VDOT
Virginia Department of Transportation

Technical Proposal | Electronic Submission

Original

I-581/Valley View Interchange Phase II D-B

State Project No.: 0581-128-109, P101, RW201, C501, B627
Federal Project No.: NH-581-5 (035)
Contract ID No.: C00016595DB45
I-581 / Valley View Boulevard Interchange Phase II
09/20/12; 4:00 P.M.

LANE *in association with* STV 100 Years

4.1 - Letter of Submittal

THE LANE CONSTRUCTION CORPORATION
Since 1890
A Commitment to Excellence

MID-ATLANTIC REGIONAL OFFICE
14500 Avion Parkway
Suite 200
Chantilly, VA 20151
703-222-5670
703-222-5960 Fax
LaneConstruct.com

September 20, 2012

Joseph A. Clarke, P.E.
Virginia Department of Transportation
1221 E. Broad Street
Main Building, 4th Floor
Richmond, Virginia 23219

REF: I-581/Valley View Boulevard Interchange Phase II
State Project No.: 0581-128-109, P101, RW201, C501, B627
Federal Project No.: NH-581-5(035)
Contract ID No.: C00016595DB45

Dear Mr. Clarke:

The LANE Construction Corporation (LANE) is pleased to submit our Technical Proposal for the above referenced design-build project with the Virginia Department of Transportation (VDOT). Our response contains all information requested in the Request for Proposal (RFP) dated March 2, 2012, Addendum No. 1 dated June 21, 2012, and Addendum No. 2 dated July 10, 2012. Further, our response has been revised in response to the Changes to RFP Requirements document issued on September 5, 2012 and the Interim Milestone Letter issued on September 13, 2012. All changes are highlighted in yellow, with the exception of non-material editorial changes (i.e., grammar and formatting).

LANE has teamed with STV, Incorporated dba STV/Ralph Whitehead Associates (STV), Lead Design Consultant, to provide VDOT a team with a solid reputation for completing complex projects **innovatively** and **ahead of schedule**. Our team's experience enables us to deliver the high quality and technically-sound projects that VDOT has come to expect from us. For this critical project, we are proposing a diverging diamond interchange (DDI) to replace the one quadrant partial cloverleaf proposed in the RFP documents. The DDI configuration provides numerous benefits to VDOT, the City of Roanoke, and various project stakeholders. Our approach *reduces right-of-way requirements* and *eliminates property takes* along Norris Drive, *reduces the stream impacts* and relocation requirements established in the RFP, *reduces the bridge width*, simplifies operation of the intersections within the interchange, and reduces impacts to existing utilities.

In short, we believe that our alternative interchange layout is superior to the basic configuration identified in the RFP plans. The enclosed technical proposal provides a detailed comparison. It will show our design is **fully compliant** with the terms of the RFP, including the revised criteria.

4.1.1 - Identification of Offeror's Official Representative and Point of Contact

Mr. Richard A. McDonough is an authorized representative of the Offeror, The LANE Construction Corporation and has executed this Letter of Submittal by original signature. He is the official representative and point of contact for the Offeror. His contact information is as follows:

Mr. Richard A. McDonough, District Manager
The LANE Construction Corporation

14500 Avion Parkway, Suite 200
Chantilly, VA 20151
Tel: (703) 222-5670 (office)
Tel: (703) 898-3811 (cell)
Fax: (703) 222-5960
E-mail: RAMcdonough@laneconstruct.com

4.1.2 – Offeror's Intent

It is the Offeror's intent to enter into a contract with VDOT for this project in accordance with the terms of this respective RFP.

4.1.3 – 120 Day Declaration

Pursuant to Part 1, Section 8.2, we declare that the offer represented by this 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 – Principal Officer Information

Mr. Joseph P. Lark is a Principal Officer of the LANE Construction Corporation and the legal entity with whom a design-build contract with VDOT will be written. His contact information is as follows:

Mr. Joseph P. Lark
Regional Vice President, Mid-Atlantic Region
The LANE Construction Corporation
14500 Avion Parkway, Suite 200
Chantilly, VA 20151
Tel: (703) 222-5670 (office)
Fax: (703) 222-5960
E-mail: JPLark@laneconstruct.com

4.1.5 – Executed Proposal Payment Agreement

An executed Proposal Payment Agreement (Attachment 9.3.1) may be found in the Appendices of Volume 1.

The LANE/STV team appreciates the opportunity to propose on this critically important project. We look forward to partnering with VDOT to make the I-581/Valley View Boulevard Interchange Phase II a landmark success for the citizens of Virginia.

Respectfully submitted,

Richard A. McDonough
District Manager
The LANE Construction Corporation

4.2 - Offeror's Qualifications

Under the leadership of our Design-Build Project Manager, **Mr. Richard McDonough**, the LANE/STV team has been conscientiously structured to effectively manage the design and construction of this project.

4.2.1 – Confirmation of SOQ Information

LANE confirms that the information presented in the Request for Qualifications (RFQ) dated December 9, 2011 remains true and accurate in accordance with RFP Section 11.4.

As demonstrated in the organizational chart presented on the following page, the team proposed by LANE, including but not limited to our organizational structure, lead contractor, lead designer, key personnel, and other individuals identified pursuant to Part 1, Section 4.2, will remain intact for the duration of the procurement process, and, if awarded the design-build contract, the duration of the contract.

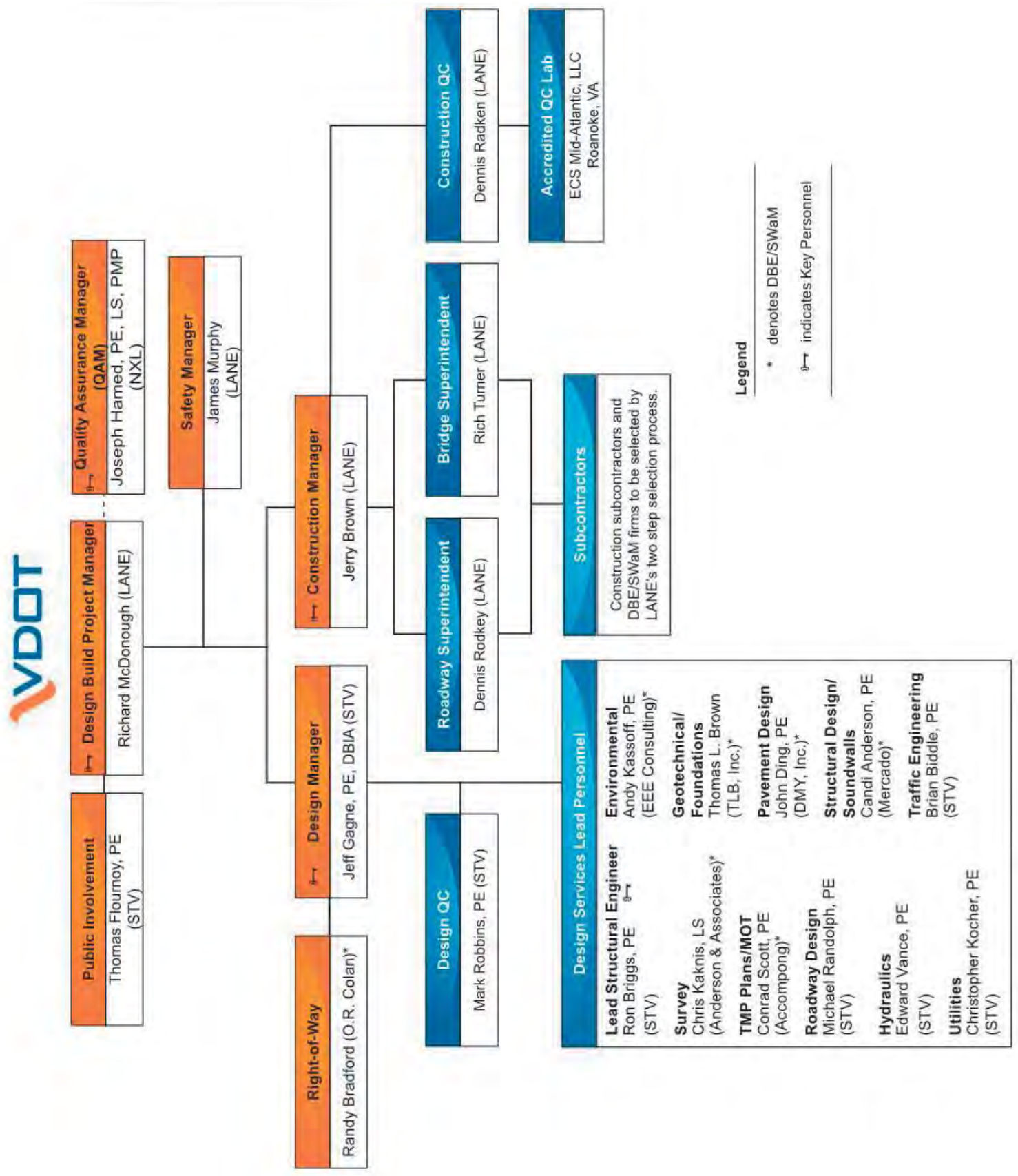
4.2.2 – Organizational Chart

The LANE/STV 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. Our organizational chart identifies key personnel and major functions to be performed for the successful management, design, and construction of the project. Though reporting relationships are rigid, the lines of communication within the team are fluid and flexible enough to meet the requirements of each individual project task. In order to prevent unnecessary project delays, it may sometimes be prudent for other members within the LANE/STV team to communicate directly with their counterparts at VDOT, as directed and authorized in advance by the LANE Design-Build Project Manager and the VDOT Project Manager.

SPOTLIGHT ON OUR TEAM

There are **no changes** from the SOQ submitted to VDOT in December 2011.

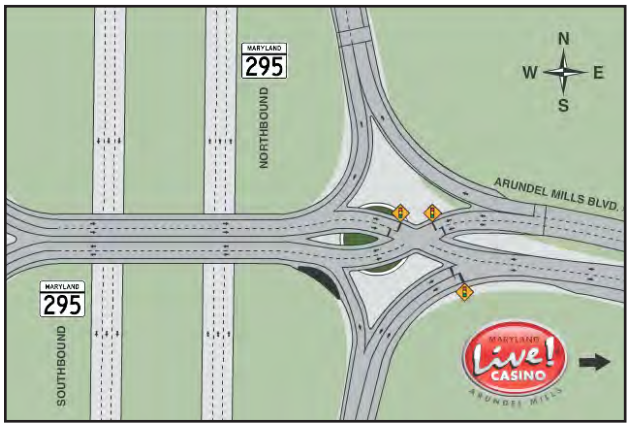
There are no changes from Section 3.4.2 of the Statement of Qualifications (SOQ) submitted to VDOT and dated December 9, 2011.


VDOT
Public Involvement
Thomas Flournoy, PE (STV)
Design Build Project Manager
Richard McDonough (LANE)
Quality Assurance Manager (QAM)
Joseph Hamed, PE, LS, PMP (NXL)
Safety Manager
James Murphy (LANE)
Right-of-Way
Randy Bradford (O.R. Colan)*
Design Manager
Jeff Gagne, PE, DBIA (STV)
Construction Manager
Jerry Brown (LANE)
Design QC
Mark Robbins, PE (STV)
Roadway Superintendent
Dennis Rodkey (LANE)
Bridge Superintendent
Rich Turner (LANE)
Construction QC
Dennis Radken (LANE)
Accredited QC Lab
ECS Mid-Atlantic, LLC
Roanoke, VA
Subcontractors
Construction subcontractors and DBE/SWaM firms to be selected by LANE's two step selection process.
Design Services Lead Personnel
Lead Structural Engineer
Ron Briggs, PE (STV)
Survey
Chris Kaknis, LS (Anderson & Associates)*
TMP Plans/MOT
Conrad Scott, PE (Accompong)*
Roadway Design
Michael Randolph, PE (STV)
Hydraulics
Edward Vance, PE (STV)
Utilities
Christopher Kocher, PE (STV)
Environmental
Andy Kassoff, PE (EEE Consulting)*
Geotechnical/ Foundations
Thomas L. Brown (TLB, Inc.)*
Pavement Design
John Ding, PE (DMY, Inc.)*
Structural Design/ Soundwalls
Candi Anderson, PE (Mercado)*
Traffic Engineering
Brian Biddle, PE (STV)
Legend
* denotes DBE/SWaM
indicates Key Personnel

4.3 - Design Concept

In recent years, the Federal Highway Administration (FHWA) has been advocating novel intersection designs as a way to promote intersection safety while meeting the often conflicting demands for increasing capacity, decreasing congestion, and minimizing the cost of new infrastructure. One of these novel designs is the **diverging diamond interchange** (DDI).

The LANE/STV team is proposing a DDI to replace the one quadrant partial cloverleaf (PARCLO B) that was originally proposed in the RFP documents. The DDI configuration will provide numerous benefits to VDOT, the City of Roanoke, and the various project stakeholders, as described herein. While this type of interchange is relatively new, it is gaining widespread use in the mid-Atlantic region and throughout the United States. VDOT is currently proposing a DDI at the intersection of I-64 at US 15 as well as at I-66 and US 15. A DDI just opened in suburban Maryland at Arundel Mills Mall that addresses analogous challenges to those present in the I-581/Valley View Interchange project area, including traffic congestion due to a high-volume shopping center.



A much anticipated DDI at I-295 and Arundel Mills Boulevard opened in Maryland in June, relieving traffic congestion in the area. Image courtesy of the State Highway Administration.

As compared to the basic project configuration identified in the RFP plans, our DDI design provides the following advantages:

- Reduces right-of-way (ROW) requirements and eliminates property takes on Norris Drive
- Reduces stream impacts and relocation requirements established in the RFP
- Reduces bridge width because the traffic signal operation reduces the need for extra storage lanes; the reduction is carried out on either side of the bridge as there is no need for transitions into the storage lanes
- Simplifies operation of the intersections within the interchange because a two-phase traffic signal operation is introduced; the operation allows for reduced ramp widths to and from I-581 without impacts to interstate operations
- Reduces impacts to existing utilities including sanitary, water and gas

WHAT IS A DDI?

DDIs temporarily cross traffic lanes to the **left** side of the road to create direct access with the freeway. A DDI limits the number of traffic signal phases required to move motorists through the interchange, helping traffic move quickly and efficiently. Movements on and off the freeway are free-flowing and have fewer conflict points than a traditional design.

The narrative presented herein will demonstrate how the LANE/STV concept provides VDOT with a design that meets or exceeds its goals while delivering a project that will have a significant savings to the Commonwealth in terms of overall cost, while benefitting the travelling public, local residents, and regional business community.

SPOTLIGHT ON DDI

As compared to the basic RFP configuration, the DDI concept reduces ROW requirements and eliminates property takes, reduces stream impacts and relocation requirements, reduces bridge width, simplifies operation of the intersections within the interchange, and reduces impacts to existing utilities.

4.3.1 – Alternative Design Concept VISSIM Analysis: Comparison of RFP and DDI Configurations

On April 30, 2012, a Proprietary Meeting was held with VDOT where the LANE/STV team presented a concept for a DDI. Through comments provided in the Proprietary Meeting Minutes dated June 15, 2012, VDOT was receptive to the DDI concept; however, a detailed VISSIM analysis was requested for the DDI including all analysis assumptions and variables for VDOT to thoroughly review the alternative interchange layout as part of the technical proposal. Furthermore, the LANE/STV team was required to provide a comparison between the RFP configuration and the DDI concept, including measures of effectiveness for all volume levels, movements and intersections included in Figure 4-6 of the

approved *Interchange Modification Report for Interstate 581 and Valley View Boulevard*. **As will be described in the subsections below, the DDI maintains the levels of service as compared to the design proposed in the RFP at both the north- and southbound ramp terminals.**

The VISSIM analysis was successfully completed and the electronic analysis files and all documented analysis assumptions and variables have been provided on a CD submitted with this Technical Proposal. A comparison of the two interchange configurations follows.

4.3.1.1 – VISSIM Methodology

The LANE/STV team used VISSIM 5.30 to analyze the traffic operations of the DDI concept. The VISSIM model is a time-based, stochastic simulation of individual vehicles (i.e., a simulation process involving a randomly determined sequence of observations, each of which is considered as a sample of one element from a probability distribution). Comprehensive measures of effectiveness are computed for each vehicle in the model for every time step of model simulation. VISSIM has the ability to collect system-wide measurements as well as movement, approach, link, route, area, and other measures of effectiveness. VISSIM software is more precise in simulating realistic driver behavior within the intersections than other scientific models of vehicular traffic dynamics (e.g., Synchro).

