT Special Provision for Phase II ESAs for Design Build Projects and Special Provision for Management of Petroleum Contaminated Soil for the six locations identified by the RFP. Complete these studies shortly after NTP to ensure the design will avoid or minimize impacts to contaminated media on these properties, especially from proposed cuts, stormwater BMPs, and utility placements. This will also ensure that the schedule for the ROW plans is not delayed and will help to reduce project costs.
Special Status Species	<ul style="list-style-type: none"> • Pursue a “may affect, but not likely to adversely affect” Section 7 determination with the USFWS for impacts to Northern long-eared bat and pursue a self-certification under the 4(d) rule to eliminate the need for a TOYR for tree clearing. Confirm there is no mussel habitat within the streams impacted by the project.

Project Schedule Integration with Environmental Milestones

Obtaining environmental permits and environmental approvals in a timely manner is always a schedule and planning priority for any project because construction cannot start in jurisdictional areas until permits are issued and the NEPA re-evaluation is completed for the EWP RFC plans, ROW plans, and RFC plans. As described below, we have already integrated the environmental activities within the schedule. The LANE Team will track the environmental activities in the project schedule throughout design and construction to ensure that the schedule is met and that permit acquisition does not delay the project.

Integration of Environmental Milestones into the Project Schedule. We have integrated key environmental permits, environmental studies, and approval activities into the schedule, including:

- JPA application preparation and submittal- 28 calendar days duration
- JPA application review and issuance of environmental permits- 210 calendar days duration
- EQ103, EQ200, EQ201 reviews- 21 calendar days duration for each
- Wetland delineations and special status studies for construction access points, laydown, borrow sites and staging areas- 28 calendar days duration
- Phase II Environmental Site Assessments- 70 calendar days duration
- Water Quality Permit acquisition for the EWP, if required, which includes construction of access roads
- Environmental permit compliance monitoring- duration of the project construction.

The LANE Team will track the environmental activities in the project schedule throughout design and construction to ensure that the schedule is met and that permit acquisition does not delay the project.

4.4.2 Utilities

Approach for Utility Coordination, Adjustments, and Relocations

The LANE Team's primary approach to utility coordination, adjustments, and relocations is to minimize conflicts and relocations that pose a risk to the schedule and Project costs. We have carefully reviewed the RFP Conceptual Plans, performed extensive on-sight inspections, coordinated with each impacted utility company, and researched available records to accurately develop our Conceptual Plans and Schedule. The LANE Team will leverage the information gathered with our extensive local knowledge and experience working with the utility companies in the corridor to provide VDOT with a comprehensive approach to minimizing utility impacts to the Project.

The following flowchart demonstrates our approach and process for addressing utilities on the Project from the RFP phase through Project execution.



Figure 4.4.2-1: Flowchart for addressing utilities on the Project

Utility Conflicts, Mitigation Measures, and Relocations

The LANE Team understands the importance of avoiding utility conflicts and relocations wherever possible. If conflicts cannot be avoided, we will work to minimize relocations with design modifications and/or protection of the facility; only as a last resort will utilities be relocated to accommodate proposed improvements. All relocations will be individually addressed in detail in the construction schedule, with emphasis to avoid Project delays and define with logic where work can be shifted, when necessary, to avoid any delays to daily construction efforts. *Table 4.4.2-2* below identifies a portion of utilities that conflict with the proposed work and our Conceptual Plans.

Table 4.4.2 -2: Utility Conflicts

Conflict Location	Public/ Private	Conflict	Mitigation	Responsibility	
				Utility	LANE
Verizon			Initial Contact: 10/5/18		
EB Route 7	Private	Road widening	Relocate to new poles & duct bank by others	✓	
Dominion Energy (Distribution)			Initial Contact: 10/5/18		
EB Route 7 west of Battlefield	Private	Road widening	Relocate poles and overhead lines	✓	
EB Route 7 Sta 1059+25 & 1064+40	Private	Road widening and ramps A&B	Adjust overhead connections to duct banks	✓	
Keystone	Private	Entrance construction	Relocate switch	✓	
Dominion Energy (Transmission)			Initial Contact: 8/9/18		
None	Private	None	Coordination only		✓
Summit IG (Zayo)			Initial Contact: 8/27/18		
WB Route 7	Private	Road widening, bridge and ramps B&C	Lift & lay relocation	✓	
Century Link			Initial Contact: 10/29/18		
EB Route 7	Private	Road widening and ramps D&A	Relocate overhead FO to new poles & adjust buried conduit	✓	
Comcast			Initial Contact: 10/5/18		
EB Route 7	Private	Road widening	Relocate overhead lines to new poles & duct bank by others	✓	
Keystone	Private	New road & entrance	Relocate underground lines	✓	
Washington Gas Light			Initial Contact: 10/30/18		
Bridge piers	Private	Adjacent to bridge pier construction	Protect in place: limit impact of excavation for pier construction		✓
Ramp C	Private	Under ramp construction	Relocate gas main	✓	
Leesburg Water			Initial Contact: 8/16/18		
EB Route 7	Public	Under proposed roadway/ramps D&A	3rd party relocating waterline/LANE Team to abandon existing line	✓	✓
Route 7 Mainline sta 1067+75	Public	Roadway widening	Extend existing casing as needed		✓
Leesburg Sewer			Initial Contact: 8/16/18		
Ramps C&D	Public	Under Proposed Ramps	Install parallel sewer & abandon existing		✓
Ramp C	Public	In ramp fill slope	Install parallel sewer & abandon existing		✓
Battlefield Parkway	Public	Road Widening	Install parallel sewer & abandon existing		✓

With all projects, the potential exists to encounter unknown utilities during construction. The LANE Team utilizes dedicated Utility Managers for both design and construction. The Utility Manager for Design will act as a single point of contact with the LANE Team, VDOT Utility Managers, and the Utility Owners during the permitting and design phase. Once construction begins, the Utility Manager for Construction will take the lead in coordinating the utility impacts and relocations.

The Utility Manager for Design will be responsible for ensuring relocation plans are coordinated among the design disciplines and various utilities owners; however, both Utility Managers will work closely together to develop alternatives to remove or mitigate conflicts and relocations.

Methods for Keeping Utility Relocations on Schedule

- Dedicated utility team whose primary goal is to mitigate and manage utility relocations
- Obtain supplemental SUE and test hole data to confirm location and avoid impacts
- Modify our design to avoid utility conflicts, where possible
- Establish and adhere to a utility relocation schedule, with buy-in from the utility owner and third parties
- Establish monthly coordination meetings with the utility owners to monitor progress and issues
- Support the utility owners by assisting them with their work, where possible

Project Sequencing Integration

The LANE Team has identified utility conflicts and has incorporated them into our staging plans, work schedules, MOT planning, and permitting. Our Proposal Schedule includes planning and time to relocate the conflicting utilities. Prioritizing utilities in conflict with the early work packages will reduce or eliminate delays to construction activities. The LANE Team will be working closely with the utility companies which will allow us to minimize or avoid outages to the stakeholder's customers and the public. The utility matrix will be continually updated as design progresses and will be used during the construction phase of operations to document completion of adjustments, and relocations.

Upon notice of award, JMT will conduct subsurface utility engineering (SUE) including test holes to precisely locate and identify underground dry and wet utilities that appear to conflict with the planned Project construction. Simultaneously, The LANE Team will schedule utility meetings with all utility stakeholders that have active utility infrastructure near or within the Project limits.

Local Knowledge and Experience

The LANE Team has worked with every utility company that has been identified as having infrastructure within the Project limits. We have long-established working relationships with these companies, successfully completing numerous large-scale projects in the area.

A recent project involved the bridge foundations for the Jones Branch Connector project that were designed to minimize vibration impacts to the Washington Gas 30-inch transmission line. The closest anticipated separation to the foundation was 5ft. One corner of the bridge was ultimately redesigned when the pipeline was found to be much closer. Team members also coordinated the relocation of watermains, Comcast, WMATA power, and Verizon facilities, and designed the relocation and extension of Dominion Energy's line along the corridor.

Modifications and additions to VDOT's ITS for I-495 were made as well as shortening one bridge and redesigning an abutment when the actual line was exposed and found to be 15ft from the ball markers picked up by the SUE survey.

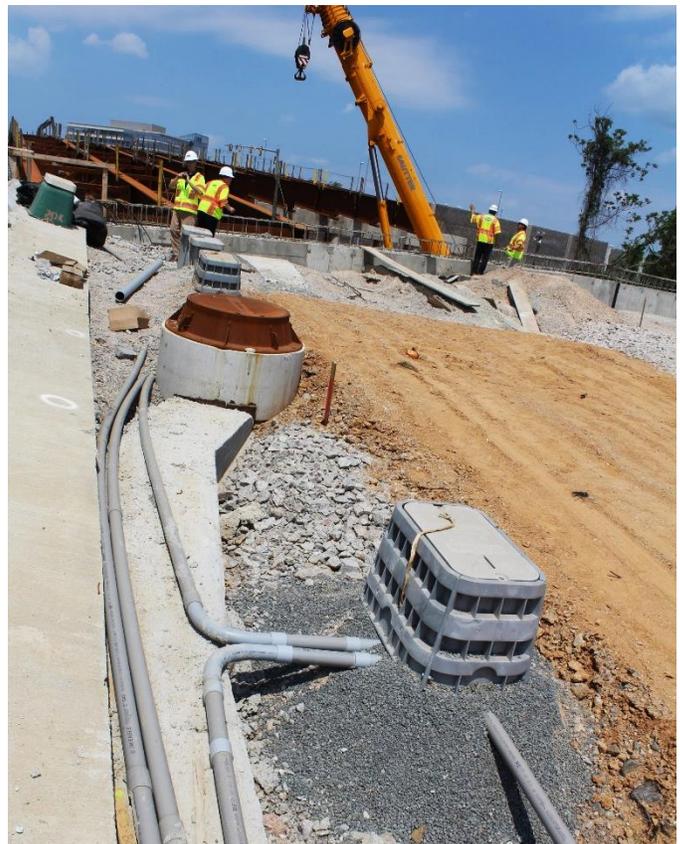


Figure 4.4.2-3: Jones Branch Connector – Showing ITS, Lighting and Dominion Energy Conduits

On the I-95 Rappahannock River Crossing Project team members are working with Dominion, Verizon, Columbia Gas, Stafford County Utilities and Summit IG to identify and mitigate conflicts. During these and numerous other local projects we have established professional working relationships with all the local utility companies, we continue to sustain these key relationships which are essential to the successful and timely completion of this Project.



Figure 4.4.2-4: Close coordination with local utility companies (over 30), LANE's \$112M Dulles Metrorail Utility Relocation project mitigated numerous utility impacts and relocations.

4.4.3 Geotechnical

Geotechnical Investigation & Engineering

The LANE Team possesses significant experience in the region of this project and will work diligently to minimize risks due to variable geotechnical subsurface conditions. Anticipated geotechnical risks include:

- Shallow and non-uniform Intermediate Geomaterials (IGM) and bedrock
- Lack of borings to identify bedrock depths, unsuitable soils including highly plastic clays for pavement support and subsurface conditions within ponds.
- Variable soil and rock conditions at jack and bore locations.
- Stability of walls and slopes and settlement impacts on existing and new structures.

Our extensive experience with the geologic formations in this region will allow the LANE Team to anticipate the subsurface soil/rock and groundwater conditions. We will develop and implement a supplemental site-specific geotechnical subsurface investigation program that is appropriate for the geologic conditions expected and the project to be constructed.

To mitigate the potential for geotechnical risks the LANE Team will perform early phase geotechnical explorations to delineate the lateral extent and depth of unsuitable soils, soft soils and shallow bedrock. The early phase exploration will also focus on obtaining samples for laboratory testing to include natural moisture contents, Atterberg limits, Standard Proctor tests, CBR tests, and shrink-swell tests. The results of these tests will assist in taking proactive measures to deal with the risks identified above early in both the design and construction phases. Descriptions of the proposed technical approach for the subsurface investigation, geotechnical engineering analysis, and reports are given below.

Subsurface Investigation

	PROVIDE A THOROUGH UNDERSTANDING of the subsurface conditions to minimize risks associated with cost and schedule.
	EXTENSIVE SUBSURFACE EXPLORATION and laboratory test program early to identify potential risks to be considered in project design and scheduling.
	ENGINEERING PERSONNEL well versed design and construction in the Diabase and Triassic geologic formations.
	WORK WITH VDOT to develop economical, constructible and efficient solutions.

Figure 4.4.3-1: LANE Team Benefits

The subsurface investigations will consist of performing test borings for the proposed new and widened roadways, slopes, bridge and retaining walls and culverts to identify depth of IGM, bedrock, and subsurface conditions not previously investigated. Variable soil and rock conditions at jack and bore locations and subsurface conditions are required to analyze foundations, the stability of walls and slopes and settlement impacts on existing and new structures.

A Virginia registered professional geotechnical engineer with more than 35 years of experience with assistance from a professional geologist (AIPG) with more than 40 years of experience will oversee the subsurface investigation. The test borings and any in-situ testing will be inspected by engineering or geological personnel with at least five (5) years of experience.

The proposed alignment crosses Diabase geologic formations and potentially the Triassic formation, most of which include relatively shallow bedrock. Excavations along the alignment will likely encounter bedrock and IGM that contain relic features of the underlying rock. The soils and the IGM can typically be excavated with conventional earthwork equipment without ripping or blasting. However, a project risk exists if we encounter harder phases of intermediate geomaterials and bedrock that require ripping or blasting. Also, jack and bore and culvert installations can be adversely affected by shallow and mixed interfaces of soil, IGM and bedrock. To mitigate the potential adverse impact of excavations in shallow bedrock, the LANE Team will focus on delineating these shallow bedrock areas with a combination of test pits, test borings, and seismic refraction surveys in expected deep cut areas. Early identification of these areas reduces the risk to the critical path of the project by allowing for a much more efficient earthwork plan and mitigation measures to include specialized earthwork equipment, blasting plans, and protection for the public.

Test borings will be performed to supplement the existing data to meet or exceed the requirements given in Chapter III of the VDOT Manual of Instructions (MOL.) In addition to the program being planned to identify normal subsurface conditions, the program will be planned to identify subsurface conditions to minimize risks associated with unsuitable soils including highly plastic clays, shallow bedrock, stability of walls and slopes and settlement impacts on existing and new structures. The supplemental boring plan will be prepared based on the Team's prior experience in this region, results of an initial site visit, review and analysis of the preliminary boring data, and review of the historic pavement condition survey information available from Loudoun County and VDOT.

The location of structure foundation borings for the bridge over Route 7, retaining walls, and culverts replacement will be determined by the needs of the individual structure and input from highway, water resources, utility, and structural engineers. The proposed borings will consist of standard penetration test (SPT) to the top of bedrock followed by coring of the bedrock, where applicable, to identify the quality of the rock. Of special note are areas where culvert/pipes are to be installed by jack and bore operations below Route 7 and Battlefield Parkway. At these locations variable rock depths can have a major impact on the ability to jack and bore due to mixed faces of soil and rock. Pavement core borings will be performed to identify pavement thicknesses. All borings and coring will be performed in accordance with the applicable VDOT, AASHTO and FHWA standard specifications for subsurface explorations.

Standard penetration tests (SPT) per ASTM D1586 will be performed in all borings with continuous sampling in the top 10 to 15ft and every 5ft thereafter. The continuous sampling in the top 10 to 15ft is intended to identify potentially unsuitable soils, shallow Intermediate Geo-Materials (IGM) rock that can influence jack and bore operations and soft soils that can impact slope stability and settlement of MSE walls. Rock coring will be performed to a depth of at least 10ft below the bottom of the anticipated foundations or until suitable rock is encountered. Undisturbed Shelby tubes will be taken in clayey soils for shear and consolidation testing.

Pressuremeter tests (PMT) per ASTM D4719 are planned in borings for the abutment walls and bridge foundations to better estimate the shear strength and settlement parameters for the soils, IGM and bedrock to produce better design parameters than can be estimated from normal standard penetration tests.

Dynamic Cone Penetrometer (DCP) tests per ASTM D 6951 are planned to be performed at all of the pavement boring locations. DCP test data can be used to determine the stability of the subgrade by estimating the in-situ CBR and shear strength of soil strata. The California Bearing Ratio (CBR) is then approximated from the DCP reading in accordance with the procedures outlined in ASTM D 6951.

Geophysical seismic refraction surveys will be performed for jack and bore culvert installation locations to better define the interfaces of where shallow IGM and bedrock will be encountered. Prior to starting the jack and bore operations, we must verify that it is a practical means and method versus open cutting to install the pipe.

Groundwater measurements will be conducted while the borings are being performed, at its completion, and where possible approximately 24 hours after completion of each boring. (The need to immediately backfill borings in or near the existing pavement areas will require that they be exempted from measurement of the groundwater table after 24 hours.)

Soil Laboratory Testing

To obtain a thorough understanding of the engineering properties of the soils encountered in the test borings, and to better manage risks associated with unsuitable soils, to include highly plastic clays and shallow bedrock, soil laboratory testing will be performed on a sufficient number of representative samples recovered from the borings. The representative samples will be tested for natural moisture contents, AASHTO and USCS soil classifications, Moisture-Density relationships (Proctor, VTM-1) and California Bearing Ratio (VTM-8) for pavement support characteristics. The natural moisture contents will be tested for all the soil samples collected.

In addition to the laboratory testing presented above unconfined compressive tests on rock cores and direct shear and consolidation testing will be performed on representative samples to aid in determining soil and rock design parameters.

Pavement Testing, Design & Analysis

In addition to borings and laboratory testing in the widening areas, the LANE Team will conduct a pavement survey and testing of the existing pavement. The pavement survey and testing will include Pavement Condition Index (PCI) Survey and patching survey in accordance with Chapter 6 of the VDOT's MOI. In addition, the LANE Team will request project related data such as roadway as-built construction plans and maintenance history from Loudoun County, VDOT, and TOL.

Review of the preliminary geotechnical data shows that the top three (3) feet of the subgrade soils within the project limits consist of primarily LEAN CLAY (CL), SILTS (ML), Silty SAND (SM) and Clayey SAND (SC) soils. Based on evaluation of the laboratory CBR values included in the Geotechnical Engineering Data Report prepared by VDOT these soils considering the overburden pressures from the pavement, should have laboratory CBR values equal to or greater than 5. The Geotechnical Engineering Data Report and experience with geologic formation along the limits of the project, FAT CLAY (CH) soils may be encountered at the pavement subgrades and would have CBR values below the required value of 5. If and when these soils are encountered they will be either improved in place or undercut and replaced to provide a laboratory CBR value greater than or equal to 5. Per the RFP, a CBR value of 5 should be used for pavement design for this project. Per VDOT's criteria, the design CBR value to be used in pavement design shall be 2/3 of the in-situ CBR value. Accordingly, the pavement design CBR value of 3.3 (2/3 of 5) will be used for this project.

Minimum RFP Pavement Sections were provided in the RFP (Under Division 2.6.1 of Part 2 Technical Requirements) for roadways within the limits of the project. Based on preliminary evaluation using the pavement design CBR value of 3.3 given above, it appears that the minimum pavement sections included in Section 2.6.1 of the RFP should be adequate.

Bridge, Retaining Walls & Embankments

A detailed geotechnical engineering analysis will be performed by highly experienced geotechnical engineers to provide geotechnical design recommendations for the pavements, foundations for bridge, retaining walls, slopes, and culverts per VDOT standards. To minimize risks, we will use our extensive experience in construction inspection and testing, to provide recommendations and warnings will be incorporated into the design documents regarding subsurface conditions that should be expected during construction that could cause unexpected delays and affect the construction duration of the project. Our geotechnical engineers will work closely with highway, water resources, utility, structural engineers and the construction team to develop geotechnical designs that are appropriate, constructible and in accordance with *Chapters 3 and 6 of VDOT MOI, RFP Part 2 Sections 2.3 and 2.6 and Attachments 2.3.1 and 2.3.12 of the RFP*. This analysis will be used to support the final design and preparation of design drawings. Geotechnical design recommendations will also include the considerations and challenges associated with new construction in the vicinity of existing foundations, structures, slopes, and reconstructing or widening existing slopes.

Based on the analysis and data provided by the structural engineer foundation recommendations will be provided for support of the bridge, retaining walls and culverts. Allowable settlement of foundations for bridges, retaining walls, and culverts will be based upon the criteria defined in Attachment 2.3.1 titled: Additional Foundation Criteria. Total vertical and/or differential settlements of the proposed structures, retaining walls and embankments will be analyzed for elastic and consolidation settlement to meet these requirements required by the RFP.

In accordance with 305.02 and 305.03 of the VDOT MOI Chapter 3, slope stability analyses will be performed at representative cross-sections for retaining walls, embankments and cut slopes. The maximum slope ratio will not be steeper than 2H:1V for cut and/or roadway embankment fill slopes. The LANE Team is responsible for verifying the stability of slopes, including those retained by structures. Critical cut and fill slopes will be designed to be stable for the interim construction stages, the end-of-construction condition, and for design-life conditions. Reinforced soil slopes steeper than 2H:1V will not be used on this project.

All retaining walls, noise barriers (if needed), and non-critical slopes will be designed in accordance with applicable VDOT and AASHTO requirements, including Attachment 2.3.12 “Soil Design Parameters for Sound Barrier Walls, Retaining Walls and Non-Critical Slopes.” Fill material used in the reinforced zone for mechanically stabilized earth (MSE) walls, will be a crushed aggregate in accordance with VDOT’s Special Provisions for MSE walls. Global and external stability analysis will be performed utilizing a GSTABLE or SLIDE software.

Results of all analyses, including boring logs, laboratory data, and any other applicable data will be presented in a Geotechnical engineering report performed and reviewed by a professional engineer licensed in the Commonwealth of Virginia per VDOT’s requirements and submitted to VDOT for review.

4.4.4 Quality Assurance/ Quality Control (QA/QC)

The LANE Team strongly believes that the quality of work is a partnership between the design team, construction staff, QC inspection technicians, independent QAM, and QA staff to meet or exceed VDOT's quality requirements.

This quality goal will be accomplished by preparing, presenting, obtaining approval of the project QA/QC plan which will be based on VDOT's *Minimum Requirements for QA and QC on Design-Build and PPTA Projects* (July 2018). The QA/QC plan will not only include roles, responsibilities, authorities, and organizational structure: it will provide mechanisms to address and report nonconforming (NCR) workmanship, materials, and/or equipment and auditing and recovery plans to control and repair deficient items.

With each successful D-B project we have completed, the LANE Team's quality, design, and construction teams have gathered invaluable experience and lessons learned to improve the effectiveness of the next QA/QC plan.



Figure 4.4.4-1: LANE Team Benefits

Project Specific Example

One unique project element that the LANE Team deems most critical for design and construction is the placement of the concrete deck slab.

Design Quality. With a deck that varies in width from 179ft to over 260ft, it is critical to minimize drying/shrinkage cracking during concrete curing. It is also critical to understand the behavior of the structure throughout the various phases of deck placement. During preliminary superstructure design, the LANE Team has taken a multi-step approach concerning practical slab placement and sequence of construction by vetting solutions through a Quality Assurance and Quality Control framework.

At the onset, the design team identified several key factors that would control the slab placement sequence:

Joints. *RFP Part 2 Section 2.3.1* indicates "open longitudinal joints on the deck will not be implemented, hence additional deck reinforcing bars may be required at some areas to minimize potential cracking." **The LANE Team clarified VDOT's intent** during the Question and Answer period and again at the first Proprietary Meeting.

We agree with VDOT that open longitudinal joints pose long-term maintenance issues and should not be implemented. The proposed slab design and deck placement sequence accommodates the use of multiple longitudinal construction joints during construction, resulting in no open joints on the deck slab in the final condition.

Width. Per *VDOT's S&B Volume V Part 2 File 10.01-1*, "for deck slabs cast in a single pour wider than 60 ft. to 80 ft., a longitudinal construction joint should be considered." Our proposed slab placement sequence includes segment widths less than 75 ft. throughout the bridge by including longitudinal construction joints.

Deflections. The LANE Team considered differential deflections between slab placements to minimize the vertical profile discrepancy between steel plate girders with staged concrete deck placement. For example, steel plate girders with full camber will have a different vertical profile than adjacent steel plate girders that have already deflected due to the dead load of the concrete deck. During the QC process, the LANE Team determined

that the two-span arrangement with relatively short spans would minimize the vertical discrepancy in steel plate girder profiles between stages. **Therefore, a closure pour between adjacent girders was removed which eliminates one longitudinal construction joint on the deck and reduces total construction time.**

Location. Per VDOT's S&B Volume V Part 2 Chapter 9, longitudinal construction joints were located 3 inches from the centerline of girder to avoid a construction joint through the middle of the shear stud. In addition, the longitudinal construction joint was shifted away from the fascia girder where the bridge deck would exhibit the maximum negative moment in the deck due to the overhang. In coordination with LANE, JMT's bridge engineer shifted the longitudinal construction joint farther in towards the center of the bridge to facilitate deck screed placement, girder deflections during concrete placement, and maintaining deck cross-slope.

In summary, the LANE Team used the following approach to determine the slab placement sequence and the location of longitudinal construction joints.

- **Task.** Verify RFP language with VDOT Design Aid preferences
- **QC.** Clarify VDOT's intent of the RFP Questions and Answers, Proprietary meeting responses, and comments, to be documented through meeting minutes.
- **Task.** Develop concrete deck slab placement sequence with sketches and assumptions noted.
- **QC.** Review placement sequence, to be performed by a Virginia Professional Engineer with extensive bridge design and construction experience, with comments to be documented for QA verification. In addition, solicit feedback from traffic management team concerning location of lighting conduit, ITS, and conduit for traffic signals. Solicit feedback from the construction team and revise as needed, comments to be documented for QA verification.
- **Task.** Determine whether a deck drainage system is required.
- **QC.** Review deck drainage assumptions and calculations, to be performed by a Virginia Professional Engineer.
- **QA.** Verify that all preferences and QC feedback was incorporated, to be performed by the Design Manager using an audit checklist.

Construction Quality

After working through the design constraints, construction of the bridge deck slab and concrete placement sequence are a unique and critical activity with respect to the QA/QC processes and implementation of VDOT's Road and Bridge Specifications. Providing clear and concise QA/QC measures is critical for achieving the final line and grades required to maintain quality work, ensuring positive drainage with no bird baths, and free from shrinkage cracks. With such a large deck, extensive preparations and planning will be implemented to accommodate the changing slopes along the slab in multiple directions. **Our goal is to construct the bridge deck slab in accordance with RFP requirements with minimal VDOT intervention though:**

- LANE has extensive experience with large decks and variable placement sequence.
- LANE has well-established standard operating procedures for inspections, testing and test reporting, material documentation, diaries and checklists, safety, and environmental monitoring.
- LANE incorporates QA/QC procedures and protocols into all design and construction planning efforts.
- LANE will provide a complete and well-structured QA/QC plan
- LANE provides a team that exhibits a proven track record that includes VDOT throughout the process.

The LANE Team will prepare for the bridge deck construction as the substructure construction is wrapping up. Upon completion of the abutments and pier, a comprehensive surveying operation will be performed to verify the as-built elevation data for the concrete pedestals and the existing roadway elevations for Route 7 under the bridge. Such data will document the elevations, geometrical girders layout, and anchor bolt configurations for each concrete bearing pad prior to the structural steel erection. Any deviations will be corrected to design

tolerances. The surveying data will be shared with all parties including the project QA/QC. This information is extremely important to set the stage for the installation of the bearing assemblies and the erection of the structural steel girders. After the girder erection is complete, the minimum vertical clearances of 16.5ft over Route 7 will be verified to ensure it is maintained during the construction of the bridge deck.

To achieve the highest degree of quality on the bridge deck, the QA/QC and construction teams will schedule preparatory meeting with all parties involved including, the Structures Design Manager, Safety Manager, MOT Manager, TOL representative, concrete supplier, pump trucks supplier, and VDOT prior to construction of the bridge deck. The purpose of the meeting is to review the drawings and outline our comprehensive plan, responsibilities, and operation approach for the deck placement sequence. Such planning will include:



Figure 4.4.4-2; LANE's I-66/Route 15 project – Deck placement

- Review shop drawings for overhang forms and SIP forms.
- Insure that forms are mortar tight and reinforcement bar clearances are within tolerances.
- Verify concrete mix design approval and deciding on the proper retardation required for the deck placement. (A concrete plant representative will be present at the meeting to verify this important aspect of the operation)
- Material documentation and certification. The plan will include review and approval of material sources on VDOT's C-25 form.
- A specific QA auditing and nonconformance recovery plan that quickly addresses quality concerns so that the final product meets or exceed VDOT expectations.
- Time and date for each deck placement. This schedule will be coordinated with all parties involved with this operation.
- MOT and lane closures. Schedules for lane closures will be coordinated and submitted to VDOT and TOL in a timely fashion.
- Time of the year concrete placement and preparation for Hot or Cold weather.
- Concrete truck deliveries, spacing, route to concrete pumps locations.
- Backup plan for equipment break-down. Bulkhead material and plastic covers will be on hand at the site in case of an emergency shut down of the deck placement operation. Also, a stand-by concrete pump will be available during each placement.
- Monitoring of weather prior to deck placement and plan for performing the deck placement under favorable conditions (wind, temperature, etc.)
- Record screed dry-run reinforcement bar clearances and depth deck thicknesses.
- Allocate location(s) for concrete testing.
- Provide VDOT certified concrete technician.
- Designate area(s) compliant with environmental measures for concrete trucks and pump wash-out.
- Complete list of material for deck curing, such as water source, burlap, plastics, blankets, etc.

4.5 | CONSTRUCTION OF THE PROJECT

The LANE Team has developed a sequence of construction which expedites the construction schedule and provides a Final Completion date of October 15, 2021 – **45 days** ahead of the RFP Final Completion date. The project will be sequenced into three major construction phases that affect the general public:

The LANE Team proposes to complete the project **45 days ahead of schedule**

- **Phase 1:** The first phase will relocate the entrances along the northern edge of Route 7, establish the future detour, and set up long-term barriers along the outer edges of Route 7 in preparation for later work.
- **Phase 2:** The second major phase constructs the bulk of the project including the bridge and ramps. The construction of the Battlefield Parkway bridge and approaches are on the critical path for project completion.
- **Phase 3:** The third major phase completes the remaining work.

Our phasing sequence allows us to incorporate the elements of our design and project approach (such as an Early Work Package and early partial ROW acquisitions) to manage project approvals and resources required to work through permitting, ROW, stakeholder coordination, safety, and utility relocation/protection. **Our approach to Early Start reduces potential delays throughout the project lifecycle by constructing what can be constructed as soon as possible rather than waiting for later when it could become critical.**

The LANE Team proposes an Early Work Package to establish safe work zones for utility work and to expedite relocation of access points away from Route 7 to Potomac Station Drive

The MOT traffic pattern on Route 7 consist of three lanes in each direction except during permissible temporary lane closures at off-peak hours. We do not intend to shift the travel lanes into their final configuration until nearly all work is completed. Battlefield Parkway will have two lanes in each direction except when the RFP established one-year detour is in place. **This work zone configuration will minimize impacts to the travelling public** except for off-peak temporary lane closures needed to perform critical construction activities.

The LANE Team’s approach to the construction sequencing is focused on minimizing the overall duration of construction. It allows us the flexibility to adjust activities and efficiently construct the Project while minimizing impacts to the traveling public and stakeholders. *See Section 4.5.2 Transportation Management Plan* for a detailed discussion of safety, traffic operations, public transportation, and public outreach during construction stages. Construction will be a well-coordinated effort that takes advantage of LANE’s well-established and time-tested management skills, means & methods, and material selection to efficiently and safely complete all work. At the same time the LANE Team will be maintaining safe and efficient movement of vehicular and pedestrian traffic. The LANE Team will be led by Mr. Brian Basnight and Mr. Bob Cross (both Key Personnel) who were involved in managing VDOT’s I-66/Route 15, I-495 Express Lanes, I-95 Express Lanes and most recently completed Richmond Broad Street BRT projects. Their extensive construction experience and will be an invaluable asset to delivering this project successfully.

4.5.1 Sequence of Construction (SOC)

The LANE Team has recent, extensive, and successful experience with urban construction projects in VDOT’s Northern Virginia District such as the Silver Line/Route 7 Utilities project in Tysons Corner, I-66/Route 15 Interchange, the I-66 Spot Improvements – Section 2, and 495/95 Express Lanes on much larger scale projects. These projects required construction in similar urban environments to the Route 7 corridor; the LANE Team completed each one on-time. More recently, the LANE Team completed a very similar interchange project at I-66/Route 15 that was on-time, on-budget and has won three national awards including the 2018 DBIA Project of Year. Our project work plan has taken many of the successful elements learned from these past projects and

applied them to the development of our means and methods for the Route 7 and Battlefield Parkway Interchange Project. We also developed our sequence of construction/temporary traffic control plan (TTCP) based on our past experiences dealing with heavy traffic volumes and our work along the Route 7 corridor.

The LANE Team approach to the project sequence of construction has many benefits that will lead to the project's success. In addition to the details described in each construction phase, we have listed our LANE Team benefits in the table to the right.

The sequence of construction divides the project into three main construction phases maximizing the construction efforts and efficiencies while reducing impacts to the traveling public. The amount of permanent construction in each phase is maximized to limit the number of traffic shifts thereby reducing confusion and interruptions to the public. Within each phase, our sequence of construction identifies sub-phases that correspond to our Team's Transportation Management Plan (TMP) presented in the next section.

Utility relocations and ROW acquisitions pose a significant risk to the schedule due to the magnitude and duration of the scope required. Our sequence of construction was developed to mitigate the ROW and utility relocation risks by maximizing early phase construction within the existing ROW, generally avoiding impact to existing utilities. Acquisition of specific areas of ROW and utility relocations along Potomac Station Drive will be accelerated to facilitate beginning construction of Keystone Drive and the West Driveway.

Our SOC is outlined below and was defined to reduce impacts to the traveling public during construction.

Phase 1

The first phase will relocate the entrances along the northern edge of Route 7, establish the future detour route and improvements for Battlefield, and set up long-term barriers along the outer edges of Route 7 in preparation for later work. We have subdivided the work into two sub-phases. Phase 1A, relocation of the driveways, will be accelerated to complete critical components of the project needed to restrict access along Route 7 and to increase capacity along the future detour route. Staging areas required for this phase will be behind concrete barriers within available ROW.

Phase 1A – Driveways and Intersection Improvements. This sub-phase will construct and open to the public the following work:

West Driveway & Keystone Drive. This work is critical to relocating access to existing commercial businesses before subsequent phases of the project can commence. Ramps B & C cannot be constructed prior to completing this phase. This construction provides new access routes to Potomac Station Drive for Consignment Solutions, recreational facilities, Potomac Station shopping center, Meadows Farms Nursery, This-n-That Amish Outlet, and other effected businesses. During the construction of the new access roadways; impacts to the traveling public will be minimal along Potomac Station Drive and the surrounding communities since only tie-in work will be constructed. Construction traffic will access the work site through approved construction entrances, all signage and protective devices will be in accordance with the MUTCD standards. Work on Keystone Drive will



MULTIPLE CREWS working simultaneously in different areas and work zones of the project to complete the project schedule milestones on-time.



PAST PROJECTS with similar experience and success in the I-66/15 DDI.



EARLY DELIVERY of design package for approval to complete the Keystone, West driveways and modification of intersections to implement Battlefield road detour.



NIGHT-TIME LANE CLOSURES for critical work to avoid public inconvenience and traffic jams



AVOIDANCE of temporary barrier service on both side of RT 7 (EB & WB)



ELIMINATION of impacts to existing buried utilities

occur in the summer and early fall and will avoid Standards of Learning (SOL) test dates in May at John W. Tolbert Jr. Elementary School. Daytime flagging operations and lane closures will be used to for ingress and egress of trucks delivering/hauling material and equipment to the work site. Construction staging will be on-site; **materials and equipment will be staged within the work limits to minimize impacts to the public.** The tie-ins connecting roadway work to Potomac Station Drive for the driveways will be completed with minimal lane closures and flagging operations. Safety and environmental personnel will be visiting the site frequently and will be proactive enforcing measures to be practiced and/or corrections required to LANE's field supervisors for immediate action.

Fort Evans Road/Battlefield Parkway & Fort Evans Road/River Creek Pkwy Intersection Modifications.

Permanent modifications to these two intersections during this phase will be completed prior to the implementation of Battlefield Pkwy detour required in Phase 2A. At Battlefield Parkway, a second southbound left-turn lane to Fort Evans Drive (East) will be added. During the addition of the dual left-turn bay, work will be conducted behind barrels with occasional short-term lane closures and/or flagging operations. A portion of the southeast traffic island will be modified to provide the increased width needed for receiving the dual turn-lanes; due the skew of the intersection, widening is not required east of the island. A new signal pole and foundation will be installed. Work in the southeast traffic island will impact the pedestrian sidewalk crossing, therefore a pedestrian detour will be provided while re-construction of the island is underway. The LANE Team will maintain ADA access for the duration of construction. Most of the existing traffic island will be maintained providing a safe, clearly defined work zone. At River Creek Parkway the existing northbound dual left-turn bay will be made operational. The northwest corner of the intersection will be widened to 30ft to receive the dual left-turn movements. The ADA ramp and an inlet will require reconstruction. It is likely that the crosswalk leading to the modification of the corner will be temporally closed to provide safe separation of pedestrians from the construction zone. During the work an alternative pedestrian route with ADA access will be provided. The milling and paving associated the addition of the added left-turn lane will be completed within lane closures and flagging operations.

Phase 1B – Work within ROW along Route 7.

Work during this sub-phase will be conducted within existing ROW along Route 7. Work will begin about the same time as Phase 1A but most of the work in this sub-phase will continue and be completed in later phases of construction. Work will include reducing Route 7 to three 11ft travel lanes in each direction to allow room for the installation of temporary concrete barrier along the outer shoulders of both the westbound and eastbound lanes; the existing median guardrail will be retained during this phase (to be replaced in later phases). Reducing the lanes

to an 11ft width is necessary to allow the placement of concrete barriers to separate vehicular traffic from the work zone areas allowing crews to perform the required widening of Route 7 safely. The eradication of the existing striping and restriping operation to shift the traffic lanes will be performed during the night time and off-peak hours to minimize the impacts to the traveling public and existing businesses. Staging areas required for this phase will be behind concrete barriers within available ROW.

Temporary concrete barriers will then be set, rough grading and storm drain installation will commence, and the existing watermain capped and abandoned, including thrust blocks where needed. Most utility relocations will occur during this sub-phase. The critical Summit FO communications ducts will be relocated to avoid future conflicts with the bridge and retaining walls in this phase. An existing gas line in the median of Route 7 will be

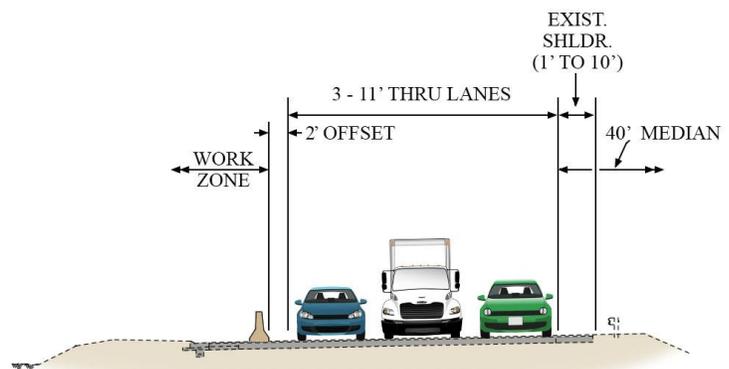


Figure 4.5.1-1 Temporary lane shifts on Route 7 within ROW begins in Phase 1B

avoided, but protection provided, to comply with the LANE design concept. This phase will also include jack and bore operations under the active lanes of Route 7 as described below.

Jack and Bore Operation. Jack and bore work will begin with pit excavations behind the concrete barriers. This work will install encasement pipes for two new drainage crossings and a sanitary sewer located at three separate locations under Route 7 west of Battlefield Parkway. During this work, all existing utilities within the jack and bore envelope, such as the gas line, will be test-holed and/or uncovered to confirm its exact location, verify room to install the encasement pipes, and ensure the required separation of the utilities.



Figure 4.5.1-2: Jack and bore operations

Phase 2

Phase 2, the second major phase, will construct the bulk of the project including the bridge and ramps. The construction of the Battlefield Parkway bridge and approaches are on the critical path for project completion. In general, this phase can begin once ROW is acquired for Route 7 and Battlefield Parkway. This phase is divided into three sub-phases as described below:

Phase 2A – Partial Construction of Ramps and Route 7 Widening. Any work that does not require closure of Battlefield Parkway can commence during this phase including the work described below. Work in this subphase will be performed prior to the detouring of Battlefield Parkway. Staging areas required for this phase will be behind concrete barriers within available ROW.

MSE Wall for Ramps. This phase allows for constructing portions of the MSE retaining walls and backfill for the ramps leading to the bridge. Most of the work will be performed behind the concrete barriers set in Phase 1B and should not interrupt the traveling public. The portions of the walls that create the bridge abutments will be constructed in the next phase after the Battlefield Parkway detour has commenced.

Route 7 Widening. Crews will continue to construct the drainage systems along the outside edge of Route 7. Construction of curbs and outside shoulder widening along Route 7 will commence upon completion of the storm drain systems. Construction access for this work will have defined entry points from Route 7 and will be performed behind concrete barriers with minimal interruption to normal traffic operations. All underground and overhead utilities will be identified and marked to ensure safety and eliminate the possibility of potential damage to vital utilities.

Phase 2B Battlefield Detour in Place/Bridge & Approaches Construction, Ramps Connected. The one-year detour for Battlefield Parkway will be implemented during this phase. **The LANE Team is committed to construct the bridge and ramps and re-open in less than 365 days.**

Work will include closing the Battlefield intersection at Route 7 and detouring all Battlefield Parkway traffic onto the RFP prescribed detour. Construction of the bridge foundations, MSE abutments, structural steel, and deck along with completion of the approach fills and roadway.



Figure 4.5.1-3: LANE's pier construction on I-66/Route 15 award winning project in Haymarket.

Following implementation of the detour, concrete barriers will be placed at the intersection to start the construction of the median pier and abutment foundations. The space available to perform the work will not impact the traveling public; all work can be done behind concrete barriers and within the closed-off areas of Battlefield Parkway. All utilities, including the existing gas line in proximity to the median bridge pier foundation, will be located and protected during the construction of the pier.

The bridge pier foundation will be constructed on rock. The pier, in its entirety, will be constructed in this phase. The abutments will bear on pile foundations with MSE walls encapsulating the pile providing a vertical concrete panel retaining system. Once the pile and MSE wall are in place the abutment caps will be constructed. Closed portions of the Parkway and portions of the ramps completed in Phase 2A will be used as staging areas.

The erection of the structural steel will be a closely orchestrated effort for safety and to avoid minimal impacts to traffic movements. This steel erection will be performed at night and under lane closures with intermittent stoppages to complete this critical work. Crane locations and work drawings will be submitted and approved prior to this work occurring. Prior to the metal deck installation, temporary wood flooring will be installed on the bottom flange of the structural steel, over route 7 traffic, to provide protection from fall debris. Once the metal deck is in place, placement of the concrete bridge deck will proceed. Upon completion of the deck, approach slabs will be placed and ramps will be fully connected.

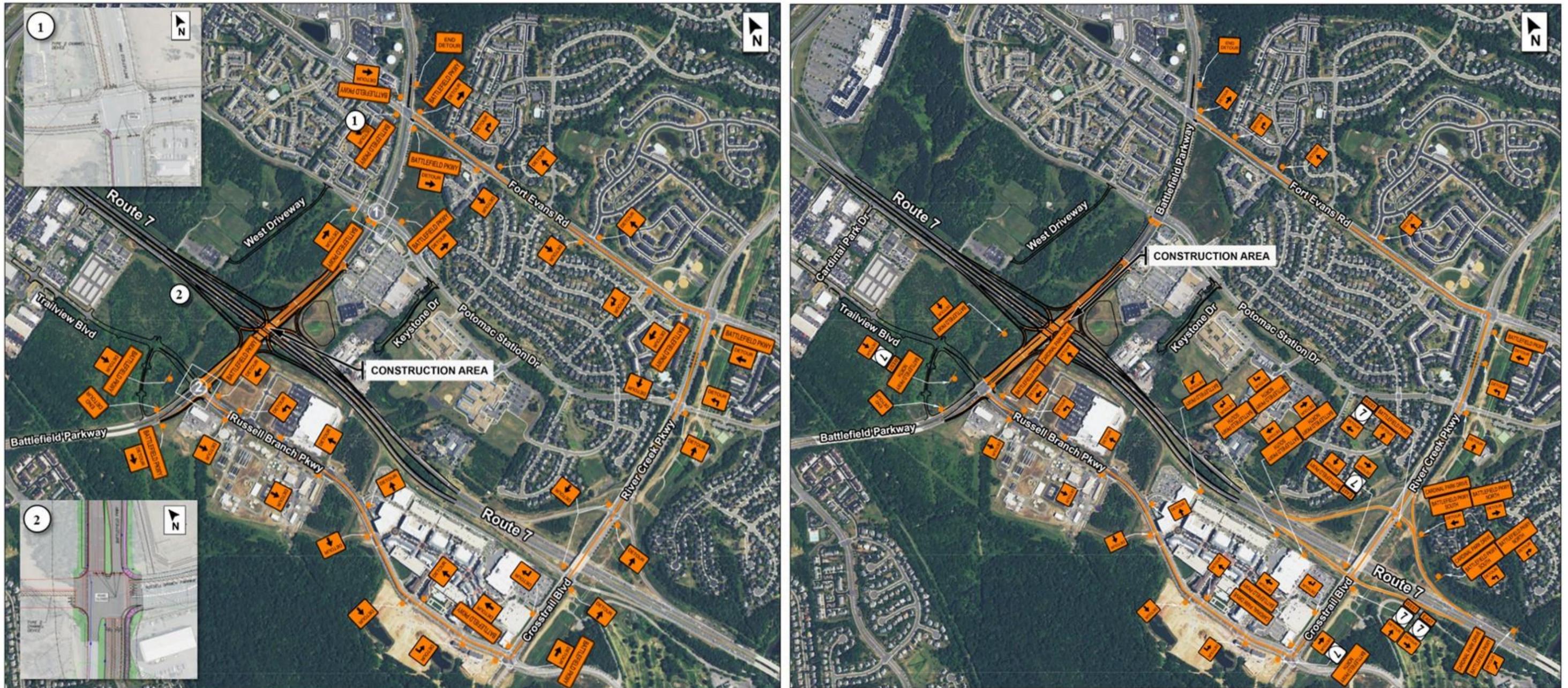


Figure 4.5.1-4: Detour Plan Operations

- From Battlefield Parkway:** Vehicles traveling on Battlefield Parkway will be diverted west to Crosstrail Boulevard/River Creek Parkway, which is a parallel roadway to Battlefield Parkway that connects to Route 7. Vehicles will use Russell Branch Parkway (south of Route 7) and Fort Evans Road (north of Route 7) to access Crosstrail Boulevard/River Creek Parkway. The plan includes appropriate detour signing to provide full access to Battlefield Parkway, Route 7, or the commercial properties along Cardinal Park Drive.
- From Route 7:** Vehicles traveling on Route 7 can access Battlefield Parkway from Crosstrail Boulevard/River Creek Parkway. This roadway parallels Battlefield Parkway which intersects with Russell Branch Parkway (to the south) and Fort Evans Road (to the north). Appropriate detour signing as shown above, will alert drivers of the Route 7 and Battlefield Parkway intersection closure and direct vehicles onto Crosstrail Boulevard/River Creek Parkway.
- Accessing Cardinal Park Drive:** Cardinal Park Drive at Route 7 will allow limited turning movements to match the proposed build-out conditions. Full access to Cardinal Park Drive will be maintained from Russell Branch Parkway/Trailview Boulevard. Vehicles destined to Cardinal Park Drive from Route 7 will be diverted to Crosstrail Boulevard/River Creek Parkway interchange to access Russell Branch Parkway/Trailview Boulevard. Appropriate detour signing as shown above, will be installed all through the detour route.

Cardinal Park Drive The full access intersection at Cardinal Park Drive (Cardinal) and Route 7 will be permanently closed, and the signal removed during this phase. The Cardinal entrance remains open only to Route 7 eastbound utilizing right in and right out traffic movements. To simplify and minimize the impacts to travelers on Cardinal, work to close the median will be delayed until the long-term Battlefield detour is in use. Cardinal travelers will be able to access Route 7 west by way of the Battlefield detour or Route 7 east to Battlefield Parkway. The LANE Team will provide advanced notification, to include meetings with each of the businesses, flyers, and social media, to the community and stakeholders to coordinate the intersection closure and provide continuous access to the businesses on Cardinal: FAA, Leesburg Motors, Leesburg Professional Center Condominium, Leesburg office, LLC, and Leegate. The detour routes will be clearly marked with trail blazer signs. Flaggers will be present during construction work hours to assist the public with the new traffic pattern. Trail View Drive, a key component to the Cardinal detour to Battlefield, is being constructed by Leegate development and is expected to open in 2019 well in advance of the detour. VMS boards and static signs will be placed along Route 7 to direct the traveling public seeking to access Cardinal Park Drive.

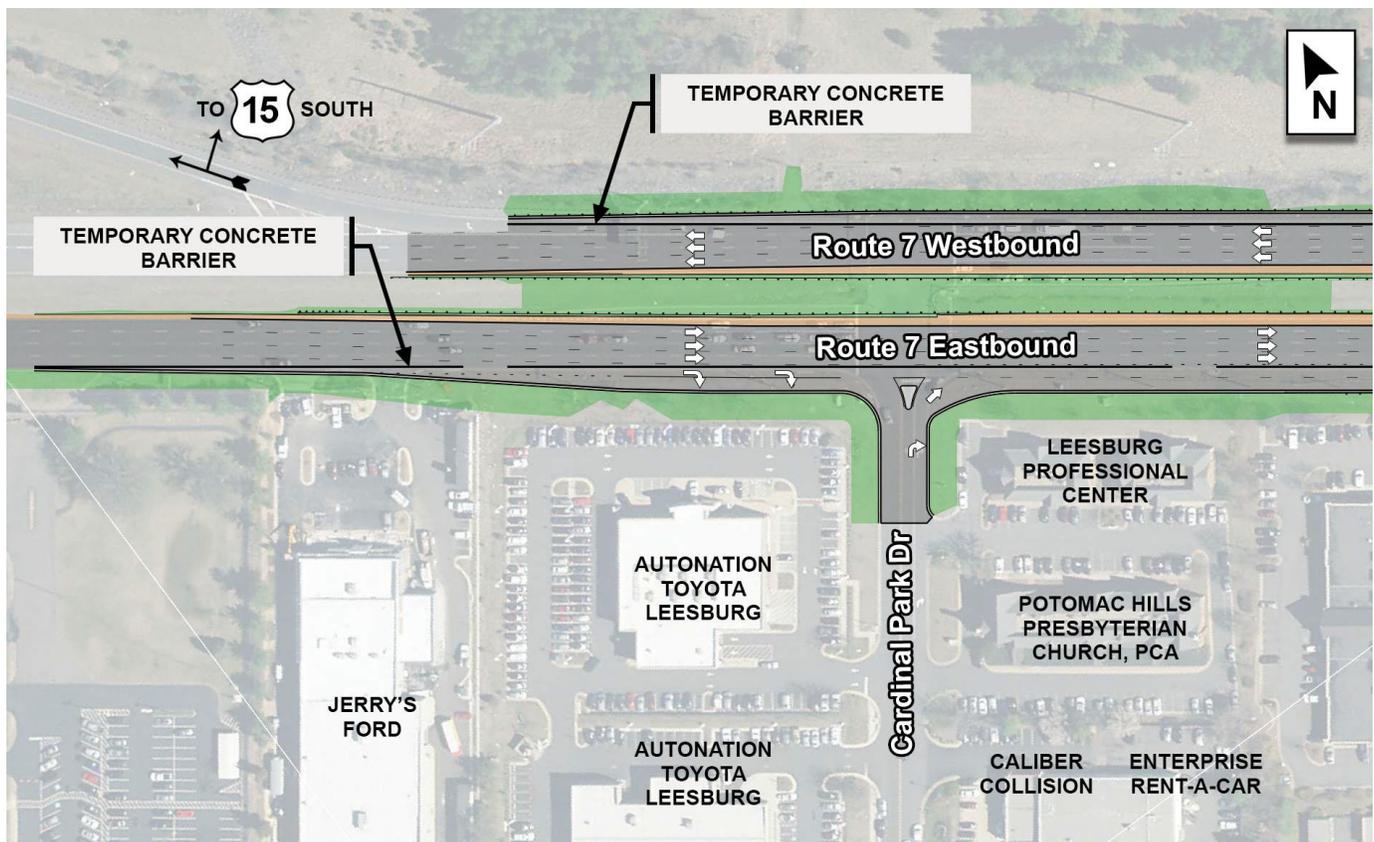


Figure 4.5.1-5: Cardinal Park Drive access during construction – close coordination with identified stakeholders to minimize short-term interruptions to local business

Phase 2C Construction of Battlefield Parkway and Russell Branch Intersection. The primary objective of this phase is to complete the intersection modifications at Battlefield Parkway and Russell Branch Parkway. The roadway elevations in the intersection will be slightly raised. This work will be performed under traffic with asphalt wedge and leveling. Access for vehicles will be maintained by way of lane closures and flagging. The intersections traffic signal is modified to accommodate the new traffic movements and to incorporate in the new Trail View Boulevard. An additional turn lane from northbound Battlefield on to Trail View is added, the turn lane from northbound Battlefield to Russell Branch is modified along with the multi-use trail. Miscellaneous

curb, median, guardrail and grading is also a part of this reconstruction. All work will be performed under traffic utilizing appropriate MUTCD traffic control methods and devices.

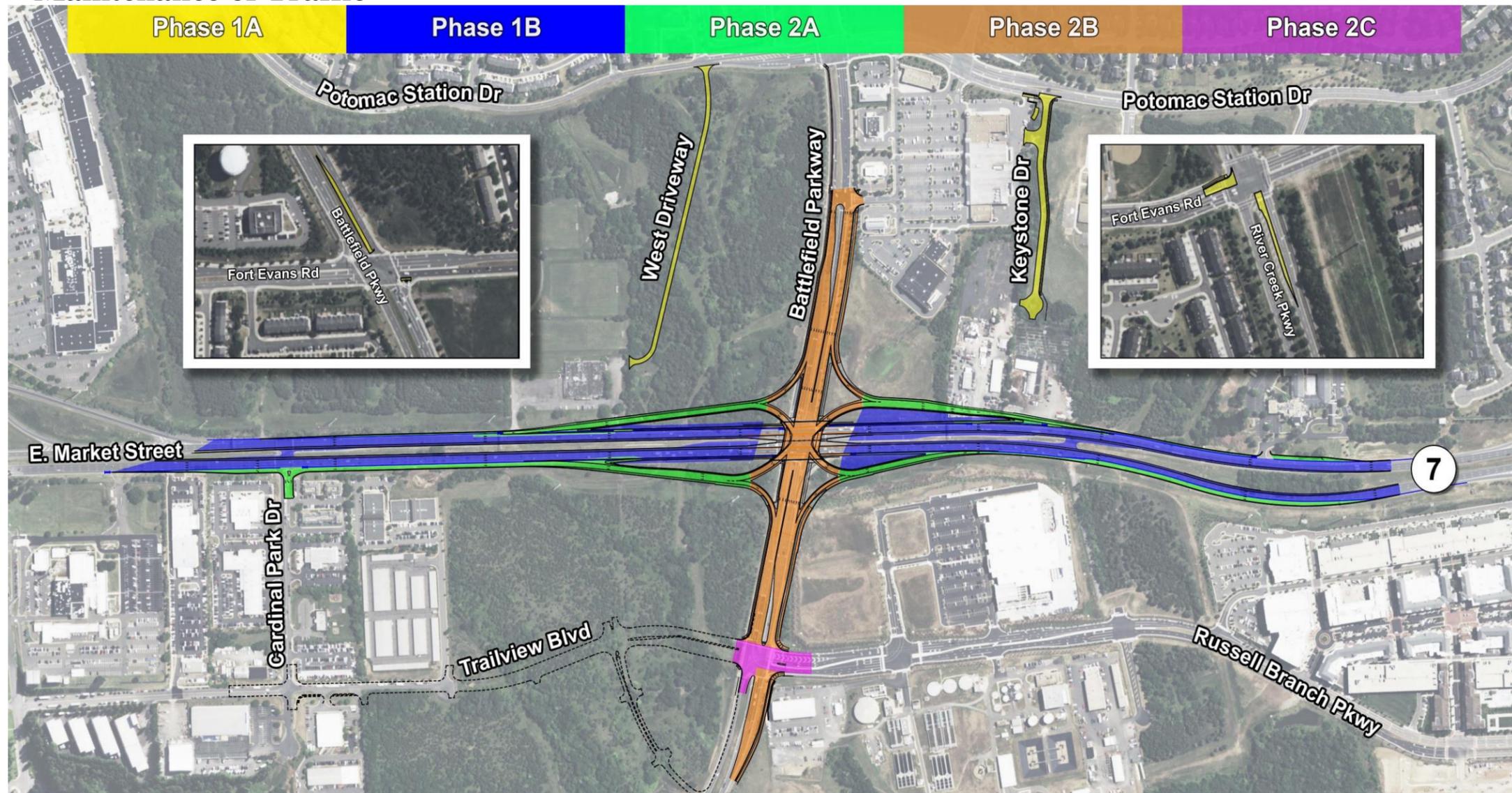
Once Phase 2B and 2C are substantially complete, with traffic control devices in place, the Battlefield detour will be removed and Battlefield Parkway will be a fully functioning interchange.

Phase 3

The third and final major phase completes the remaining work. MOT will be conducted as WAPM typical applications for short-term and intermediate-term activities. Construction staging during this phase will transition from unopened locations within the project. Work will include:

- Lighting
- Completion of final punch list items
- Final seeding
- Adding surface course asphalt to work opened during Phase 2
- Removal of concrete barriers along Route 7
- Installation of MGS guardrail with required grading in the median along Route 7
- Painting and staining of concrete
- Final removal of E&S control devices
- Painting and staining of concrete

Maintenance of Traffic



MAIN PACKAGE

PHASE 2A
Partial Construction of Ramps and Route 7 Widening:

- Route 7 will still maintain three travel lanes in each direction.
- No impacts to the turning vehicles at the intersection of Route 7 and Battlefield Parkway.
- There are no existing pedestrian accommodations at the Route 7 intersection; therefore, no impact to the pedestrian access during this phase of construction.
- Keystone Drive and West Driveway will open for traffic and maintain access to the connecting businesses.

PHASE 2B

- Battlefield Parkway within the construction areas will be closed to perform construction activities. The one-year detour plan for traffic diversions will be activated and access will be provided to all impacted areas.
- The interchange bridge piers, bridge deck, approach slabs and the ramp connections will be completed. Shared use path and sidewalk connections along Battlefield Parkway will be part of this phase.
- Permanent roadway and signal improvements at Battlefield Parkway and Shopping Center entrance north of Route 7 will be constructed and the accesses to the impacted businesses will be maintained via Potomac Station Drive.
- Existing traffic signal at Cardinal Park Drive will be removed and the accesses to the impacted businesses will be maintained via Russell Branch Parkway and Trailview Boulevard intersection.
- Pedestrian sidewalk within the constructed areas will be closed-off for public safety. Portable Changeable Message Signs (PCMS) will be posted in a timely manner and at appropriate locations to advise motorists of planned construction activities, detours, new traffic patterns, and lane closures.
- Improvements at Battlefield Parkway and Russell Branch Parkway/Trailview Boulevard would begin.

PHASE 2C
Construction of Battlefield Parkway and Russell Branch Intersection:

- Phase 2C involves completing the roadway and signal improvements at Battlefield Parkway and Russell Branch Parkway/Trailview Boulevard intersection.
- Construction activities will be completed behind channelizing devices with flagging operations and occasional short-term lane closures.

EARLY PACKAGE

PHASE 1A
West Driveway and Keystone Drive:

- Minimum impact to the traveling public along Potomac Station Drive and the surrounding communities.
- Existing access to the businesses along West Driveway and Keystone Drive will be maintained until the completion of driveways.
- Daily flagging operations and off-peak hours/night time lane closures along Potomac Station Drive to allow construction vehicles and equipment to the work site.
- Minimum impact to pedestrian access during the construction of West Driveway. Pedestrians will be detoured to other side of the Potomac Station Drive during off-peak hours/nighttime lane closures.

Fort Evans Road/Battlefield Parkway and Fort Evans Road/River Creek Pkwy Intersection Modifications:

- Minimum impact to the travelling public including pedestrians and school buses is expected during these intersection modifications.
- Construction activities will be completed behind channelizing devices with flagging operations and occasional short-term lane closures.
- Pedestrians will be detoured to provide safe separation of pedestrian from the construction zone for the impacted pedestrian sidewalk crossings.

PHASE 1B
Phase 1B - Work within ROW along Route 7:

- The vehicular traffic in both directions on Route 7 is shifted towards the median creating barrier separated work zone area and maintain three 11-foot travel lanes.
- Traffic shift, and eradication of the existing stripping and restriping operation will be performed during the night time to minimize the impacts to the traveling public and existing business.
- Jack & Bore work for two new drainage crossings and a sanitary sewer under Route 7 west of Battlefield Pkwy, and existing utility relocations will be done behind the concrete barriers within existing ROW utilities along Route 7 will be relocated.
- Existing access to the business along West Driveway and Keystone Drive will be maintained with necessary breaks in the concrete barrier until the completion of new access.

Safety and Operations

Safety for the LANE Team is the top priority throughout the project duration. Under the leadership of Mr. Brian Basnight, DBPM, and Mr. Richard Gorby, Safety Manager, LANE will manage a stringent Safety Program that empowers employees at all levels to promote safe work operations while having the authority to stop work anytime an unsafe action occurs. The LANE Team's Safety Plan will be based on our proven and successful Corporate Safety Program and will be tailored to meet the specific needs of the project.

To enhance driver safety and mobility, we have planned construction activities that **minimize the need for restrictive lane closures**. Temporary concrete traffic barrier will be placed along Route 7 in the early phases and remain in place for most duration of the project to **protect the public from the active work zones** without capacity restrictions. Along the Route 7 corridor, traffic lanes are reduced to 11 ft, and shifted towards the median to provide room for the temporary barrier to construct the outside widening without exposing the public to dangerous drop-offs and obstructions.

Pedestrians currently have sidewalks and shared-use paths within the project construction areas such as Keystone Drive, Fort Evans/Battlefield, Fort Evans/River Creek, and Battlefield/Russell Branch intersections. The sidewalks and paths will be closed-off for public safety. A pedestrian detour plan, to accommodate their safe passage through the work area, will be submitted for approval prior to the start of work.

Efforts during Design to Avoid/Minimize Potential Safety Impacts to the Construction Workers and the Traveling Public: While safety is primarily associated with construction operations, the LANE Team engages with a safety mindset long before the construction begins. As previously stated, safety is first and foremost on a LANE project. Our design integrates the LANE Team, VDOT, and appropriate stakeholders into our safety processes. The design team will use and conform to the Manual on Uniform Traffic Control Devices (MUTCD) and Virginia Work Area Protection Manual (VWAPM) in the development of the temporary traffic control plan (TTCP), but there could be variables related to means and methods of construction that may require additional considerations in the design of the TTCP. The construction team assists with the early identification of these project specific variables through our constructability review process and weekly technical working group (TWG) meetings. The design team will incorporate safety in the design and mitigate concerns, particularly for any unusual or special conditions, as part of the final design. This practice has provided the traveling public and the LANE Team with a solid work zone safety program. As a matter of company policy, LANE requires that safety procedures be enforced throughout all aspects of the project. We employ a **Zero Accident Philosophy, a belief that all accidents are predictable, preventable and unacceptable. Implementing this attitude improves morale and enhances safety for all. The LANE Team considers the safety for the public and our employees to be the top priority.**

We know that working in high traffic volumes, both day and night, involves many variables that need to be planned with the safety of the public and our employees in mind. We proactively address potential hazards long before losses can occur and will never sacrifice safety for production or cost savings.

Public Safety: During construction, we will emphasize public safety through our Public Information and Communication Plan (PICP) and reinforce travel expectations through our work zones regularly. As motorists approach the work zone, the signs, variable messaging boards, and markings will provide clear and easily understood guidance through the project alignment. Our experience gained on past projects such as I-66/Route 15 has guided our TMP and MOT plan development in such a manner that eases congestion allowing continuous and safe travel through the work zones.

The LANE Team will develop a MOT plan that focuses on safety for all parties and minimizes community impacts. The MOT plan will not only address the public's traffic movements but also construction vehicle access to safely ingress and egress the work zone. The MOT plan addresses a Safety Management Plan for construction vehicles, traffic control plan sheets and a public outreach campaign. Specific strategies include:

- Wide pavement markings, where appropriate, and reduced spacing for channelizing devices
- Construction access points with areas of adequate sight distance
- Acceleration/deceleration lanes to/from construction access points where feasible
- Highly reflective materials and lights on construction vehicles
- Driver/operator training
- Temporary light plants to illuminate nighttime areas of construction activity/access
- Escorts for slowing construction traffic to facilitate safe entry
- Hazard Identification Beacons/lights in advance of major construction access points

Construction Access Staging and Storage Areas

Construction access to the work zone is a critical consideration that accounts for multiple factors: posted speed, location of desired access points, and ability of construction vehicles and equipment to maneuver in and out of the access points. Ingress and egress of construction vehicles in the work zone will not cause impacts to existing traffic flow. The locations of access points will be efficient and safe to facilitate construction staging and storage of equipment and materials.

The LANE Team intends to use an offsite storage area for major staging. Smaller staging areas will be used near the actual work (i.e. the bridge pier in the middle of the Route 7, Keystone Drive and West Driveway). During the detour period of Battlefield, off site staging/storage areas will be utilized for the construction of the bridge and ramps. This approach keeps the work zone clean, efficient, and frees up space for construction. Large deliveries, such as girders and wall panels, will be staged off-site and brought on-site when the material is scheduled for installation. Storing material within the work zone, when possible, will help minimize the amount of truck deliveries to the project and potential traffic interruptions. In areas of restricted, narrow space, the LANE Team will implement lane closures, when permitted, to deliver/remove materials from the site, as discussed in *Section 4.5.2*.

Permanent and temporary material deliveries, construction equipment, and the project personnel make up the majority of construction traffic coming in and out of the site. **Deliveries will be scheduled around non-peak traffic hours to improve safety along the corridor. Similarly, craft personnel will be transported on-site in groups, limiting personal vehicles in the work zone.** Site access and egress will be carefully selected, designed, and routinely checked for effectiveness.