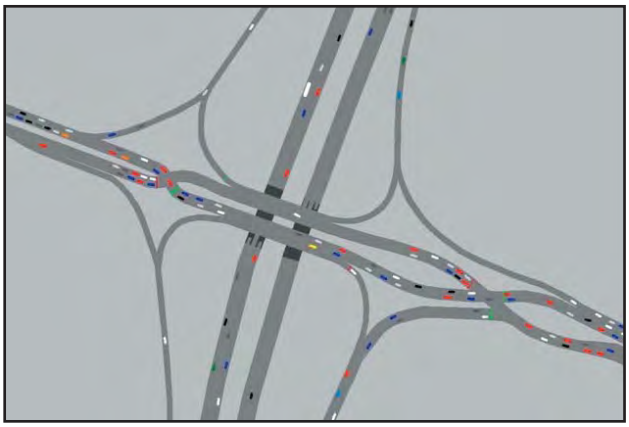
Changes were made to the default driving behavior parameters to reflect an urban environment involving close intersection spacing and higher density. These were made based on engineering judgment and experience modeling other regional urban areas. The driver behaviors were applied to both the RFP and DDI alternatives so that a fair comparison could be made.

The process used to analyze the DDI with VISSIM began with a link-node diagram coded in Synchro to generate geometry, volume, and timing files that could be used to generate the VISSIM files. All volume levels in the RFP were used for the analysis, including weekday volumes, weekday volumes plus 15 percent, weekday volumes plus 30 percent, and weekday volumes plus 50 percent.

Manual coding within the VISSIM files was necessary to accommodate the variables and random scenarios of the proposed DDI to provide a thorough model. Upon completion of the VISSIM files, visual error checking was conducted. Seeding times of 15 minutes were used and the VISSIM models were run five times prior to averaging and processing the data.

4.3.1.2 – Analysis Results

For comparison purposes, and because VISSIM and Synchro typically produce varying results, a VISSIM model was created for Option C1: PARCLO with a Split-T intersection to the west as found in the approved *Interchange Modification Report for Interstate 581 and Valley View Boulevard*, referred to as RFP (VISSIM) in this analysis. Click on the video clip included on the CD submitted with this proposal package to run a thirty second clip of the VISSIM model.



The DDI maintains the levels of service as compared to the design proposed in the RFP.

The results of the analysis show that the DDI performs the best between the two interchange designs under the base weekday volumes and all surge levels considered in the IMR. By movement, the DDI serves turning vehicles (vehicles destined to I-581) better than the original interchange included in the RFP.

As the volumes increase, the DDI interchange shows an advantage over the original interchange design. The overall intersection delays show that as volumes increase (i.e., from base to +15 percent, to +30 percent, to +50 percent), delays at the original interchange design increase at a greater rate than those at the DDI.

For example, at the northbound ramp, the intersection approach delay in the RFP model

increases by 86 seconds when the volumes increase from base weekday to +30 percent.

The DDI model shows an increase of two seconds for the same increase in volumes. At the southbound ramp, the ability of the DDI to handle increased volumes is also better than the RFP.

SPOTLIGHT ON DDI

The DDI concept is compliant with RFP requirements for levels of service.

The results of the analysis show that the DDI has a higher capacity than the interchange design in the RFP, suggesting that the design supports future growth without additional improvements. There are no circumstances under the DDI option where individual movement or approach delays exceed 80 seconds of delay. Under the RFP design, there are numerous delays greater than 80 seconds, resulting in LOS F.

Table 1 and Table 2 are revisions to our original technical proposal.

4.3.2 – Design Concept Success Factors

The DDI design accommodates left-turning movements at signalized, grade-separated interchanges of arterials and limited-access highways while eliminating the need for left-turn phasing. On the arterial, traffic crosses over to the left side of the roadway between the nodes of the interchange. Two-phase traffic signals are installed at the crossovers. Once on the left side of the arterial roadway, vehicles can turn left onto limited-access ramps without stopping and without conflicting with through traffic. The following subsections will address how our design concept meets key project success factors including **safety and operations**, **construction impacts**, **public acceptance**, **future inspection and maintenance**, and the **future extension** of Valley View Boulevard.

Table 1: RFP Interchange VISSIM Results

Approach	Movement	Weekday		Weekday +15%		Weekday +30%		Weekday +50%	
		LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
NORTHBOUND RAMP TERMINAL									
Valley View Eastbound	Left	F	122	F	120	F	129	F	118
	Through	A	2	A	2	A	2	A	7
	Approach	C	34	C	35	D	37	D	38
Valley View Westbound	Through	B	18	B	18	C	20	C	27
	Right	A	5	A	6	A	7	B	10
	Approach	B	16	B	16	B	18	C	24
I-581 Northbound Off-Ramp	Left	E	63	F	94	F	107	F	107
	Right	E	69	F	149	F	170	F	171
	Approach	E	67	F	134	F	153	F	154
Overall	-	**D**	**39**	**E**	**63**	**E**	**69**	**E**	**70**
SOUTHBOUND RAMP TERMINAL									
Valley View Eastbound	Through	C	26	C	27	C	30	D	43
	Right	B	19	B	20	C	24	D	37
	Approach	C	23	C	24	C	27	D	40
Valley View Westbound	Left	B	14	B	15	B	15	D	44
	Through	A	8	A	9	A	9	A	7
	Approach	B	18	B	19	C	21	D	44
I-581 Southbound Off-Ramp	Left	E	68	E	68	E	71	E	80
	Right	B	17	B	19	B	17	C	21
	Approach	D	51	D	52	D	54	E	62
Overall	-	**C**	**23**	**C**	**23**	**C**	**26**	**D**	**38**

Table 2: DDI Interchange VISSIM Results									
Approach	**Movement**	**Weekday**		**Weekday +15%**		**Weekday +30%**		**Weekday +50%**	
		LOS	**Delay (sec)**	**LOS**	**Delay (sec)**	**LOS**	**Delay (sec)**	**LOS**	**Delay (sec)**
NORTHBOUND RAMP TERMINAL									
Valley View Eastbound	Left	A	1	A	1	A	1	A	2
	Through	B	18	B	20	C	22	C	27
	Approach	B	13	B	15	B	16	B	20
Valley View Westbound	Through	B	19	C	23	C	28	C	33
	Right	A	4	A	6	A	8	B	11
	Approach	B	17	C	22	C	26	C	31
I-581 Northbound Off-Ramp	Left	B	19	B	19	C	21	C	22
	Right	B	16	B	18	B	18	C	21
	Approach	B	17	B	18	B	19	C	21
Overall	-	**B**	**16**	**B**	**19**	**C**	**21**	**C**	**25**
SOUTHBOUND RAMP TERMINAL									
Valley View Eastbound	Through	C	21	C	23	C	25	C	29
	Right	A	9	B	12	B	18	C	23
	Approach	B	18	C	20	C	23	C	28
Valley View Westbound	Left	A	2	A	3	A	4	A	5
	Through	B	20	C	23	C	29	D	36
	Approach	B	12	B	14	B	17	C	21
I-581 Southbound Off-Ramp	Left	B	12	B	12	B	18	D	50
	Right	A	7	B	14	C	29	E	80
	Approach	A	8	B	13	C	26	E	70
Overall	-	**B**	**14**	**B**	**16**	**C**	**21**	**C**	**32**

4.3.2.1 – Safety and Operations

A DDI manages traffic increases as the turning volumes increase. In addition, the DDI lessens the impact of merging vehicles onto the freeway by metering traffic; thereby, creating smaller platoons entering the freeway mainline. Each signal within the DDI operates as a two-phase signal, which allows for shorter cycle lengths and decreased lost time per phase.

The DDI configuration reduces conflict points and crash conditions including rear end and right angle. The DDI, much like a roundabout, keeps traffic moving at slower speeds which reduces the severity of other crashes.

4.3.2.2 – Construction Impacts

The DDI will be constructed without impacting the existing interchange operations. It reduces the footprint of the interchange and limits construction impacts as follows:

- Reduces impacts to Lick Run, thus allowing more of the stream to remain in its natural state
- Eliminates impacts to the existing timber shared use path bridge across Lick Run at Norris Drive
- Eliminates the need for the acquisition/ demolition of residential structures, thus eliminating the need for hazardous materials, inspections, and abatement/removal
- Reduces impacts to existing utilities
- Requires less disturbance of the existing shared use path along Lick Run
- Shortens the southbound I-581 deceleration lane by 900 feet

4.3.2.3 – Public Acceptance

The LANE/STV team has included a public hearing as part of the schedule to update the public on the design revisions. We anticipate a

positive response from the public because the DDI provides a lower cost, innovative design that will reduce ROW and environmental impacts. The DDI provides the public with an interchange configuration that functions at equivalent levels of service while meeting the project goal to complete the interchange and provide for the future extension of Valley View Boulevard.

The LANE/STV team understands the importance of public understanding and acceptance of the DDI concept. It is crucial to engage all stakeholders, public and private alike, to educate them on a concept that they are not likely to have seen before. This educational process will inform stakeholders and the public at large as to the safety, constructability, and financial value inherent in the acceptance of the DDI concept. This has proven vital in the locations where DDIs are moving forward into design and construction. The following subsections address two key topics related to public acceptance — the revision of the Categorical Exclusion (CE) and the revision of the Interchange Modification Report (IMR).

4.3.2.3.1 – CE Revisions

In light of our revised interchange configuration, it will be necessary for us to re-visit the NEPA document developed for the original interchange concept. By re-evaluating the CE, we will confirm that the document captures the revised action and the impacts associated with it. To accomplish this, the LANE/STV team will schedule an early kick-off meeting to review the document and identify changes that may be required to reflect the new interchange configuration.

Our early assessment has identified the following elements that will require updating and re-analysis: traffic and operational analysis of the new configuration, revised noise analysis, impacts to ROW, impacts to Lick Run, and impacts to the Lick Run Greenway Trail. We believe the revised analysis will show the environmental impacts for the proposed improvements will either remain unchanged or show improvements such that impacts are lessened. It has already been shown in the preliminary VISSIM analysis that the proposed DDI will maintain levels of service for many of the interchange segments. This will be reflected in the revised environmental document. The revised traffic analysis will inform the noise analysis, which will be updated to reflect the new operational characteristics being proposed.

Positive impacts to ROW acquisition have been previously identified. We expect the number of residential relocations to be reduced to **zero**. **The proposed interchange will result in no residential relocations.**

Lastly, impacts to Lick Run and the Lick Run Greenway Trail will likewise be positive. The RFP plans identified 941 linear feet of stream relocations.

SPOTLIGHT ON DDI

The DDI provides the public with an interchange configuration that functions at equivalent levels of service while meeting the goals of the project to complete the interchange and provide for the future extension of Valley View Boulevard.

Our DDI configuration only requires 150 linear feet of stream relocation. The small amount of ROW take is the same as that indicated in the VDOT RFP plans.

Working closely with VDOT, the LANE/STV team will initiate informational meetings with previously identified stakeholders including citizen's groups, adjacent land owners, and business entities. Mailings will also be used to communicate the proposed changes. These early communication efforts will be used to inform the public of the positive changes that will occur under the proposed DDI.

The public involvement program will culminate in a public informational meeting that will allow for public input to the environmental process.

The last step will be to finalize the revised document and submit it to VDOT and FHWA for review and approval. Comments received will be incorporated and the document resubmitted for signature. The final approved document will be used to inform the IMR.

4.3.2.3.2 – IMR Revisions

A revised interchange configuration will require the LANE/STV team to review prior work and revise the IMR to reflect the access improvements proposed by our team. This work will be executed in close coordination with the revision of the CE due to the shared basic analysis, however, the analysis required for the IMR will be taken to a higher level of investigation and presentation in accordance with VDOT and FHWA requirements.

The initial effort will be a scoping meeting with VDOT and FHWA to identify early on the level of effort and confirm agreement on the scope of work to complete the IMR.

The initial justification will remain valid. The LANE/STV team's goal will be to demonstrate, through the IMR process, the traffic improvements that will occur under the proposed configuration and to provide the supporting documentation to ensure a streamlined and quick approval of the revised document.

The revised analysis will focus on the following elements: traffic analysis, operations analysis, functional plans, signing plans, maintenance of traffic plans, and other supporting documentation.

FHWA's *Policy on Access to the Interstate System* provides the requirements for the documentation necessary to substantiate changes in access to the interstate system. Since VDOT has already attained approval for an IMR, the LANE/STV team will focus on updating this document and addressing FHWA's eight policy points. These eight policy points form the core of the narrative of the IMR and our initial assessment of each is as follows:

Policy Point Nos. 1, 2, 5, 6, 7, and 8: We do not envision substantial changes to the narrative addressing these policy points.

Policy Point No. 3: We will update the freeway analysis using CORSIM and HCS. We will need to do this regardless if the gore spacing changes because we may be varying the platoons merging onto I-581. We will likewise update the local street analysis using Synchro based on the new traffic control/configuration. We will also update the safety analysis and signing plan.

Policy Point No. 4: We will update the design requirements and revise the current list and identify any new design exceptions. During this process, we will revisit and revise the design criteria as appropriate. Since there is limited guidance within the United States as to the applicability of these criteria to a DDI, we will work closely with VDOT and FHWA to review these sections to properly identify and present the approach.

It is anticipated that this process will take approximately six months, however, given the familiarity of the interchange by VDOT and FHWA due to prior study efforts, we expect that this process can be compressed and may be accomplished in less time. Regardless, our schedule reflects the six-month time frame, which is built-in to the overall schedule. Because much of the work used to develop the revised IMR is related to the final design effort, we do not believe that completing the IMR process for the new configuration will impact the final delivery of the project to VDOT.

4.3.2.4 – Future Inspection and Maintenance

The design of the rehabilitation and widening of the bridge carrying Valley View Boulevard over I-581 is intended to provide VDOT with a structure that reduces the need for future inspection and maintenance. **The DDI concept enables us to reduce the amount of bridge widening work required, which reduces the overall construction cost of the bridge as well as long-term bridge maintenance costs to VDOT (i.e., less square footage of bridge deck to maintain).** The construction of the bridge will also utilize durable materials such as weathering steel, low permeability concrete, corrosion resistant reinforcing steel and concrete protective coatings such that the need for future maintenance is minimized.

Joints will be eliminated on the structure by utilizing integral abutments and continuous spans. The existing girders will be strengthened to achieve a satisfactory bridge load rating for the final bridge configuration as well as during all stages of construction. The structure also does not require deck drains.

4.3.2.5 – Future Extension of Valley View Boulevard

The LANE/STV design concept allows for the extension of Valley View Boulevard in the future. All traffic analyses included the highest projections, which considered the extension of Valley View Boulevard as well as access to the undeveloped portion of land adjacent to I-581.

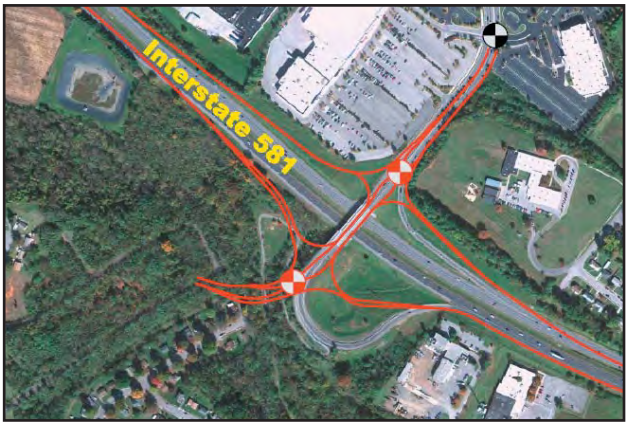
Stub-outs will be constructed to minimize the amount of tie-in work necessary, and the shared use path will be constructed so that minimal disruptions will occur. The signal for the west intersection will not be required at this time. As this was identified in the RFP,

the LANE/STV team proposes constructing portions of the conduits and junction boxes to support the ultimate traffic signal. The portion of the traffic signal which supports lighting needed on opening day will be included.

The following narrative subsections meet and/or exceed all requirements listed in the *Design Criteria Table, Part 2, Attachment 2.3* including the revisions presented in the *Changes to RFP Requirements* dated September 5th, 2012.

4.3.3 – Conceptual Roadway Description

The technical proposal plan set includes key elements of the roadway design plans such as typical sections, horizontal and vertical elements, lane and pavement widths, traffic barrier, limits of construction, drainage features, and structure details. The image below presents a depiction of our proposed DDI configuration.



A DDI can significantly improve traffic operations compared to more traditional designs.

The LANE/STV team has made revisions to the RFP plans as a result of the DDI design concept. These revisions are further discussed below. The LANE/STV design concept is compliant with VDOT RFP requirements. **The roadway will be maintained at all times during construction.**

4.3.3.1 – I-581

I-581 is classified as an Urban Interstate with a minimum 60 MPH Design Speed, TC-5.01R and Standard GS-5 Freeway. In general, the proposed construction along I-581 remains as shown in the RFP plans and consists of widening both the north- and southbound directions to provide a 12-foot auxiliary lane and a 12-foot paved shoulder. As shown in the plan set, the southbound off-ramp is relocated to the northwest quadrant of the interchange and, as a result, the diverge is moved 900 feet north and the widening along southbound I-581 is reduced accordingly.

4.3.3.2 – Interchange Ramps

Significant design refinements and enhancements have been made to the interchange ramps to accommodate the improved DDI design concept. These refinements have been incorporated to create a more efficient interchange, provide superior safety, and reduce environmental, utility, and ROW impacts. AASHTO guidance for design speeds for at-grade terminals "should be predicated on near-minimum turning conditions". In addition, industry guidelines for the DDI calls for the design speed to be reduced through the interchange for traffic calming. It is recommended that the design speed be reduced by 5 to 10 MPH. The interchange ramps are classified as such with a minimum 20 to 25 MPH design speed for the ramp terminals and a 30 MPH design speed for the remaining portion of ramps, utilizing TC-5.01R and Standard GS-R. Sufficient width has been provided to allow for a WB-67 to traverse the interchange.

SPOTLIGHT ON DDI

The DDI concept is compliant with all RFP requirements related to design speeds.

4.3.3.3 – Valley View Boulevard

As with the Interchange Ramps, significant design refinements/enhancements have been made to Valley View Boulevard as a result of the proposed DDI. Valley View Boulevard is classified as an Urban Major Collector with a minimum 35 MPH design speed, TC-5.04ULS and Standard GS-7. Valley View Boulevard will be widened to provide two through lanes in each direction, but instead of dual left turn lanes through the interchange, only single left turn lanes will be required. Similar to the interchange ramps, a reduced design speed of 30 MPH is provided for the crossovers to allow for traffic calming.

4.3.4 – Bridge and Retaining Wall Structures Concepts

This project includes the rehabilitation and widening of the bridge carrying Valley View Boulevard over I-581 (Bridge B627) as well as several retaining walls. The bridge and retaining walls will be designed in accordance

with the AASHTO *LRFD Bridge Design Specifications*, 5th Edition, 2010; 2010 *Interim Specifications*; and the VDOT *Modifications and the Additional Substructure and Foundation Criteria* included in the RFP (Attachment 2.2A). The HL-93 loading will be used for the live load design capacity of the rehabilitated and widened structure. VDOT's Standard Details and Design Aids will be used to the maximum extent possible during plan development.

4.3.4.1 – Bridge B627 Superstructure

Bridge B627 is a 2-span continuous, 240-foot long steel plate girder bridge with a composite reinforced concrete deck with an out-to-out width of approximately 64 feet. The existing structure was originally designed and constructed to accommodate traffic to/from SBL I-581, however only a single lane of traffic to SBL I-581 is currently located on the structure. There is also a 10.6-foot shared use path located on the north side of the structure that is separated from the travel lane to SBL I-581 by an F-shape parapet with pedestrian fencing. The existing structure also has three light poles on the shared use path side of the structure.

The DDI concept proposed by the LANE/STV team requires a narrower bridge superstructure than that of the interchange design concept included in the RFP documents, which reduces the overall construction cost of the bridge as well as long-term bridge maintenance costs to VDOT. The existing bridge will be widened to accommodate a 17.5-foot shared use path and six 12-foot lanes divided by an 8-foot raised median. The subsequent rail-to-rail width of the widened structure will be 113.5 feet, which includes the appropriate curb and gutter offsets in accordance with VDOT's *Manual of the Structure and Bridge Division*, Volume V, Part 2, *Design Aids*, Chapter 6, *Geometrics*.

The superstructure of the widened portion of the bridge will consist of continuous structural steel plate girder spans with a composite reinforced concrete deck. An 8.75-inch thick deck will be used for the widened portions of the bridge to match the existing deck slab thickness, which was designed under VDOT's *Metric Design Criteria*. All structural steel will consist of ASTM A709 Grade 50W (weathering steel) and be painted in accordance with Section 411 of the 2007 VDOT *Road and Bridge Specifications*. The finished paint color will be gray, 595-26081, to complement the existing bridge unless another color is desired by VDOT. The VDOT Standard BR27C-10 Railing and Pedestrian Fencing (Type B) will be used on the shared use path side of the bridge and the VDOT Standard BR27C-1 Railing will be used on the opposite side of the bridge. The superstructure will be designed to accommodate a lighting system, including supports for light poles and a bridge conduit system for lighting and traffic signals. In addition, four 3-inch diameter conduits will be placed on the underside of the bridge between girders. Low permeability concrete with a compressive strength of 4,000 psi will be used in the bridge deck, shared use path, median and railings. Deck drain assemblies are not required.

Closure pours will be made to accommodate the dead load deflection and to limit differential deflection between the existing and widened portion of the deck. The closure pours will be located such that they are partially supported over the girders rather than solely relying on the transverse reinforcement for support. An expansive concrete mixture will also be used to minimize any opening of the construction joints due to shrinkage of the concrete. In addition, slotted connections will be used in the cross frames connecting the new and existing girders to account for differential deflections and allow for field adjustment. Both LANE and STV have completed numerous bridge widening projects using similar techniques. Due to the out-to-out width of the ultimate structure being 115.2 feet, the bearings, cross frames, and substructure will be analyzed taking into account the effects of thermal expansion/contraction in the transverse direction. The introduction of a closure pour between the widened and existing portions of the bridge will minimize the effect of stresses becoming permanently locked into the structure. To achieve optimal results, the temperature at the time of placement will need to occur as close to 60 degrees Fahrenheit as possible.

The existing girders will be strengthened to provide a satisfactory load rating using the Load and Resistance Factor Rating (LRFR) method in accordance with the RFP.

The following methods of strengthening the existing girders will be employed to yield a satisfactory load rating of the existing girders:

- Additional transverse stiffeners will be added near the abutments and pier to increase the shear resistance
- Additional lines of cross frames will be added near the abutments and pier to control lateral torsional buckling
- Existing bearing stiffeners at the abutments will be modified to meet LRFD requirements

The existing bridge superstructure will be modified to eliminate bridge joints at the abutments. Portions of the existing deck slab, abutment backwalls and approach slabs will be reconstructed and/or modified to accommodate a deck slab extension style of abutment (integral abutment). Other repairs and modifications to the existing superstructure include:

- Replacing all loose bolts in the girder splices and cross frames. Note: The existing structural steel shop drawings included with the RFP indicate that galvanized A325 Type 1 bolts were used in the existing structural steel framing. As such, all loose bolts will be replaced in lieu of simply re-tightening them since re-torquing/re-tightening galvanized A325 Type 1 bolts is not allowed by the 2007 VDOT R*oad and Bridge Specifications* since they are not ductile enough to undergo a second pretensioned installation
- Replacing all damaged and/or short bolts on the existing girders and cross frames

To address cracking in the existing bridge deck and improve the rideability and appearance of the overall widened/repaired bridge deck, all of which were concerns that were brought to VDOT's attention during our Proprietary Meeting, a uniform layer of a VDOT approved thin bonded epoxy overlay will be placed over the entire riding surface of the final bridge deck (existing and newly widened).

A bridge load rating will be performed for each stage of construction using AASHTOWARE Virtis software in accordance with VDOT's IIM-S&B-86. A load rating analysis and report will be submitted to VDOT prior to superstructure construction and the opening of the structure to traffic. Load ratings performed during construction will include construction loadings as applicable.

4.3.4.2 – Bridge B627 Substructure

The existing abutments and pier will be widened to accommodate the widened superstructure configuration described above. Portions of the existing abutments and retaining walls will be partially demolished and reconstructed to accommodate the widened structure. The existing bridge will be modified to eliminate bridge joints at the abutments. This will entail the reconstruction and modification of the existing abutment backwalls and approach slabs to accommodate a deck slab extension style of abutment (integral abutment).

The widened portions of Abutments A and B will consist of a cantilevered abutment similar in design to the existing abutments. The stem of the abutment will be supported by a footing founded on steel H-piles driven to refusal. The embankments for the approach roadway and ramps will be retained using mechanically stabilized earth (MSE) walls. The MSE walls will extend out parallel to I-581 at both abutments. The MSE walls will be set back from the front face of the abutment to provide a clean break line between the cast-in-place abutment breast wall and the MSE wall panels, which is similar to the appearance of the existing bridge except that U-back wing walls were used. The MSE walls will also receive a rustication pattern resembling Rustic Ashlar.

The MSE walls will be set back from the front face of the abutment, similar to the appearance of the existing bridge.

To accommodate the wider superstructure, a new independent multi-column pier will be constructed on the shared use path side of the bridge and

a single-column pier will be constructed on the opposite side. The pier columns will be supported by drilled shafts that are socketed into the underlying bedrock. Drilled shafts offer several advantages over a traditional pile footing in that costly temporary shoring is eliminated, less time is needed for construction in the median, and impacts to traffic along I-581 are reduced. The appearance of the widened portions of the pier will also mimic the existing pier.

As part of the bridge widening work, the existing substructure will also be rehabilitated during construction. The LANE/STV team has identified the following repairs:

- Repair of spalled and delaminated concrete surfaces
- Repair of structural and dormant cracks
- Installation of galvanic anode units to control the rate of corrosion in the reinforcing steel
- Clean and wash the bearing seats at the abutments and pier

The LANE/STV team recognizes that the aesthetics of the widened portions of the structure are important. As such, all new and existing concrete substructure elements, except MSE walls, will receive a decorative protective coating from VDOT's Approved Products List. The protective coating is designed to seal the concrete from moisture, aid in the protection of the reinforcing steel, and enhance the appearance of the structure.

STV's design staff recently used similar techniques for successful repairs to the Fredericksburg Station in Fredericksburg, VA. A concrete protective coating was applied to portions of the structure that were being repaired to aid in the protection of the structure and to provide uniformity of color between the concrete repairs and the existing structure.

Prior to the start of construction on the bridge repair work, an inspection of the bridge will be performed to identify, mark, and inventory the necessary repairs to both the superstructure and substructure. The bridge inspection will be completed by one of STV's NBIS-certified bridge inspectors and assisted by members of the bridge design staff.

New and existing concrete substructure elements will receive a decorative protective coating, like the one on Fredericksburg Station above. (Top photo - before, bottom photo - after)

4.3.5 – Retaining Walls

Several retaining walls are required on the project to keep earth embankments within the proposed ROW limits and to minimize impacts to existing utilities, drainage ditches, and streams. The VDOT Standard RW-3 gravity retaining wall will be used to the greatest extent possible where the exposed wall height does not exceed ten feet. MSE walls will be utilized for walls exceeding an exposed height of ten feet. All retaining walls will receive a rustication pattern resembling Rustic Ashlar.

4.3.6 – Sound Walls

The RFP Conceptual Plans identified three sound walls along I-581 that are required. The sound walls were identified as Walls 1, 4, 5, 6, and 7 and predominately border residential areas. It is noted that Walls 4/5 and Walls 6/7 are considered as one wall each although they are not connected.

Wall 1 is located along the western side of I-581 between Sta. 166+00 and Sta. 177+00. Walls 4 and 5 are located along the eastern side of

I-581 between the I-581/Valley View Boulevard Interchange and the Liberty Road overpass. Walls 6 and 7 are located along the western side of I-581 between the I-581/Valley View Boulevard Interchange and the Liberty Road overpass. It is anticipated that the DDI design concept proposed by the LANE/STV team will have no adverse impact on the location of these sound walls nor warrant any additional sound walls. All sound walls will be designed in accordance with the *Special Provision for Sound Barrier Walls* that was included in the RFP. The finish on the roadway and landowner's sides of the walls will receive an Ashlar stone finish.

4.3.7 – Surveying

The LANE/STV team will update and complete the survey in accordance with the scope of work. Once updated, the final topographic survey will be used to develop base mapping for the project limits. This survey will be structured to supplement existing surveys provided by VDOT or will be developed independently as required to advance the design.

Special emphasis will be placed on verifying and obtaining information on the following:

- Underground utilities
- Drainage and utility features
- Physical structural constraints
- Obstructed areas, as required
- Natural and constructed planimetric features

In preparation of topographic surveys, we will verify the location of utility appurtenances. Gravity systems (storm/sanitary) will be opened and interior data recorded. Depth, pipe size and, when required, structure condition information will be annotated and/or photographed. Closed systems will be compiled from record information where available.

We will research and confirm the existing ROW and boundaries of adjoining properties. ROW will be based upon VDOT's provided survey information and the minimized impacts of the proposed design. Boundaries for adjoining properties will be depicted based upon field ties to parcel/subdivision monuments. Existing easements will be depicted based upon existing utility field location and record maps. In summary, our survey teams will:

- Verify existing data by performing horizontal and vertical checks of the existing control and spot-checking DTM for accuracy
- Finalize existing survey and acquire additional survey data to accommodate proposed revisions to the project concept
- Stake boreholes, stake utility test hole locations, and construction stakeout
- Stake existing and proposed ROW and easements for acquisition as required

4.3.8 – Sidewalk/Trail

The proposed Lick Run Greenway Trail will be constructed in a similar configuration to the RFP plans along the north side of Valley View Boulevard. On the west side of I-581, the path crosses the southbound off-ramp and proceeds north along the off-ramp in a similar configuration to the RFP plans. **As an improvement over the RFP plans, through the use of retaining walls, a minimum 100-foot radius is maintained, with a maximum grade between 4 and 5 percent for the length of the trail.** The proposed trail will tie in to the existing trail along the stream and allows for less disturbance along the existing Lick Run trail.

A flashing beacon will be placed on the I-581 southbound off-ramp before the proposed trail crossing. The beacon will be actuated by trail users to alert motorists that pedestrians are crossing the ramp ahead. The beacon will stay on flash mode for a duration that is calculated in accordance with VDOT standards. Applicable trail crossing warning signs and high visibility crosswalk markings will be utilized to further delineate the crossing. Thermoplastic rumble strips or other devices determined beneficial by VDOT will be considered in the final design.

The trail will be maintained at all times during construction. The existing trail alignment will be utilized as much as feasible. A temporary trail alignment will be necessary while the I-581 southbound off-ramp is being constructed. This temporary alignment will continue the trail down the existing I-581 southbound on-ramp and utilize switchbacks to meet the existing trail alignment. The temporary alignment will be designed to meet

geometric design standards in accordance with VDOT specifications. The trail will also shift on Valley View Boulevard to allow construction of the northern portion of the bridge and roadway. During these phases, the trail will be maintained between the workzone and the travel lanes, utilizing temporary barrier placement to protect trail users on both sides of the trail. Temporary lighting will be placed to achieve required lighting levels on temporary alignments, and other safety features such as fencing, railing, signage and markings will also be placed as needed.

4.3.9 – Drainage

The proposed drainage systems will be designed in accordance with the VDOT *Drainage Manual*. All existing pipes and box culverts that are to be utilized in the proposed design will be restored to a 75-year life span. The fact that open cut of I-581 is not permitted will be a major factor in deciding whether to replace, repair, or line the existing pipe or box culvert. If pipe lining is chosen as the most appropriate rehabilitation measure, the outfall protection for the pipe outlet will be carefully analyzed due to the increased outlet flow velocity and erosive force resulting from the smoother pipe interior. The hydraulic adequacy of all existing cross drain culverts will be analyzed, and all outfalls will be analyzed to ensure conformance with MS-19 channel adequacy requirements. All discharge points and outfall locations will be field inspected for condition and stability. If eroded and unstable sections are discovered, they will be stabilized by placing an appropriately sized riprap lining within the channel.