4.5.2 Transportation Management Plan (TMP)

A project of this magnitude requires an in-depth and well-orchestrated TMP for construction activities to safely operate in harmony with normal traffic operations. When a project exhibits inadequate pavement markings, improper signing, and lack of maintenance, it leads to confused motorists, dissatisfied stakeholders, crashes, unsafe conditions for users and workers, and undesirable traffic queues. The LANE Team has the knowledge, understanding, and experience developing TMPs for major interchange projects that safely and effectively manage traffic, contractor activities, and communications with the project stakeholders. The LANE Team's TMP, as described below, will proactively inform motorists of the travel situations, mitigate incidents and, in general, allow unimpeded travel through a well-marked project corridor all in an effort to minimize delay, maintain access and prevent unsafe conditions.

The continuous efforts of Mr. Paul Bacon, our MOT Manager, and his assigned staff, in the implementation and management of the TMP will eliminate the need for VDOT to expend resources on this aspect of the project.

Maintain Traffic Through All Phases of Construction

The LANE Team's Concept greatly minimizes the interchange construction impacts on the traveling public, local communities, and adjacent businesses. We have planned, as much as possible, all major construction operations to occur out of main traffic flows. Our experienced Team understands that the development of an accurate and

complete TMP establishes the essential foundation for a safe and successful project for all users, including motorists, cyclists, pedestrians, as well as the construction, inspection, and VDOT staff.

The LANE Teams' approach is to balance the conflicting priorities of maintaining motor vehicle, bicycle, and pedestrian traffic while also completing the construction as expeditiously as possible. The MOT phases will be developed to minimize lane closures and will keep all major construction activities outside of traffic. Any necessary closures will be in accordance with VDOT Work Area Protection Manual and Northern Region Operations policies and procedures on all roadways within the project limits. This will ensure that any access restrictions, traffic shifts, etc. are communicated to local residences, emergency responders, elected officials, schools, facilities, and businesses.

The project will develop a Type C TMP (Category V) based on the VDOT Instructional and Informational Memorandum I&IM-241/TE-351, TED 351.3. VDOT, through this directive, affirms the commitment to providing safe and efficient movement of motorized and pedestrian traffic through or around roadway work zones as well as providing protection for workers and equipment located within work zones. The LANE Team shares in this commitment to provide a safe work area for both the public and our workforce. We will accomplish the shared goals of VDOT and the LANE Team through our innovative approach to constructing the Route 7/Battlefield Parkway Interchange project.

The TMP has three components and each component is further broken down in areas of emphasis:

- **Temporary Traffic Control Plan (TTCP).** Major components will consist of Detailed Plans, Typical Sections, and, as necessary, Special Details/Cross Sections/Profiles. The TTCP includes a detailed sequence of construction, general notes, typical section and special details for implementation over various phases of construction. As described in *Section 4.5.1*, each phase requires different approaches to maintain traffic throughout construction. The sequence of construction will be incorporated into the TMP along with the associated temporary traffic control plan. Some of the specific traffic control plans that will be used from the 2011 VWAPM include:
 - TTC-6.1: Shoulder Closure with Barrier Operation
 - TTC-7.0: Shoulder Closure with Barrier and Lane Shift Operation
 - TTC-15.1: Short Duration Operation on a Multi-Lane Roadway
 - TTC-20.1: Lane Closure Operation with Temporary Traffic Barrier
 - TTC-28.1: Lane Closure Operation in an Intersection
 - TTC-29.1: Turn Lane Closure Operation
 - TTC-30.1: Flagging Operation at a Signalized Intersection
 - TTC-35.0: Sidewalk Closure and Bypass Sidewalk Operation
 - TTC-36.1: Crosswalk Closure and Pedestrian Detour Operation
 - TTC-40.1: Multi-Lane Shift Operation
 - TTC-48.1: Road Closure Operation with a Detour
- **Public Communications Plan.** The Public Communications Plan is the means by which all information regarding the construction schedule, temporary road closures, detours, and other information is relayed to the public, emergency responders, and among contractors engaged in other active projects in the area. This will be presented in a narrative format as part of the TTCP. The LANE Team will attend public meetings to encourage communication with the communities, as well as keeping them informed on construction schedule and impacts to their communities and businesses.
- **Transportation Operations Plan.** The Transportation Operations Plan will include several strategies including notifying the Regional Smart Traffic Center of closures, provide a contact list of local emergency response agencies, and procedures to respond to traffic incidents that may occur in the work zone.

The Type C TMP for this project will assess the Work Zone Traffic Impact using an operational-level traffic analysis software simulation program. The current design of the MOT phases will require shoulder closures as

well as lane closures during peak and non-peak travel periods. The overall operation of the MOT phases will be analyzed in accordance with the requirements as outlined in IIM-241 and the Traffic Operations and Safety Analysis Manual (TOSAM) to assess impacts and to highlight areas where alternative construction methods may need to be employed. Traffic analysis will be performed for proposed detours as well as any unforeseen and unexpected lane, full shoulder, or road closures that are outside the Project's allowable lane closure hours identified in Part 2, Section 2.11.2 of the RFP. The LANE Team's traffic engineering staff responsible for the development of the TMP are trained and VDOT certified for Advanced Work Zone Traffic Control.

When applicable, all traffic volume assumptions that are used in the model and those provided in the RFP will be verified by performing AM or PM peak period turning movement counts at impacted intersections and along affected roadways. Forecasted traffic volumes will be obtained or coordinated from VDOT or other appropriate sources. Other Measures of Effectiveness such as approach level of service and queuing information along local roadways, as applicable, will also be provided to offer a complete profile of the expected conditions under construction. The LANE Team recognizes that this project is in the western outer suburbs of the major employment centers of DC and northern Virginia and as a result the peak periods tend to extend over a longer time frame than other less densely populated areas. This verification will assure that the TMP is reflecting the true existing conditions.

Approach to Lane and Road Closures, Minimum Lane Widths, Time of Day Restrictions, Temporary Detours, Flagging Operations and Work Zone Speed Reductions

The TMP will document the required information regarding work zone speed limits, minimum allowed lane and shoulder widths, allowable lane and road closure hours. A minimum of three travel lanes will be maintained in in both directions along Route 7 during all phases of construction. Any lane closures envisioned for completing the work will be temporary in nature and will be scheduled and conducted per the restrictions outlined in the RFP Part 2, Section 2.11 to maintain the minimum lane width of 11ft. **To minimize impacts to the traveling public, the LANE Team does not anticipate requiring any work zone speed reductions.**

The LANE Team has developed a sequence of construction to reduce the number of temporary lane, shoulder, and road closures to reduce overall impacts to the traveling public. Route 7 traffic will be shifted only once during construction. All lane and shoulder closures will be coordinated and approved by VDOT and Town of Leesburg before implementation. These activities include, but are not limited to, installation of traffic control devices necessary for traffic shifts, installation of proposed guardrail, bridge pier work, delivery of materials, and pavement tie-in work. The Team understands that temporary lane closures are at the sole discretion of VDOT.

The LANE Team acknowledges the lane, shoulder, and road closure restrictions as well as the Holidays identified in the Section 2.11.2 of the RFP. These restrictions will be incorporated into the TMP. Any deviation of this plan will be verified through the analysis of Work Zone Traffic Impact to identify appropriate mitigation and adjustment to construction schedule. Temporary lane shifts will meet full posted speed limit and will be the maximum recommended length required **providing a substantial safety benefit to the traveling public.**

Traffic signal modifications are detailed in the TMP and will be communicated in advance to the public to relieve congestion impacts. For example, the proposed closure of Battlefield Parkway during the Phase 2B construction will result in traffic diversion on to Fort Evans Road and River Creek Parkway potentially requiring traffic signal timing adjustments along Fort Evans Road. The LANE Team will work with VDOT and the TOL to adjust traffic signal timings as necessary during construction. We have the relevant expertise in developing traffic signal timings on staff.

Approach to Maintaining Access

During construction, our Team will coordinate closely with VDOT and the TOL on potential impacts to adjacent roadways and properties. The TMP will outline the need to maintain access to all businesses, schools, and recreational facilities at all times. All entrances, intersections, access points that will be affected by traffic control devices will be maintained or an acceptable alternative will be established.

As an example, the potential construction work on Route 7 in Phase 2 will limit the Cardinal Park Drive access for the motorists traveling in the westbound direction. Therefore, reasonable detour routes were identified via River Creek Parkway and Trailview Boulevard/Russell Branch Parkway to facilitate the access to the affected businesses. These detour routes will be communicated to the public as well as emergency responders in advance of any planned detours.

Incident Management Plan

As previously discussed in Section 4.5.1, the TMP will also include an Incident Management Plan which will detail our response. The plan will be developed in coordination with VDOT, local fire and rescue departments, and other stakeholders to identify the protocols for who will be contacted in case of an incident. The plan will be reviewed and approved by VDOT and the TOL prior to any work zones and/or any lane closures becoming active on the project. The plan will also consider the type of incident and estimated durations. The LANE Concept provides pull-off areas for emergency and disabled vehicles.

Mitigating and Anticipating Potential Delays

The LANE Team (design and construction) have coordinated closely to develop efficient and optimized concepts, plans, means and methods to document and ensure the Project is completed ahead of schedule and without unnecessary delays. We identified many potential project delay triggers and developed a path forward to steer the project to successful completion. Recent experience on a very similar project gives the LANE Team proven methods for creating, monitoring, and maintaining the schedule. Below are three major project stages we will leverage to quickly mitigate delays.

- **Pre-bid Proposal Phase:** LANE’s Concept schedule is developed in this stage. The LANE Team has been meeting on a weekly basis (Technical Work Groups) since the release of the RFP to discuss project issues, concepts, feedback, and make refinements. The schedule provided in Section 4.7-is the result of this effort. The Team will target the identified issues for resolutions right away.
- **Design Phase and Deliverables:** The design process to meet the RFP dates are a critical component of the project. Various disciplines will be coordinating closely to produce the plans quickly. The LANE Team will schedule weekly team meetings to provide over-the-shoulder reviews and discuss issues for immediate resolution. During this time period, the complete project schedule will be developed and reviewed with VDOT and other stakeholders. Should issues arise or conditions change during design that impact the sequence or completion milestones, LANE’s Team will review schedule options for correction so that these milestones are maintained. Changes to the schedule will be disseminated to all effected by these particular activities. Throughout this stage, the approved schedule is monitored, updated, and communicated to VDOT by the DBPM to ensure that it remains compliant.
- **Building Phase:** The Project will quickly transition to this important stage. Mr. Bob Cross, CM, and Mr. Brian Basnight, DBPM, will monitor and update the schedule on a regular basis. The CM ensures that the schedule and updates to the CPM and 5-week “look-ahead” schedule are communicated to our Team, stakeholders, QA/QC, and VDOT. The “look-ahead” schedules allow teams to plan activities on a daily/weekly basis and communicate specific work activities in an urgent-manner. The LANE Team will constantly evaluate options for avoiding delay or recovering the schedule by re-sequencing the work, adding resources, or re-designing certain features.

4.6 | PROPOSAL SCHEDULE

4.6.1 Proposal Schedule

The Proposal Schedule utilizes Primavera P6 software and CPM scheduling to depict the scope and sequence of work to design and construct the project per the RFP requirements. The Proposal Schedule is organized by using a hierarchical Work Breakdown Structure (WBS) into major phases of the project. These include project milestones, design, Scope Validation Period, environmental permitting, ROW acquisition, utility relocation, public involvement and construction. The Proposal Schedule also depicts the anticipated Critical Path, reviews by VDOT, FHWA, the Town of Leesburg (TOL), and other regulatory agencies, material procurement, and other involved parties' activities. The Proposal Schedule is included in Volume II. Per the RFP requirement, the LANE Team has provided "PDF" copies of the proposal schedule and narrative, as well as a back-up copy of the schedule source file in "XER" format (Ver 17.9.0) on a CD-ROM.

4.6.2 Proposal Schedule Narrative

The LANE Team has developed the following Proposal Schedule narrative for our overall plan to execute the work. The narrative includes overall sequencing of project, the Critical Path, the LANE Team's strategy to ensure the successful delivery of the project on time and within budget, and other key assumptions on which the schedule is based. We also explain how the LANE Team optimizes the benefits of the D-B delivery method to mitigate known risks, conform to MOT requirements, minimize impacts of construction activities on the public, and deliver the project **ahead of the RFP Completion Date by 45 days**.

Sequence of Work

The LANE Team will work diligently to achieve the time restriction on Battlefield Parkway detour and Final Completion before the required dates. The LANE Team evaluates the project in three stages:

- **Design and Permitting** – The objectives of this stage is to complete all preliminary and final design for the project, obtain approval of all permits, resolve all utility conflicts, and perform ROW acquisitions.
- **Procurement** – The objective of this stage is to procure all long lead items for the project which include shop drawing development and approval, fabrication of material, and its delivery.
- **Construction** - The objective of this stage is to construct the entire project. This includes the VDOT inspection and acceptance of work, system testing, punchlist, burn-in periods, and project close-out.

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

- The LANE Team will utilize an Early Work Package (EWP) to design and process the ROW approval for West Driveway and Keystone Drive access roadway work. The goal is to submit the EWP soon after NTP; and complete the construction of the access roads by the end of 2019. The scope will also include the stormwater management facility near Ramp B.
- In the EWP, the LANE Team will also place traffic barriers along the outside edge of Route 7, which the Project to perform some early utility relocation work within the existing ROW. This will prevent the utility work from impacting Route 7 widening and improve the overall schedule.
- The LANE Team will combine all design outside of the EWP, through ROW and Design Approvals, into a single design package to expediate the design and review process.
- The LANE Team will accelerate the acquisition of parcels affecting Ramps A, B, C and D.
- The LANE Team would establish a key interim design package for Battlefield Parkway detour. This will help prevent design delay on the Battlefield Parkway roadway work and begin the bridge over Route 7.

- The LANE Team has developed activities in the CPM schedule to track the Limited Access Establishment approval with planned meetings to avoid impact to design and construction.

Critical Milestones

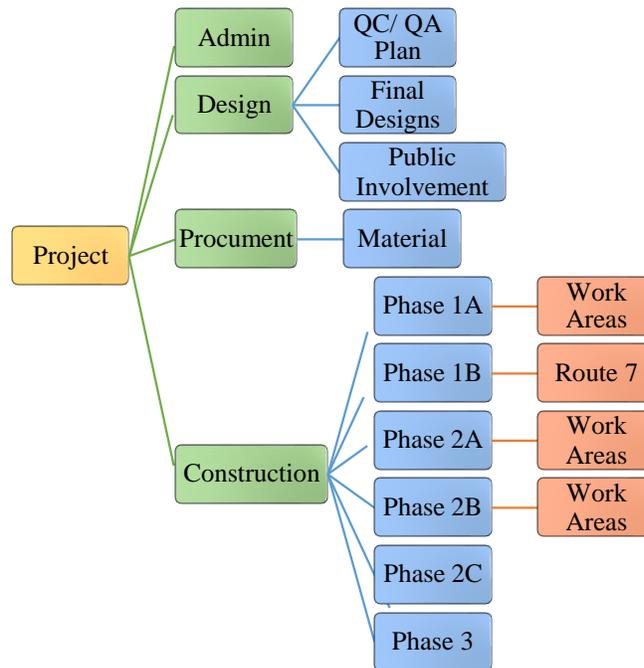
The LANE Team is committed to the Final Completion Milestone of October 15, 2021– **45 Calendar Days earlier than the RFP date**: November 30, 2021. The table below identifies Key Milestone dates, which in order to be met, will require coordination not only between the D-B Team, and VDOT but also other reviewing agencies (FHWA, TOL etc.). Post award, the LANE Team will implement our assertive D-B approach, local experience, and relationships to potentially improve these dates.

Key Milestone	Milestone Date
Technical Proposal Submission Date	November 27, 2018
Price Proposal Submission Date	December 12, 2018
Open Price Proposal	December 18, 2018
Notice of Intent to Award	December 20, 2018
CTB Approval / Notice to Award	January 10, 2019
Design-Build Contract Execution	February 20, 2019
NTP	February 22, 2019
Scope Validation Period Complete	June 22, 2019
Battlefield Parkway Closure	365 Days (1 Year)
Final Completion Date	October 15, 2021

Work Breakdown Structure (WBS)

The WBS is a multi-level, hierarchical arrangement of the work to be performed on the Project. The LANE Team has laid out the WBS to break down the major phases of the Project by Project Element and type of work. The type of work has been broken down by Phases, Areas and respective components such as Milestones, Project Management, Scope Validation, Environmental/Permitting, ROW, Design, Public Involvement, Utility Relocation, and Construction.

The WBS areas for the Project have been developed as a collaborative effort between the design and construction teams by evaluating the components as a single Project including: type of work along the alignments design considerations, and management of the construction efforts.



Level 1 is the Project; Level 2 through 6 of the WBS include, but are not limited to, the following items for the respective project components:

- **Administration:** includes the contract milestones, the start and completion milestones of major project components, and monitoring of project durations.
- **Design:** includes the development of all design plans, scope validation, utilities, permits, ROW acquisition, QA/QC plans, construction plans, etc.
- **Procurement:** includes the procurement and fabrication of girders and MSE panels for the Project.
- **Construction:** includes the entire construction scope of the project, including but not limited to: MOT, erosion & sediment controls, QA/QC, storm water management, drainage, lighting, ITS, phasing, bridge construction, mill-and-overlay paving, and roadway construction.

Calendars

The LANE Team uses 5 different calendars to represent a variety of work scenarios:

- **“5-Days with Holiday”** – Based on five working days per week and includes standard holidays. Used for design activities and work not impacted by adverse weather and holiday restrictions.
- **“5-Days with Weather & Holidays”** – Based on five working days per week, specified holiday restrictions, and anticipated weather days. Used for construction activities.
- **“5-Days with Paving & Holidays”** – Based on the “5 Days with Weather & Holidays” with non-working periods from December through February. Used for asphalt paving activities.
- **“5-Days with Final Paving”** – Based on the “5 Days with Weather & Holidays” with non-working periods from December through April. Used for mill-and-overlay and final asphalt paving activities.
- **“Calendar Days”** – Based on seven days per week and is used for review periods and milestones.

The LANE Team has reviewed the weather data provided by NOAA observation center at Washington Reagan National Airport, VA. Using on 0.1 inch of participation per day as the threshold for weather impact and taking into consideration of weekends, the LANE Team schedule accounts the following number of weather days each month:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Anticipated Weather Days	4	4	4	4	5	6	5	4	3	4	3	6

The LANE Team will observe the New Year, Memorial Day, 4th of July, Labor Day, Thanksgiving, Friday after Thanksgiving, and Christmas holidays from 2018 to 2021, and marks these dates as non-work days in the schedule.

Activity Identification

The LANE Team is proposing a smart activity identification system in the Proposal Schedule, where a unique alphanumeric is used. Each activity identification is broken down into the following parts: Phase of Work, Work Area, Sub-Location, and Unique Identifier, described in detail below:

As an example is **C 00 0- 2680**

Type of Work	Phasing & Area	Sub-Area	Unique Identifier
Types of work for the project with the abbreviations	Construction phasing of the Project with the abbreviations:	Sub-Area of construction	The last four digits in the activity identification structure are numeric increments starting with 1000, and incremented in steps of 10. This is done to leave ample room between activities so that additional activities may be inserted as necessary.
A = Administration	00 = Phase	1- = Area 1	
D = Design	10 etc... = Phase 1, Phase 2, etc.	2- = Area 2	
P = Procurement	2A, 2B etc... = Phase 2A, Phase 2B, etc.	5S= Area 5 Bridge	

Scope Validation Period

The scope validation period is the 120 day period following NTP. Our schedule depicts activities that are relevant to the validation work and VDOT review of the submittal.

Plan and Strategy

The LANE Team has developed a comprehensive MOT/phasing plan to complete the Project in a timely manner. Our Plan is to organize the Project into three phases: 1A, 1B, 2A, 2B, 2C, and 3. The LANE Team will pursue all available work within each phase to maximize the construction progress on the Project.

- **Phases 1A/1B:** Construct work relating to Keystone Drive and the West Driveway along with Route 7 roadway work not requiring ROW acquisition and modification of the Fort Evans intersection
- **Phase 2A:** Construct remaining Route 7 roadway work, and Ramps A, B, C, and D. Jack & Bore drain pipes and sanitary sewer
- **Phase 2B:** Construct Battlefield Parkway and bridge, and the remaining Ramps/Spurs A, B, C and D. The start of Phase 2B marks the start of Battlefield closure/detour period.
- **Phase 2C:** Modify Battlefield Parkway and Russell Branch Parkway intersection for pavement tie-in. The end of Phase 2C marks the end of Battlefield closure/detour period.
- **Phase 3:** Complete bridge aesthetics, remaining lighting work, final surface paving, mill-and-overlay existing pavement on Route 7, landscape, and punch list for Final Completion.

Each phase has its own set of conditions for release of work. Since these phases are not sequentially tied to each other, the LANE Team will work one or more phases concurrently throughout the construction schedule. The completion of each phase is directly tied to the Final Completion of the Project.

Design

Activities for design activities are shown in the project schedule. Time is included for all design QA and QC activities to be completed prior to any submittal; we do not rely on outside agencies to correct our plans.

An Early Work Package (EWP) will be designed and processed for separate ROW and Design Approvals. This package will accelerate the acquisition/transfer of properties needed to construct West Driveway and Keystone Drive. This allows the LANE Team to expediate the work required to provide new access roads to the current occupants of Parcels 011, 012, 013, 014, and 015 and allow the owners unfettered access away from the remainder of construction for the interchange. The EWP would also begin conversion of the existing stormwater management facility (SWM) near Ramp B to mitigate impacts to streams along the West Driveway. Permanent modifications to the two off-site intersections along the proposed detour would also be designed as part of the EWP. The design for the EWP would be submitted for ROW and Design Approval soon after NTP is received. Our goal is to open the new access driveways/roads before the end of 2019.

In conjunction with the EWP, traffic barriers would be placed along the outside edges of Route 7 allowing some early work within the existing ROW to begin including relocation of the Summit Communications ducts and abandonment of the Town watermain. This work along Route 7 helps expediate the construction of Route 7 widening roadway work to avoid potential delay, improve the overall schedule of the Project, and ultimately provides an earlier benefit to the travelers along Route 7. This portion of the work would need MOT approval from VDOT at an early stage in the contract.

Except for the EWP, all other design will be processed as a combined design package through ROW and Design Approvals; this reduces the number of reviews and approvals required from VDOT and the TOL. After Design Approval, separate work packages would be RFC covering the various stages of construction outlined below.

A key interim RFC design package would be for the establishment of the Battlefield Parkway detour. This RFC package will avoid any delays to the start of construction for the Battlefield Parkway roadway and bridge work.

Limited Access Establishment will be tracked to avoid impact to design and construction and better coordinate the Limited Access Establishment approval with planned meetings and input dates for the Commonwealth Transportation Board (the CTB has months where they do not meet).

Environmental /Permitting

Activities for environmental permitting and related activities are shown in the project schedule.

Separate environmental permits/actions will be required for the EWP; this would include commencement of modifications to the stormwater management facility near Ramp B. These permits would primarily involve work related to stream impacts along West Driveway. TOYR may be required following studies to identify endangered species habitats; these potential TOYR restrictions are considered in the detailed schedule.

Permits covering the remainder of the work would be processed separately from the EWP permits. These permits would involve reviews, verifications, and approvals including hazardous materials, Section 404, VPDES, and NEPA compliance.

Right of Way Acquisition

ROW acquisition will be prioritized to assure that either Right of Entry or clear title is obtained prior to each construction phase.

Acquisition activities for the EWP will occur separately from the other acquisitions needed for the project. The transfer of ownership of the School property is accommodated within the schools listed proffer. The process will begin with a request from the TOL to convey the property to Loudoun County and subsequently TOL; this process can begin very early in the Contract. Other properties impacted by Keystone Drive or the West Driveway are limited to a few owners; acquisition/negotiation would be pursued aggressively enabling the affected owners to establish new access to their properties that will not be directly impacted by later work along Route 7. No additional ROW will be needed at the intersections of Fort Evans Road with Battlefield Parkway or River Creek Parkway.

The next critical set of properties to be acquired involve any to be impacted by construction of Ramps A, B, C, and D. Land needed for Ramp D would primarily involve the Leegate Development, this land has already been proffered but will require execution of the proffer and transfer of ownership; right of entry would also be anticipated. Most land needed for Ramp B and the SWM facility are already within existing ROW. Land rights for the parcels affected by Ramp C would already be addressed during the acquisitions for the EWP. Most acquisitions needed for early work on Ramp A have a single owner who has already been actively involved in establishing the proposed ROW along their property.

The other required acquisitions, such as those near Cardinal Park Drive, would be included in the final set of properties.

Utility Relocation

Some utilities are expected to be relocated by others in advance of this contract. This includes undergrounding of all the overhead utilities currently crossing Battlefield Blvd just south of Route 7. New sanitary sewer and water facilities are currently being installed by the Leegate Development and will connect to work to be performed under this D-B project.

For the EWP, utility relocation for the utilities located near the north end of Keystone Drive are shown as separate activities on the project schedule. The relocation of the underground electric and communication lines in this area may occur simultaneously with other work on the southern portions of Keystone Drive but will be completed so that the final connection of the roadway to Potomac Station Drive can be completed.

The project schedule allows for early work along Route 7 to mitigate conflicts with communication duct banks operated by Summit IG. These relocations will clear the project for construction of the bridge. The bridge piers are located to avoid the need to relocate the existing gas main in the median of Route 7.

Other key relocations include the facilities operated by the TOL. The existing watermain in Route 7 can be abandoned as soon as the rerouted watermain is completed across the Leegate Development; this is expected to be completed in conjunction with Trailview Boulevard Extension (to be done by others) by the end of 2019. The new sanitary sewer under Route 7 would be installed prior to commencing fill work for Ramps C and D in order to reduce the length of jack and bore for the encasement (the remainder of the new encasement and work under Battlefield Parkway could be installed within open trenches).

Procurement

The Procurement Stage includes activities related to the material procurement efforts in the Project including: the development shop drawings, VDOT review and approval of submissions, and the fabrication of the material. The types of material are as follows:

- Girders and Structural Steel for Battlefield Parkway over Route 7
- MSE Wall for Battlefield Parkway Bridge over Route 7
- MSE Wall for Ramps A and D

Construction

The LANE Team's sequences of construction, for which this schedule is based, has been developed to achieve all project milestones, mitigate impacts to the traveling public, delays to construction and to facilitate successful completion of the project. Some potential delays include (but not limited to): utility relocation, maintaining stakeholder access, and ROW acquisition. The LANE Team will employ the following strategies to avoid these potential delays:

- **Utility Relocate:** The LANE Team's approach is to identify and verify the conflict as soon as possible, and design our work around the conflict thus minimizing the scope of utility relocation, and its potential to impact to start construction.
- **Maintain Stake Holder Accesses:** The LANE Team will expedite the construction of new accesses: West Driveway, Keystone Drive and Cardinal Park Drive to Phase 1A and 1B, so the restraint of maintaining accesses to the stake holders will stop affecting the schedule.
- **Right of Way Acquisition:** The LANE Team has reviewed the ROW requirement of the Project, and plan to design and release Route 7 work not requiring ROW for construction early. This will partially mitigate the impact of ROW acquisition on the schedule.

Sequence of Construction – The project will be constructed in the following phases: Phase 1A, 1B, 2A, 2B, 2C, and 3. In addition to obtaining the required permit and RFC plan approval, each phase will also have its own set of conditions to start, which varies depending on the work area. The LANE Team will work concurrently on multiple phases throughout the project to help expediate the schedule.

- **Phase 1A:** The goal of Phase 1A is to construct the new accesses points for the impacted stakeholders and the Battlefield Intersection Improvements. The existing traffic pattern will not be modified except for shifting lanes for shoulder and median work. The scope of work is as follow:
 - **West Driveway:** The release of work requires ROW acquisitions for Parcel 011 and 012 plus separate environmental permits. The scope of work includes clearing and grubbing and the construction of the new drainage and roadway.
 - **Keystone Drive:** The release of work requires ROW acquisitions for Parcel 013 and 014. The scope of work includes clearing and grubbing and the construction of the new drainage and roadway.
 - **Battlefield Intersection Improvements:** The area does not require conditions additional to the permit and design requirements. We will modify the existing intersections of Battlefield Parkway/Fort Evans Rd and Fort Evans Rd/Rivercreek Parkway to accommodate the detour traffic.
 - Battlefield Parkway/Fort Evans Rd: construct a new SB turn lane in the median, modify an existing island, construct EB roadway widening, relocate the existing sidewalk, install new signal, and mill-and-overlay the existing intersection.
 - Fort Evans Rd / Rivercreek Parkway: modify an existing island, construct WB roadway widening, relocate the existing sidewalk, modify existing signal, and mill-and-overlay the existing intersection.
- **Phase 1B:** The goal of Phase 1B is to construct the portions of the proposed Route 7 widening work that do not require ROW acquisition. MOT along Route 7 will be implements and we will shift lanes on Route 7 towards the median for the widening to the outside shoulder. The LANE Team will maintain accesses from/to Route 7 for the occupants of Parcel 011 and 012, 013, and 014, until the replacement accesses in Phase 1A – Keystone Drive and West Driveway are completed and opened for traffic.
 - **Route 7 Widening:** The area does not require additional conditions to the permit and design requirements. We will widen existing Route 7 in areas where ROW acquisition is not required. The scope of work is as follow:

- Install MOT and erosion controls, installation of drainage, SWM facilities, ITS, signage, and lighting, earthwork and paving to widen Route 7 to the outside shoulders.
 - Jack & bore major utilities and drainage crossings under Route 7.
 - Roadway work under Bridge B601 will start after the completion of bridge deck for safety reasons (falling debris). The proposal schedule incorporates a separate sequence of earthwork, drainage, and pavement work.
- **Phase 2A:** The goal of Phase 2A is to construct the ramps: A, B, C, and D, and Route 7 roadway work requiring ROW acquisition. We will install additional MOT along Route 7 but will not modify the existing traffic pattern to minimize impacts to the traveling public.
 - **Route 7 Widening:** The release of work requires ROW acquisition. Install MOT and erosion control, widen Route 7 to the outside shoulders, drainage, SWM facilities, ITS, signage, and lighting.
 - **Ramp A and D:** The release of work requires ROW acquisition. Install MOT and erosion control, retaining wall, earthwork, drainage, pavement, guardrail, SWM facilities, ITS, signage, and lighting.
 - **Ramp B:** The release of work requires ROW acquisition, and the completion of Keystone Drive work in Phase 1. Install MOT and erosion control, retaining wall, earthwork, drainage, pavement, guardrail, SWM facilities, ITS, signage, and lighting.
 - **Ramp C:** The release of work requires ROW acquisition and the completion of West Driveway work in Phase 1. Install MOT and erosion control, retaining wall, earthwork, drainage, pavement, guardrail, SWM facilities, ITS, signage, and lighting. Modify Cardinal Park Drive intersection with Route 7, which includes eliminating the existing traffic signal and crossover to and from WB Route 7, and abandon existing the waterline. The work cannot start until installation of the waterline along Trailview Blvd and the opening of Leegate to Russell Branch Parkway (by others).
- **Phase 2B:** The goal of Phase 2B is to construct the new Battlefield Parkway bridge over Route 7, the Battlefield Parkway bridge approach fills, and connecting the ramps/spurs: A, B, C, and D to the new bridge. The release of work requires ROW acquisition and the establishment of the Battlefield Parkway detour in Phase 1. **The LANE Team has strategically deferred the start of the detour/construction to June 1, 2020, so we will be completing the Battlefield work with good weather in the spring of 2021.** The scope of work is as follows:
 - **Battlefield Parkway:** Install MOT and erosion control, earthwork, drainage, pavement, guardrail, ITS, signage, and signal.
 - **Battlefield Parkway Bridge over Route 7:** Install MOT and erosion control, site clean-up and grading, drive piles, construct spread footer for Pier, construct Abutment A and B, erect girders and structural steel, construct deck, curb and sidewalk on deck, parapets, and deck fences.
 - **Ramp/Spur A, B, C, D:** Install MOT and erosion control, earthwork, drainage, pavement, guardrail, SWM facilities, ITS, signage, signal and lighting.
 - **Battlefield Parkway and Russell Branch intersection:** Construct the right-turn lane, a retaining wall and relocate the sidewalk.
 - **Cardinal Park Drive:** Eliminate the left-turn into Cardinal Park Dr., remove the signal, modify the Cardinal Park Dr. access from/to Route 7, and the abandon the existing waterline.
- **Phase 2C:** The goal of Phase 2C is to construct the modification of Battlefield Parkway and Russell Branch intersection. There will be no additional changes in to the detoured Battlefield traffic, except for nightly / weekend lane closures and flagging operations. The scope of work includes the reconstruction of curb and gutter to match the new grades, the construction of a right-turn lane on Battlefield Parkway NB alignment, and the pavement build-up to tie-in the roadway between the new and existing Battlefield

Parkway. The end of Phase 2C will be the opening of the Battlefield Parkway interchange without restrictions- ending the Battlefield Parkway detour period.

- **Phase 3:** The goal of Phase 3 is to complete the remaining construction work and to punchlist the Project. The scope of work includes: stain / paint bridge parapets, sidewalk and crosswalk, installation of all remain lighting, replacing all remaining existing guardrail on the project, the mill-and-overlay of existing pavement on Route 7, the final paving and stripping of all new pavements, seeding the green areas, and final inspection/punch lists.