4.3.10 – Stormwater Management and Erosion and Sediment Control

The DDI results in less impervious area than the original RFP design, thus decreasing the stormwater management (SWM) requirements for the project and impacts to local water quality and stream channel erosion. Two extended-detention basins (located at Sta. 182+50, Rt. I-581 and south of the proposed on-ramp for I-581 southbound) will be proposed to satisfy the project's SWM requirements. Because the project is located within potential karst terrain, the basins will be designed to minimize infiltration of surface runoff into the ground and may utilize impermeable liners based on the results of geotechnical investigations. The impervious area draining to the basin south of the I-581 southbound on-ramp will be maximized by extending the proposed drainage systems along Valley View Boulevard and the DDI.

The DDI also results in a more advantageous location for a proposed SWM facility south of the I-581 southbound on-ramp as compared to the original RFP design location. There is more available area for a SWM facility at the new location. This allows for greater flexibility in the basin layout and is easier to provide maintenance access and aesthetically pleasing grading and landscaping. The greater area also increases the likelihood that enhanced extended-detention can be used to increase the pollutant removal efficiency of the basin and further reduce the project's impact to the environment. The new location will also result in a significant amount of excavation of the existing roadway embankment which could be used towards the project's proposed embankment needs, as well as reduce the length of the 60-inch specially designed pipe since the basin will be closer to Lick Run.

The erosion and sediment control (ESC) design will utilize several temporary sediment traps and/or basins and will be located to minimize impacts on existing utilities and drainage. ESC plans will be developed for each stage of construction to allow for continuous mitigation throughout the construction process. Where possible, proposed stormwater basins will be utilized during construction as sediment basins; this will reduce the amount of required grading and allow for a fluid transition between erosion control and water quality control. Because there are large fill slopes throughout the project area, adequate diversions and sediment control will be critical to preserving the downstream water quality. Maintenance of stream flow will be designed for the Lick Run stream relocation work and where existing baseflow is present within existing culverts to be improved.

4.3.11 – Temporary Traffic Control Devices

Temporary traffic control devices are addressed in detail in **Section 4.5.2 – Transportation Management Plan**.

4.3.12 – Roadway Bridge and Trail Lighting

Lighting will be maintained at all times during construction. Analysis and design of the replacement of the existing light fixtures will be conducted throughout the limits of the project. The lighting system will be designed in accordance with the current edition of VDOT's *Road and Bridge Specifications* and requirements in the National Electric Code (NEC). Lighting analysis will include the measurement of proposed surface illumination levels including average illuminance, uniformity ratio, and veiling luminance to determine adequate pole spacing and luminaire wattage. We will employ state-of-the-art computer software, such as AGi32, to perform the lighting analysis and prepare the photometric plans. The principal criteria for the design of lighting systems will be the Illuminating Engineering Society of North America (IESNA) and American Association of State Highway and Transportation Officials (AASHTO) average illuminance, uniformity ratio, and veiling luminance. The proposed lighting plan will include all existing features (utilities, landscaping, ROW and existing lighting equipment); proposed geometrics; as well as the proposed lighting layout with pole and luminaire locations, spacing, numbers, heights style and schedule per VDOT standards, Appalachian Power Company (APCO) standards and/or other agency standards if lighting is impacted on other facilities.

All lighting within the limits of the interchange along I-581, on- and off-ramps, Valley View Boulevard, as well as the Lick Run Greenway Trail will be analyzed as part of this project. LANE/STV will use the existing lighting plans provided by APCO to develop conceptual design plans that will detail the proposed light fixture locations including pole heights and styles as well as luminaire style and wattages. The LANE/STV team will coordinate with APCO to determine electrical service locations for lighting along all facilities.

The DDI concept results in significant cost savings compared with the RFP's parallel lighting design scheme. The DDI concept allows for a smaller bridge structure with an 8-foot median between opposing travel lanes. The number of poles required along the southbound off-ramp for the DDI configuration will be reduced. The proposed trail connection will be designed and constructed so as to maintain proper light levels during temporary conditions.

The conceptual design plans will be accompanied by proposed photometric plans. The photometric plans will detail the proposed lighting distribution of each individual luminaire with illuminance templates. All calculation points will be shown in foot-candle units and overall light levels including average illuminance, uniformity ratio, and veiling luminance will be shown for the project limits. Intersection areas will be designed to a minimum average of 2.2 foot-candles, while all other areas will be designed to a minimum average of 1.7 foot-candles.

4.3.13 – Landscape Architecture

A landscaping plan will be prepared by a Virginia-licensed Landscape Architect and submitted to the VDOT Project Manager and City of Roanoke for review and approval. All landscaping will be in accordance with the City of Roanoke's Street Design Guide and Complete Streets Policy as referenced in Section 2.1 and with the following:

- Landscaping will be designed and installed along Valley View Boulevard and the Lick Run Greenway within the project limits.
- A majority of the plant materials will be indigenous to the area and will be able to adapt and survive in roadside environments.
- Plants will require minimal maintenance and measures will be shown on the plans and in the specifications to reduce maintenance activities for the landscaping. The landscaping and architectural features will be compatible with the existing landscape adjacent to the project site and may reflect historic and cultural features of the area.
- Shade trees will be 1.5 to 2 inches caliper, ball and burlaped or container grown, not expected to exceed a 4-inch caliper in maturity (unless planted outside of the clear zone) and be planted where there is adequate space.
- Adherence to VDOT Specification Section 605 Plantings (Section VI Roadside Development).

The LANE/STV team assumes that adequate locations will be identified within the proposed ROW or temporary construction easements, and without modification to the typical section.

Class A Topsoil will be placed within the limits of I-581 mainline and interchange ramps up to the termini with Valley View Boulevard. If the quantity of Class A exceeds what is available from within the project limits, LANE/STV will be responsible for securing the material off site for use in completing the limits of Class A application. Class B Topsoil will be placed within the limits of Valley View Boulevard and the Lick Run Greenway and stream relocation.

A roadside development sheet will be developed leveraging the *Roadside Development Seed Mix* provided in the RFP Information Package and submitted to the VDOT Project Manager for review and approval prior to land-disturbing activities.

4.3.14 – Other Data Collection

The minimum pavement sections provided in the RFP have been reviewed and applied in the development of this proposal. As stated in the RFP, the LANE/STV team will confirm the pavement design during the Scope Validation Period. The minimum pavement sections have been incorporated in the roadway typical section sheets for reference.

4.3.15 – Signing and Pavement Marking Plans

Signing and Pavement Marking Plans will be developed in accordance with the latest design standards and practices, *Manual on Uniform Traffic Control Devices* (MUTCD) (including VDOT's recent Supplement), the VDOT *Traffic Engineering Design Manual*, and VDOT's *Road and Bridge Specifications*.

Designing signage and pavement markings that clearly communicate traffic patterns and lane assignments to vehicular and pedestrian traffic is critical in maximizing the benefits of the DDI, including improved traffic operations and safety. The LANE/STV team will develop plans to effectively guide traffic and minimize the potential for vehicles to make improper movements. All regulatory, warning, and guide signs, along with complimentary pavement markings, will be placed to prepare motorists for the necessary movements to traverse through the interchange area. Contrast markings will be utilized on the bridge.

SPOTLIGHT ON DDI

Designing signage and pavement markings that clearly communicate traffic patterns and lane assignments to vehicular and pedestrian traffic are critical in maximizing the benefits of the DDI, including improved traffic operations and safety.

Guide signage on I-581 and Valley View Boulevard will be designed, modified, and/or relocated to accommodate the new ramp movements as well as any impacts because of the proposed auxiliary lane widening. All proposed sign structures will be spaced in accordance with the MUTCD and VDOT's Supplement. Standard VDOT cantilever sign structures will be used for the placement of overhead signs on I-581. Partial-span sign structures will be installed on both approaches of Valley View Boulevard for the purpose of placing overhead lane assignment guide signs. One of the poles for each structure will be placed within the median islands to minimize the size of the structure. Trailblazer signs will also be utilized as required on Valley View Boulevard and off-ramps. Guide sign panels and any non-standard sign will be designed using GuidSign software. All signs and sign structures will be sized accordingly to accommodate the placement of future signs and/or overlay panels for when the interchange is eventually completed.

Existing City of Roanoke wayfinding signs and Specific Travel Service Signs (logo signs) will be maintained throughout construction. New signs will be placed as needed in both the north- and southbound directions to alert drivers of Valley View Boulevard destinations. Wherever possible, the existing individual logo panels will be placed onto new background sign panels.

4.3.16 – Signalization Plans

New Traffic Signal Plans and Traffic Signal Modification Plans will be developed in accordance with the latest design standards and practices, MUTCD, VDOT's Supplement, VDOT's *Construction Standards and Specifications*, VDOT's *Road and Bridge Specifications*, FHWA's *Traffic Detector Handbook*, the NEC, and applicable APCO and City of Roanoke standards.

Two intersections will require the following traffic signal modification plans:

- Valley View Boulevard at Valley View Crossing Shopping Center Entrance (full rebuild)
- Valley View Boulevard at Northbound I-581 Ramps (full signal construction)

The intersection of Valley View Boulevard at Southbound I-581 Ramps will be a new traffic signal installation. For the purposes of this technical proposal, LANE/STV will construct conduit, junction boxes, and pole foundations necessary for the eventual completion of a traffic signal at this location once Valley View Boulevard is extended west. It may be possible to erect selected traffic signal poles for use in lighting; any mast arm flanges will be capped so that VDOT can easily install mast arms in the future.

Signal equipment such as controller, cabinet, and uninterruptible power supply units will be designed in accordance with VDOT specifications. All equipment will be compatible and fully integrated with the City's signal system. Traficon System video detection will be placed on all mast arms. Emergency vehicle preemption will be designed using Opticom cable and confirmation lights.

Traffic signal heads and accessories will be designed to meet current VDOT specifications and MUTCD standards. Traffic signals will be the signal displays per the MUTCD. All signal heads (vehicular and pedestrian) will be LED.

Pedestrian safety will be a critical aspect of the design. All pedestrian facilities will be designed in accordance with the current Americans with Disabilities Act (ADA) sidewalk and ramp standards as well as current VDOT provisions for Accessible Pedestrian Signal (APS) push buttons and Countdown Pedestrian Signals (CPS).

Timing plans will be developed for the two functioning signals. Interconnect conduit and 18 gauge wiring will be installed between all three signals to facilitate signal coordination and promote efficient traffic operations. The timings will be designed to prevent queues from extending onto I-581.

Any temporary traffic signalization will be submitted as part of the Temporary Traffic Control Plans. All Temporary Traffic Signal Modification Plans will be submitted prior to the proposed phase to the City of Roanoke for review and approval. **Traffic signal communication and power service will be maintained for the duration of construction for all (existing, temporary and newly constructed) traffic signals.**

4.3.17 – ITS

A Dynamic Message Sign (DMS) is located in the southbound direction of I-581, approximately 0.4 miles south of Valley View Boulevard. This sign will have to be relocated due to widening for the proposed auxiliary lane. A new pole foundation will be placed at the appropriate lateral offset from the new edge of shoulder, and the existing DMS pole and panel will be relocated onto the new foundation. The placement of new conduit and wiring will also be required as part of this construction. ATR devices are also present within the project's limits and will be relocated with new conduit and wiring as needed.

SPOTLIGHT ON DDI

If you look at a picture of a DDI, it appears to be a challenge to drive through the intersection.

In reality, a DDI has pavement markings and traffic signals just like any intersection to clearly guide drivers through. The DDI allows for two-phase operation at all signalized intersections within the interchange. This is a significant improvement in safety, since no left turns must clear opposing traffic and all movements are discrete, with most controlled by traffic signals.

4.4 - Project Approach

The LANE/STV team has developed a comprehensive approach to managing, designing, and constructing the I-581/Valley View Interchange to deliver this critical project to VDOT and the public **ahead of schedule**, in a **safe and efficient manner**, while **minimizing disruption to travelers and the local community**.

Our team is comprised of experienced professionals who are committed to delivering a project that will be viewed as a first-rate example of the high quality product that can be achieved using the VDOT design-build methodology. In the true spirit of the design-build process, we have developed an alternative design to provide VDOT with a best-value project. As discussed in **Section 4.3 – Design Concept**, the LANE/STV team has proposed a **diverging diamond interchange** (DDI) in lieu of the interchange configuration in the RFP. **As shown within the plan set, the DDI configuration and the location of the western terminus of Valley View Boulevard reduces or eliminates a significant portion of the fill slopes required in the RFP document.** This allows us to significantly reduce the stream relocation and ROW impacts associated with this project.

The RFP plans identified 941 linear feet of stream relocations. **Our DDI configuration only requires 150 linear feet of stream relocation**, a net reduction of 791 linear feet. Per the Nationwide 23 Permit, impacts less than 300 linear feet do not require mitigation. **This will be a significant savings to the project, as mitigation credits do not need to be purchased.** There are also overall benefits to the project in terms of the savings relative to both design and permitting of impacts. **Section 4.4.1 – Environmental Management** details our team's approach for obtaining the environmental permits required on this project. **Furthermore, the utility impacts proposed as a result of the stream relocation and ROW impacts are no longer required with our DDI configuration.** Further details can be found in **Section 4.4.2 – Utilities**.

The following sections expand upon the approach the LANE/STV team proposes for this project. Through extensive up-front design and coordination efforts during the proposal phase, we have developed a comprehensive understanding of the project's requirements, challenges, and risks. Our team has meticulously prepared a concept plan that minimizes risk by avoiding impacts where possible and simplifying the construction sequencing of the project.

Our team's previous performance demonstrates our ability to manage risk, particularly in the areas of environmental management, utilities, and geotechnical issues through the construction phase. Together, LANE and STV have worked on **nine** design-build projects valued at over **$600 million**.

SPOTLIGHT ON DDI

The DDI configuration and the location of the western terminus of Valley View Boulevard reduces or eliminates a significant portion of the fill slopes required in the RFP document. The LANE/STV team is therefore able to significantly reduce stream relocation and ROW impacts.

Our past work history enhances our ability to effectively manage the design and construction of this project. We are confident that this interchange treatment is the most viable solution. The DDI configuration offers benefits over conventional interchange designs with its efficient two-phase operation, narrower bridge structure width, lower costs, fewer conflict points, expected increase in throughput, reduced vehicular delay, decreased speeds, and reduced environmental impact.

The LANE/STV DDI approach will save the Commonwealth up to $1 million in project-obsolete ROW and relocation costs. In addition, the immeasurable savings to human emotional and aesthetic impacts should be considered. **No homeowners will have to leave their homes, the Lick Run will continue to flow predominantly in its natural channel environment, and less utility relocations means less inconveniences for all.**

SPOTLIGHT ON DDI

Gateways to the two greenways bisecting Roanoke will be ornamented by a northern diamond and the Star of the South.

The Star City of the South's own Star of the South.

4.4.1 – Environmental Management

The I-581/Valley View Interchange project has several environmental risk factors. **The DDI concept proposed by the LANE/STV team greatly reduces the impact of these risk factors in comparison to those of the original RFP interchange design.** The design of the project will result in significant reductions in the roadway and trail fill slopes extending into Lick Run, west of the current partial interchange.

Our DDI configuration only requires 150 linear feet of stream relocation.

The overriding objective of environmental management for the project will be to coordinate all elements of the environmental permitting and clearance process with the project team during the concurrent engineering design process. We will coordinate with the appropriate regulatory authorities early and often during project development, to confirm that proposed work is consistent with modified permits and regional guidance to avoid project delays.

The following subsections outline our approach to environmental management. The tasks identified are presented in approximate sequential order of performance. There will be some overlap of activities between the tasks, as some elements of the individual tasks will be performed simultaneously.

Environmental risk management is integrated into the design process in the following ways:

- At each phase of design, the design team will coordinate with environmental permitting personnel to integrate a design that balances cost-effective roadway construction with environmental impact minimization.
- Regulatory coordination and consultation will occur early and often. Lines of communication will be established to confirm all parties are well aware of potential regulatory concerns and information requirements from the regulatory community are properly addressed.
- During construction of the relocated channel, qualified and experienced personnel will be onsite to provide construction administration of the natural channel design to verify all conditions of the USACE and Virginia Department of Environmental Quality (VDEQ) permit are met.
- Hazardous material surveys and abatement will be conducted in complete accordance with VDOT's *Road and Bridge Specifications*, thereby reducing any potential for non-compliance or regulatory involvement. **The DDI concept will significantly reduce this effort and further mitigate the risk by eliminating property takes and subsequent demolition of these houses.**
- Due to the changes in interchange configuration, a revised noise analysis and submittal of a revised Noise Abatement Design Report will be required. **It is anticipated that the DDI design concept will have no adverse impact on the location of these sound walls nor warrant any additional sound walls.**

SPOTLIGHT ON RISK

Potential delays are primarily associated with the acquisition of permits from the USACE and VDEQ. The potential for delay will be greatly reduced by effective coordination and communication between the environmental specialists and the design team.