Means and Methods

Drawing from decades of civil infrastructure experience that the LANE Team has in North Virginia, we have developed means and methods in the design and construction to meet or exceed the RFP requirements; plus, accommodate the future Route 7 alignment. **The objective is to provide VDOT with a safe construction project for both the public and the contractor, minimal disruption to the public with the least amount of phasing, and a reliable, innovative design limiting the need for VDOT involvement, and an end product that requires minimal long-term maintenance.**

Roadway Sequence - There are two major roadway construction sequence in the Project: Route 7 widening and reconstruction of Battlefield Parkway. The LANE Team will construct Route 7 widening in Phase 1B and 2A, and Battlefield Parkway in Phase 2B and 2C. The LANE Teams' roadway design and construction sequence offers numerous schedule advantages:

- Early work package (EWP) allows the LANE Team to take advantage of the minimal ROW acquisition requirements for the Route 7 widening and construct the majority of the widening during Phase 1B. This alleviates risk of overall project delays that could impact the Route 7 work; it also permits a leveled allocation of resources for construction improving overall efficiency and quality of roadway construction.
- EWP allows the Team to start the Keystone Drive and West Driveway work at the onset of construction. This prevents the work from impacting Phase 2A by providing the new access points to Potomac Station Drive for Parcels 011, 012, 013, and 014 occupants; allowing the LANE Team to close their current access to Route 7.
- The LANE Team's design will primarily widen Route 7 to the outside shoulder. This essentially reduces the overall construction for Route 7 widening from 2-phases to 1, and decreasing the overall public impact and duration of construction.
- We are strategically starting the detour of Battlefield Parkway on June 1, 2020; the 365-day detour period will end around the end of May 2021. The last 3 months of the detour period (March, April, and May of 2021) are in good weather and the start of the 2021 paving season; coinciding with the Battlefield Parkway roadway construction sequence. This approach will minimize the effects of a winter shut-down on asphalt paving against the detour period, greatly reducing the risk of a detour period delay/extension.

The LANE Team proposes an Early Work Package to establish safe work zones for utility work and to expedite relocation of access points away from Route 7 to Potomac Station Drive

Ramp / Spur Sequence - The LANE Team will construct the majority of ramps A, B, C, D in Phase 2A and construct the spurs and ramps tie-in to the bridge in Phase 2B. This approach offers several schedule advantages:

- Performing the majority of the ramp work ahead of the Battlefield Parkway detour period, the LANE Team reduces the risks of delaying the removal of the detour due to ramp impacts.
- Reducing the scope of ramp work in Phase 2B, it reduces the clustering of crews and equipment at the intersection and improves accesses to the work site. It shall improve the overall safety, quality and schedule of the bridge work.

Bridge Construction Sequence - The LANE Team will construct the Battlefield Parkway Bridge over Route 7 in Phase 2B. The work requires the detour of Battlefield Parkway traffic for a period of no more than 365 days. The LANE Team’s bridge construction sequence offers the following advantages:

- By strategically starting the detour of Battlefield on June 1, 2020, the 365-day detour period will end no later than the end of May 2021. This allows for the last 3 months of the detour period - March, April and May of 2021, when the LANE Team plans to perform the temperature sensitive deck placements. This approach will minimize the effects of a winter shut-down for temperature sensitive work and reduces the risk of detour period delay.
- The bridge deck pouring sequence presents a unique challenge due to the multiple construction joints required to avoid open joints and the non-standard geometric deck shape to accommodate the SPUI traffic movement configuration. The LANE Team has developed construction means and methods and a multiple deck placement program that sequences the decks to be placed in a 30-day period.

Project QA and QC

- **Design** – The Proposal Schedule has incorporated activities allocating time for the QA / QC process; they are the predecessor to the submission of all design packages. Each design submission will receive a QC check by a pre-designated design team member. Once QC has completed their process an independent JMT engineer to this project performs the QA check to verify accuracy and compliance. The project baseline schedule will follow the same process.
- **Construction** – The proposal and baseline schedule construction activities account for the time required for the QC and QA inspection process. The QC/QA plan will identify hold points and testing processes that are accounted for in the construction durations. All Lane construction operations go through a formal, written pre-planning process with the crews. Included in the formal review are the QC and QA personnel. All hold and test points will be identified in the pre-planning document and enforced by the management. The QA and QC organizations will keep separate documents for all testing, diaries and inspections. QC and QA managers are responsible to coordinate with each other to ensure all testing and inspections are per the Project QA/QC plan, the Specifications and the construction manual.
- **Inspection, Testing and Acceptance** – The Proposal Schedule has incorporated inspection testing and acceptance activities for all activities on the Battlefield Parkway Interchange project, The QA/QC testing and inspection plan includes: soil and stone compaction, pipe installation alignment, cleanliness and compaction, rebar inspections, concrete testing, structural steel bolt torque tests, ITS, lighting and signalization, etc. These activities also provide the time reference necessary for test coordination. The Proposal schedule also includes “burn-in period” activities for lighting and signalization systems.

Public Involvement / Public Relations - The LANE Team will provide the Public Involvement / Public Relations service as required by the RFP Part 2 Section 2.12. The Proposal Schedule depicts the LANE Team developing and implementing the public outreach program during the post-award phase of the Project as well as development and implementation of the communication plan. Meetings will be held with stakeholders throughout the project schedule. “Pardon Our Dust” meetings will occur before each major construction phase and traffic shift.

Critical Path

The Critical Path starts with the development Design Exceptions and Waivers, and then the development of the ROW Plans, and the ROW acquisitions. The Critical Path of the design phase ends with the utility relocations.

The construction phase Critical Path starts with Phase 2B - pile driving for Bridge B601; it continues to follow the Bridge B601 construction sequence into the substructure work, girder erection and deck construction. Upon the completion of the deck, the Critical Path switches to Phase 1B – Route 7 roadway construction underneath the bridge deck, which follows the sequence from excavation, drainage, stone base, utilities, permanent bridge

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 monthly, 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 need for 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.

Incentive for Early Completion

The Proposal Schedule depicts the LANE Team achieving the Early Removal of Battlefield Parkway Detour and the Final Completion Milestone in the RFP: 362 days and October 15, 2021, respectively. VDOT has offered an “No Excuse” incentive for early completion of these milestones. The provision clearly dictates the terms and condition required for collecting this payment, and the LANE Team fully intend to modify our sequence work to achieve early completions post award. The modifications can be summarized as follows:

- Perform the earth and drainage work of Route 7 underneath Bridge B601 concurrent with the bridge deck work, taking the aforementioned work off the critical path. **Potential improvement on the schedule 9 weeks.**
- Perform the final surface pavement concurrently the completion of the Route 7 underneath Bridge B601 roadway. **Potential improvement on the schedule 2 weeks.**

The LANE Team can potentially complete the project by early August 2021 if ROW, utilities, and weather occur as anticipated and normal for this region. However, we can only determine the feasibility of the aforementioned modifications post award, thus, it is intentionally omitted from the Proposal Schedule.

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 advantage:

- Widening of Route 7 is on the outside shoulders only. This approach allows the LANE Team to construct the widening work on Route 7 in 1 phase instead of the 2 or more phases required to widen in both the median and the shoulder per the RFP proposed design. As a result, the LANE Team can complete the construction considerably earlier than before and reduces the risk of project delay.
- For future widening of Route 7, the scope of work is expected to be primarily to the median. This eliminates the need of 2 or more phases, and modification of ramps at the interchange. Thus, the future widening can also be performed in shorter schedule and less impact to the travelling public.
- The LANE Team’s design requires no ATCs, eliminating the risk of schedule impact when an ATC ultimately failed to get accepted by the Department and other stakeholders.
- The LANE Team developed a construction schedule, that operates concurrently in multiple phases and work areas. This approach provides a great degree of flexibility in resource allocation, work arounds to potential impacts and mitigates the effect of impact for a predecessor to its successors. Comparing our multi-phase approach to a sequential schedule, an impact to a single event can easily delay the entire remaining schedule.

Additionally, the Proposal Schedule considers: internal plan reviews, VDOT plan reviews and approvals, environmental permitting, ROW acquisitions, utility relocations, QA/QC testing and inspection, and construction 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 we receive 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 AND CONTENTS

ATTACHMENT 4.0.1.1 – Addendum No. 1
Route 7 and Battlefield Parkway Interchange
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	Appendix Attachment 4.0.1.1
Acknowledgement of RFP, Revisions, and/or Addenda	Attachment 3.6 (Form C-78-RFP)	Sections 3.6, 4.0.1.1	no	Appendix Attachment 3.6
Letter of Submittal	NA	Sections 4.1		Pages 1 & 2
Letter of Submittal on Offeror's letterhead	NA	Section 4.1.1	yes	Page 1
Identify the full legal name and address of Offeror	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
Point of Contact information	NA	Section 4.1.4	yes	Page 1
Principal Officer information	NA	Section 4.1.5	yes	Page 2
Interim Milestone and Final Completion Date(s)	NA	Section 4.1.6	yes	Page 2
Unique Milestone Date(s)	NA	Section 4.1.7	yes	Page 2
Proposal Payment Agreement or Waiver of Proposal Payment	Attachment 9.3.1 or 9.3.2	Section 4.1.8	no	Page 2 & Appendix Attachment 9.3.1
Certification Regarding Debarment Forms	Attachment 11.8.6(a) Attachment 11.8.6(b)	Section 4.1.9	no	Page 2 & Appendix Attachments 11.8.6(a) & 11.8.6(b)
Written statement of percent DBE participation	NA	Section 4.1.10	yes	Page 2

ATTACHMENT 4.0.1.1 – Addendum No. 1
Route 7 and Battlefield Parkway Interchange
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
Organizational chart with any updates since the SOQ submittal clearly identified	NA	Section 4.2.2	yes	Page 4
Revised narrative when organizational chart includes updates since the SOQ submittal	NA	Section 4.2.2	yes	Page 3
Design Concept	NA	Section 4.3		Volume I Pages 5-24 & Volume II Pages 53-70
Conceptual Roadway Plans and description	NA	Section 4.3.1.1	yes	Volume I Pages 8-19 & Volume II Pages 53-66
Conceptual Structural Plans and description	NA	Section 4.3.1.2	yes	Volume I Pages 19-24 & Volume II Pages 67-70
Project Approach	NA	Section 4.4		Pages 25-38
Environmental Management	NA	Section 4.4.1	yes	Pages 25-28
Utilities	NA	Section 4.4.2	yes	Pages 29-32
Geotechnical	NA	Section 4.4.3	yes	Pages 32-35
Quality Assurance/ Quality Control (QA/QC)	NA	Section 4.4.4	yes	Pages 36-38
Construction of Project	NA	Section 4.5		Pages 39-52
Sequence of Construction	NA	Section 4.5.1	yes	Pages 39-49

ATTACHMENT 4.0.1.1 – Addendum No. 1
Route 7 and Battlefield Parkway Interchange
TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Transportation Management Plan	NA	Section 4.5.2	yes	Pages 49-52
Proposal Schedule	NA	Section 4.6		Volume I Pages S1-S13 & Volume II Pages S14-S24
Proposal Schedule	NA	Section 4.6	no	Volume II Pages S14-S24
Proposal Schedule Narrative	NA	Section 4.6	no	Volume I Pages S1-S13
Proposal Schedule in electronic format (CD-ROM)	NA	Section 4.6	no	CD ROM

ATTACHMENT 3.6
FORM C-78-RFP

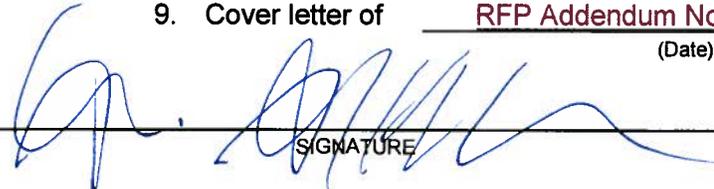
ATTACHMENT 3.7**COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION****ACKNOWLEDGEMENT OF RFP, REVISION AND/OR ADDENDA**

RFP NO.	C00106573DB101
PROJECT NO.:	0007-253-109

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 3.7, the Offeror acknowledges receipt of the RFP and/or following revisions and/or addenda to the RFP for the above designated project which were issued under cover letter(s) of the date(s) shown hereon:

1. Cover letter of RFP – June 18, 2018
(Date)
2. Cover letter of RFP Addendum No. 1 – August 2, 2018
(Date)
3. Cover letter of RFP Addendum No. 2 – September 5, 2018
(Date)
4. Cover letter of RFP Addendum No. 3 – September 18, 2018
(Date)
5. Cover letter of RFP Addendum No. 4 – October 5, 2018
(Date)
6. Cover letter of RFP Addendum No. 5 – October 15, 2018
(Date)
7. Cover letter of RFP Addendum No. 6 – November 2, 2018
(Date)
8. Cover letter of RFP Addendum No. 7 – November 14, 2018
(Date)
9. Cover letter of RFP Addendum No. 8 – November 16, 2018
(Date)



 SIGNATURE

November 27, 2018

 DATE

Ali Alkouraishi

 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 27th day of November, 2018, 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 December 8, 2017 Request for Qualifications (“RFQ”) and was invited to submit proposals in response to a Request for Proposals (“RFP”) for the **Route 7 and Battlefield Parkway Interchange, Project No. 0007-253-109** (“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 **Fifty Thousand and 00/100 Dollars (\$50,000.00)** ("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: Ali Alkouraishi

Title: Pursuit Manager

ATTACHMENT 11.8.6(a)
CERTIFICATION OF DEBARMENT FORMS

ATTACHMENT 11.8.6(a)
CERTIFICATION REGARDING DEBARMENT
PRIMARY COVERED TRANSACTIONS

Project No.: 0007-253-109

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

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

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

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

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

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

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


Signature

11/27/2018
Date

Pursuit Manager
Title

The Lane Construction Corporation
Name of Firm

ATTACHMENT 11.8.6(b)
CERTIFICATION OF DEBARMENT FORMS

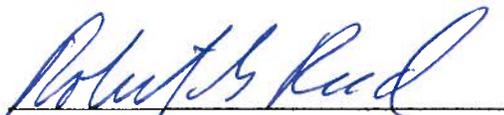
ATTACHMENT 11.8.6(b)
CERTIFICATION REGARDING DEBARMENT
LOWER TIER COVERED TRANSACTIONS

Project No.: 0007-253-109

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

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

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



Signature

11/06/2018

Date

Vice President

Title

Johnson, Mirmiran & Thompson, Inc.

Name of Firm

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

Project No.: 0007-253-109

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

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

 _____ Signature	11/06/2018 _____ Date	President _____ Title
---	-----------------------------	-----------------------------

CES CONSULTING LLC

Name of Firm

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

Project No.: 0007-253-109

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 _____ Signature	11/06/2018 _____ Date	Vice President _____ Title
--	-----------------------------	----------------------------------

DMY Engineering Consultants, Inc.

Name of Firm

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

Project No.: 0007-253-109

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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	9/20/18 _____ Date	President _____ Title
--	--------------------------	-----------------------------

Dulles Geotechnical & Material

Name of Firm
Testing Services, Inc (DGMTS)

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

Project No.: 0007-253-109

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

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

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

	11/06/2018	Vice President
_____ Signature	_____ Date	_____ Title

Endesco, Inc.

Name of Firm

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

Project No.: 0007-253-109

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

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

 _____ Signature	11/06/2018 _____ Date	President & CEO _____ Title
--	-----------------------------	-----------------------------------

Harris Miller Miller & Hanson Inc.
Name of Firm



14500 AVION PARKWAY
SUITE 200
CHANTILLY, VA 20151
703.222.5670

www.laneconstruct.com

TECHNICAL PROPOSAL - VOLUME II

ROUTE 7 AND BATTLEFIELD PARKWAY INTERCHANGE

TOWN OF LEESBURG, VIRGINIA
STATE PROJECT NO.: 0007-253-009, P101, R201, C501, B601
FEDERAL PROJECT NO.: STP-5A01(704)

CONTRACT ID NO.: C00106573DB101



PREPARED FOR:



SUBMITTED BY:





LANE Team Benefits
 Implementation of a TMP that addresses needs for local services such as school bus and emergency vehicle routes and provides local access.

LANE Team Benefits
 Centralized Stormwater Management - one large traditional BMP instead of several smaller facilities reduces long-term maintenance.

LANE Team Benefits
 Extensive experience coordinating with stakeholders along the Route 7 corridor.

LANE Team Benefits
 Upsized piles used to limit time needed for pre-augering.

LANE Team Benefits
 Enhanced non-corrosive materials in the bridge which exceed the minimum requirements and no longitudinal joint on the bridge deck reduces long-term maintenance.

LANE Team Benefits
 Use of Midwest Guardrail System within project limits; MASH-tested.

LANE Team Benefits
 Improved traffic separation on the SPUI layout with more than 10-feet between opposing movements and more than 4-feet between parallel movements.

LANE Team Benefits
 Improved geometry on all ramps provides enlarged landscaping area at 3:1 slopes and places ramps in the future condition.

LANE Team Benefits
 Battlefield Parkway profile optimized to reduce impacts to Russell Branch Parkway.

LANE Team Benefits
 Construction work areas limited to mostly the outer edge of the travel way reducing lane/shoulder closures and shifts. Increases work zone safety.

LANE Team Benefits
 OpenRoads 3D technology used to eliminate or mitigate risks early in design and optimize designs for reduced property impacts.

DESIGN BUILDER
LANE

DESIGNED BY
JMT

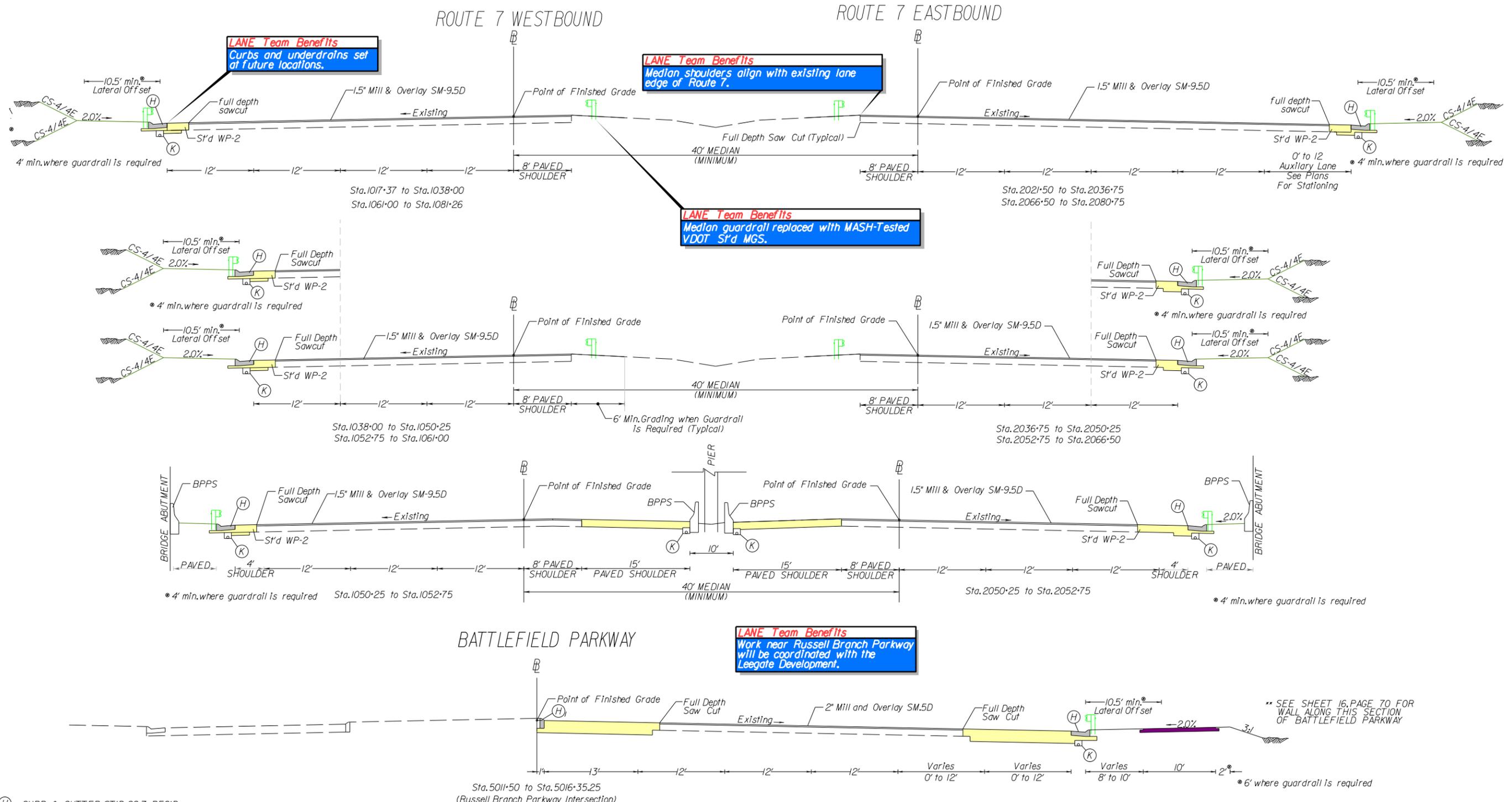
STATE PROJECT
 0007-253-109, P101

VIRGINIA DEPARTMENT OF TRANSPORTATION
ROUTE 7 AND BATTLEFIELD PARKWAY INTERCHANGE

SHEET NO.
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PAGE NO.
 53

TYPICAL SECTIONS (N.T.S.)



- (H) CURB & GUTTER, ST'D. CG-7 REQ'D.
- (H) CURB ST'D. CG-3 REQ'D.
- (H) CURB & GUTTER, ST'D. CG-6 REQ'D.
- (H) CURB & GUTTER, ST'D. CG-2 REQ'D.
- (I) RAISED CONCRETE MEDIAN STRIP, ST'D. MS-1A REQ'D.
- (J) RAISED CONCRETE MEDIAN STRIP, ST'D. MS-2 REQ'D.
- (K) UNDERDRAIN, ST'D. UD-4 REQ'D.

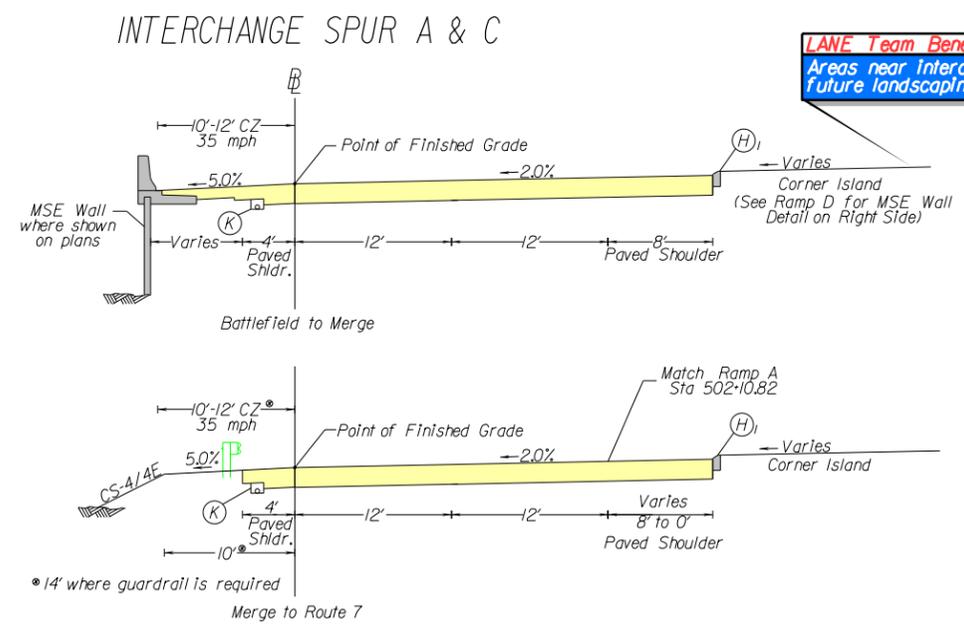
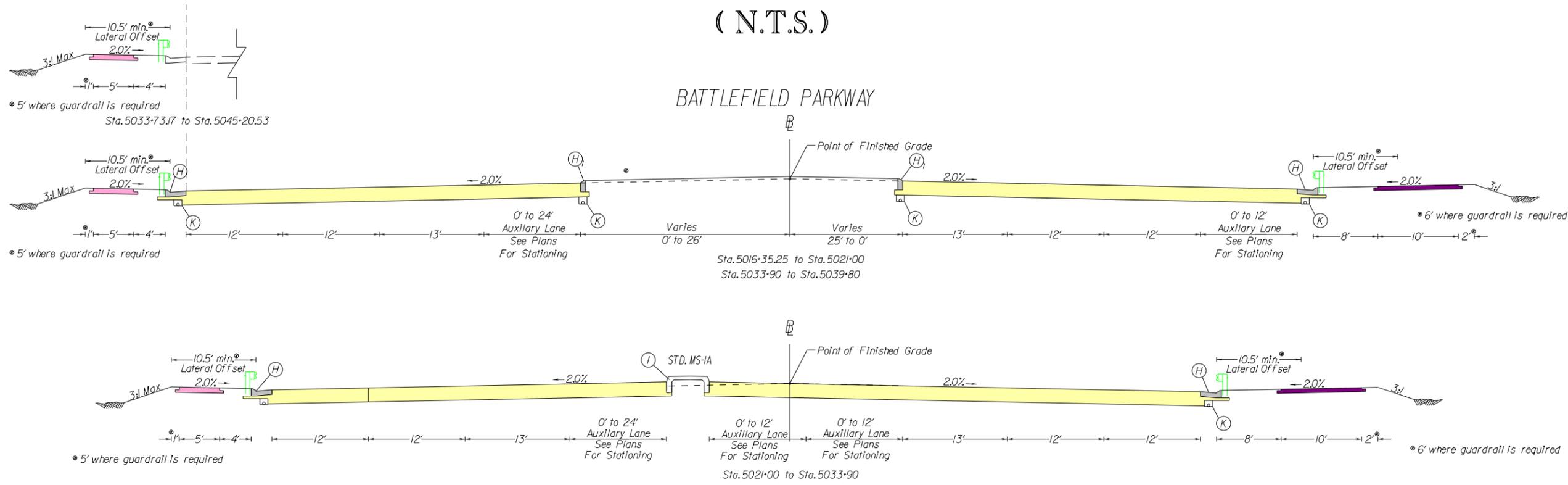
- PROPOSED FULL DEPTH PAVEMENT
- PROPOSED GRASS MEDIAN/
BUFFER/ PLANTED AREA
- PROPOSED SHARED-USE-PATH
- PROPOSED SIDEWALK

NOTES:
 1. SEE PLANS FOR GUARDRAIL LOCATIONS.
 2. PAVEMENT SECTIONS SHALL COMPLY WITH RFP REQUIREMENTS.
 3. ALL DISTURBED, NON-PAVED AREAS TO BE SEEDED AND MULCHED.

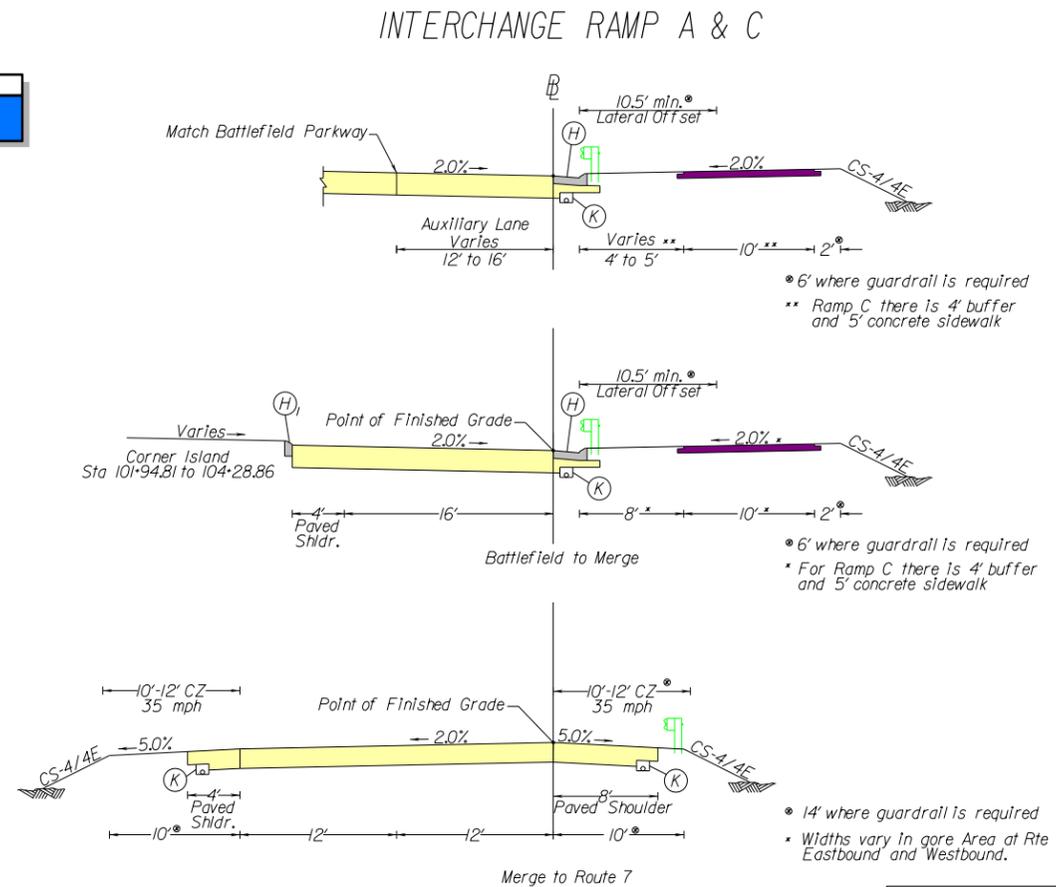
CONCEPT PLANS

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TYPICAL SECTIONS (N.T.S.)



LANE Team Benefits
Areas near Interchange will be prepared for future landscaping.



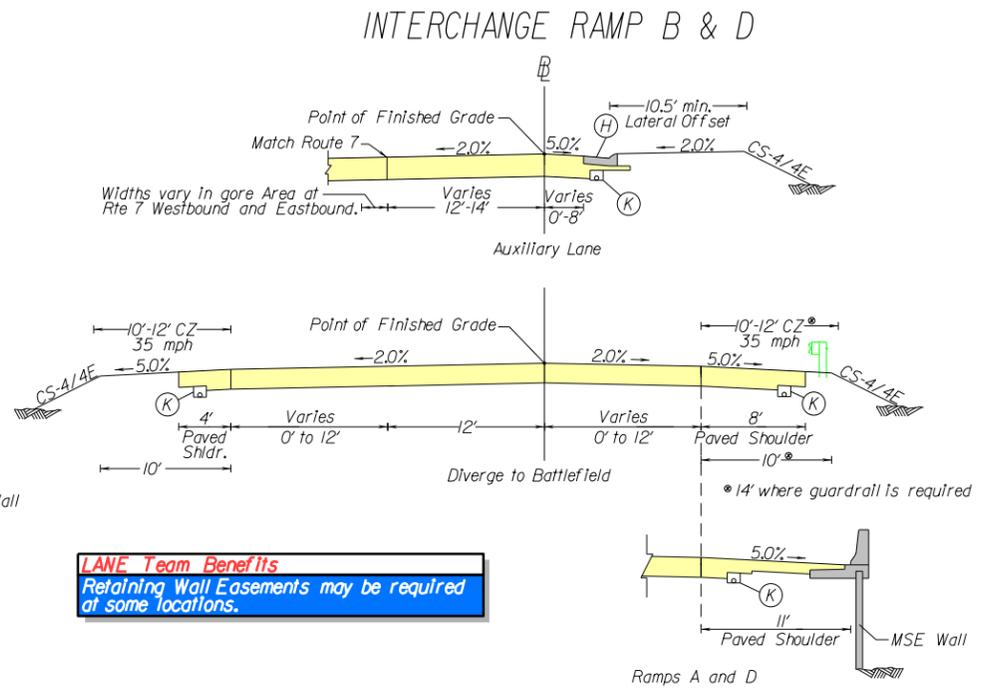
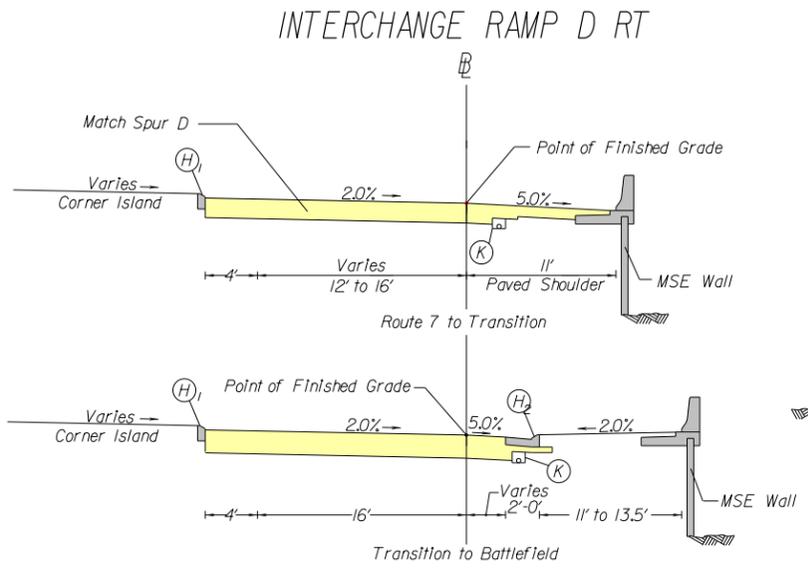
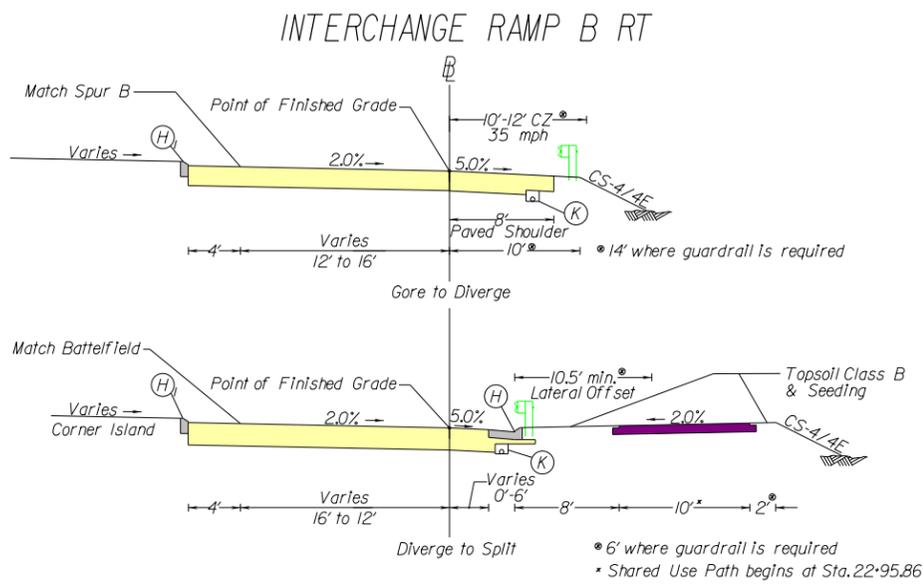
- (H) CURB & GUTTER, ST'D. CG-7 REQ'D.
- (H₁) CURB ST'D. CG-3 REQ'D.
- (H₂) CURB & GUTTER, ST'D. CG-6 REQ'D.
- (H₃) CURB & GUTTER, ST'D. CG-2 REQ'D.
- (I) RAISED CONCRETE MEDIAN STRIP, ST'D. MS-1A REQ'D.
- (J) RAISED CONCRETE MEDIAN STRIP, ST'D. MS-2 REQ'D.
- (K) UNDERDRAIN, ST'D. UD-4 REQ'D.

- PROPOSED FULL DEPTH PAVEMENT
- PROPOSED GRASS MEDIAN/ BUFFER/ PLANTED AREA
- PROPOSED SHARED-USE-PATH
- PROPOSED SIDEWALK

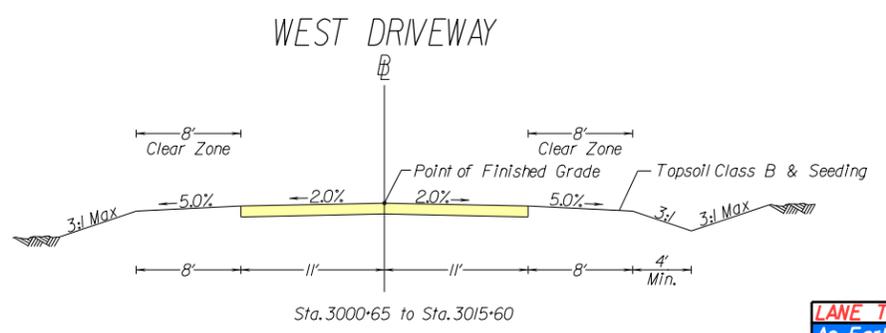
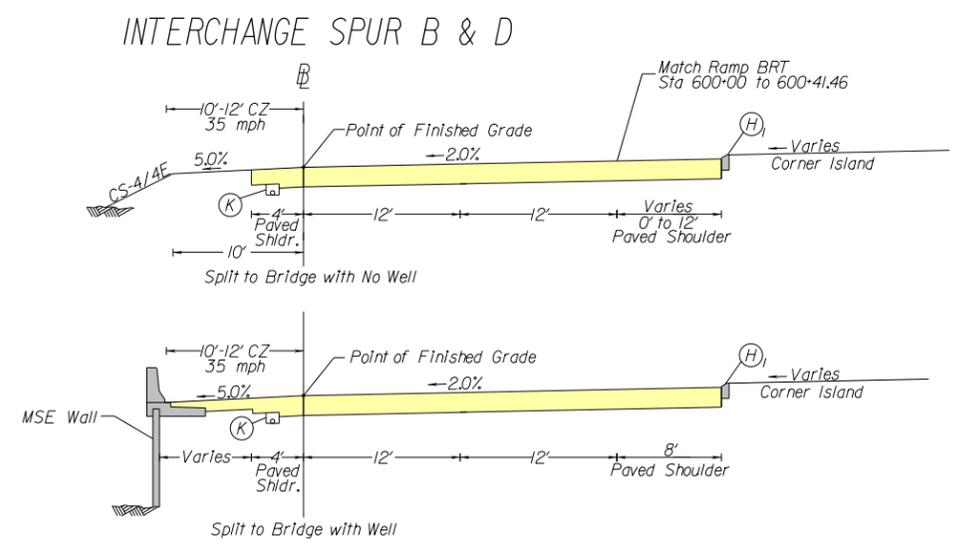
NOTES:
1. SEE PLANS FOR GUARDRAIL LOCATIONS.
2. PAVEMENT SECTIONS SHALL COMPLY WITH RFP REQUIREMENTS.
3. ALL DISTURBED, NON-PAVED AREAS TO BE SEEDED AND MULCHED.

CONCEPT PLANS

TYPICAL SECTIONS (N.T.S.)

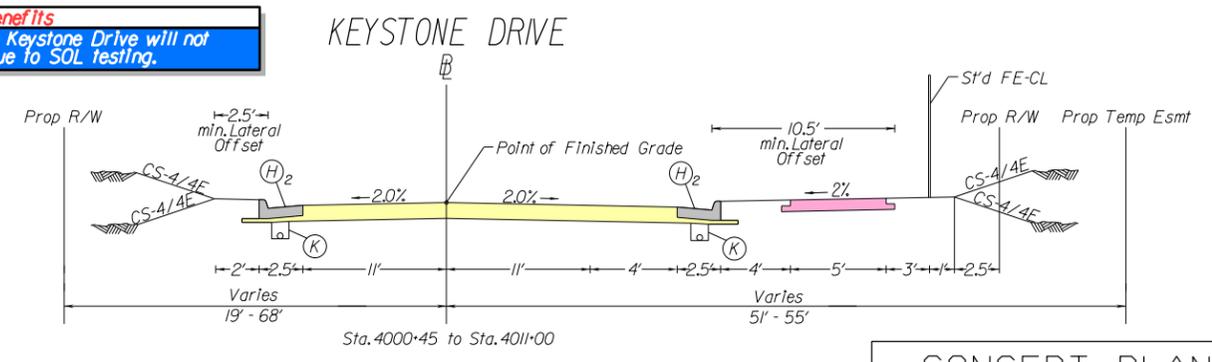


LANE Team Benefits
Retaining Wall Easements may be required at some locations.



LANE Team Benefits
An Early Work Package will construct West Driveway and Keystone Drive.

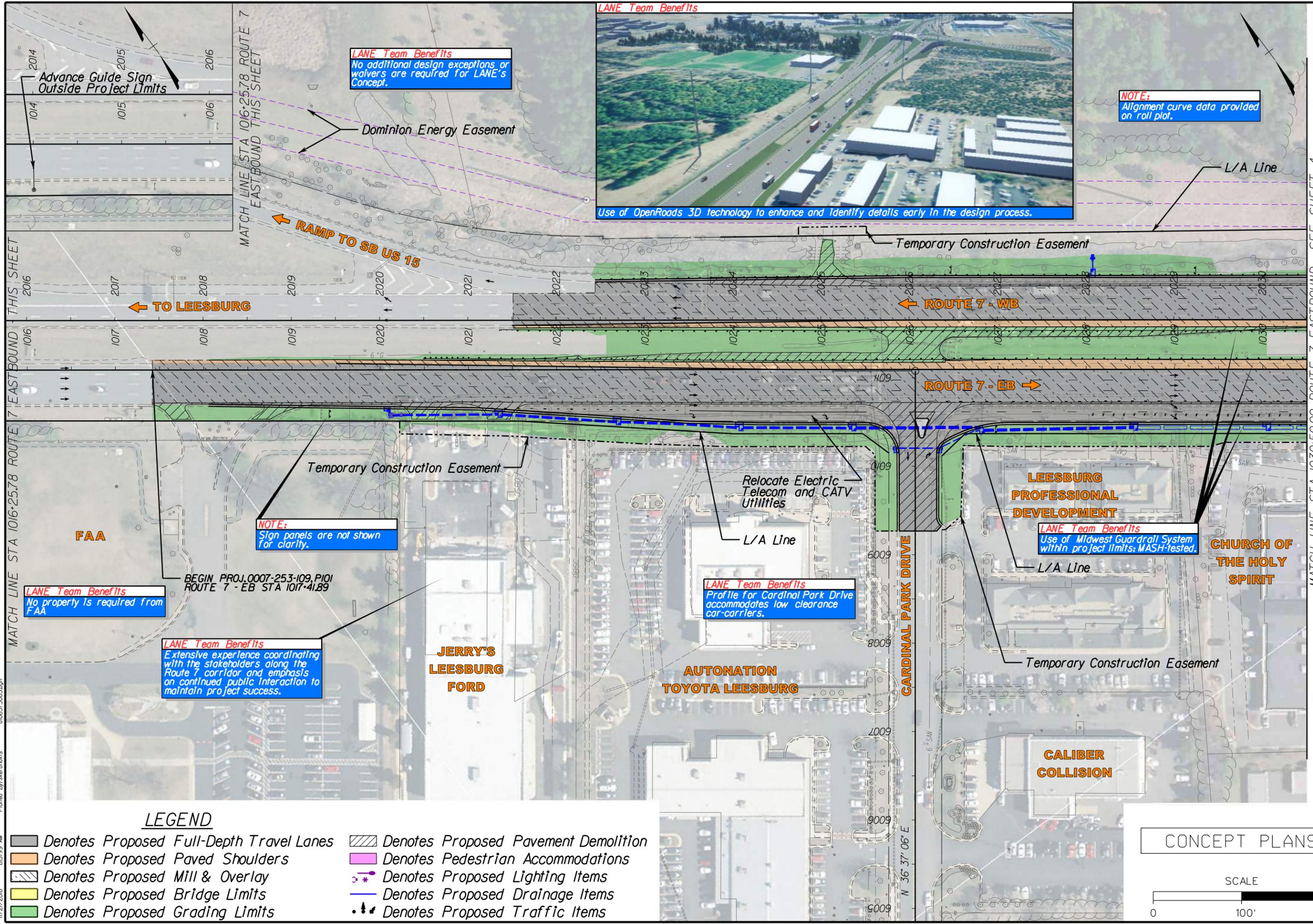
LANE Team Benefits
Construction of Keystone Drive will not occur in May due to SOL testing.



CONCEPT PLANS

- (H) CURB & GUTTER, ST'D. CG-7 REQ'D.
 - (H₁) CURB ST'D. CG-3 REQ'D.
 - (H₂) CURB & GUTTER, ST'D. CG-6 REQ'D.
 - (H₃) CURB & GUTTER, ST'D. CG-2 REQ'D.
 - (I) RAISED CONCRETE MEDIAN STRIP, ST'D. MS-1A REQ'D.
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 - (K) UNDERDRAIN, ST'D. UD-4 REQ'D.
- PROPOSED FULL DEPTH PAVEMENT
 - PROPOSED GRASS MEDIAN/ BUFFER/ PLANTED AREA
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NOTES:
1. SEE PLANS FOR GUARDRAIL LOCATIONS.
2. PAVEMENT SECTIONS SHALL COMPLY WITH RFP REQUIREMENTS.
3. ALL DISTURBED, NON-PAVED AREAS TO BE SEEDED AND MULCHED.



MATCH LINE STA 1016+25.78 ROUTE 7 EASTBOUND - SEE SHEET 4

DESIGN BUILDER
LANE

DESIGNED BY
JMT

STATE PROJECT
0007-253-109, P101

VIRGINIA DEPARTMENT OF TRANSPORTATION
ROUTE 7 AND BATTLEFIELD PARKWAY INTERCHANGE

SHEET NO.
3

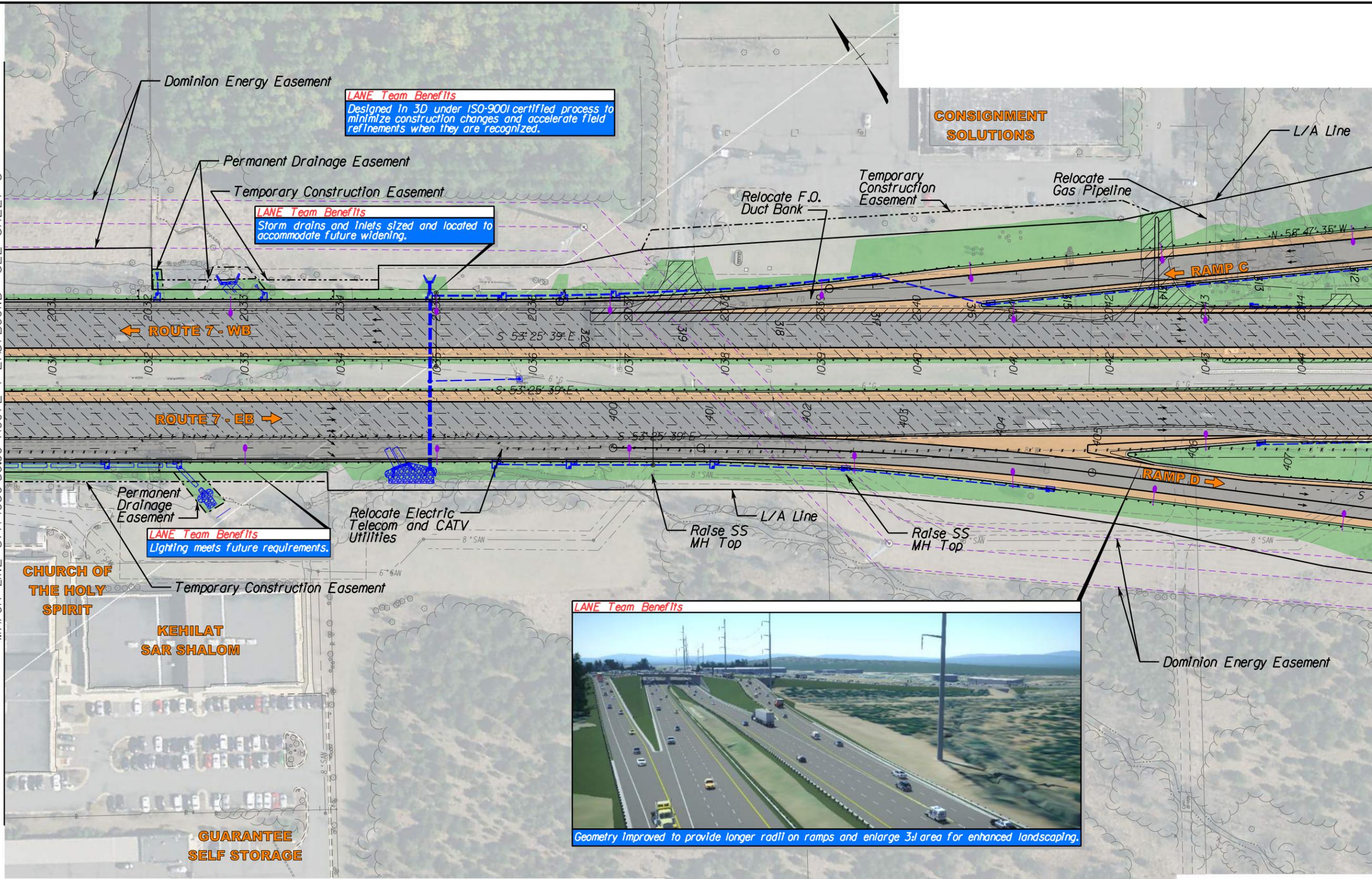
PAGE NO.
57



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MATCH LINE STA 1030+50.00 ROUTE 7 EASTBOUND - SEE SHEET 3

MATCH LINE STA 1044+75.00 ROUTE 7 EASTBOUND - SEE SHEET 5



LEGEND

- Denotes Proposed Full-Depth Travel Lanes
- ▨ Denotes Proposed Pavement Demolition
- Denotes Proposed Paved Shoulders
- Denotes Pedestrian Accommodations
- ▨ Denotes Proposed Mill & Overlay
- * Denotes Proposed Lighting Items
- Denotes Proposed Bridge Limits
- Denotes Proposed Drainage Items
- Denotes Proposed Grading Limits
- Denotes Proposed Traffic Items

CONCEPT PLANS



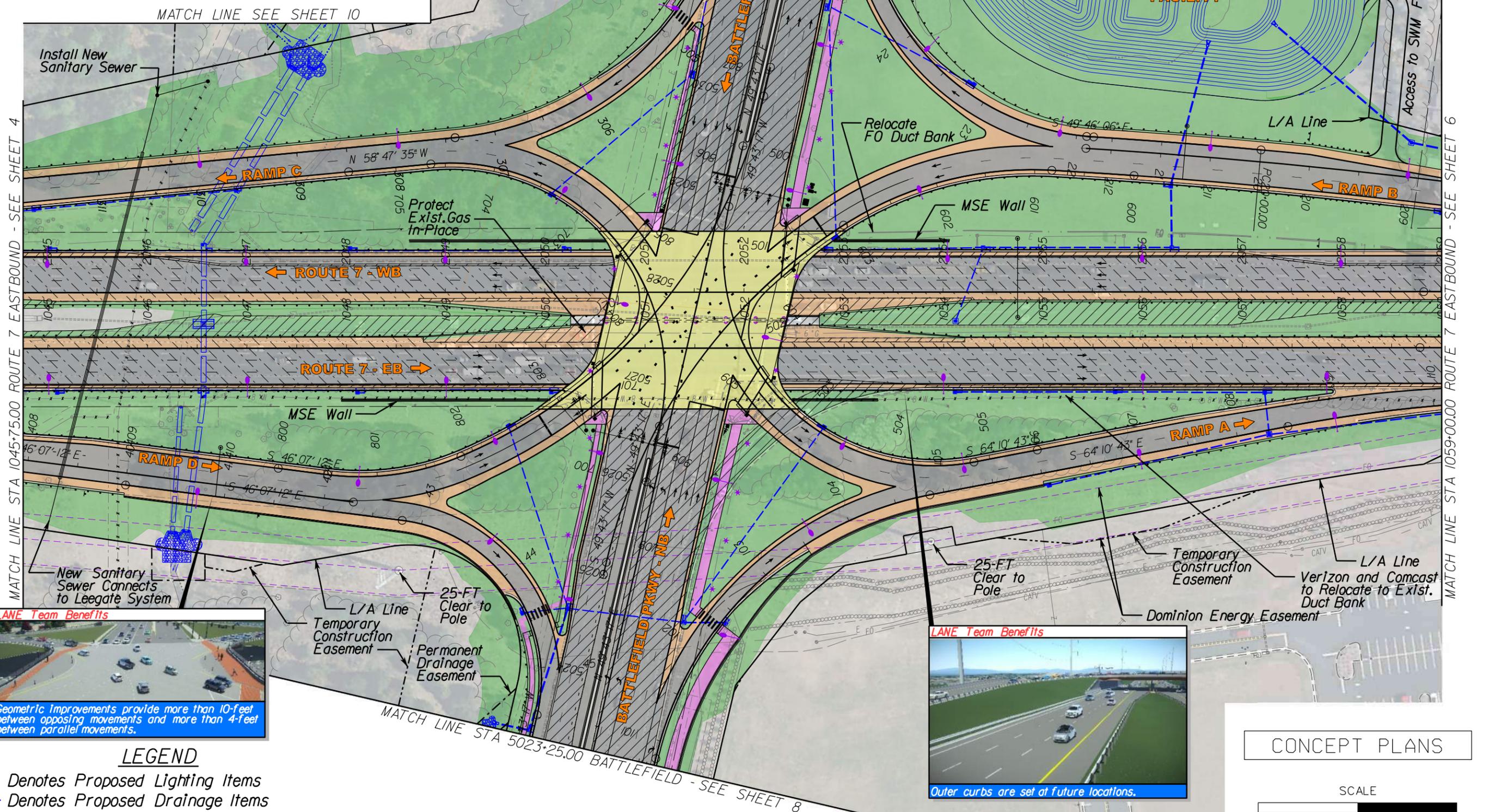
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Concept Plans For Information Only

LEGEND

-  Denotes Proposed Full-Depth Travel Lanes
-  Denotes Proposed Paved Shoulders
-  Denotes Proposed Mill & Overlay
-  Denotes Proposed Bridge Limits
-  Denotes Proposed Grading Limits
-  Denotes Proposed Pavement Demolition
-  Denotes Pedestrian Accommodations

LANE Team Benefits



LEGEND

-  Denotes Proposed Lighting Items
-  Denotes Proposed Drainage Items
-  Denotes Proposed Traffic Items

CONCEPT PLANS



STATE PROJECT
0007-253-109, P101

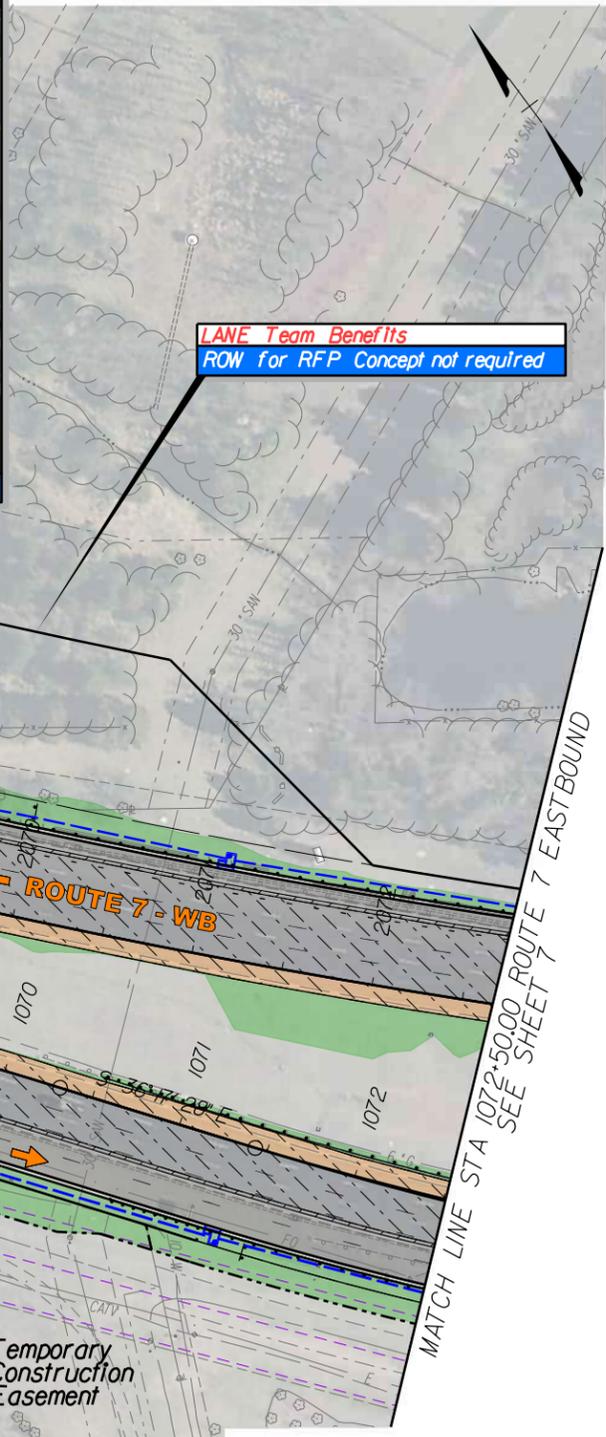
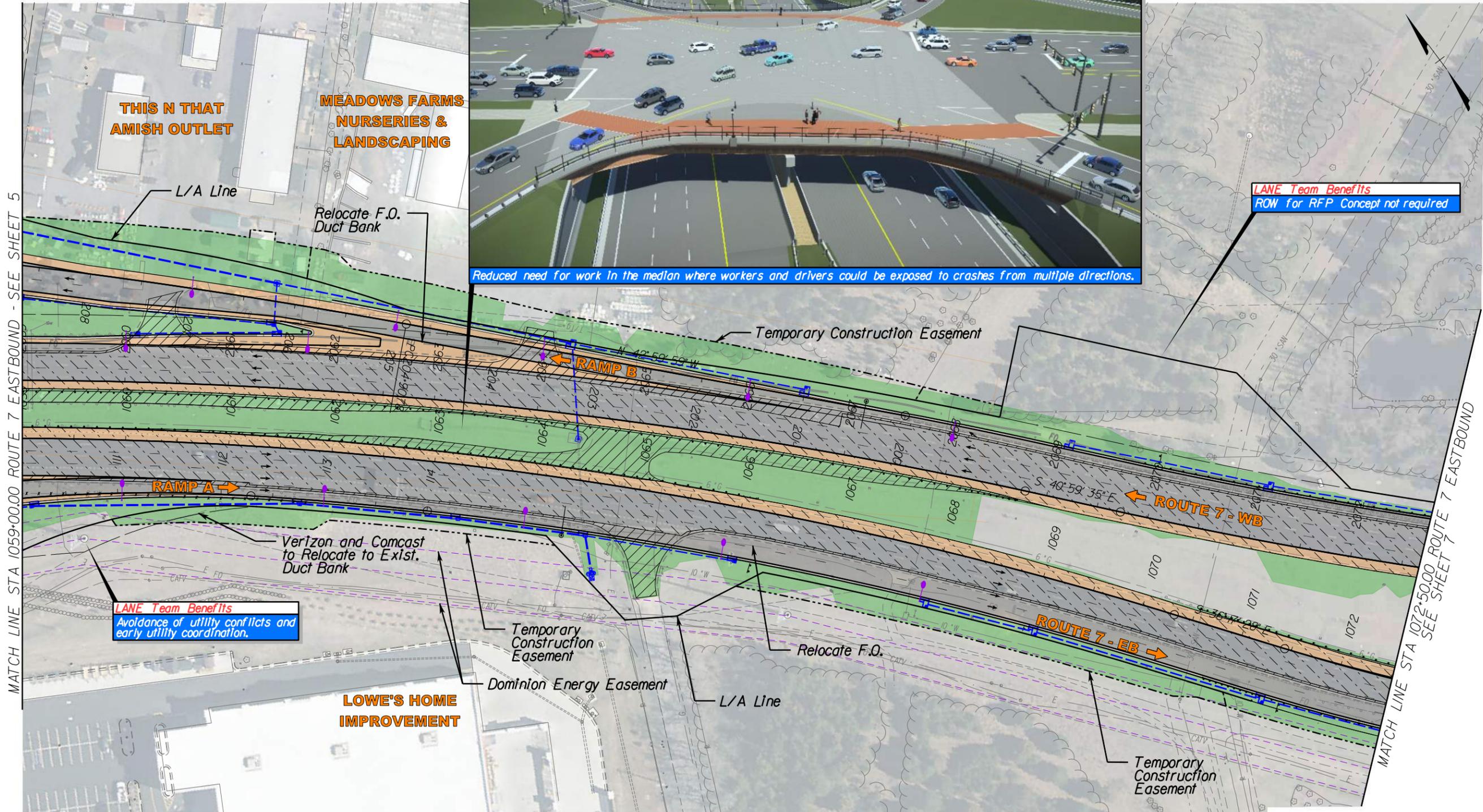
VIRGINIA DEPARTMENT OF TRANSPORTATION
ROUTE 7 AND BATTLEFIELD PARKWAY INTERCHANGE

SHEET NO.
5

PAGE NO.
59

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LANE Team Benefits
Avoidance of utility conflicts and early utility coordination.

LANE Team Benefits
ROW for RFP Concept not required

Reduced need for work in the median where workers and drivers could be exposed to crashes from multiple directions.

LEGEND

- | | |
|--|--------------------------------------|
| Denotes Proposed Full-Depth Travel Lanes | Denotes Proposed Pavement Demolition |
| Denotes Proposed Paved Shoulders | Denotes Pedestrian Accommodations |
| Denotes Proposed Mill & Overlay | Denotes Proposed Lighting Items |
| Denotes Proposed Bridge Limits | Denotes Proposed Drainage Items |
| Denotes Proposed Grading Limits | Denotes Proposed Traffic Items |

CONCEPT PLANS



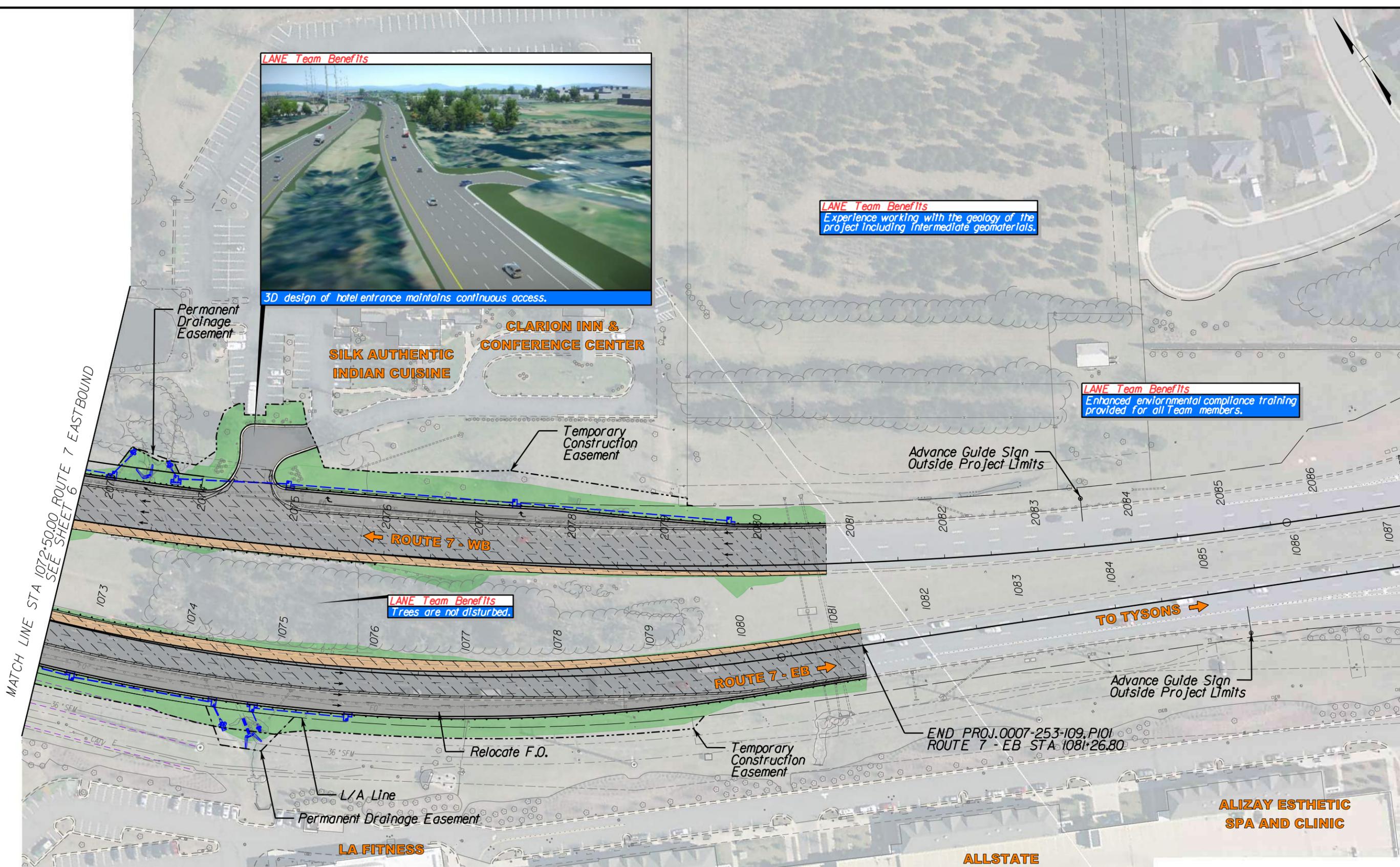


LANE Team Benefits
Experience working with the geology of the project including intermediate geomaterials.

LANE Team Benefits
Enhanced environmental compliance training provided for all Team members.

LANE Team Benefits
Trees are not disturbed.