Potential delays to the project associated with the environmental considerations are primarily associated with the acquisition of the associated permits from the USACE and VDEQ to impact jurisdiction features (stream and wetlands). The potential for delays will be greatly reduced by effective coordination and communication between the environmental specialists and the design team. Additionally,

early coordination with the permitting agencies should significantly reduce the time required to issue and implement the permits.

Potential delays associated with the impact of jurisdictional features by roadway design changes and modifications can be reduced through proactive internal team coordination and external coordination with the permitting agencies. Our team's knowledge of the permitting process will reduce the potential for delays. Any potential delays associated with construction of the natural channel system will be mitigated through effective and accurate design and real-time construction administration.

Other potential delays could be associated with the US Fish and Wildlife Service (USFWS) and Virginia Department of Game and Inland Fisheries (DGIF) requiring a survey for the Virginia (and federal) threatened and endangered species, the Roanoke Log Perch, and the state threatened species, the Orangefin Madtom. While the request for such a survey is unlikely (due to the location of the stream with respect to downstream urban receiving waters), the potential for a request cannot be accurately determined until the permit coordination is finalized.

Should a survey be required, potential delays will be mitigated by the effective design and implementation of a survey conducted by qualified and recognized professionals. Additionally, even if a survey is not required, the agencies could impose a time-of-year restriction for in-stream activities from March 15 through June 30. Accordingly, any scheduling and design of anticipated in-stream activities will address the potential for such a time of year restriction, thereby mitigating the potential for delay, should a restriction be applied.

Our preliminary assessment indicates there is limited potential for impact to cultural resources, both archeological and architectural, from the proposed project.

Should the ultimate roadway design exceed the regulatory thresholds for impacts associated with the Categorical Exclusion under the National Environmental Policy Act (NEPA), additional NEPA-related reporting and coordination may be required. To mitigate the potential for delay associated with the NEPA requirements, every attempt will be made to work within the existing threshold impacts. Should that not be possible due to site constraints, delays will be mitigated through proactive coordination with the regulatory agencies.

The following subsections outline our approach to environmental management. Tasks are presented in sequential order of performance. There will be some overlap of activities between the tasks, as some elements of the individual tasks will be performed simultaneously.

4.4.1.1 – Task 1: Jurisdictional Feature Resource Inventory

The first environmental task will be the review and modification of the resource inventory of wetland and stream features on the site. The resource inventory review will include the verification of the delineation of the wetland and stream features within the project limits. The features will be documented in accordance with USACE and VDEQ criteria. The data collected will be compiled into a Jurisdictional Delineation Report and submitted to the USACE for verification. The delineated features will be field-verified by survey and a digital layer will be created for use throughout the CADD design/drawing process.

The resource inventory will be presented to the project design team early in the design process to help assure the highest degree of **avoidance** and **minimization** of impacts to jurisdictional features. This process will be documented and will be presented to the USACE with the Water Quality Permit application (see Task 4).

4.4.1.2 – Task 2: Verification of Environmental Conditions and Determinations

Elements of this task will occur simultaneously with Task 1. All previous environmental studies and determinations will be reviewed and evaluated to determine if any additional coordination is required. **The NEPA CE will be reevaluated and revised accordingly to address reduced impacts resulting from the DDI concept plan.**

A pre-application site meeting will be coordinated with the USACE to determine if the proposed Water Quality Permitting vehicle, the Nationwide 23 Permit, is appropriate for the site and that all threshold impacts associated with the permit (< 0.5 acres of impacts) are not exceeded.

The Cultural Resources and Threatened and Endangered (T&E) Species coordination documents will be reviewed to determine if all conditions and commitments are valid and complete. Verification with any coordinating regulatory agencies will be performed.

Hazardous material surveys will be performed at the structures slated for demolition within the project limits. Surveys will include asbestos-containing material and lead-based paint surveys (if required). **This effort has been significantly reduced through our DDI concept by the avoidance of property takes involving demolition of residential structures.** Additional hazardous material conditions identified will be documented and corrective measures will be developed to mitigate those conditions.

4.4.1.3 – Task 3: Stream Relocation Design

Preliminary roadway design for the DDI concept indicates that there is a likelihood for minor relocation of Lick Run within the project limits. **The DDI concept will require only 150 linear feet of stream relocation.** The LANE/STV team will utilize natural channel design. The intent of the natural channel design will be to minimize potential impacts and associated compensatory mitigation for impacts (if any). The natural channel design will be integrated into the mitigation plan associated with permit application. This design process will be performed by team members from EEE Consulting who have designed transportation related mitigation projects for VDOT previously and who are knowledgeable about VDOT design requirements.

Andy Kassoff, **P.E.**, hydrogeologist and environmental engineer, and **John Michael Harris, Senior Environmental Scientist** will lead the natural channel design. Mr. Kassoff, as the managing principal of the EEE Blacksburg office, brings local familiarity with the region's waterways and has served on several Technical Advisory Committees for the renewal of Virginia State Regulations.

Mr. Harris brings highly relevant experience to this design task, having previously served as the VDOT Salem District Stream Team coordinator. In this capacity, he was responsible for the preparation of natural channel stream designs, permitting of the designs, and construction administration of stream design/construction.

Mr. Harris has been the primary liaison with the regulatory community and the lead designer on over 12 separate stream-related projects. While with EEE, Mr. Harris was the lead designer for a VDOT mitigation site that will provide VDOT with over 7,000 stream credits to mitigate transportation related impacts. He is also providing construction administration for that project. Mr. Harris will be the task leader for the natural channel design.

4.4.1.4 – Task 4: Permit Application

Following verification of the Jurisdictional Delineation by the USACE, a permit application will be prepared and submitted. The anticipated permitting vehicle will be the Nationwide 23 permit. This type of permit requires coordination with state and local agencies and mitigation for up to 0.5 acres of jurisdictional features. The permit application will be coordinated with USACE and the VDEQ (as required) prior to submittal and throughout the review process.

4.4.1.5 – Task 5: Permit Acquisition

Following acquisition of the permit, the team will hold a site meeting outlining permit limitations as well as documenting project commitments. This meeting will be conducted to ensure that all aspects of the permit are clearly communicated to the entire team including construction managers and superintendents to ensure strict compliance with permits and other environmental commitments during construction.

4.4.1.6 – Task 6: Project Monitoring and Compliance Certification

The team will perform permit monitoring during construction. Monitoring will be performed

to confirm that constant communication is maintained during construction operations, and to document compliance with permit requirements. Once construction operations are completed, the team will perform a final monitoring event to ensure that permit related work is complete and that work was performed in accordance with permit conditions. This monitoring event and the project monitoring record will be used to document signature of the project certificate of compliance.

4.4.1.7 – Task 7: Post-Construction Monitoring

If relocation of Lick Run is required, the team will perform post-construction monitoring to document that the stream reach is meeting success criteria. Duration and frequency of post construction monitoring will depend on permit requirements.

4.4.2 – Utilities

LANE has been an active leader on numerous high profile projects for VDOT, including the very relevant $1.5B Capital Beltway HOT Lanes D-B project, the $13M Gilberts Corner Route 50 Roadway Improvements D-B project, and the $75M construction of the Springfield Interchange Project, Phase V.

Members of the LANE team work regularly with the Western Virginia Water Authority (WVWA), as well as other known utility owners within the project area whose facilities will be impacted by the proposed project, including Appalachian Power, Roanoke Gas, Verizon, Cox Communications, nTelos, and Telcove. Over the years, LANE/STV team members have successfully worked on many VDOT utility relocation projects, which include all utilities to be affected on this project. Our utility relocation specialist, **Christopher Kocher, P.E.** will provide all designs for water and sewer relocations while coordinating the designs of private utilities with the following private utility owners.

- Water and sanitary sewer: WVWA
- Communications: Verizon
- Traffic control: VDOT
- Electric: Appalachian Power
- Gas: Roanoke Gas Company

The reduced footprint of our alternative DDI interchange design has resulted in reduced impacts to existing utilities. The table at the bottom of this page presents an overview.

4.4.2.1 – Mitigation Strategies for Known and Unknown Utility Relocations

Our utility relocation team will thoroughly investigate all identified utilities in conflict, and promptly contact all utility owners to discuss the known issues with their particular utility and what it will take to relocate their facility. In instances where we identify opportunities to avoid conflicts with existing utilities by slight, but appropriate, modifications to the roadway design, we will do so with the approval of VDOT. In instances where unexpected utilities are encountered, we will immediately contact the utility owner and determine the best solution and strive to maintain service, while keeping VDOT abreast of the issue and welcoming their input on the subject.

4.4.2.2 – Utilities Saved

The DDI design allows for the elimination of utility conflicts as follows. Each of these is associated with **Plan Sheet 11**.

Sanitary Sewer – WVWA, Cross Country – The 24-inch line currently installed parallel to Lick Run no longer needs to be relocated

The LANE/STV Approach Significantly Reduces Utility Impacts					
Plan Sheet	Utility	Owner	**Saved**	Length (lf)	Location
11	Sanitary	WVWA	**24-inch line and manholes**	580	Parallel to Lick Run
11	Sanitary	WVWA	**8-inch line and manholes**	218	Eastern End of 19th Street
11	Sanitary	WVWA	**8-inch line and manholes**	289	Eastern End of Norris Drive
11	Water	WVWA	**8-inch line**	80	Eastern End of Norris Drive
11	Gas	Roanoke Gas	**2-inch gas line**	95	Eastern End of Norris Drive

between SSMH 90 and SSMH 101. The original relocation paralleled the proposed realignment of Lick Run due to the depth of fill to be placed upon the top of the existing line and the depth of the existing manholes once tops were adjusted to finished grade. Extensive coordination with the utility owner would have been required. Pumping would have been required to maintain service during the connection of the proposed line to the existing line. A small section of the line adjacent to SSMH 90 may require encasement to protect from additional fill.

WVWA, Eastern End of 19th Street – The 8-inch line currently installed beneath Lick Run no longer needs to be relocated between SSMH 93 and SSMH 91 to accommodate realignment of Lick Run. This line would have required a steel casing for future maintenance.

WVWA, Eastern End of Norris Drive – The 8-inch line currently installed beneath Lick Run no longer needs to be relocated between SSMH 98 and SSMH 101 to accommodate realignment of Lick Run. This line would have required a steel casing for future maintenance.

Water – WVWA, Eastern End of Norris Drive – The 8-inch line currently terminating in the existing cul-de-sac no longer needs to be terminated west of the limits of Lick Run. Service would have been interrupted briefly while the line was valved off for the installation of a plug/cap and possibly a gate valve.

Gas – Roanoke Gas, Eastern End of Norris Drive – The 2-inch line currently terminating in the existing cul-de-sac would need to be terminated west of the limits of the realigned Lick Run. Service would be interrupted briefly while the line is valved off for the installation of a plug/cap.

4.4.2.3 – Utility Sequencing

By identifying all known and possible utility conflicts, our team has made it possible to determine which utilities will need to be relocated prior to and during construction. **We have determined ways to eliminate and minimize the impact to those who are served by these utilities.** See the subsections below of all identified utilities which appear to be in conflict and our conclusion of what needs to be done in each instance.

4.4.2.3.1 – Plan Sheet 3

Communication – Verizon, Sta. 163R – Protection of existing line, conduit, and duct bank will be necessary during construction along the edge of roadway. Coordination with the utility owner will be required prior to commencement of construction. It is expected that interruption of service can be avoided with proper planning.

Sanitary Sewer – WVWA, Sta. 165R – The 12-inch line currently installed beneath I-581 will need steel casing pipe extended as necessary to clear limits of proposed paving and zone of influence in fill slope for future line access and maintenance. Coordination with the utility owner will be required. It is anticipated that the needed steel casing extension can be installed without interrupting service by utilizing a split casing.

Water – WVWA, Sta. 169 R – The 20-inch line currently installed beneath I-581 will need steel casing pipe extended as necessary to clear limits of proposed paving, sound barrier wall, retaining wall, and zone of influence of retaining wall for future line access and maintenance. Coordination with the utility owner will be required. It is anticipated that the needed steel casing extension can be installed without interrupting service by utilizing a split casing. In addition, stormwater structure 3-4 will be shifted up station to avoid possible conflict with, and unnecessary installation overtop of, the existing waterline.

WVWA, Sta. 169 L – The 20-inch line currently installed beneath I-581 will need steel casing pipe extended as necessary to clear limits of proposed paving and zone influence of fill slope for future line access and maintenance. Coordination with the utility owner will be required. It is anticipated that the needed steel casing extension can be installed without interrupting service by utilizing a split casing.

Communication – Verizon, Sta. 171+50L to 175L – Relocation of the existing line in the cut area will be necessary prior to grading

activities. Coordination with the utility owner will be required and will minimize/eliminate any interruption of service. It appears that the only item this line serves is a VDOT Traffic Counter Box, therefore interruption of service may not be an issue.

4.4.2.3.2 – Plan Sheet 4

Communication – Verizon, Sta. 175L to 185+50L – Relocation of existing line in cut area and beneath proposed roadway shoulder will be necessary prior to grading activities in this area. Coordination with the utility owner will be required and will minimize/eliminate any interruption of service. It appears that the only item this line serves is a VDOT Traffic Counter Box, therefore interruption of service may not be an issue.

Traffic Counter – VDOT, Sta. 185+50L – Relocation of existing traffic counter at the edge of proposed paved shoulder will likely be necessary. Coordination with owner will be required. Interruption of service will be likely, but is not anticipated to be an issue.

VDOT, Sta. 186+50R – Relocation of existing traffic counter within the limits of the proposed paved shoulder will be necessary. Coordination with owner will be required. Interruption of service will be likely, but is not anticipated to be an issue.

Communication – Verizon, Sta. 185R to 186+50R – Relocation of existing line within limits of proposed sediment trap will be necessary prior to grading activities in this area. Coordination with the utility owner will be required and will minimize/eliminate any interruption of service. It appears that the only item this line serves is a VDOT Traffic Counter Box, therefore interruption of service may not be an issue.

4.4.2.3.3 – Plan Sheet 5

Sanitary Sewer – WVWA, Sta. 197R&L – The 12-inch line currently installed beneath I-581 will need steel casing pipe extended as necessary to clear limits of proposed paving and zone of influence in fill slopes along both sides of the highway for future line access and maintenance. Coordination with the utility owner will be required. It is anticipated that the needed steel casing extension can be installed without interrupting service by utilizing a split casing.

4.4.2.3.4 – Plan Sheet 6

Underground Electric – Appalachian Power, Sta. 208R to 210+50R – The existing line serving light poles along the edge of the existing trail will need to be abandoned and the poles removed. New lines and poles will need to be installed along the edge of the proposed trail in the vicinity of the interchange. Coordination with Appalachian Power will be required. Interruption of service will also occur and reinstatement of service will rely on reconstruction of the shared use path. Temporary lighting will be provided as necessary.

Appalachian Power, Sta. 211+50R&L – The existing line crossing bridge serving poles will need to be relocated to coordinate with the proposed bridge expansion. New lines and poles will need to be installed on the bridge for relocated trail. Coordination with Appalachian Power will be required. Interruption of service will also occur and reinstatement of service will rely on the reconstruction of shared use path on the bridge and on both sides of the bridge. Temporary lighting will be provided while future permanent facilities are constructed, as necessary.

4.4.2.3.5 – Plan Sheet 7

Sanitary Sewer – WVWA, Sta. 230R – The 8-inch line currently installed beneath I-581 will need steel casing pipe extended as necessary to clear limits of proposed paving, sound barrier wall, and zone of influence of fill slope for future line access and maintenance. Coordination with the utility owner will be required. It is anticipated that the needed steel casing extension can be installed without interrupting service by utilizing a split casing. It should be noted that the existing line currently passes beneath the wing wall of stormwater structure 7-9 and so will the proposed line and steel casing.