MATCH LINE STA 1072+50.00 ROUTE 7 EASTBOUND
SEE SHEET 6



CLARION INN & CONFERENCE CENTER
SILK AUTHENTIC INDIAN CUISINE

TO TYSONS

END PROJ.0007-253-109.PI01
ROUTE 7 - EB STA 1081+26.80

LA FITNESS

ALIZAY ESTHETIC SPA AND CLINIC

ALLSTATE INSURANCE

COCHRAN FAMILY DENTAL

LEGEND

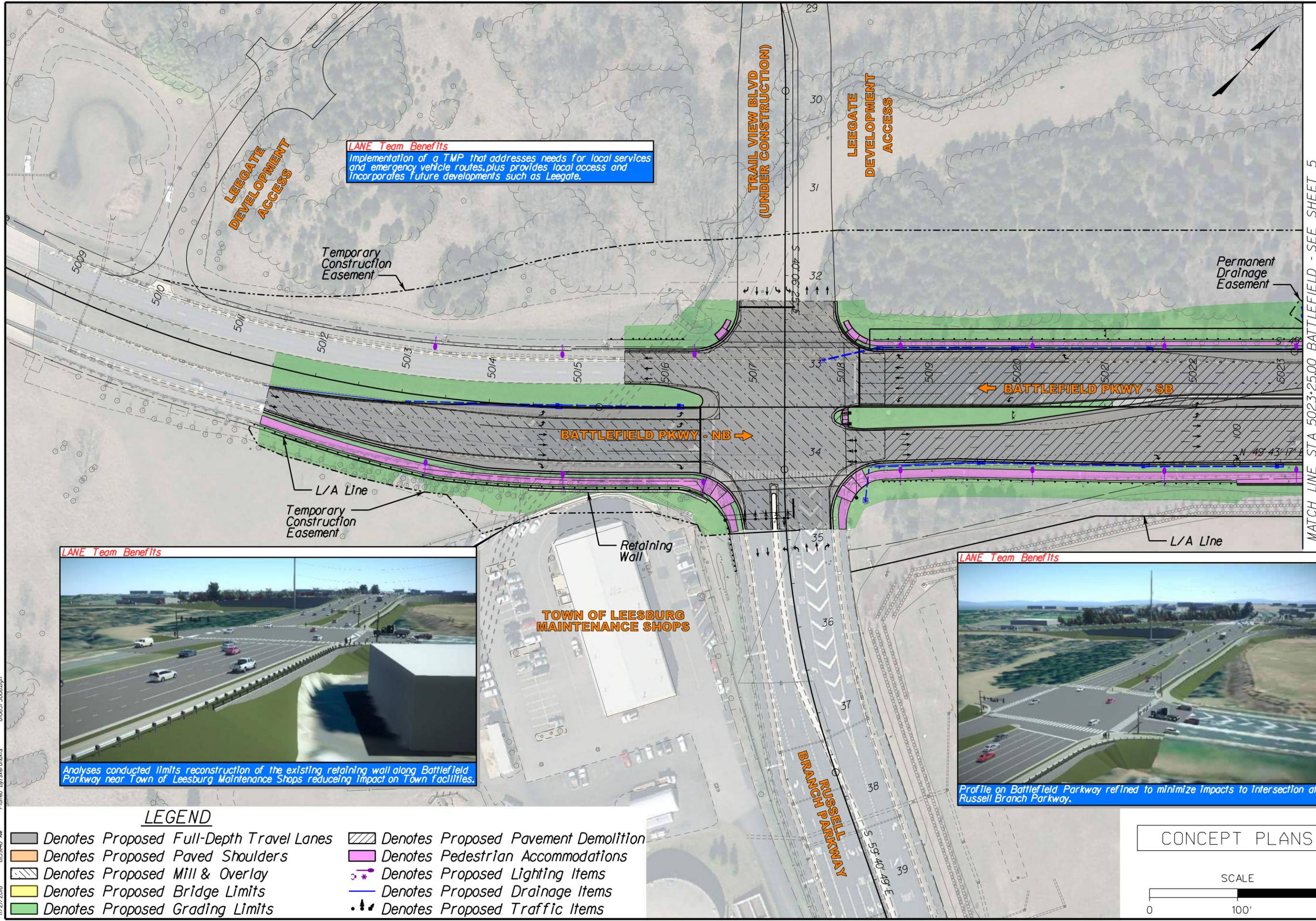
- Denotes Proposed Full-Depth Travel Lanes
- Denotes Proposed Paved Shoulders
- Denotes Proposed Mill & Overlay
- Denotes Proposed Bridge Limits
- Denotes Proposed Grading Limits
- Denotes Proposed Pavement Demolition
- Denotes Pedestrian Accommodations
- Denotes Proposed Lighting Items
- Denotes Proposed Drainage Items
- Denotes Proposed Traffic Items

CONCEPT PLANS

SCALE

0 100' 200'

11/21/2018 8:39:19 AM Plotted By: stercmkts d:\06573007.dgn



LANE Team Benefits
 Implementation of a TMP that addresses needs for local services and emergency vehicle routes, plus provides local access and incorporates future developments such as Leegate.



LEGEND

- Denotes Proposed Full-Depth Travel Lanes
- Denotes Proposed Pavement Demolition
- Denotes Proposed Paved Shoulders
- Denotes Pedestrian Accommodations
- Denotes Proposed Mill & Overlay
- Denotes Proposed Bridge Limits
- Denotes Proposed Grading Limits
- Denotes Proposed Lighting Items
- Denotes Proposed Drainage Items
- Denotes Proposed Traffic Items



MATCH LINE STA 5023+25.00 BATTLEFIELD - SEE SHEET 5

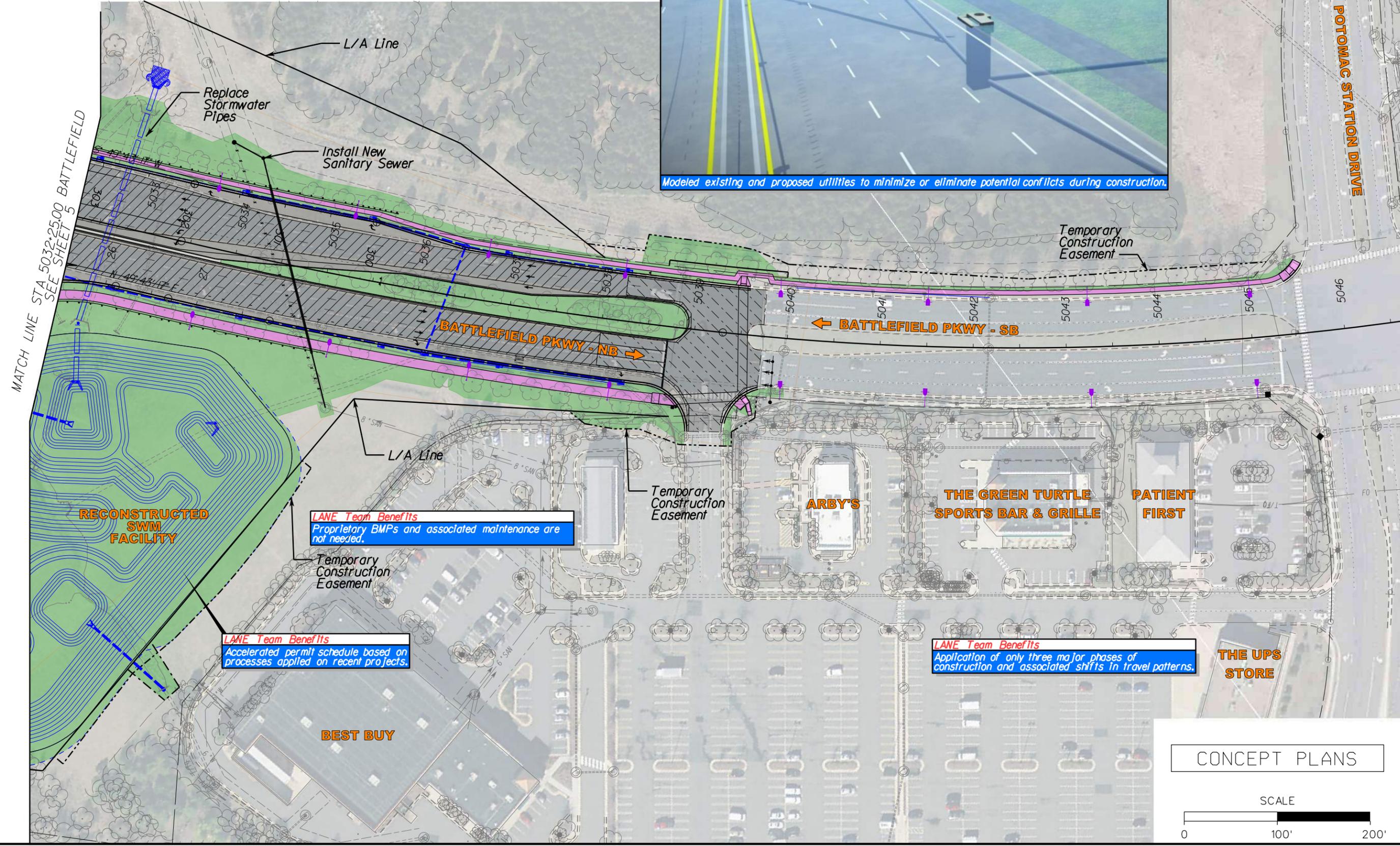
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DESIGN BUILDER **LANE**
 DESIGNED BY **JMT**
 STATE PROJECT 0007-253-109, P101
 VIRGINIA DEPARTMENT OF TRANSPORTATION
ROUTE 7 AND BATTLEFIELD PARKWAY INTERCHANGE
 SHEET NO. **8**
 PAGE NO. **62**

Concept Plans For Information Only

LEGEND

- Denotes Proposed Full-Depth Travel Lanes
- Denotes Proposed Paved Shoulders
- Denotes Proposed Mill & Overlay
- Denotes Proposed Bridge Limits
- Denotes Proposed Grading Limits
- Denotes Proposed Pavement Demolition
- Denotes Pedestrian Accommodations
- Denotes Proposed Lighting Items
- Denotes Proposed Drainage Items
- Denotes Proposed Traffic Items



CONCEPT PLANS



DESIGNED BY
STATE PROJECT
0007-253-109, P101

VIRGINIA DEPARTMENT OF TRANSPORTATION
ROUTE 7 AND BATTLEFIELD PARKWAY INTERCHANGE

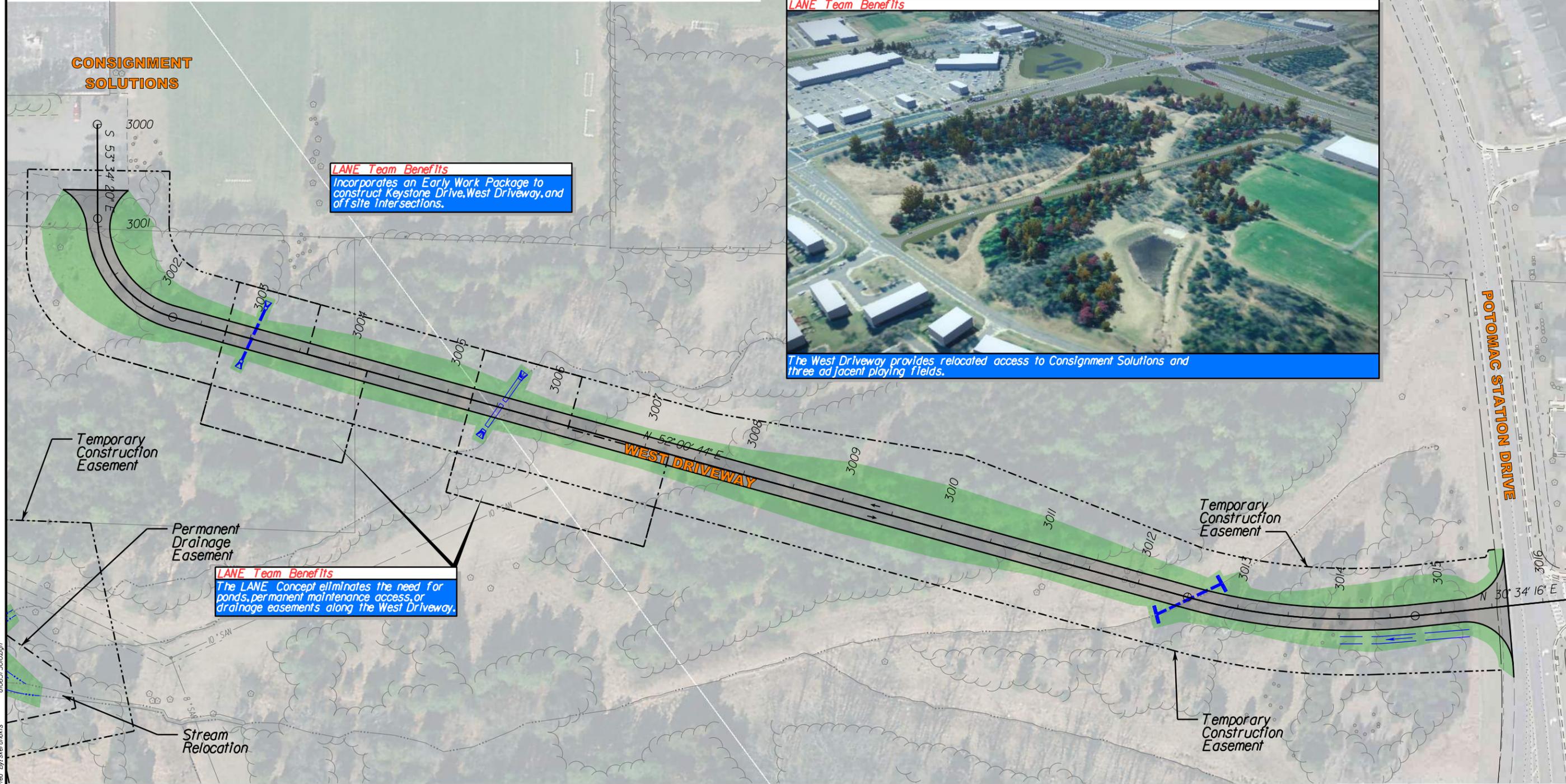
SHEET NO. 9
PAGE NO. 63

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Concept Plans For Information Only

LEGEND

- Denotes Proposed Full-Depth Travel Lanes
- Denotes Proposed Paved Shoulders
- Denotes Proposed Mill & Overlay
- Denotes Proposed Bridge Limits
- Denotes Proposed Grading Limits
- Denotes Proposed Pavement Demolition
- Denotes Pedestrian Accommodations
- Denotes Proposed Lighting Items
- Denotes Proposed Drainage Items
- Denotes Proposed Traffic Items



CONSIGNMENT SOLUTIONS

LANE Team Benefits
 Incorporates an Early Work Package to construct Keystone Drive, West Driveway, and of site Intersections.



LANE Team Benefits
 The West Driveway provides relocated access to Consignment Solutions and three adjacent playing fields.

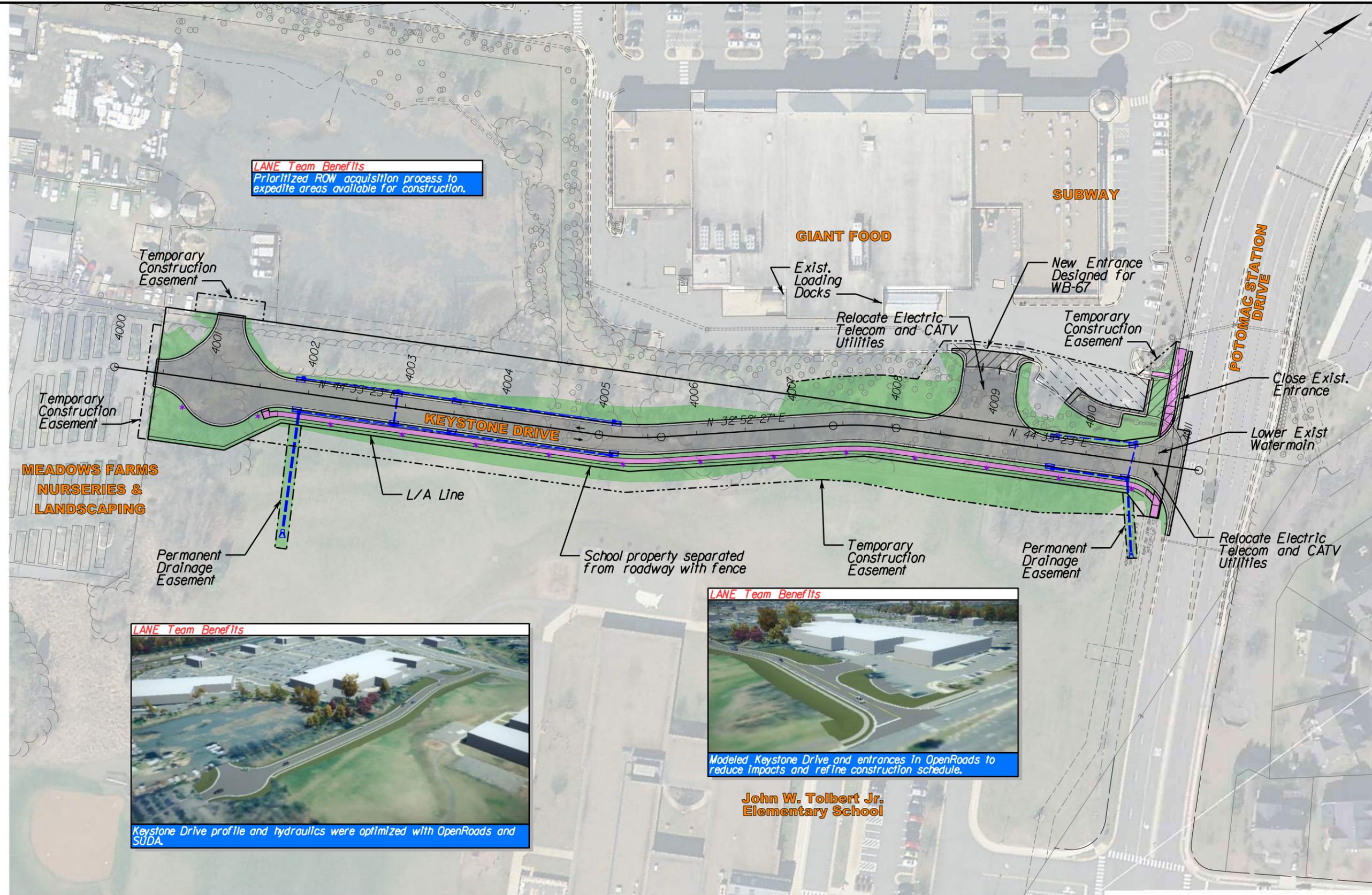
LANE Team Benefits
 The LANE Concept eliminates the need for ponds, permanent maintenance access, or drainage easements along the West Driveway.

CONCEPT PLANS



11/21/2018 8:40:43 AM Plotted By: stecran@mts d:\0657\3010.dgn

DESIGN BUILDER
LANE
 DESIGNED BY
JMT
 STATE PROJECT
 0007-253-109, P101
 VIRGINIA DEPARTMENT OF TRANSPORTATION
ROUTE 7 AND BATTLEFIELD PARKWAY INTERCHANGE
 SHEET NO.
10
 PAGE NO.
64

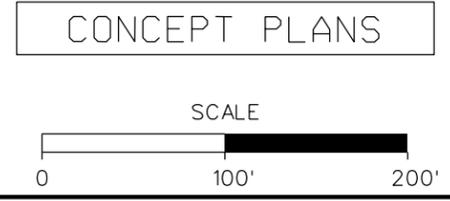


John W. Tolbert Jr. Elementary School

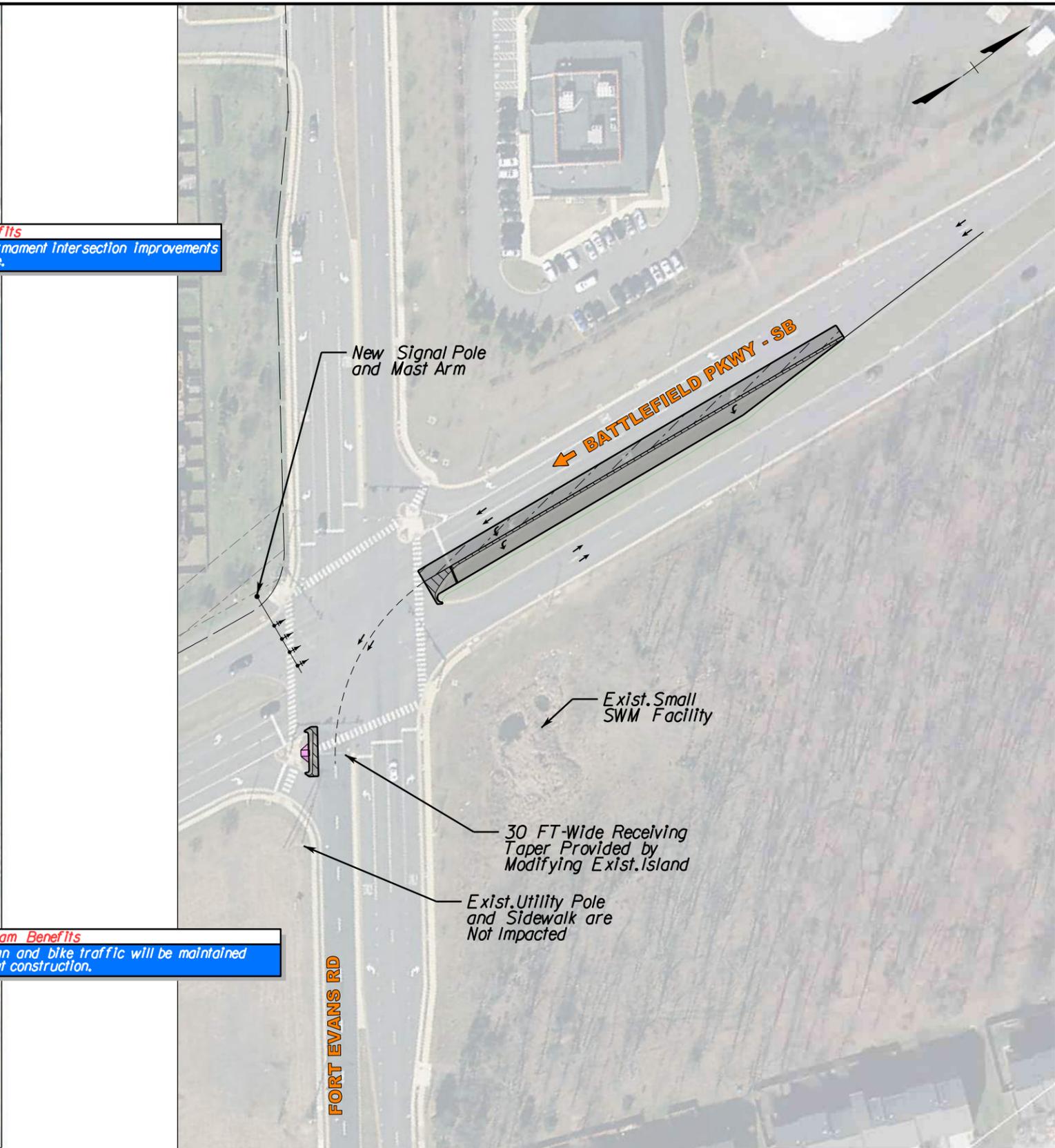
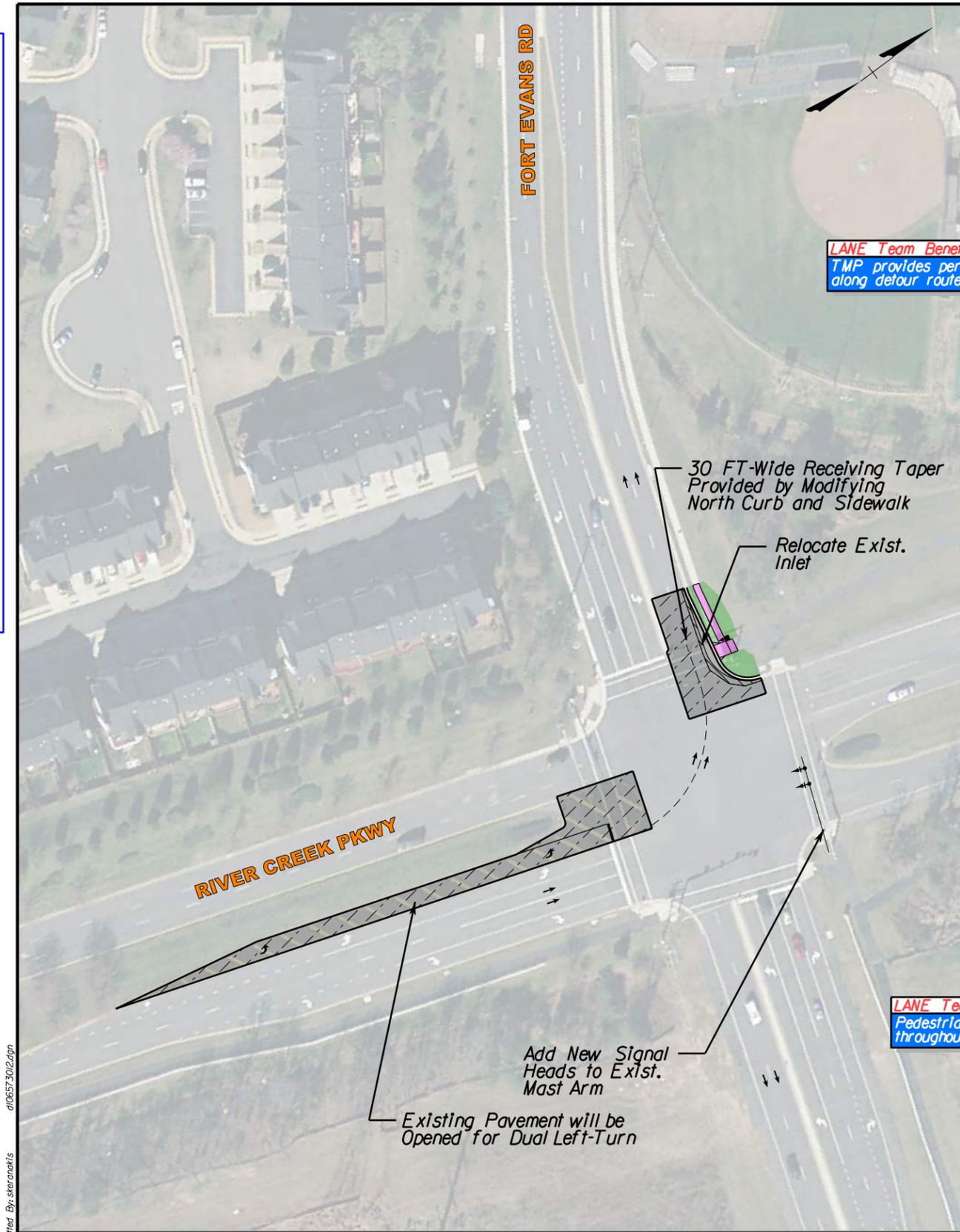
LANE Team Benefits
No construction work near school in May.

LEGEND

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|--|--------------------------------------|
| Denotes Proposed Full-Depth Travel Lanes | Denotes Proposed Pavement Demolition |
| Denotes Proposed Paved Shoulders | Denotes Pedestrian Accommodations |
| Denotes Proposed Mill & Overlay | Denotes Proposed Lighting Items |
| Denotes Proposed Bridge Limits | Denotes Proposed Drainage Items |
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LEGEND

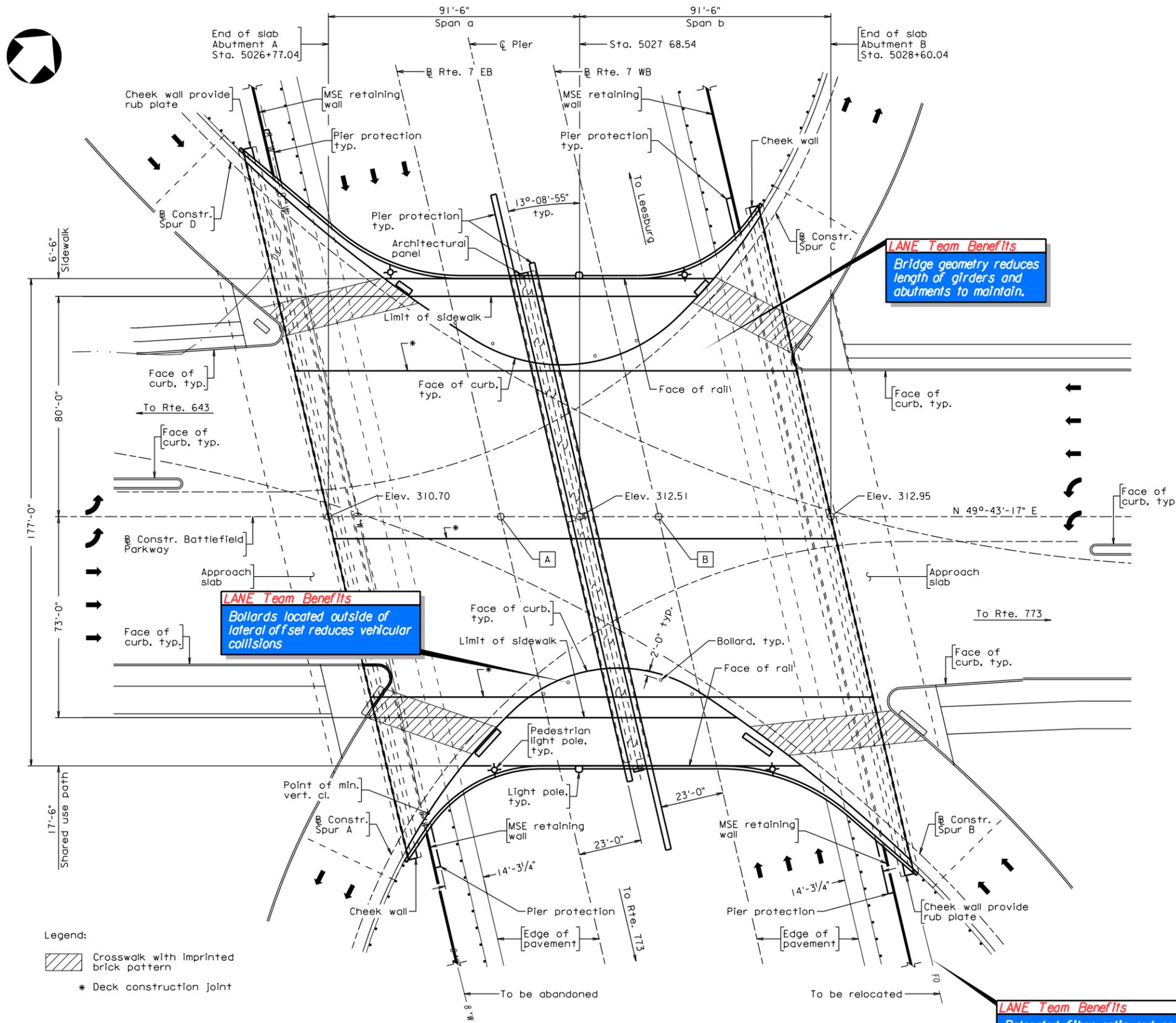
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|--|--------------------------------------|
| Denotes Proposed Full-Depth Travel Lanes | Denotes Proposed Pavement Demolition |
| Denotes Proposed Paved Shoulders | Denotes Pedestrian Accommodations |
| Denotes Proposed Mill & Overlay | Denotes Proposed Lighting Items |
| Denotes Proposed Bridge Limits | Denotes Proposed Drainage Items |
| Denotes Proposed Grading Limits | Denotes Proposed Traffic Items |

CONCEPT PLANS

SCALE

0 100' 200'

11/21/2018 8:41:28 AM Plotted By: stercanakis dl05573012.dgn



DESIGN EXCEPTION(S):

None.

GENERAL NOTES:

Widths: 6'-6" sidewalk, 153'-0" roadway, 17'-6" shared use path.
Overall width 177'-0" face-to-face of rails. Deck flares out at four corners.

Span layout: 91'-6" - 91'-6" continuous steel plate girder spans.

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.

Design loading includes 20 psf allowance for construction tolerances and construction methods.

Design loading includes 15 psf allowance for future wearing surface.

Face of all MSE walls shall receive architectural treatment.

- A POT 5027+39.78 @ Construction Battlefield Parkway
- POT 1051+41.85 @ Rte. 7 EB
- Δ = 76°-51'-05"
- B POT 27+97.29 @ Construction Battlefield Parkway
- POT 2051+55.56 @ Rte. 7 WB
- Δ = 76°-51'-05"

NOTE:
Bridge will incorporate stained concrete; thermoplastic "brick" running bond crosswalks; and other architectural treatments.

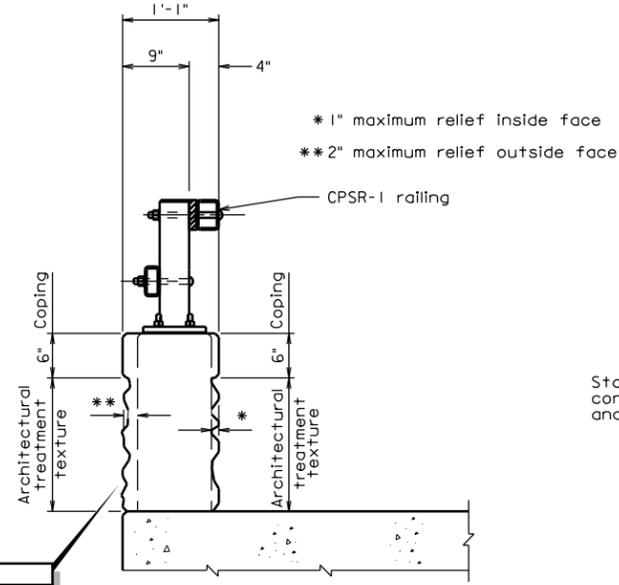
LANE Team Benefits
Relocated fiber optic reduces utility conflicts during wall construction.

VDOT
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
PROPOSED BRIDGE ON
BATTLEFIELD PARKWAY OVER RTE.7
TOWN OF LEESBURG - 0.9 MI. E.
OF RTE. 7/15 BYPASS
PROJ. 0007-253-109, B601

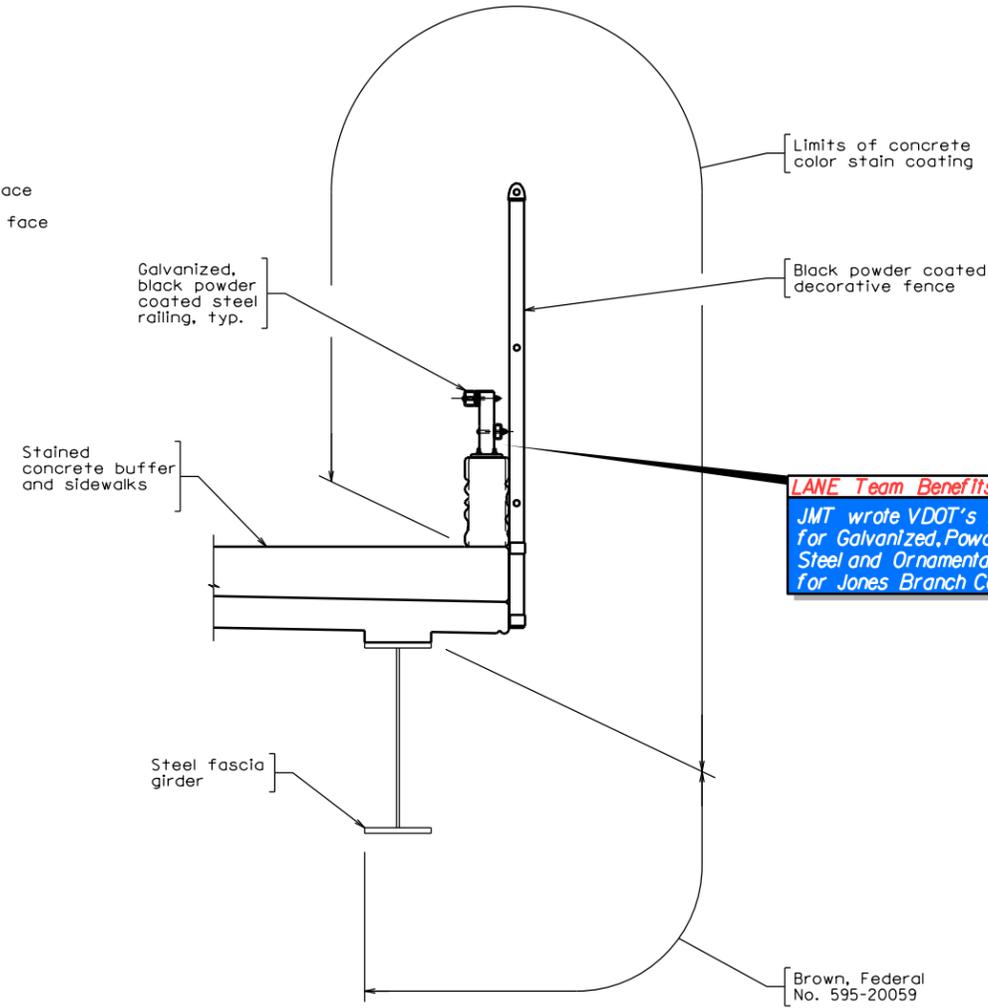
11/21/2018 8:41:47 AM Plotted By: steremakis b106573001.dgn

Existing electric conduits for existing light poles and traffic devices not shown for clarity.

LANE Team Benefits
Using architectural treatment (tri-stained dry stack) enhances aesthetics.



TYPICAL ARCHITECTURAL TREATMENT SECTION

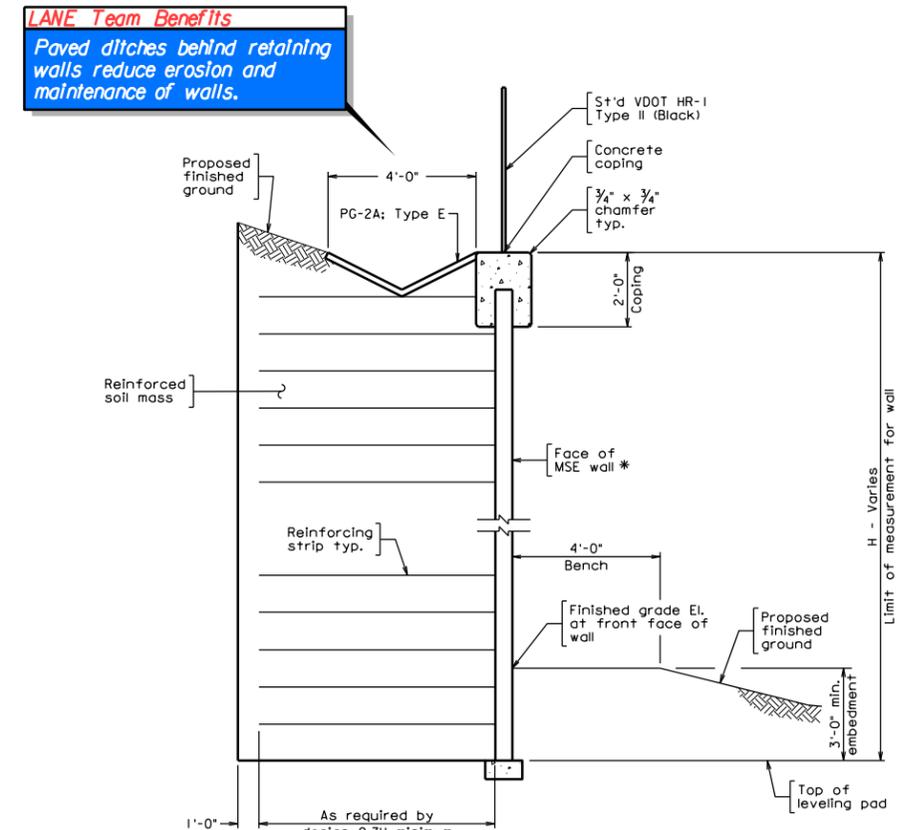
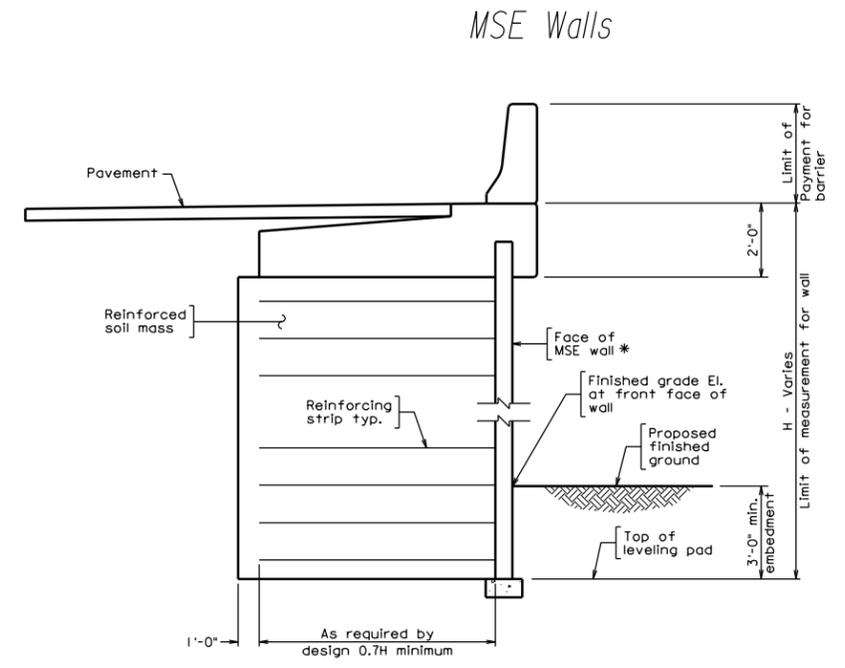
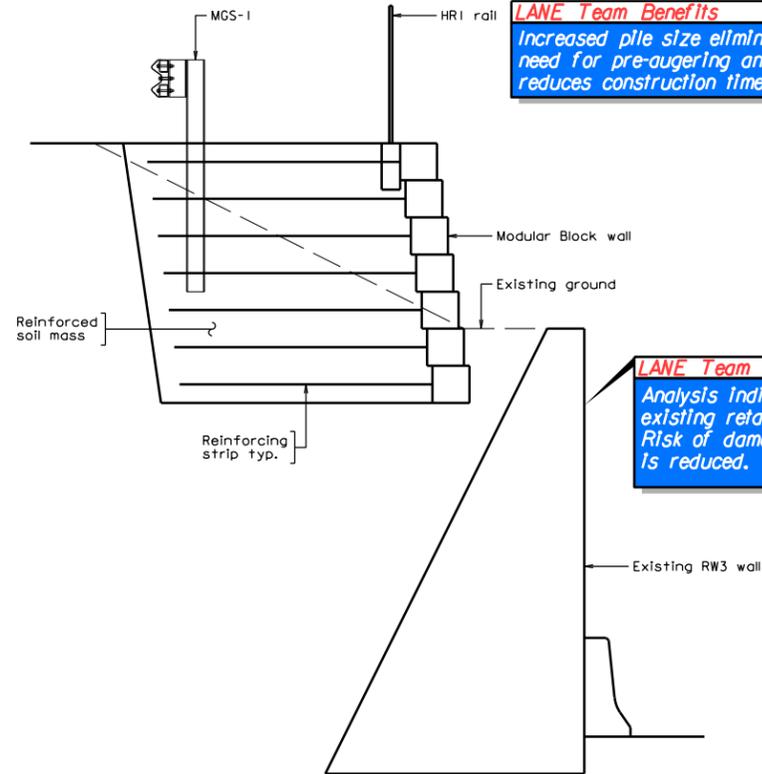
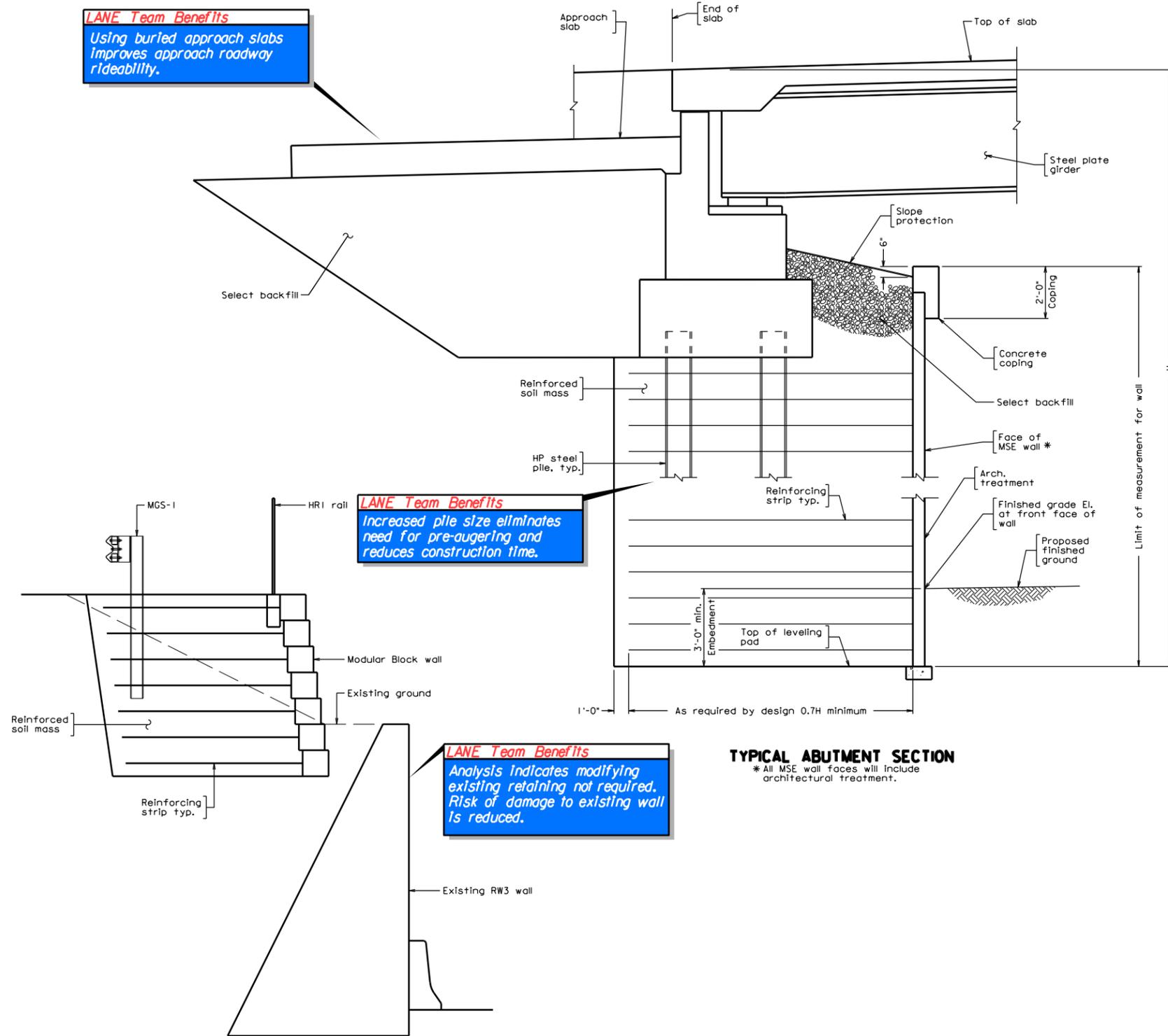


LIMITS OF CONCRETE COLOR STAIN COATING STEEL GIRDER

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

LANE Team Benefits
JMT wrote VDOT's Special Provision for Galvanized, Powder Coated Steel and Ornamental Fence for Jones Branch Connector.

TYPICAL SECTIONS (N.T.S.)



LANE Team Benefits
Paved ditches behind retaining walls reduce erosion and maintenance of walls.

MSE Walls

11/21/2018 8:42:00 AM Plotted By: steven.matis b106573004.dgn

Activity ID	Activity Name	Original Duration	Start	Finish	2019												2020												2021												2022											
					Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun					
R-7 and Battlefield Parkway Interchange (Early Completion)																																																				
Admin																																																				
A000-1000	Notice of Intent to Award	0	20-Dec-18*		◆ Notice of Intent to Award																																															
A000-1010	CTB Approval / Notice to Award	0	10-Jan-19*		◆ CTB Approval / Notice to Award																																															
A000-1020	Design-Build Contract Execution	0	20-Feb-19*		◆ Design-Build Contract Execution																																															
A000-1030	NTP	0	22-Feb-19*		◆ NTP																																															
C2B0-1030	Battlefield Parkway Detour Period, Ph 2B & 2C	362	01-Jun-20	28-May-21	Battlefield Parkway Detour Period, Ph 2B & 2C																																															
A000-1040	Final Completion (10/15/21)	0		15-Oct-21*	◆ Final Completion (10/15/21)																																															
A000-1050	LANE Early Completion - 46 Calendar Days	46	16-Oct-21	30-Nov-21	LANE Early Completion - 46 Calendar Days																																															
A000-1060	RFP Final Completion (11/30/21)	0		30-Nov-21	◆ RFP Final Completion (11/30/21)																																															
Design																																																				
QA/QC Plan																																																				
D000-1050	QA/QC Plan Submittal	10	04-Feb-19	15-Feb-19	■ QA/QC Plan Submittal																																															
D000-1060	QA/QC Plan Presentation	1	25-Feb-19	25-Feb-19	■ QA/QC Plan Presentation																																															
I-95 Design/Environmental/Right-of-Way/Utilities																																																				
Scope Validation Period																																																				
D000-1070	Scope Validation Investigation and Findings General Notice (120 days)	120	22-Feb-19	12-Aug-19	■ Scope Validation Investigation and Findings General Notice (120 days)																																															
D000-1080	Scope Validation Submission of Supporting Documentation	21	13-Aug-19	11-Sep-19	■ Scope Validation Submission of Supporting Documentation																																															
D000-1090	Scope Validation Discussions	30	12-Sep-19	23-Oct-19	■ Scope Validation Discussions																																															
Existing Drainage Culverts																																																				
D000-1100	Review Visual/Video Inspection of Existing Culvert (Contractor)	25	27-Feb-19	02-Apr-19	■ Review Visual/Video Inspection of Existing Culvert (Contractor)																																															
D000-1110	Assess Structural Condition of Existing Culverts, Prepare & Submit Report	10	03-Apr-19	16-Apr-19	■ Assess Structural Condition of Existing Culverts, Prepare & Submit Report																																															
D000-1120	VDOT & Leesburg Review and Approve Existing Drainage Culvert Report	21	17-Apr-19	07-May-19	■ VDOT & Leesburg Review and Approve Existing Drainage Culvert Report																																															
Design Phase																																																				
Design Exceptions & Waivers																																																				
D000-1130	Verify Potential DEs and DWs Implementation & Mitigation Measures	10	07-Jan-19	18-Jan-19	■ Verify Potential DEs and DWs Implementation & Mitigation Measures																																															
D000-1140	Agency Review and Meeting	21	26-Feb-19	18-Mar-19	■ Agency Review and Meeting																																															
D000-1150	Update & Resubmit Exception(s)/Waiver(s)	5	19-Mar-19	25-Mar-19	■ Update & Resubmit Exception(s)/Waiver(s)																																															
D000-1160	Agency Review & Approval of Exception(s)/Waiver(s)	21	26-Mar-19	15-Apr-19	■ Agency Review & Approval of Exception(s)/Waiver(s)																																															
Field Surveys																																																				
D000-1170	Prepare & Submit Draft Property Owner Notification Letter & Address Listing	5	11-Feb-19	15-Feb-19	■ Prepare & Submit Draft Property Owner Notification Letter & Address Listing																																															
D000-1180	VDOT Review and Approve Property Owner Notification Letter	1	16-Feb-19	16-Feb-19	■ VDOT Review and Approve Property Owner Notification Letter																																															
D000-1190	Mail Property Owner Notification Letters Providing 15 Day Notice	1	18-Feb-19	18-Feb-19	■ Mail Property Owner Notification Letters Providing 15 Day Notice																																															
D000-1200	Perform Supplemental Field Surveys	30	06-Mar-19	16-Apr-19	■ Perform Supplemental Field Surveys																																															
D000-1220	Prepare Updates Survey Files	20	13-Mar-19	09-Apr-19	■ Prepare Updates Survey Files																																															
D000-1210	Stake Geotechnical Boring Locations	5	22-Mar-19	28-Mar-19	■ Stake Geotechnical Boring Locations																																															
D000-1230	Set ROW Monumentation Prior to Contract Completion	30	16-Mar-21	26-Apr-21	■ Set ROW Monumentation Prior to Contract Completion																																															
Geotechnical Engineering & Subsurface Investigations																																																				
D000-1260	Prepare Property Owner Notification Letters for Geotechnical Investigations	1	18-Feb-19	18-Feb-19	■ Prepare Property Owner Notification Letters for Geotechnical Investigations																																															
D000-1240	Prepare and Submit Geotechnical Boring Location Plan	5	22-Feb-19	28-Feb-19	■ Prepare and Submit Geotechnical Boring Location Plan																																															
D000-1270	Secure Permits and Clear Utilities as Required	15	01-Mar-19	21-Mar-19	■ Secure Permits and Clear Utilities as Required																																															
D000-1250	VDOT Review Geotechnical Boring Location Plan	21	01-Mar-19	21-Mar-19	■ VDOT Review Geotechnical Boring Location Plan																																															
D000-1300	Perform Balance of Geotechnical Field Investigations	20	25-Mar-19	19-Apr-19	■ Perform Balance of Geotechnical Field Investigations																																															
D000-1280	Field Investigations, Boring Logs and Lab Analysis for Scope Validation	40	25-Mar-19	17-May-19	■ Field Investigations, Boring Logs and Lab Analysis for Scope Validation																																															
D000-1310	Boring Logs, Laboratory Testing & Analysis	30	01-Apr-19	10-May-19	■ Boring Logs, Laboratory Testing & Analysis																																															
D000-1320	Prepare/Submit Bridge Geotechnical Engineering Report B601 & Retaining Walls	10	06-May-19	17-May-19	■ Prepare/Submit Bridge Geotechnical Engineering Report B601 & Retaining Walls																																															
D000-1330	Prepare/Submit Roadway & SWM Geotechnical Engineering Report	10	20-May-19	03-Jun-19	■ Prepare/Submit Roadway & SWM Geotechnical Engineering Report																																															
D000-1340	VDOT Review Roadway Geotechnical Engineering Report	90	04-Jun-19	01-Sep-19	■ VDOT Review Roadway Geotechnical Engineering Report																																															

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



Activity ID	Activity Name	Original Duration	Start	Finish	2019												2020												2021												2022																	
					Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun											
Roadway Design																																																										
Develop Right-of-Way Plans																																																										
D000-1430	VDOT & Leesburg Review and Comment Draft TMP 1st Submittal	30	20-Dec-18	23-Jan-20	VDOT & Leesburg Review and Comment Draft TMP 1st Submittal																																																					
D000-1410	Submit ROW Plans 1st Submittal	1	22-Apr-19	22-Apr-19	Submit ROW Plans 1st Submittal																																																					
D000-1420	VDOT & Leesburg Review and Comment ROW Plans 1st Submittal	21	23-Apr-19	13-May-19	VDOT & Leesburg Review and Comment ROW Plans 1st Submittal																																																					
D000-1440	Address Comments Develop ROW Plans Final	20	14-May-19	11-Jun-19	Address Comments Develop ROW Plans Final																																																					
D000-1450	Design QA/QC ROW Plans Final Submittal	5	12-Jun-19	18-Jun-19	Design QA/QC ROW Plans Final Submittal																																																					
D000-1460	Submit ROW Plans Final Submittal	1	19-Jun-19	19-Jun-19	Submit ROW Plans Final Submittal																																																					
D000-1470	VDOT & Leesburg Review / Approve ROW Plans Final	21	20-Jun-19	10-Jul-19	VDOT & Leesburg Review / Approve ROW Plans Final																																																					
D000-1480	ROW Plans Approved	0	11-Jul-19		ROW Plans Approved																																																					
Develop ROW Plans 1st Submittal																																																										
D000-1380	Develop Draft TMP 1st Submittal	45	20-Dec-18	22-Feb-19	Develop Draft TMP 1st Submittal																																																					
D000-1360	Develop Drainage/SWM, E&S Plans and Drainage/SWM Report 1st Submittal	80	20-Dec-18	12-Apr-19	Develop Drainage/SWM, E&S Plans and Drainage/SWM Report 1st Submittal																																																					
D000-1350	Right-of-Way/Roadway Plan Development 1st Submittal	80	20-Dec-18	12-Apr-19	Right-of-Way/Roadway Plan Development 1st Submittal																																																					
D000-1370	Develop Signing, Marking, Lighting, Signal, ITS, MOT Plans 1st Submittal	75	28-Dec-18	12-Apr-19	Develop Signing, Marking, Lighting, Signal, ITS, MOT Plans 1st Submittal																																																					
D000-1390	Utilities Coordination & Easement Request	1	27-Mar-19	27-Mar-19	Utilities Coordination & Easement Request																																																					
D000-1400	Design QA/QC ROW Plans 1st Submittal	5	15-Apr-19	19-Apr-19	Design QA/QC ROW Plans 1st Submittal																																																					
Early Work Package (EWP)																																																										
D000-1500	Development TMP - A EWP	30	20-Dec-18	01-Feb-19	Development TMP - A EWP																																																					
D000-1490	Develop EWP 1st Submittal	65	22-Feb-19	23-May-19	Develop EWP 1st Submittal																																																					
D000-1510	Design QA/QC EWP 1st Submittal	5	24-May-19	31-May-19	Design QA/QC EWP 1st Submittal																																																					
D000-1520	Submit EWP 1st Submittal & EWP ROW Submittal - HOLD POINT	1	03-Jun-19	03-Jun-19	Submit EWP 1st Submittal & EWP ROW Submittal - HOLD POINT																																																					
D000-1530	VDOT & Leesburg Review and Comment 1st Submittal	21	04-Jun-19	24-Jun-19	VDOT & Leesburg Review and Comment 1st Submittal																																																					
D000-1540	Address Comments Develop EWP Plans Final Submittal	10	25-Jun-19	09-Jul-19	Address Comments Develop EWP Plans Final Submittal																																																					
D000-1550	Design QA/QC EWP Final Submittal	2	10-Jul-19	11-Jul-19	Design QA/QC EWP Final Submittal																																																					
D000-1560	Submit EWP Final Submittal	1	12-Jul-19	12-Jul-19	Submit EWP Final Submittal																																																					
D000-1570	VDOT & Leesburg Review/Approve and Comment EWP Final Submittal	21	13-Jul-19	02-Aug-19	VDOT & Leesburg Review/Approve and Comment EWP Final Submittal																																																					
D000-1580	Released For Construction (RFC) EWP Plans	1	05-Aug-19	05-Aug-19	Released For Construction (RFC) EWP Plans																																																					
Remainder of Work Packages (WPs) Roadway/Drainage/SWM/E&S/Traffic/MOT																																																										
D000-1620	Revise & Submit Final TMP	10	25-Mar-19	05-Apr-19	Revise & Submit Final TMP																																																					
D000-1710	TMP Approval	90	08-Apr-19	13-Aug-19	TMP Approval																																																					
D000-1600	Develop Remainder WPs Drainage/SWM&Plantings, E&S Plans and Drainage/SWM Report 1st Submittal	75	20-Jun-19	04-Oct-19	Develop Remainder WPs Drainage/SWM&Plantings, E&S Plans and Drainage/SWM Report 1st Submittal																																																					
D000-1590	Develop Remainder WPs Roadway Plans 1st Submittal	75	20-Jun-19	04-Oct-19	Develop Remainder WPs Roadway Plans 1st Submittal																																																					
D000-1630	Design QA/QC Remainder WPs 1st Submittal	5	07-Oct-19	11-Oct-19	Design QA/QC Remainder WPs 1st Submittal																																																					
D000-1640	Submit Remainder WPs Roadway/Drainage/SWM&Plantings/E&S/Traffic/MOT Plans 1st Submittal	1	14-Oct-19	14-Oct-19	Submit Remainder WPs Roadway/Drainage/SWM&Plantings/E&S/Traffic/MOT Plans 1st Submittal																																																					
D000-1650	VDOT & Leesburg Review and Comment/Approval Remainder WPs 1st Submittal	21	15-Oct-19	04-Nov-19	VDOT & Leesburg Review and Comment/Approval Remainder WPs 1st Submittal																																																					
D000-1680	Address Comments Develop Remainder WPs Traffic & MOT Final Submittal	15	05-Nov-19	25-Nov-19	Address Comments Develop Remainder WPs Traffic & MOT Final Submittal																																																					
D000-1670	Address Comments Develop Remainder WPs Drainage/SWM&Plantings, E&S Plans Final Submittal	15	05-Nov-19	25-Nov-19	Address Comments Develop Remainder WPs Drainage/SWM&Plantings, E&S Plans Final Submittal																																																					
D000-1660	Address Comments Develop Remainder WPs Roadway Final Submittal	15	05-Nov-19	25-Nov-19	Address Comments Develop Remainder WPs Roadway Final Submittal																																																					
D000-1690	Design QA/QC Remainder WPs Final Submittal	5	26-Nov-19	03-Dec-19	Design QA/QC Remainder WPs Final Submittal																																																					
D000-2890	Submit Final H&HA Major Culvert Submittal	1	04-Dec-19	04-Dec-19	Submit Final H&HA Major Culvert Submittal																																																					
D000-1700	Submit Remainder WPs Roadway/Drainage/SWM&Plantings/E&S/Traffic/MOT Plans Final Submittal	1	04-Dec-19	04-Dec-19	Submit Remainder WPs Roadway/Drainage/SWM&Plantings/E&S/Traffic/MOT Plans Final Submittal																																																					
D000-1720	VDOT & Leesburg Review and Comment/Approval Remainder WPs & H&HA Major Culverts Final Submittal - HOLD POINT	21	05-Dec-19	25-Dec-19	VDOT & Leesburg Review and Comment/Approval Remainder WPs & H&HA Major Culverts Final Submittal - HOLD POINT																																																					
D000-1730	Released For Construction (RFC) Remainder WPs Plans	1	23-Jan-20	23-Jan-20	Released For Construction (RFC) Remainder WPs Plans																																																					

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



Activity ID	Activity Name	Original Duration	Start	Finish	2019																								2020												2021												2022					
					Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun											
Develop Remainder WPs Sign., Marking, Lighting, Signal Design, ITS & MOT (Traffic) 1:																																																										
D000-1610	Develop Photometric Lighting Analysis & Calculations and Submit	10	26-Jul-19	08-Aug-19																																																						
Bridge Design																																																										
Bridge B601																																																										
D000-1740	Prepare B601 Reports TS&L Plan (Stage I) Submission	20	12-Jun-19	10-Jul-19																																																						
D000-1750	Design QA/QC B601 Stage I Submission	5	11-Jul-19	17-Jul-19																																																						
D000-1760	Submit B601 Stage I Submission	1	18-Jul-19	18-Jul-19																																																						
D000-1770	VDOT & Leesburg Review, Comment & Approve B601 Stage I Submission	21	19-Jul-19	08-Aug-19																																																						
D000-1780	Address Comments and Prepare B601 Final Plans (Stage II) Submission	60	09-Aug-19	01-Nov-19																																																						
D000-1790	Design QA/QC B601 Stage II Submission	5	04-Nov-19	08-Nov-19																																																						
D000-1800	Submit B601 Stage II Submission	1	11-Nov-19	11-Nov-19																																																						
D000-1810	VDOT & Leesburg Review/Approval B601 Stage II Submission	21	12-Nov-19	02-Dec-19																																																						
D000-1820	Final Revisions, VDOT & Leesburg Review/Approval and Released for Construction (RFC) B601 Plans	10	03-Dec-19	16-Dec-19																																																						
D000-1830	Bridge B601 Construction Unit Cost Report (w/in 90 Days of RFC)	90	17-Dec-19	22-Apr-20																																																						
Retaining Walls																																																										
D000-1840	Prepare Retaining Walls Stage I Submission	20	18-Feb-19	15-Mar-19																																																						
D000-1850	Design QA/QC Retaining Walls Stage I Submission	5	18-Mar-19	22-Mar-19																																																						
D000-1860	Submit Retaining Walls Stage I Submission	1	22-Apr-19	22-Apr-19																																																						
D000-1870	VDOT & Leesburg Review, Comment & Approve Retaining Walls Stage I Submission	21	23-Apr-19	13-May-19																																																						
D000-1880	Address Comments and Prepare Retaining Walls Final Plans (Stage II) Submission	10	14-May-19	28-May-19																																																						
D000-1890	Design QA/QC Retaining Walls Stage II Submission	5	26-Nov-19	03-Dec-19																																																						
D000-1900	Submit Retaining Walls Stage II Submission	1	04-Dec-19	04-Dec-19																																																						
D000-1910	VDOT & Leesburg Review/Approval Retaining Walls Stage II Submission	21	05-Dec-19	25-Dec-19																																																						
D000-1920	Final Revisions, Released for Construction (RFC) Retaining Walls Plans	1	26-Dec-19	26-Dec-19																																																						
Environmental																																																										
Hazardous Materials																																																										
D000-1950	Hazardous Material Phase II ESA Field Investigation & Laboratory Work	45	07-Jan-19	08-Mar-19																																																						
D000-1960	Develop & Submit EWP Hazardous Materials Phase II ESA	5	04-Feb-19	08-Feb-19																																																						
D000-1980	VDOT/FHWA EWP Hazardous Material Phase II ESA - Hold Point	21	11-Feb-19	11-Mar-19																																																						
D000-1970	Develop & Submit Remainder WPs Hazardous Material Phase II ESA	5	11-Mar-19	15-Mar-19																																																						
D000-1990	VDOT/FHWA Remainder WPs Hazardous Material Phase II ESA - HOLD POINT	21	18-Mar-19	15-Apr-19																																																						
D000-1930	Prepare/Submit Spill Prevention, Control and Countermeasure Plan (SPCC)	15	21-Jun-19	12-Jul-19																																																						
D000-1940	VDOT Review/Approval SPCC	21	13-Jul-19	02-Aug-19																																																						
Environmental Permits																																																										
Environmental Permit Applications																																																										
D000-2000	Natural Resource Field Studies for Borrow, Staging, Access	20	20-Dec-18	18-Jan-19																																																						
D000-2020	Develop and Submit Joint Permit Application - Remainder WPs	20	21-Jan-19	15-Feb-19																																																						
D000-2010	Threatened & Endangered Species Section 7 Coordination	20	21-Jan-19	15-Feb-19																																																						
D000-2410	Develop and Submit Joint Permit Application - EWP	20	22-Feb-19	21-Mar-19																																																						
D000-2050	Request EQ-201 NEPA Re-evaluation for ROW	1	22-Apr-19	22-Apr-19																																																						
D000-2030	Develop and Submit EWP VPDES Stormwater General Permit Application & SWPPP	8	04-Jun-19	13-Jun-19																																																						
D000-2060	Request EWP EQ-200 NEPA Re-eval. & EQ-103 NEPA Certification/Commitments for Construction	1	12-Jul-19	12-Jul-19																																																						
D000-2040	Develop and Submit Remainder WPs VPDES Stormwater General Permit Application & SWPPP	5	12-Nov-19	18-Nov-19																																																						