WVWA, Sta. 231L – The 8-inch line currently installed beneath I-581 will need steel casing pipe extended as necessary to clear limits of proposed paving, sound barrier wall, and zone of influence of fill slope for future line access and

maintenance. Coordination with the utility owner will be required. It is anticipated that the needed steel casing extension can be installed without interrupting service by utilizing a split casing.

4.4.2.3.5 – Plan Sheet 7B

Sanitary Sewer – WVWA, Intersection of Marlian Ave. & Court Street – The 6-inch line currently installed across proposed stormwater outfall channel is not anticipated to be in conflict with the proposed facility, however this should be confirmed with the utility owner. Coordination with the utility owner will be required.

Water - WVWA, Intersection of Marlian Ave. & Court Street – The 2-inch line currently installed across the proposed stormwater outfall channel is not anticipated to be in conflict with proposed facility, however, this should be confirmed with the utility owner. Coordination with the utility owner will be required.

4.4.2.3.6 – Plan Sheet 8

Underground Electric – Communication, Message Board, Appalachian Power, Verizon, VDOT, Sta. 234R – Existing message board, communication line, and power line will need to be relocated and replaced to accommodate the proposed roadway widening, grading, and sound barrier wall. Coordination with VDOT will be required to determine if the sign will need to be replaced or removed. Coordination with Verizon and Appalachian Power will be required and action taken will depend on the answer provided by VDOT. Service will need to be interrupted. If the sign is to be replaced, a temporary message board can be provided until the new one is installed.

Communication – Verizon, Sta. 243+25L – The slight relocation of the corner of sound barrier wall is recommended to avoid conflict with existing underground communication duct. If relocation of duct is required, extensive coordination with the utility owner will be required.

4.4.2.3.7 – Plan Sheet 11

Underground Electric – Appalachian Power, Cross country adjacent to existing trail – Existing line serving light poles along the edge of the existing trail will need to be abandoned and the poles removed. New lines and poles will need to be installed along the edge of the proposed trail. Coordination with Appalachian Power will be required. Interruption of service will also occur and reinstatement of service will rely on reconstruction of shared use path. Temporary lighting will be provided if necessary.

4.4.2.3.7 – Plan Sheet 12

Underground Electric – Appalachian Power, Sta. 332L to 339+50L – Existing line along the western edge of Valley View Boulevard serving traffic signals at Sta. 340 and possibly other unidentified items will most likely need to be relocated outside of roadway improvements. Coordination with Appalachian Power will be required. Interruption of service can be avoided with proper coordination and temporary services.

4.4.3 – Geotechnical

The LANE/STV team has reviewed the geotechnical requirements in the RFP and will meet those requirements in our design and construction.

As mentioned in our RFQ submission, we have proposed that **Thomas L. Brown Associates, Inc. (TLB)** will perform the geotechnical engineering for this project. TLB will be an integral member of the design and construction teams. Our geotechnical approach is structured to minimize geotechnical risks by identifying potential issues during the design stage so that mitigating steps can be taken to confirm that safe and cost-effective design solutions are executed during construction. Based on our project understanding, the most significant geotechnical features, design elements, and construction activities for this project are:

- The execution of the subsurface investigation program
- Addressing potential karst features within the existing rock
- Bridge B627 foundations (drilled shafts and driven piles)
- Addressing deep roadway fills and borrow needs/sources

- Monitoring earthwork and foundation operations during construction (construction QA/QC)

4.4.3.1 – Design Phase

As part of the design phase of this project, TLB will perform geotechnical engineering investigation, evaluation, and analyses to develop design recommendations for the design and construction of this project, in accordance with the geotechnical requirements outlined in the RFP. The following procedures will be implemented during the design phase to minimize geotechnical risks:

- Review contract documents with keen interest on identifying issues that might potentially affect costs, schedules, and constructability. Research of existing foundation types, sizes, depth and locations and determine if they interfere with new construction.
- Review and determine sufficiency of available data for developing geotechnical design parameters.
- Review available topographic maps and geologic maps, and conduct site reconnaissance to determine general geologic conditions at the site.
- Coordinate with all disciplines to evaluate existing soil data and determine supplemental soil boring locations and in-situ test locations.
- Contact Miss Utility 72 hours in advance of drilling to mark the locations of all underground utilities in the vicinity of each boring.
- Provide an engineer or geologist to perform full time supervision of the drilling and sampling, prepare detailed boring logs, and provide communication with the office from the field regarding any necessary adjustment to the soil boring and sampling program.
- Provide designs that do not negatively impact existing foundations and structures
- Recommend instrumentation to monitor detrimental movement, deformations, and vibrations

4.4.3.1.1 – Subsurface Exploration Program

Based upon the limited number of borings performed and presented in the geotechnical reports included in the RFP, the LANE/STV team has determined that additional borings will be required to conform to the requirements of VDOT's *Manual of Instructions* (MOI). TLB will conduct the final phase of the subsurface investigation program and perform the geotechnical analyses for the final design for the bridge foundations, embankments, stormwater management basins, temporary structures, drainage, sidewalk/trail, retaining walls, sound walls, culverts, signs, pavements, and any other earth-supported or earth-retaining structures or elements of highway design. The results of the investigations, analyses and geotechnical recommendations will be presented in the Final Geotechnical Report.

One of the advantages that TLB brings to the LANE/STV team is that they own their own drill rigs, which will mitigate schedule impacts during their subsurface investigation program. They own track, truck and ATV drill rigs, which are capable of accessing areas on land and water. TLB also has relevant experience working in southwestern Virginia on the Route 61 Bridge Replacement Project over the New River in Narrows, VA. During their subsurface investigation program for that project, TLB successfully completed 19 borings (13 borings on land and 6 borings in the river) in difficult terrain. TLB is also committed to working safely in highways and streets.

4.4.3.1.2 – General Subsurface Conditions

This project is located within the highly folded and faulted Valley and Ridge Physiographic Province of Virginia. The subsurface soil and rock data presented in the geotechnical reports included in the RFP exhibited miscellaneous fill, residual soils, weathered rock, and rock of the Cambrian-aged Elbrook and Rome formations, which have been mapped to contain karst features. The following is a summary of the characteristics and properties of the subsurface soil and rock data contained in the RFP:

- **Miscellaneous Fill/Disturbed Soils –** Up to 43-feet in thickness and consisting of

low-to-high plasticity clay with varying amounts of sand and gravel and poorly-graded gravel. Field Standard Penetration Test (SPT) N-values were generally in the 3 to 35 blows per foot (bpf) range.

- **Residual Soils –** Consisting of mostly low-to-high plasticity clay with varying amounts of sand and gravel. Sand with varying amounts of clay and silt and poorly-graded gravel were also observed. The SPT N-values varied widely from 0 to over 51 bpf. N-values generally less than 15 bpf were observed in the clay soils and N-values greater than 15 bpf were generally in the sand and gravel layers.
- **Weathered Rock –** Consisting of weathered dolomite and limestone fragments with varying amounts of sand, clay, or silt. SPT N-values in this material were generally over 51 bpf foot to split spoon refusal.
- **Rock –** Rock where cored, especially in the areas of the bridge borings, was described as slightly-to-highly weathered, moderately-to-very hard, moderately-to-intensely fractured, and light-to-dark gray limestone or dolomite, with Rock Quality Designation (RQD) from 0% to 86%. Karst features may exist within the Elbrook formation within the project limits. Karst features may consist of cover-collapse or cover-subsidence (depression) sinkholes that can lead to open cavities within the bedrock.

4.4.3.1.3 – Karst Terrain

To address the karst terrain, and to mitigate geotechnical risk, a detailed karst evaluation will be completed. If karst features are encountered, measures will be taken to mitigate the long-term effects of these features on the performance of the roadways, structures, and stormwater management basins.

4.4.3.1.4 – Bridge B627 Foundations

The existing bridge abutments and center pier are supported on driven steel HP12x53 piles. The new foundations for the widened substructure will be located adjacent to the existing foundations supporting the existing bridge. The LANE/STV team has determined that the widened portions of Abutments A and B will consist of a cantilevered abutment similar in design to the existing abutments and will be supported by a footing founded on steel HP12x53 piles driven to refusal. Differential settlements are anticipated to be insignificant since the piles will be driven to refusal within the bedrock. As a safeguard against negative effects of driving adjacent to existing structures and to minimize the effects of vibration, consideration will be given to driving the piles in predrilled holes and/or employing a vibration monitoring program.

To accommodate the wider superstructure, a new independent multi-column pier will be constructed on the shared use path side of the bridge and a single column pier will be constructed on the opposite side. The pier columns will be supported by drilled shafts that are socketed into the underlying bedrock. Four-foot diameter drilled shafts will be utilized within the overburden. A 3.5-foot rock socket will be socketed a minimum of 14 feet into the rock with RQD values greater than 35 percent. The top of competent rock is highly variable, but below Elevation 1037 the RQD's were observed to be greater than 35 percent. To minimize geotechnical risks associated with the karst topography, borings and rock cores will be taken at each drilled shaft and advanced sufficiently below the estimated tip of drilled shafts to verify that no karst features exist. During construction, the bottom of each drilled shaft will be inspected by the Geotechnical Engineer.

4.4.3.1.5 – Slope Stability

Embankments are required to support the new ramps and expansion of existing ramps. The *Geotechnical Engineering Data Report* indicates generally clay soils and, to lesser extent, sand and gravel at deeper depths. A slope stability analysis will be performed at representative cross-sections on cut and fill slopes to verify that slopes are stable. Critical slopes are classified as "any slope that is greater than 25 feet in height, affects or supports a structure, impounds water or whose failure would result in significant cost for repair, or damage to private property." Therefore, the high embankments required for this project will require

a minimum Factor of Safety (FS) of 1.5. It is also critical to keep surface runoff away from all slopes.

4.4.3.1.6 – Stormwater Management Basins

The proposed stormwater management basin located along the southwest side of I-581 between Stations 182+00 and 183+00 is located in the Elbrook Formation. This formation is prone to karst features. This basin will need to be lined with an impermeable membrane or clay layer to deter promotion of the creation of solution cavities. The proposed stormwater management basin located in the southeast quadrant of the I-581 / Valley View Boulevard Interchange is located in the Rome Formation and is less prone to karst features.

4.4.3.2 – Construction Phase

During the construction phase of this project, TLB will participate in all applicable construction QA/QC activities and verify that geotechnical requirements are incorporated, observed, and fulfilled. TLB will visit the site during construction to review all earthwork and foundation operations and verify that work is being completed consistent with the geotechnical recommendations developed during the design phase. The Geotechnical Engineer will review the following construction activities:

- Cut and fill slope construction
- Undercut and replacement of unsuitable material
- Subgrade preparation
- Fill benching
- Subgrade transitions including soil to rock transitions
- Site preparation and acceptance of foundation conditions prior to placing concrete
- Instrumentation
- Testing and acceptance of material for use as non-durable and durable rock fill
- Grading at stormwater management basins
- Inspection of drilled shaft foundations

The construction of the roadway, shared use path, and sound wall improvements will require a significant amount of fill material that will need to be obtained from a borrow source. To reduce the quantity of borrow material required for construction, the LANE/ STV team has identified a potential onsite borrow source - a portion of the existing southbound ramp at the I-581/ Valley View Boulevard Interchange. The DDI approach relocates this portion of the existing interchange ramp closer to I-581.

SPOTLIGHT ON DDI

A portion of the existing southbound ramp at the I-581/ Valley View Boulevard Interchange is a potential onsite borrow source because the DDI approach relocates this portion of the existing interchange ramp closer to I-581.

Additional borings and testing will be required to verify that the existing embankment materials are suitable for embankment construction. All borrow excavation sources will be approved by the Geotechnical Engineer.

4.4.4 – Quality Assurance / Quality Control

The LANE/STV team understands that one of the most important aspects of a VDOT design-build project is the successful completion of QA/QC activities. The QA/QC process is integral to all design and construction projects administered by VDOT, and is even more critical under the design-build delivery system. Our mission is to deliver a quality project that meets or exceeds VDOT's expectations, and sets the benchmark for future design-build projects. To help assure that our mission and objectives are met, we have assembled a team of highly qualified and experienced professionals to comply with VDOT's *Minimum Requirements for Quality Assurance and Quality Control on Design Build and Public-Private Transportation Act Projects*, dated January 2012.

4.4.4.1 – Quality Control and Quality Assurance Organization

A QA/QC organizational chart is presented on the following page. The overall management of the QA/QC program, in accordance with the team's QA/QC Plan, will be the responsibility of the Design-Build Project Manager. The Quality

Assurance Manager (QAM), **Joseph Hamed, P.E., L.S.**, will have responsibility for the overall design-build QA/QC Plan, which will be developed and implemented in accordance with the VDOT's QA/QC design-build guidelines.

The Design Manager will be responsible for the design portion of the overall design-build QA/QC Plan and the Construction Manager will be responsible for the quality control portion. Details of both the QA and QC team's organization and function are discussed in detail below.

4.4.4.1.1 – QA/QC for Design

The Design Manager for the LANE/STV team, **Jeff Gagné, P.E., DBIA**, is a registered professional engineer in Virginia and holds a Professional DBIA (Design-Build Institute of America) certification, making him especially qualified for implementing and overseeing the QA and QC processes for the design portion of the project.

The design QA/QC plan will address procedures and responsibilities to verify that project design standards are met, reviews are performed, and approvals are received. Each design submittal of plans, calculations, or reports (whether intermediate or final) will undergo an independent quality review. The team will utilize a QA/QC design log to track the completion of design and the status of QA and QC reviews. Each review is tabulated on a review summary form, which indicates by signature that the QA and QC Reviewers have completed their respective reviews and that the Design Manager has confirmed that all review comments have been properly incorporated into the plans.

The review documents, including the review summary form, become a permanent part of the project files. Quality reviews will also be conducted for any design changes that may be necessary during construction.

SPOTLIGHT ON QUALITY

The LANE/STV team is in full compliance with VDOT requirements:

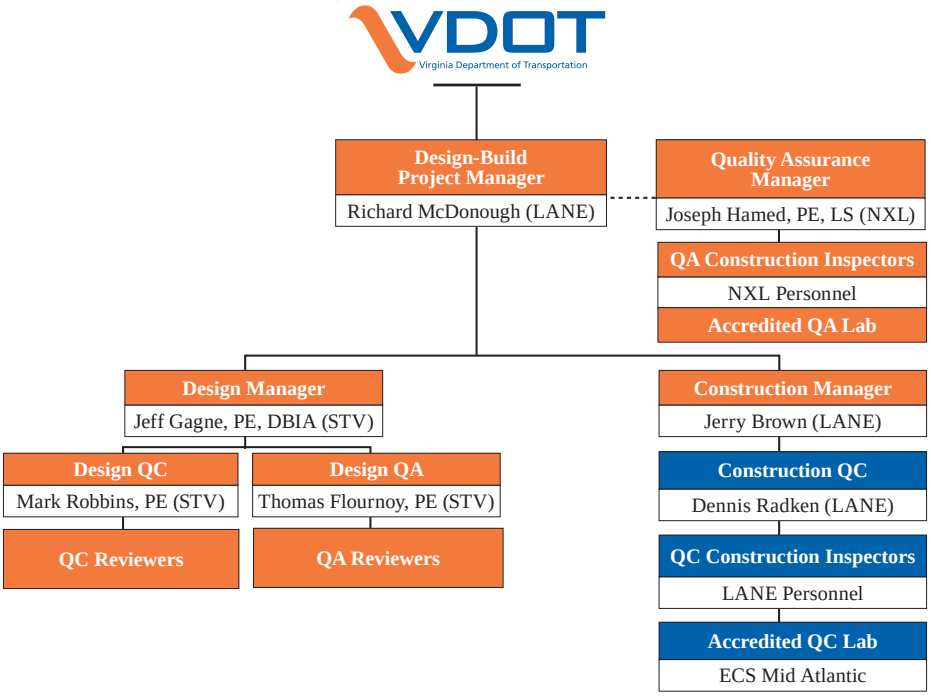
The QA organization is distinct and separate from the design and production staff.

All key personnel performing QA or QC functions are exclusively designated as such

QA and QC personnel will not be assigned to perform other duties or production work.