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



Activity ID	Activity Name	Original Duration	Start	Finish	2019																								2020												2021												2022								
					Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun														
D000-2070	Request Remainder WPs EQ-200 NEPA Re-eval.& EQ-103 NEPA Certification/Commitments for Construction	1	04-Dec-19	04-Dec-19																									Request Remainder WPs EQ-200 NEPA Re-eval.& EQ-103 NEPA Certification/Commitments for Construction																																
Issuance and Approval of Environmental Permits - All Permitted Construction Activities A					342	16-Feb-19	23-Jan-20																																																						
D000-2080	Agency Reviews and Issuance of Section 404 Permit, WPP, SBP - Remainder WPs - HOLD POINT	210	16-Feb-19	13-Sep-19																									Agency Reviews and Issuance of Section 404 Permit, WPP, SBP - Remainder WPs - HOLD POINT																																
D000-2880	Agency Reviews and Issuance of Section 404 Permit, WPP, SBP - EWP - HOLD POINT	100	22-Mar-19	29-Jun-19																									Agency Reviews and Issuance of Section 404 Permit, WPP, SBP - EWP - HOLD POINT																																
D000-2110	VDOT Review and Approve EQ-201 NEPA Re-evaluation for ROW - HOLD POINT	21	23-Apr-19	13-May-19																									VDOT Review and Approve EQ-201 NEPA Re-evaluation for ROW - HOLD POINT																																
D000-2090	Agency Reviews and Issuance of EWP VPDES Stormwater General Permit & SWPPP Segment-HOLD POINT	45	26-Jun-19	09-Aug-19																									Agency Reviews and Issuance of EWP VPDES Stormwater General Permit & SWPPP Segment-HOLD POINT																																
D000-2120	VDOT Rvw.&Approve EWP EQ-200 NEPA Re-eval.& EQ-103 NEPA Certify/Commitments for Const.-HOLD POINT	21	13-Jul-19	02-Aug-19																									VDOT Rvw.&Approve EWP EQ-200 NEPA Re-eval.& EQ-103 NEPA Certify/Commitments for Const.-HOLD POINT																																
D000-2100	Agency Reviews and Issuance of Remainder WPs VPDES Stormwater General Permit & SWPPP-HOLD POINT	45	19-Nov-19	02-Jan-20																									Agency Reviews and Issuance of Remainder WPs VPDES Stormwater General Permit & SWPPP-HOLD POINT																																
D000-2130	VDOT Rvw.&Approve Remainder WPs EQ-200 NEPA Re-eval.& EQ-103 NEPA Certify/Commitments for Const.-HOLD POINT	21	03-Jan-20	23-Jan-20																									VDOT Rvw.&Approve Remainder WPs EQ-200 NEPA Re-eval.& EQ-103 NEPA Certify/Commitments for Const.-HOLD POINT																																
Noise Abatement					123	20-Dec-18	30-Jul-19																																																						
D000-2140	Complete Final Noise Impact Report	140	20-Dec-18	09-Jul-19																									Complete Final Noise Impact Report																																
D000-2150	VDOT Review/Approval Noise Wall Design	21	10-Jul-19	30-Jul-19																									VDOT Review/Approval Noise Wall Design																																
Right-of-Way					161	22-Apr-19	05-Feb-20																																																						
D000-2170	Prepare and Submit Acquisition Plan including Proposed Appraisers & Reviewers	15	22-Apr-19	10-May-19																									Prepare and Submit Acquisition Plan including Proposed Appraisers & Reviewers																																
D000-2180	VDOT Review and Approve Acquisition Plan Inc. EQ-201 Revaluation	21	11-May-19	31-May-19																									VDOT Review and Approve Acquisition Plan Inc. EQ-201 Revaluation																																
D000-2160	Limited Access Line Modification Submittal for Option 1 - Chief Engineer/CTB Approval - Hold Point	45	14-May-19	17-Jul-19																									Limited Access Line Modification Submittal for Option 1 - Chief Engineer/CTB Approval - Hold Point																																
D000-2220	EWP ROW (School, Leegate, Parcels 011 & 012)	10	25-Jun-19	09-Jul-19																									EWP ROW (School, Leegate, Parcels 011 & 012)																																
D000-2200	Goodwill Letters, Title Searches, Appraisals, Appraisal Reviews, Basic Administrative Reports & RUMS Input	30	25-Jun-19	24-Jul-19																									Goodwill Letters, Title Searches, Appraisals, Appraisal Reviews, Basic Administrative Reports & RUMS Input																																
D000-2190	VDOT Issue Notice to Proceed for ROW Acquisitions- HOLD POINT	10	11-Jul-19	24-Jul-19																									VDOT Issue Notice to Proceed for ROW Acquisitions- HOLD POINT																																
D000-2210	VDOT Rvw & Approval Appraisal Packages, Just Compensation, Relocation Benefits and Administrative Settlements-Acquisitio	21	25-Jul-19	22-Aug-19																									VDOT Rvw & Approval Appraisal Packages, Just Compensation, Relocation Benefits and Administrative Settlements-Acquisitio																																
D000-2230	Initiate ROW/Easements Negotiations, Acquisition incl. RW24's	20	01-Aug-19	28-Aug-19																									Initiate ROW/Easements Negotiations, Acquisition incl. RW24's																																
D000-2300	Closing and Settlement Payment Disbursement and Indefensible Title to VDOT-Acquisitions	120	13-Sep-19	10-Jan-20																									Closing and Settlement Payment Disbursement and Indefensible Title to VDOT-Acquisitions																																
D000-2290	VDOT Process Vouchers for Payments for Acquisitions	120	13-Sep-19	10-Jan-20																									VDOT Process Vouchers for Payments for Acquisitions																																
D000-2280	VDOT Issue Certificate of Take and Files in Court, if Impasse is Reached	120	13-Sep-19	10-Jan-20																									VDOT Issue Certificate of Take and Files in Court, if Impasse is Reached																																
D000-2270	Property Owner Accepts ROE	120	13-Sep-19	10-Jan-20																									Property Owner Accepts ROE																																
D000-2260	Request Right of Entry-As Necessary	120	13-Sep-19	10-Jan-20																									Request Right of Entry-As Necessary																																
D000-2250	Property Owner Accepts Offer	120	13-Sep-19	10-Jan-20																									Property Owner Accepts Offer																																
D000-2240	Make Offers to Property Owners	25	13-Sep-19	17-Oct-19																									Make Offers to Property Owners																																
D000-2310	VDOT Issue Clearance for Construction - Acquisitions-HOLD POINT	21	16-Jan-20	05-Feb-20																									VDOT Issue Clearance for Construction - Acquisitions-HOLD POINT																																
Utilities					287	18-Feb-19	16-Jul-20																																																						
Utility Delineation					66	18-Feb-19	20-May-19																																																						
D000-2320	Prepare Property Owner Notification Letters for Subsurface Utility Engineering (SUE)	1	18-Feb-19	18-Feb-19																									Prepare Property Owner Notification Letters for Subsurface Utility Engineering (SUE)																																
D000-2330	Perform SUE Designations and Test Holes	20	23-Apr-19	20-May-19																									Perform SUE Designations and Test Holes																																
D000-2340	Prepare Test Hole Data Sheets , UT9's	15	30-Apr-19	20-May-19																									Prepare Test Hole Data Sheets , UT9's																																
Utility Coordination					91	22-Feb-19	05-Aug-19																																																						
D000-2360	Preliminary Utility Field Inspection (PUFI) Meeting with Utility Owners	5	27-Feb-19	05-Mar-19																									Preliminary Utility Field Inspection (PUFI) Meeting with Utility Owners																																
D000-2350	Meet with VDOT Regional Utility Manager w/in45 days after NTP	1	27-Feb-19	27-Feb-19																									Meet with VDOT Regional Utility Manager w/in45 days after NTP																																
D000-2400	Obtain Easement Requirements	15	06-Mar-19	26-Mar-19																									Obtain Easement Requirements																																

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



Activity ID	Activity Name	Original Duration	Start	Finish	2019												2020												2021												2022						
					Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
D000-2370	Determine Prior Rights, Update UT9's	30	06-Mar-19	16-Apr-19	Determine Prior Rights, Update UT9's																																										
D000-2380	Utility Field Inspection (UFI) Meeting with Utility Owners	5	17-Apr-19	23-Apr-19	Utility Field Inspection (UFI) Meeting with Utility Owners																																										
D000-2390	Prepare & Submit Preliminary Utility Status Report due 120 days after NTP	15	24-Jun-19	15-Jul-19	Prepare & Submit Preliminary Utility Status Report due 120 days after NTP																																										
Utilities In-Plan		91	22-Feb-19	05-Aug-19																																											
D000-2430	Preliminary Water Plans	10	22-Feb-19	07-Mar-19	Preliminary Water Plans																																										
D000-2420	Preliminary Sanitary Sewer Plans	20	22-Feb-19	21-Mar-19	Preliminary Sanitary Sewer Plans																																										
D000-2440	Design QA/QC W&SS 1st Submittal	5	22-Mar-19	28-Mar-19	Design QA/QC W&SS 1st Submittal																																										
D000-2450	Submit W&SS 1st Submittal	1	29-Mar-19	29-Mar-19	Submit W&SS 1st Submittal																																										
D000-2460	Utility Review and Comment/Approval W&SS 1st Submittal	30	30-Mar-19	28-Apr-19	Utility Review and Comment/Approval W&SS 1st Submittal																																										
D000-2480	Address Comments Develop Sanitary Sewer Plans Final Submittal	10	29-Apr-19	10-May-19	Address Comments Develop Sanitary Sewer Plans Final Submittal																																										
D000-2470	Address Comments Develop Water Plans Final Submittal	20	29-Apr-19	24-May-19	Address Comments Develop Water Plans Final Submittal																																										
D000-2490	Design QA/QC W&SS Plans Final Submittal	3	28-May-19	30-May-19	Design QA/QC W&SS Plans Final Submittal																																										
D000-2500	Submit W&SS Plans Final Submittal	1	31-May-19	31-May-19	Submit W&SS Plans Final Submittal																																										
D000-2510	Utility Review and Comment/Approval W&SS Final Submittal	30	01-Jun-19	30-Jun-19	Utility Review and Comment/Approval W&SS Final Submittal																																										
D000-2520	Released For Construction (RFC) W&SS Plans	1	05-Aug-19	05-Aug-19	Released For Construction (RFC) W&SS Plans																																										
Utility Design (By Others)		278	06-Mar-19	16-Jul-20																																											
UTILITY RELOCATION DESIGN		92	06-Mar-19	16-Aug-19																																											
EWP		63	06-Mar-19	27-Jun-19																																											
D000-2530	Utilities Prepare Plan & Estimate/Letter of No Cost/Submit to D-B	60	06-Mar-19	29-May-19	Utilities Prepare Plan & Estimate/Letter of No Cost/Submit to D-B																																										
D000-2540	D-B Review & Approve Plan & Estimate/Submit to VDOT for Approval	5	30-May-19	05-Jun-19	D-B Review & Approve Plan & Estimate/Submit to VDOT for Approval																																										
D000-2550	VDOT Review & Approve Utility Assembly	21	06-Jun-19	26-Jun-19	VDOT Review & Approve Utility Assembly																																										
D000-2560	D-B Issues Authorization to Proceed w/Utility Relocation	1	27-Jun-19	27-Jun-19	D-B Issues Authorization to Proceed w/Utility Relocation																																										
Remainder WPs		63	24-Apr-19	16-Aug-19																																											
D000-2570	Utilities Prepare Plan & Estimate/Letter of No Cost/Submit to D-B	60	24-Apr-19	18-Jul-19	Utilities Prepare Plan & Estimate/Letter of No Cost/Submit to D-B																																										
D000-2580	D-B Review & Approve Plan & Estimate/Submit to VDOT for Approval	5	19-Jul-19	25-Jul-19	D-B Review & Approve Plan & Estimate/Submit to VDOT for Approval																																										
D000-2590	VDOT Review & Approve Utility Assembly	21	26-Jul-19	15-Aug-19	VDOT Review & Approve Utility Assembly																																										
D000-2600	D-B Issues Authorization to Proceed w/Utility Relocation	1	16-Aug-19	16-Aug-19	D-B Issues Authorization to Proceed w/Utility Relocation																																										
UTILITY P&E DEVELOPMENT		60	24-Apr-19	18-Jul-19																																											
D000-2730	Level 3 Communications	60	24-Apr-19	18-Jul-19	Level 3 Communications																																										
D000-2720	Summit IG (SIG)	60	24-Apr-19	18-Jul-19	Summit IG (SIG)																																										
D000-2710	Verizon Business (MCI)	60	24-Apr-19	18-Jul-19	Verizon Business (MCI)																																										
D000-2700	Cox Communications (CC)	60	24-Apr-19	18-Jul-19	Cox Communications (CC)																																										
D000-2690	Zayo Group	60	24-Apr-19	18-Jul-19	Zayo Group																																										
D000-2680	Comcast Cable (CC)	60	24-Apr-19	18-Jul-19	Comcast Cable (CC)																																										
D000-2670	Fiberlight, LLC	60	24-Apr-19	18-Jul-19	Fiberlight, LLC																																										
D000-2660	Qwest Government Services, Inc (QGS)	60	24-Apr-19	18-Jul-19	Qwest Government Services, Inc (QGS)																																										
D000-2650	AT&T -Local/Metro/TCA	60	24-Apr-19	18-Jul-19	AT&T -Local/Metro/TCA																																										
D000-2640	AT&T -Long Distance/Core/Legacy	60	24-Apr-19	18-Jul-19	AT&T -Long Distance/Core/Legacy																																										
D000-2630	Verizon Virginia, LLC (VV)	60	24-Apr-19	18-Jul-19	Verizon Virginia, LLC (VV)																																										
D000-2620	Washington Gas (WG)	60	24-Apr-19	18-Jul-19	Washington Gas (WG)																																										
D000-2610	Dominion Energy - Transmission & Distribution (DETD)	60	24-Apr-19	18-Jul-19	Dominion Energy - Transmission & Distribution (DETD)																																										
Utilities with No Conflict		25	24-Apr-19	29-May-19																																											
D000-2740	Confirm Utilities No Conflicts	5	24-Apr-19	30-Apr-19	Confirm Utilities No Conflicts																																										
D000-2750	Submit Letter of No Conflict to VDOT	20	01-May-19	29-May-19	Submit Letter of No Conflict to VDOT																																										
Utility Relocation Construction		209	10-Jul-19	16-Jul-20																																											
D000-2760	Utility Performs Relocation EWP	60	10-Jul-19	07-Sep-19	Utility Performs Relocation EWP																																										
D000-2780	SIG Performs Relocations	130	17-Aug-19	24-Dec-19	SIG Performs Relocations																																										
D000-2770	Utility Performs Relocation Remainder WPs	120	11-Jan-20	09-May-20	Utility Performs Relocation Remainder WPs																																										
D000-2790	Utility As Builts from Utility	1	09-Jul-20	09-Jul-20	Utility As Builts from Utility																																										
D000-2800	Utility As Builts Review and Submittal to VDOT	5	10-Jul-20	16-Jul-20	Utility As Builts Review and Submittal to VDOT																																										
Public Involvement		315	22-Feb-19	15-May-20																																											

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



Activity ID	Activity Name	Original Duration	Start	Finish	2019												2020												2021												2022						
					Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
D000-2840	Public Information Preparation & Release and Content for Project Website	1	22-Feb-19*	22-Feb-19	I												Public Information Preparation & Release and Content for Project Website																														
D000-2830	Develop & Present Communications Plan (Within 45 days of commencement)	45	22-Feb-19	25-Apr-19	█												Develop & Present Communications Plan (Within 45 days of commencement)																														
D000-2820	Develop & Maintain Public Information Log/Database	20	25-Feb-19	22-Mar-19	█												Develop & Maintain Public Information Log/Database																														
D000-2810	Submit Emergency Contact List & Response Plan	5	27-Feb-19	05-Mar-19	█												Submit Emergency Contact List & Response Plan																														
D000-2850	Pardon Our Dust and Other Stakeholders Meetings (Ph 1A and 1B)	1	22-Jul-19	22-Jul-19	I												Pardon Our Dust and Other Stakeholders Meetings (Ph 1A and 1B)																														
D000-2860	Pardon Our Dust and Other Stakeholders Meetings (Ph 2A)	1	21-Jan-20	21-Jan-20													I												Pardon Our Dust and Other Stakeholders Meetings (Ph 2A)																		
D000-2870	Pardon Our Dust and Other Stakeholders Meetings (Ph 2B and 2C)	1	15-May-20*	15-May-20													I												Pardon Our Dust and Other Stakeholders Meetings (Ph 2B and 2C)																		
Procurement		291	04-Nov-19	20-Aug-20																																											
P000-1000	Prepare Shop Drawings - Bridge Steel Girders	30	04-Nov-19	03-Dec-19													█												Prepare Shop Drawings - Bridge Steel Girders																		
P000-1010	VDOT Review Shop Drawings - Bridge Steel Girders	21	04-Dec-19	24-Dec-19													█												VDOT Review Shop Drawings - Bridge Steel Girders																		
P000-1020	Fabricate Bridge Steel Girders	240	25-Dec-19	20-Aug-20													█												Fabricate Bridge Steel Girders																		
P000-1060	Prepare Shop Drawings - MSE Walls for Ramp A & D	30	27-Dec-19	25-Jan-20													█												Prepare Shop Drawings - MSE Walls for Ramp A & D																		
P000-1030	Prepare Shop Drawings - Bridge MSE Walls	30	27-Dec-19	25-Jan-20													█												Prepare Shop Drawings - Bridge MSE Walls																		
P000-1070	VDOT Review Shop Drawings - MSE Walls for Ramp A & D	21	26-Jan-20	15-Feb-20													█												VDOT Review Shop Drawings - MSE Walls for Ramp A & D																		
P000-1040	VDOT Review Shop Drawings - Bridge MSE Walls	21	26-Jan-20	15-Feb-20													█												VDOT Review Shop Drawings - Bridge MSE Walls																		
P000-1080	Fabricate Bridge MSE Walls for Ramp A & D	90	16-Feb-20	15-May-20													█												Fabricate Bridge MSE Walls for Ramp A & D																		
P000-1050	Fabricate Bridge MSE Walls	90	16-Feb-20	15-May-20													█												Fabricate Bridge MSE Walls																		
Construction		449	06-Aug-19	15-Oct-21																																											
C000-1000	Construction Start Milestone	0	06-Aug-19														◆												Construction Start Milestone																		
C000-1030	Construction Finish Milestone	0		23-Aug-21																									◆												Construction Finish Milestone						
Phase 1A		55	06-Aug-19	06-Nov-19																																											
C100-1000	Start Milestone, Ph 1A	0	06-Aug-19														◆												Start Milestone, Ph 1A																		
C100-1010	Finish Milestone, Ph 1A	0		06-Nov-19																									◆												Finish Milestone, Ph 1A						
West Driveway		48	06-Aug-19	23-Oct-19																																											
C101-1010	Install MOT and Erosion Control, Ph 1A, West	5	06-Aug-19	13-Aug-19													█												Install MOT and Erosion Control, Ph 1A, West																		
C101-1000	Start Milestone, Ph 1A, West	0	06-Aug-19														◆												Start Milestone, Ph 1A, West																		
C101-1020	Clear & Grub, Ph 1A, West	5	15-Aug-19	22-Aug-19													█												Clear & Grub, Ph 1A, West																		
C101-1030	Excavate and Embank, Ph 1A, West	14	23-Aug-19	13-Sep-19													█												Excavate and Embank, Ph 1A, West																		
C101-1040	Install Drainage, Ph 1A, West	10	16-Sep-19	01-Oct-19													█												Install Drainage, Ph 1A, West																		
C101-1050	Construct Aggregate Base, Ph 1A, West	2	02-Oct-19	03-Oct-19													█												Construct Aggregate Base, Ph 1A, West																		
C101-1070	AC Paving, Ph 1A, West	2	04-Oct-19	07-Oct-19													█												AC Paving, Ph 1A, West																		
C101-1090	Site Clean-Up and Demobe, Ph 1A, West	10	09-Oct-19	23-Oct-19													█												Site Clean-Up and Demobe, Ph 1A, West																		
C101-1080	Finish Milestone, Ph 1A, West	0		23-Oct-19																									◆												Finish Milestone, Ph 1A, West						
Keystone Drive		55	06-Aug-19	06-Nov-19																																											
C102-1010	Install MOT and Erosion Control, Ph 1A, Keystone	5	06-Aug-19	13-Aug-19													█												Install MOT and Erosion Control, Ph 1A, Keystone																		
C102-1000	Start Milestone, Ph 1A, Keystone	0	06-Aug-19														◆												Start Milestone, Ph 1A, Keystone																		
C102-1020	Clear & Grub, Ph 1A, Keystone	5	15-Aug-19	22-Aug-19													█												Clear & Grub, Ph 1A, Keystone																		
C102-1030	Excavate and Embank, Ph 1A, Keystone	14	23-Aug-19	13-Sep-19													█												Excavate and Embank, Ph 1A, Keystone																		
C102-1040	Install Drainage, Ph 1A, Keystone	12	16-Sep-19	03-Oct-19													█												Install Drainage, Ph 1A, Keystone																		
C102-1050	Construct Aggregate Base, Ph 1A, Keystone	2	04-Oct-19	07-Oct-19													█												Construct Aggregate Base, Ph 1A, Keystone																		
C102-1060	Install Curb & Gutter, Ph 1A, Keystone	5	09-Oct-19	15-Oct-19													█												Install Curb & Gutter, Ph 1A, Keystone																		
C102-1070	AC Paving, Ph 1A, Keystone	2	17-Oct-19	18-Oct-19													█												AC Paving, Ph 1A, Keystone																		
C101-1100	Site Clean-Up and Demobe, Ph 1A, Keystone	10	21-Oct-19	06-Nov-19													█												Site Clean-Up and Demobe, Ph 1A, Keystone																		
C102-1080	Finish Milestone, Ph 1A, Keystone	0		06-Nov-19																									◆												Finish Milestone, Ph 1A, Keystone						
Battlefield Pkwy Detour		35	06-Aug-19	02-Oct-19																																											
Battlefield Pkwy / Fort Evans Rd		30	06-Aug-19	24-Sep-19																																											
C104-1080	Install Signal Foundation / Underground Conduits, Ph 1A, Battlefield / Fort Evans	15	06-Aug-19	29-Aug-19													█												Install Signal Foundation / Underground Conduits, Ph 1A, Battlefield / Fort Evans																		
C104-1010	Install MOT and Erosion Control, Ph 1A, Battlefield / Fort Evans	5	06-Aug-19	13-Aug-19													█												Install MOT and Erosion Control, Ph 1A, Battlefield / Fort Evans																		
C104-1000	Start Milestone, Ph 1A, Battlefield / Fort Evans	0	06-Aug-19														◆												Start Milestone, Ph 1A, Battlefield / Fort Evans																		
C104-1070	Partial Demo and Reconstruct Exist Island, Ph 1A, Battlefield / Fort Evans	10	15-Aug-19	29-Aug-19													█												Partial Demo and Reconstruct Exist Island, Ph 1A, Battlefield / Fort Evans																		
C104-1030	Clear Median, Ph 1A, Battlefield / Fort Evans	5	15-Aug-19	22-Aug-19													█												Clear Median, Ph 1A, Battlefield / Fort Evans																		
C104-1020	Demo Exist Rdwy (Partial) & Sidewalk, Ph 1A, Battlefield / Fort Evans	5	15-Aug-19	22-Aug-19													█												Demo Exist Rdwy (Partial) & Sidewalk, Ph 1A, Battlefield / Fort Evans																		
C104-1060	Excavate, Ph 1A, Battlefield / Fort Evans	5	23-Aug-19	29-Aug-19													█												Excavate, Ph 1A, Battlefield / Fort Evans																		

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



Activity ID	Activity Name	Original Duration	Start	Finish	2019												2020												2021												2022						
					Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
C2B3-1120	Install Guardrail, Ph 2B, Spur C	5	10-Aug-20	14-Aug-20																									█ Install Guardrail, Ph 2B, Spur C																		
C2B3-1110	Install Lighting / ITS, Ph 2B, Spur C	5	10-Aug-20	14-Aug-20																									█ Install Lighting / ITS, Ph 2B, Spur C																		
C2B3-1130	Finish Milestone, Ph 2B, Spur C	0		14-Aug-20																									◆ Finish Milestone, Ph 2B, Spur C																		
Ramp D / Spur D		46	01-Jun-20	17-Aug-20																																											
C2B4-1010	Install Erosion Control, Ph 2B, Spur D	5	01-Jun-20	05-Jun-20																									█ Install Erosion Control, Ph 2B, Spur D																		
C2B4-1000	Start Milestone, Ph 2B, Spur D	0	01-Jun-20																										◆ Start Milestone, Ph 2B, Spur D																		
C2B4-1030	Excavate and Embank, Ph 2B, Spur D	20	08-Jun-20	13-Jul-20																									█ Excavate and Embank, Ph 2B, Spur D																		
C2B4-1070	Install Signal and Elect Conduits, Ph 2B, Spur D	5	16-Jun-20	24-Jun-20																									█ Install Signal and Elect Conduits, Ph 2B, Spur D																		
C2B4-1040	Install Drainage, Ph 2B, Spur D	5	16-Jun-20	24-Jun-20																									█ Install Drainage, Ph 2B, Spur D																		
C2B4-1060	Construct CTA Aggregate Base, Ph 2B, Spur D	2	14-Jul-20	15-Jul-20																									█ Construct CTA Aggregate Base, Ph 2B, Spur D																		
C2B4-1080	Install Underdrain, Ph 2B, Spur D	5	17-Jul-20	24-Jul-20																									█ Install Underdrain, Ph 2B, Spur D																		
C2B4-1090	Place OGD, Ph 2B, Spur D	1	27-Jul-20	27-Jul-20																									█ Place OGD, Ph 2B, Spur D																		
C2B4-1100	Construct AC Base, Ph 2B, Spur D	2	29-Jul-20	30-Jul-20																									█ Construct AC Base, Ph 2B, Spur D																		
C2B4-1110	Install Curb & Gutter, Ph 2B, Spur D	5	31-Jul-20	07-Aug-20																									█ Install Curb & Gutter, Ph 2B, Spur D																		
C2B4-1120	AC Paving, Ph 2B, Spur D	1	10-Aug-20	10-Aug-20																									█ AC Paving, Ph 2B, Spur D																		
C2B4-1140	Install Guardrail, Ph 2B, Spur D	5	11-Aug-20	17-Aug-20																									█ Install Guardrail, Ph 2B, Spur D																		
C2B4-1130	Install Lighting / ITS, Ph 2B, Spur D	5	11-Aug-20	17-Aug-20																									█ Install Lighting / ITS, Ph 2B, Spur D																		
C2B4-1150	Finish Milestone, Ph 2B, Spur D	0		17-Aug-20																									◆ Finish Milestone, Ph 2B, Spur D																		
Battlefield Pkwy		216	01-Jun-20	23-Jun-21																																											
C2B5-1010	Install MOT and Erosion Control, Ph 2B, Battlefield	5	01-Jun-20	05-Jun-20																									█ Install MOT and Erosion Control, Ph 2B, Battlefield																		
C2B5-1000	Start Milestone, Ph 2B, Battlefield	0	01-Jun-20																										◆ Start Milestone, Ph 2B, Battlefield																		
C2B5-1020	Demo Exist Rdwy, Ph 2B, Battlefield	20	08-Jun-20	13-Jul-20																									█ Demo Exist Rdwy, Ph 2B, Battlefield																		
C2B5-1030	Excavate and Embank, Ph 2B, Battlefield (2 Crews)	80	25-Jun-20	09-Nov-20																									█ Excavate and Embank, Ph 2B, Battlefield (2 Crews)																		
C2B5-1040	Install Drainage, Ph 2B, Battlefield	30	06-Jul-20	24-Aug-20																									█ Install Drainage, Ph 2B, Battlefield																		
C2B5-1080	Install Signal and Elect Conduits, Ph 2B, Battlefield	20	07-Oct-20	09-Nov-20																									█ Install Signal and Elect Conduits, Ph 2B, Battlefield																		
C2B5-1060	Construct Aggregate Base, Ph 2B, Battlefield	10	02-Nov-20	18-Nov-20																									█ Construct Aggregate Base, Ph 2B, Battlefield																		
C2B5-1220	Construct CTA Aggregate Base, Ph 2B, Battlefield	5	11-Nov-20	18-Nov-20																									█ Construct CTA Aggregate Base, Ph 2B, Battlefield																		
C2B5-1180	Install Signal Foundations, Ph 2B, Battlefield	20	11-Nov-20	18-Dec-20																									█ Install Signal Foundations, Ph 2B, Battlefield																		
C2B5-1090	Install Underdrain, Ph 2B, Battlefield	15	19-Nov-20	18-Dec-20																									█ Install Underdrain, Ph 2B, Battlefield																		
C2B5-1070	Construct Median, Ph 2B, Battlefield	10	19-Nov-20	08-Dec-20																									█ Construct Median, Ph 2B, Battlefield																		
C2B5-1100	Place OGD, Ph 2B, Battlefield	3	21-Dec-20	24-Dec-20																									█ Place OGD, Ph 2B, Battlefield																		
C2B5-1230	Winter AC Plant Shut-Down, Ph 2B, Battlefield	65	25-Dec-20	27-Feb-21																									█ Winter AC Plant Shut-Down, Ph 2B, Battlefield																		
C2B5-1110	Construct AC Base, Ph 2B, Battlefield	12	01-Mar-21	19-Mar-21																									█ Construct AC Base, Ph 2B, Battlefield																		
C2B5-1120	Install Curb & Gutter, Ph 2B, Battlefield	15	09-Mar-21	02-Apr-21																									█ Install Curb & Gutter, Ph 2B, Battlefield																		
C2B5-1130	AC Paving, Ph 2B, Battlefield	3	05-Apr-21	07-Apr-21																									█ AC Paving, Ph 2B, Battlefield																		
C2B5-1190	Install Signals, Ph 2B, Battlefield	20	09-Apr-21	12-May-21																									█ Install Signals, Ph 2B, Battlefield																		
C2B5-1160	Install Guardrail, Ph 2B, Battlefield	20	09-Apr-21	12-May-21																									█ Install Guardrail, Ph 2B, Battlefield																		
C2B5-1150	Install ITS, Ph 2B, Battlefield	20	09-Apr-21	12-May-21																									█ Install ITS, Ph 2B, Battlefield																		
C2B5-1200	Test and Accept Signal, Ph 2B, Battlefield	5	14-May-21	24-May-21																									█ Test and Accept Signal, Ph 2B, Battlefield																		
C2B5-1210	Signal 30-Day Burn-In Period, Ph 2B, Battlefield	30	25-May-21	23-Jun-21																									█ Signal 30-Day Burn-In Period, Ph 2B, Battlefield																		
C2B5-1170	Finish Milestone, Ph 2B, Battlefield	0		28-May-21																									◆ Finish Milestone, Ph 2B, Battlefield																		
Bridge B601		198	06-Jun-20	28-May-21																																											
C2B5S1000	Start Milestone, Ph 2B, Bridge	0	06-Jun-20																										◆ Start Milestone, Ph 2B, Bridge																		
C2B5S1030	Site Grading, Ph 2B, Bridge	5	08-Jun-20	15-Jun-20																									█ Site Grading, Ph 2B, Bridge																		
C2B5S1050	Construct Approach Slab, Ph 2B, Bridge	20	01-Apr-21	04-May-21																									█ Construct Approach Slab, Ph 2B, Bridge																		
C2B5S1060	Construct Roadway Tie-In, Ph 2B, Bridge	5	06-May-21	12-May-21																									█ Construct Roadway Tie-In, Ph 2B, Bridge																		
C2B5S1070	Install Guardrail, Ph 2B, Bridge	5	14-May-21	24-May-21																									█ Install Guardrail, Ph 2B, Bridge																		
C2B5S1080	Finish Milestone, Ph 2B, Bridge	0		28-May-21																									◆ Finish Milestone, Ph 2B, Bridge																		
Substructure		97	16-Jun-20	03-Dec-20																																											
C2B5S1120	Excavate Pier, Ph 2B, Bridge	10	16-Jun-20	02-Jul-20																									█ Excavate Pier, Ph 2B, Bridge																		
C2B5S1090	Drive Piles - Abutment A, Ph 2B, Bridge	10	16-Jun-20	02-Jul-20																									█ Drive Piles - Abutment A, Ph 2B, Bridge																		
C2B5S1140	Drive Piles - Abutment B, Ph 2B, Bridge	10	06-Jul-20	21-Jul-20																									█ Drive Piles - Abutment B, Ph 2B, Bridge																		
C2B5S1130	Construct Pier, Ph 2B, Bridge	60	06-Jul-20	13-Oct-20																									█ Construct Pier, Ph 2B, Bridge																		
C2B5S1100	Install Retaining Wall - Abutment A, Ph 2B, Bridge	20	06-Jul-20	07-Aug-20																									█ Install Retaining Wall - Abutment A, Ph 2B, Bridge																		
C2B5S1150	Install Retaining Wall - Abutment B, Ph 2B, Bridge	20	23-Jul-20	24-Aug-20																									█ Install Retaining Wall - Abutment B, Ph 2B, Bridge																		
C2B5S1110	Construct Abutment A, Ph 2B, Bridge	50	10-Aug-20	30-Oct-20																									█ Construct Abutment A, Ph 2B, Bridge																		
C2B5S1160	Construct Abutment B, Ph 2B, Bridge	50	25-Aug-20	18-Nov-20																									█ Construct Abutment B, Ph 2B, Bridge																		
C2B5S1180	Cure Pier, Ph 2B, Bridge	7	15-Oct-20	26-Oct-20																									█ Cure Pier, Ph 2B, Bridge																		
C2B5S1170	Cure Abutment A, Ph 2B, Bridge	7	02-Nov-20	12-Nov-20																									█ Cure Abutment A, Ph 2B, Bridge																		

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





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