Design QC

The Design QC process will be led by **Mark Robbins, P.E.**, who will report to the Design Manager and work directly with the design team QC Reviewers. Mr. Robbins is presently serving as the Design Project Manager for a successful, $137 million NCDOT design-build project (being led by a LANE/STV design-build



team), which involves roadway improvements along I-85 and the construction of dual 3,000-foot long bridges over the Yadkin River and Norfolk Southern and North Carolina Railroads.

Design QC reviews will involve design staff independently checking each other's work to verify numerical accuracy of engineering computations, completeness of calculations and plans, conformance to contract requirements, and coordination with other disciplines including construction. Documented coordination reviews between disciplines and subconsultants will be scheduled as part of the design quality control process at pre-determined times for each submittal and all Issued-for-Construction design packages. Constructability reviews will also be scheduled between design and construction staff at pre-determined times during design. These processes will make extensive use of standardized checklists, including VDOT S&B and L&D, materials from STV's quality plan, and VDOT's QA/QC D-B guidelines. The QC reviewer will be addressing questions such as:

- Do the design calculations comply with the published design criteria?
- Do the construction drawings conform to design calculations?
- Are correct items denoted in YELLOW and incorrect items denoted in RED?
- Have ALL incorrect items been resolved?

QC Reviewers will review, and, if accepted, sign off on numerous design submissions or "packages" sequenced to match the construction schedule.

Design QA

Design QA reviews look at the "big picture" during the design phase of the project. These reviews assess whether or not the design has been correctly conceived, all relevant factors have been considered, and that qualified personnel were assigned to the task. The LANE/STV team has identified **Thomas Flournoy**, **P.E.**, to assist the Design Manager in the facilitation of QA reviews for all aspects of design. Mr. Flournoy is a Vice President for STV with more than 35 years of experience delivering challenging transportation and infrastructure planning and design projects.

SPOTLIGHT ON QUALITY

There is a clear separation of our team's QA and QC components.

Design QA reviews will be completed by senior-level engineers (QA Reviewers) from each design discipline who will report directly to Mr. Flournoy. QA Reviewers will provide independent, external, unbiased review of the design computations, drawings, specifications, and other design submittals to verify that the documents were prepared in a manner acceptable to VDOT.

In the event that a QA Reviewer identifies a particular element in the design (e.g., engineering computation, plan drawing, specification, report, etc.) that he/she feels does not meet the design criteria of the project, then the particular element will be returned to the design team for further review and correction as necessary. The design team will review the QA reviewers' comments, make corrections as necessary, and develop written responses. Corresponding QC and QA reviews will then be completed. Upon successful completion of all QC and QA reviews for a particular submission, the design documents will be delivered to the Design Manager for submission to VDOT. Following receipt of review comments from VDOT, the particular design submission will be returned to the design team, if necessary, and revisions made for further QC and QA reviews as described above.

QA/QC Procedures for One Unique Design Project Element: Transportation Management Plan Design QA/QC

The LANE/STV team considers the developmental phases of the Traffic Management Plan (TMP) the most critical aspect of the design phase of the project. Our team recognizes that I-581 is a critical linkage between I-81 and the City of Roanoke, as well as other points of interest along this route (including the Valley View Mall and the Roanoke Regional Airport). We are committed to developing a TMP to help assure the safe and efficient movement of vehicles, pedestrians, and bicyclists through and around roadway work zones.

We are also committed to providing protection for workers and equipment within work zones.

The development of the TMP will involve extensive coordination and input from the various design disciplines, members of the construction team, VDOT, FHWA, the City of Roanoke, and many other organizations and groups. The Design QA/QC Plan developed by the LANE/STV team will address procedures and responsibilities to verify that the project's TMP is developed in accordance with IIM-LD-241.5 and meets or exceeds VDOT's expectations. Because this is a Type B Category III project, major components of the TMP will include a Temporary Traffic Control Plan (TTCP), a Public Communications Plan, a Transportation Operations Plan, typical sections, and any special details/cross sections/profiles that are necessary.

Design QC activities during the development of the TMP will include design staff independently checking each other's work, conducting documented coordination reviews between disciplines and subconsultants, and conducting constructability reviews between design and construction staff at pre-determined times. Design QC activities will also involve the completion of the TMP Design Checklist (VDOT L&D checklist) as well as any other appropriate design checklists that will aid in the development of the TMP. For example, a QC Reviewer for the bridge and structures aspect of the TTCP development will be addressing questions such as:

- Does the sequence of construction for the bridge coincide with the roadway construction sequence and TTCP?
- Is adequate work area space being provided?
- Will the lane closure configurations shown in the TTCP enable bridge demolition work to occur within the construction sequence?
- Does the TTCP address temporary off-peak road closures during girder erection activities?
- Does the TTCP address lane closures for the installation of girder cross-frames, structural steel bolts, and stay-in-place forms?
- Are temporary bridge parapets (traffic barrier service) and/or pedestrian fences required on the bridge during construction? Does the design of the bridge take into consideration the installation/placement of temporary bridge barriers or pedestrian fences?

QA Reviewers will check to confirm that all QC review items have been resolved. For example, a QA Reviewer for the bridge and structures aspect of the TTCP development will be addressing questions such as:

- Were qualified bridge design staff members assigned to the task?
- Were all design checklists completed?
- Have all review comments been resolved and QC reviews been completed?
- Does the TTCP meet the contract requirements from a structures standpoint?
- Have all relevant factors been considered?

The LANE/STV team will utilize a design log to track the progress of the design and status of the QC and QA reviews. Because the development of the TMP will involve input from several design disciplines, each design discipline will be required to sign off under their respective discipline for a particular TMP submittal. Each review is finalized by a review summary form, which indicates by signature that the QA and QC Reviewers have completed their respective reviews and that the Design Manager has confirmed that all review comments have been properly incorporated.

Similar procedures will be exercised during construction should changes or updates be necessary. The Design QA/QC Plan enacted on the project helps assure that a comprehensive and thoughtful TMP is developed to meet VDOT's expectations.

4.4.4.1.2 – QA/QC for Construction

Construction QA

NXL will lead the Construction QA team for LANE. The QA team's primary role will be to confirm that the work conforms to the approved plans and VDOT specifications by reviewing QC data. As

the QAM, Mr. Joseph Hamed will be responsible for the independent QA inspection and testing of materials used and work performed on the project to include monitoring of the contractor's QC program. Mr. Hamed will lead a group of highly qualified NXL inspectors and an office engineer representing the project QA team.

SPOTLIGHT ON QUALITY

The QAM has both the authority and responsibility to suspend project activities in the event of quality deficiencies and/or irregularities.

At all times, they will carry out the inspection and testing activities of the QA/QC Program, and will perform the following functions:

- Review plans and reference documents related to the work and review the QA/QC Plan as related to the work
- Confirm all submittals, sources, and materials are approved
- Monitor the CPM schedule and determine (and perform) the proper frequency of tests
- Check calibration and condition of testing equipment
- Prepare daily diaries and logs, accept completed work, and document the same, and maintain the materials notebook
- Monitor QC staff to confirm coverage of work
- Coordinate laboratory testing
- Assist with coordination of witness and hold points
- Verify that unacceptable work is corrected and notify the QAM if corrective measures are not implemented in a timely manner

The QA staff will verify that QC functions are being performed and conducted properly. They will also perform QA testing and documentation per the approved plan. The QAM will maintain the Project's Materials Book in accordance with the Department's Materials Division requirements.

The **Thomas L. Brown Associates Lead Geotechnical Engineer** will support QA activities during construction for verification that conditions are consistent with the basis of design and that work is being completed consistent with the geotechnical recommendations. Recommendations will be modified as needed based on conditions encountered, related to the bridge foundations; roadway subgrade, subgrade transitions, and slope construction; and other aspects that arise during construction. The Geotechnical Engineer and staff will make regular visits to monitor specific construction activities and verify conditions related to the activities.

Construction QC

LANE will be responsible for construction QC on this project. The QC function is to assess and adjust construction processes to control the level of quality being produced in the project. The purpose of QC is to measure those quality characteristics and to inspect those activities that impact the production at a time when corrective action can be taken to substantially decrease the likelihood that appreciable nonconforming material will be incorporated in the project.

As part of the overall QA/QC plan, the LANE/STV team will provide VDOT with a detailed QC Plan that describes the testing and inspection activities and frequencies that meet or exceed the minimum requirements outlined in VDOT's QA/QC D-B Guidelines.

LANE will manage and control construction activities through our in-house QC program, which is applied to all of our construction projects. The Design-Build Project Manager, Richard McDonough, will direct the construction management effort. Our on-site project team includes a Quality Control Manager, **Dennis Radken**, who will lead the team's QC function and will direct the activities of the inspection staff and independent QC testing firm, **ECS Mid-Atlantic**. QC technicians and inspectors

SPOTLIGHT ON QUALITY

Our independent QC testing firm, ECS Mid-Atlantic, has an 18-year record of growth, accomplishment, and success, and is a top-ranked provider of testing services

will have the required VDOT certifications at the commencement of construction of this project.

Summary of Construction QA/QC Plan
With NXL staff performing QA services and LANE performing QC, we have built a team that will deliver a high quality project to VDOT. Overall, the LANE/STV team's QA/QC process for the Valley View Interchange design-build project will ensure that VDOT receives the high quality they deserve.

The purpose of the Construction QA/QC Plan is to establish clear and complete procedures for inspection of construction and testing of materials. NXL will prepare and submit a QA/QC Plan to VDOT for review and approval. The plan being developed is based upon established procedures that have proven successful on current and past design-build projects such as VDOT Gilberts Corner Roundabouts, Sudley Manor and Linton Hall Road Extension (Prince William County), VDOT I-495 HOT Lanes, and VDOT I-95 Express Lanes, to name a few examples. The LANE/STV team's experience, combined with lessons learned on the above-mentioned projects and other design-build projects, will provide VDOT the distinct advantage and benefit of a team of seasoned professionals who have a record of success administering QA/QC programs in Virginia.

These QA/QC procedures will be developed based on, but not limited to: the I-581/Valley View Interchange Phase II RFP, including addenda; VDOT's *Minimum QA/QC Requirements for Design-Build and PPTA Projects* (January 2012); VDOT's *Construction Manual* (2005); VDOT's *Inspection Manual* (April 2008); VDOT's *Road and Bridge Specifications* (2007); and VDOT's *Materials Manual of Instruction* (May 2011).

The plan submitted for approval will establish QA/QC procedures to confirm work is completed at or above established quality standards. The construction QA/QC function is independent of both the design and construction teams. Below are several procedures that will be included in LANE's Construction QA/QC Plan.

Staffing Procedures
QAM Authority: Per Section 3.1.1 of VDOT's QA/QC D-B guidelines, the Design-Build Project Manager, Mr. McDonough, has given the QAM, Mr. Hamed, full authority to shut down the project and/or be able to recommend to VDOT to withhold payment for items that are not acceptable.

SPOTLIGHT ON QUALITY

The QAM has full authority to shut down the project and/or recommend that VDOT withhold payment for items that are not acceptable.

QA/QC Staff Levels: Actual QA/QC staffing will be dependent upon LANE's construction schedule and time-of-the-year weather patterns. Based on this staffing plan, an inspector may be assigned from inception through close-out while other inspectors will be brought on soon after mobilization and released prior to project close-out.

Roles, Responsibilities, and Reporting: LANE has contracted with NXL to provide construction QA services for this project. Mr. Hamed will manage the on-site program as well as provide inspection personnel. NXL will provide QA laboratory services. The QC program will be managed by LANE. QC technicians from a firm other than NXL will be under the direction of the Construction QC Manager, Mr. Dennis Radken. LANE will contract with ECS Mid-Atlantic, an accredited laboratory separate from NXL to provide testing of soils, aggregates, and concrete.

As indicated above, the QA and QC functions will be performed by separate organizations. Mr. Hamed, the QAM, will report directly to the Design-Build Project Manager, Mr. McDonough. The construction QC Manager, Mr. Radken, will report directly to the Construction Manager, **Jerry Brown**. The QC technicians will report directly to LANE's QC Manager and will be responsible for performing QC testing in the field and providing samples for laboratory tests. QC test reports and documentation will be submitted to the QA team for review and approval. Thus, the QA team will be able to assess the QC results and either accept or reject them in an unbiased manner.

VDOT's role during construction operations will include verification sampling and testing, and

independent assurance. The QA programs will be performed under the direction of the QAM. The QC programs will be performed under the direction of the Construction QC Manager. Each QA and QC inspector/technician will be certified in the particular item which they are inspecting or testing. As manager of the QA/QC Plan, Mr. Hamed will be responsible for assuring the quality of all the materials and work on the project. His role will include the following tasks:

- Develop and implement the QA/QC Plan
- Deliver the commitments of the QA/QC Plan
- Assign QA staff and responsibilities
- Direct QA inspection/testing
- Conduct all Preparatory Inspection Meetings
- Determine observation/testing frequencies
- Coordinate with VDOT on Independent Assurance (IA) and Verification Sampling and Testing (VST)
- Responsible for hold and witness points
- Monitor of the Construction QC Program, including review/approval of testing plans
- Review/approve daily inspector reports and material test reports
- Verify non-conformance work is corrected (NCR's attended to)
- Certify pay requests
- Written authority to stop work or deny payment

Inspection Procedures

Construction QA and QC inspection personnel will perform all of the construction inspection and sampling and testing work that is normally performed by VDOT, as prescribed in the documents listed on page 35 of this response, and all other applicable reference documents. This includes the documentation of construction activities and acceptance of manufactured materials. Five phases of inspection will be used to verify the work is performed in accordance with the contract documents.

Preparatory Phase Inspections: Prior to the start of any work activity, the LANE/STV team will hold a Preparatory Inspection Meeting to confirm that all project personnel have a thorough understanding of the upcoming work. The purpose of the Preparatory Inspection Meeting is to provide coordination and communication among the LANE/STV team's production personnel, QA personnel, and QC personnel, as well as VDOT's Independent Assurance and Verification Sampling and Testing (IA/VST) personnel.

Start-up Phase Inspections: The start-up phase takes place as work begins. During this phase, the QAM will review the work to verify conformance to the plans. In addition, he will also verify that appropriate documentation is being forwarded to VDOT after his review and acceptance.

Production Phase Inspections: The production phase of the inspection process ensures that the methods and procedures that were established in the start-up phase are maintained, and any deficiencies that were noted in the initial phase have been resolved and corrected. It is to the responsibility of the QAM to finalize and submit all documentation to the appropriate agencies.

Intermediate Phase Inspections: Throughout the course of construction, the LANE/STV team will accommodate VDOT's performance of Intermediate Inspections.

Completion and Punch-out Inspections: Completion Inspections will allow verification by VDOT's project manager that all necessary and supporting documentation is available to support the LANE/STV team's application for final payment as identified in the approved CPM schedule.

The LANE/STV team will be responsible for punch-out inspection. The punch list will be maintained by the QAM and will be created as the project approaches substantial completion. The punch-out inspection will be performed on all definable features of the work, against approved construction plans, specifications, and other related construction documents, and note any discrepancies thereof.

Non-Conformance/Deficiency Procedures

The LANE/STV team will establish and maintain a QA Auditing and Non-Conformance Recovery Plan (AR Plan) for uniform reporting, controlling, correction, and disposition and resolution of non-conformance (including disputed non-conforming items) issues. The LANE/STV team's AR Plan will establish a process for review and disposition of nonconforming material, equipment, or other construction and design elements of the work. The AR Plan will specifically address a recovery plan to increase QA and QC testing frequencies for tests that fail to meet comparison tolerances as set forth in VDOT's QA/QC D-B guidelines. Furthermore, the AR Plan will clearly delineate the LANE/STV team's procedures for addressing construction and design deficiencies. Such procedures will include increased QA and QC testing frequencies and other quality management features as needed to achieve the desired work product. The deficient work and QA processes will be completed in such a manner as not to cause additional oversight by VDOT.

Communications

During construction, the QAM will be communicating with key staff on a daily basis. Each day, he will conduct a brief staff meeting with the QA staff to make sure all work is covered and proper records are being kept. He will communicate on a daily basis with the Construction Manager to make sure the QC staff and construction operations are proceeding as planned. A conference call between the Design-Build Project Manager, QAM, Design Manager, Project Inspectors, and the VDOT Project Manager will take place on a bi-weekly basis (or more frequently if needed) to discuss progress and any concerns or issues. The QC and QA staff will be communicating on a daily basis as well to confirm proper coverage of inspection. The QA staff will assist the QAM in making sure the VDOT Project Manager is notified in a timely manner and proper coordination is done to cover Witness Points, Hold Points, Independent Assurance (IA), and Verification Sampling and Testing (VST). Proper planning and conducting of project meetings can contribute significantly to the success of a project. The following meetings will be conducted:

Bi-Weekly Meeting: The Construction Manager, QAM, and the Senior QA and QC Inspectors will meet to discuss the progress of the work. Any issues and/or concerns will be discussed and addressed. Minutes will be prepared and all issues and/or concerns that are not resolved during a meeting will be tracked until resolution. The VDOT Project Manager will have an open door invitation to attend this meeting.

Preparatory Inspection Meeting: The QAM will conduct these meetings per the approved QA/QC Plan to discuss who, what, when, where, and how work is to be done on a particular construction activity. He and the VDOT Project Manager will ensure each discussion item is addressed and approved.

Monthly Progress (Partnering) Meetings: The Design-Build Project Manager will meet monthly with the Design, ROW (as applicable), Construction, and QAM, as well as the VDOT Project Manager, to discuss the work and the progress of the project. A standard agenda will be established at the first meeting and then followed throughout, and modified as necessary to emphasize special activities for a given month. Key items will be discussed each month: status of plans, schedule, and materials, environmental/permitting, ROW, safety, and community interface. Minutes will be prepared for each meeting and promptly distributed, and any issues or concerns not taken care of or resolved during the meeting will be diligently tracked until resolution is made.

Documentation

QA and QC staff will follow established VDOT procedures regarding document control and record keeping. QA and QC staff will set-up independent filing systems to facilitate the orderly and systematic processing of all project documents and relevant information. The QAM will monitor the QC staff and oversee the QA staff to make sure their filing and document control systems are on track and in accordance

with VDOT procedures. The QAM will also review the inspection staffs' daily diaries on a daily basis and have available for the VDOT Project Manager's review. Project documents will be kept in electronic files. Reviews will be administered by the QAM throughout the project.

QA/QC Procedures for One Unique Construction Project Element: Construction of Drilled Shafts

The LANE/STV team considers the construction of the drilled shafts for the center pier on the bridge carrying Valley View Boulevard over I-581 one of the most critical aspects of the construction phase. The center pier is located in the median of I-581 and offers a limited area to work within. The construction of the drilled shafts themselves requires specialized equipment, testing, and the involvement of the Geotechnical Engineer.

Prior to the start of construction for this activity, the Bridge Superintendent, Crew Leader for the drilled shaft subcontractor, and QC Manager and staff will hold a pre-work coordination meeting to review technical specification requirements and work procedures. The QAM and Geotechnical Engineer will also be notified and participate in this meeting. They review the shaft layout, installation procedures and equipment to be utilized, all testing and inspection requirements, and the schedule of the work.

Prior to beginning the installation work, the shaft locations are staked out by a licensed surveyor and verified by the QC Inspector, with spot checks being completed by the QA Inspector.

The crew then begins by augering a 4-foot diameter shaft until reaching rock at Elevation 1040.00. The QC Inspector monitors the operation, including MOT procedures and functions, along with spot checks from the QA Inspector in accordance with the approved QA/QC Plan. The earth auger is then removed and replaced with a 3.5-foot rock auger and advanced down to Elevation 1037.00, which is the estimated top of competent rock. All spoils are removed from the bottom of the shaft and the Geotechnical Engineer then inspects the bottom of the shaft and determines that the rock is of satisfactory quality to begin the minimum 14-foot rock socket and records these findings in his daily diary. The crew then resumes augering operations; the QC Inspector continues to monitor the operation along with spot checks from the QA Inspector until completion.

The crew removes all spoils from the bottom of the shaft and the Geotechnical Engineer inspects the shaft to verify no karst features exist and the quality of the rock within the socket meets the intent of the design. The Geotechnical Engineer observes that the quality of the rock within the top five feet of the rock socket is severely fractured and recommends the rock socket be advanced an additional five feet. The crew advances the shaft an additional five feet and the Geotechnical Engineer again inspects the shaft and determines the rock socket is acceptable.

The Geotechnical Engineer records all of his findings in his daily diary and prepares a weekly report for submission to the QAM. The QC Inspector verifies the alignment and plumbness of the shaft and determines it is within the acceptable tolerances specified in the specifications. The QC Inspector also verifies that all spoils have been removed from the shaft and that it is acceptable to begin installing the reinforcing steel cage. The QA Inspector spot checks the above activities. Similar QA/QC procedures are followed for the remainder of the construction activities for the drilled shafts (i.e., fabrication/assembling of the reinforcing steel cage, installation of the reinforcing steel cage, concreting operations, materials testing, and crosshole sonic logging testing).

This example emphasizes the role and importance of the Geotechnical Engineer during construction as it relates to QA and QC, as well as the functions and roles of the respective QA and QC teams.

4.5 - Construction of the Project

4.5.1 – Sequence of Construction

Design activities commence at notice to proceed and continue through the approval process. Design-build coordination will be conducted for the duration of the contract. Required permit and ROW acquisition will take place **prior** to the commencement of construction. All material submittals will be submitted and approved in the progression of the construction sequencing and approval of the respective design packages.

The design of the widening and rehabilitation of the bridge carrying Valley View Boulevard over I-581 has taken into consideration the sequencing of work in order to address safety and operations, constructability, the confined work areas within the median of I-581, and the potential geotechnical impacts on deep foundations (potential karst features). Work on the bridge will be completed in two distinct stages. Vehicular and shared use path traffic and lighting will be maintained during all stages of bridge construction, as illustrated in the Plan Sheets. Traffic barrier service will be utilized during the second phase of construction on the bridge. The placement of temporary traffic barriers have been arranged such that they are not located over any girders and can be bolted through the deck slab in accordance with VDOT standards.

In order to reduce the amount of time needed for construction within the media of I-581, drilled shafts are being proposed over traditional pile footings for the widened portions of the center bridge pier. The Geotechnical Engineer will also be heavily engaged during construction as part of the QA/QC process. If different subsurface conditions are encountered during the construction/installation of deep foundations than assumed in the design, the Geotechnical Engineer will be able to provide expedited recommendations to mitigate any impacts to schedule.

Utility protection and relocation measures will lead the construction schedule as required to support the proposed improvements. This work will involve adjustment to both wet (sanitary sewer and water) and dry utilities (communication and electric).

SPOTLIGHT ON ACCESS

The trail and roadway will remain open at all times throughout construction.

SPOTLIGHT ON SAFETY

MOT and SESC measures will be installed along Valley View Boulevard **PRIOR** to construction to accommodate safe and efficient travel during construction as well as mitigate any potential delays to construction. Emphasis is placed on public communication throughout construction to safeguard traveling public access and awareness.

Stage 1 of construction will begin with set-up of approved maintenance and protection of traffic (MOT) and soil erosion and sediment control (SESC) measures to begin construction on Ramp Y and the widening of I-581 northbound, south of the Valley View Interchange. This includes earthwork, grading, installation of storm sewer measures, paving, and guardrail installation. It is anticipated that the Jack and Bore under I-581 at Station 216+40 will commence in this stage due to duration. Construction of sound barrier walls 4 and 5 will commence along with installation of the required MB-7F barrier. The required demolition of the south side of Bridge B627 will be performed to allow the widening of the bridge to be performed in Stage 1. Repairs and modifications to the south side of the existing bridge will also be completed at this time. Construction will begin at the new on-ramp to I-581 southbound (Ramp Z) and new exit ramp from I-581 southbound (Ramp W) (the west side of interchange).

Stage 2 of construction will shift traffic onto the newly constructed portion of Ramp Y, after which, the left turn lanes of Ramp Y will be constructed. Earthwork, grading, storm sewer measures, paving and guardrail installation will be completed for the left turn lane of Ramp Y.

Stage 2A will allow the eastbound widening construction of Valley View Boulevard (south side). The appropriate MOT and SESC measures will be installed prior to the start of construction. The initial portion (westbound) of the DDI will be constructed to allow traffic to be shifted onto the newly widened portion of Bridge B627.

Stage 3 will consist of the demolition and widening of the north side of Bridge B627.

Drilled shafts will be installed for the median piers with columns and caps following accordingly. Repairs and modifications to the north side of the existing bridge will also be completed at this time. Upon the completion of Bridge B627, a thin bonded epoxy overlay will be applied to the deck. The widening of Valley View Boulevard along the northern portion of the roadway will commence, including excavation, grading, storm sewer, paving, and curbing.

Stage 4 entails the construction of Ramp X providing ingress to I-581 northbound and the widening of I-581 northbound north of Valley View Boulevard interchange. I-581 southbound widening will commence along with installation of sediment traps and permanent detention basin construction. Storm sewer reaches associated with the widening and the jack and bore at station 180+75 will be installed and completed to allow final grading and pavement installation. The RW-3 retaining wall providing grading relief behind sound barrier wall 1 will be installed and subsequently sound barrier Wall 1 will be installed. Sound barrier walls 6 and 7 are also planned for this stage. As designed, MB-7F barrier will be installed along their respective sound barriers.

The widening of Valley View Boulevard will be completed with median MS-1A and MS-2, along with required signal and lighting improvements. The eastbound portion of the DDI will be completed allowing traffic flow from the newly constructed off ramp at I-581 southbound. This will facilitate opening of the entire interchange once signaling has been tested and implemented.

Finally, landscaping will be installed along with any required final stabilization of graded areas. Signage will be in effect for opening operation of the DDI. Clean-up and demobilization will conclude the project.

SPOTLIGHT ON EXPEDITED DELIVERY

DDI configuration and simultaneous construction activities expedite delivery.

1) Required permits and ROW activities (decreased with DDI) take place prior to construction.

2) Utility protection and relocation measures (decreased with DDI) lead the schedule.

3) Environmental impacts decrease with minimized stream realignment required with DDI.

4) QA/QC reviews on concurrent construction activities throughout the life of project for feasibility and constructability.

5) Geotechnical participates throughout QA/QC process.

6) Design engineer and contractor interact continuously throughout construction.

4.5.2 – Transportation Management Plan (TMP)

Our team recognizes that I-581 is a critical linkage between I-81 and the City of Roanoke, as well as other points of interest along this route; including the Valley View Mall and the Roanoke Regional Airport. The LANE/STV team will utilize our extensive expertise and proven systems to facilitate the safe and efficient movement of vehicles, pedestrians and bicyclists through and around roadway work zones and to providing protection for workers and equipment within work zones. Since this is a Type B Category III project, major components of the TMP will include a Temporary Traffic Control Plan (TTCP), a Public Communications Plan, a Transportation Operations Plan, typical sections, and any special details/cross sections/profiles that are necessary. The development of this document will involve extensive coordination and input from the various design disciplines, members of the construction team, VDOT, FHWA, the City of Roanoke, and other stakeholders, organizations and groups which makes its development paramount to its implementation during construction of the project.

Traffic will be maintained at all times. This will be accomplished through staged construction and the use of permanent pavement in conjunction with temporary pavement to shift traffic. All MOT schemes will be designed in accordance with the Virginia *Work Area Protection Manual*. Construction strategies will be employed to minimize impact to the public, such as the timing of lane closures. **Major work activity will be minimized in November and December to accommodate the increased regional, seasonal traffic volumes around Valley View Mall.**

4.5.2.1 – Stage 1

Stage 1 of traffic phasing involves:

- Widening and repair of the southern portions of the Valley View Boulevard bridge
- Construction of portions of Ramp Y and the widening of I-581 northbound
- Construction of portions of Ramps W and Z
- Construction of the temporary connection for the Lick Run Greenway Trial
- Construction of sound barrier walls 4 and 5

Traffic will generally be maintained by utilizing existing lane configurations. Traffic will be shifted onto temporary pavement to facilitate the Ramp Y construction. A short-term closure will be needed to complete the construction of Ramp Z in the vicinity of the I-581 gore area. A temporary detour will be implemented to divert traffic to the Hershberger Road interchange.

Rolling lane closures will be necessary on I-581 for the placement of structural elements and any demolition. These closures will only occur from Sunday night through Friday morning between the hours of 12:00AM and 4:00AM. Temporary closures will not exceed 15 minutes in duration and will comply with the Traffic Engineering Division Memorandum Number TE-352, *Slow Roll Temporary Traffic Control*. It may be beneficial to perform longer-term rolling closures to allow more efficient construction of the structural elements. In this case, a temporary detour could be initiated that would divert traffic around the work zone via Valley View Boulevard and the Hershberger Road interchange or Williamson Road via Valley View Boulevard.

Short-term lane closures will be necessary on I-581 to construct pavement tie-ins. Lane closures on I-581 and the ramps will be coordinated with the Virginia State Police. Single lane closures will occur between the hours of 8:00PM and 6:00AM, all days of the week or as directed by VDOT. If a multi-lane closure is needed on I-581, it will consist of adjacent lanes and will only occur between the hours of 10:00PM and 6:00AM, all days of the week.

Other elements of the traffic control include the following, which will apply to all stages:

1) A minimum 12-foot lane width will be maintained at all times on I-581 and associated on and off-ramps. Valley View Boulevard will maintain minimum 11-foot lane widths at all times.

2) All traffic control elements will be designed in accordance with the existing approach speed. Work zone speed limits will not be adjusted unless directed by VDOT.

3) No long-term lane or ramp closures are expected on I-581 or Valley View Boulevard.

4) Short-term flagging operations will occur as needed on Valley View Boulevard to construct pavement tie-ins and for the placement of channelizing devices and pavement markings.

5) Valley View Boulevard will remain open to two lanes of traffic in each direction Monday through Friday between the hours of 6:00AM and 8:00PM and all day Saturday and Sunday.

6) Between the hours of 8:00PM and 6:00AM daily from Sunday evening through Friday morning, Valley View Boulevard may be reduced to one (1) lane in each direction, except for the period of time between the day before Thanksgiving Day through the day after New Year's Day, in which two (2) lanes of traffic in each direction shall be maintained.

4.5.2.2 – Stage 2

Stage 2 of traffic phasing involves the construction of the Ramp Y left turn lane. Traffic will be maintained in this stage by utilizing the pavement constructed in Stage 1 and the temporary pavement on Valley View Boulevard where the median barrier is to be removed. Ramp Y will be opened to receive traffic to facilitate the construction of the Ramp Y left turn lane. Median barrier will be removed along Valley View Boulevard to allow traffic to shift onto newly constructed Ramp Z.

The trail will remain in the same configuration as in the previous stage.

4.5.2.2A – Stage 2A

Stage 2A of traffic phasing involves:

- Constructing portions of the westbound DDI lanes
- Removing the median located on Valley View Boulevard east of I-581 to permit the placement of temporary pavement in Stage 3

Traffic will remain in the same configuration as in Stage 2 during this stage.

4.5.2.3 – Stage 3

Stage 3 of traffic phasing involves:

- Widening and repair of the northern portion of the Valley View Boulevard bridge
- Widening of the northern portion of westbound Valley View Boulevard

Traffic will be maintained in this stage by utilizing the pavement constructed in Stages 1 and 2 to facilitate lane shifts and by using temporary pavement. Rolling lane closures will be necessary on I-581 for the placement of structural elements and any necessary blasting. These closures will only occur from Sunday night through Friday morning between the hours of 12:00AM and 4:00AM. This temporary closure will not exceed 15 minutes in duration and will comply with the Traffic Engineering Division Memorandum Number TE-352, *Slow Roll Temporary Traffic Control*. It may be beneficial to perform longer-term rolling closures to allow more efficient construction of the structural elements. In this case, a temporary detour would be initiated that would divert traffic around the work zone via Valley View Boulevard and the Hershberger Road interchange or Williamson Road via Valley View Boulevard. A traffic analysis will be performed to verify that the roadway network can support any proposed detour. Traffic signal timings would be adjusted as needed to account for the additional traffic volume.

The Lick Run Greenway Trail will be maintained via a temporary connection constructed between the work zone and the travel lanes. A temporary barrier will be placed to delineate the path and provide protection for trail users. Our team understands the importance of this trail to the surrounding community, and will make sure that a trail connection will remain open at all times during construction.

4.5.2.4 – Stage 4

Stage 4 of traffic phasing involves:

- Construction of the proposed I-581 southbound widening, auxiliary lane, shoulder and tie-ins to Ramp W and Ramp Z
- Construction of the proposed Ramp X, I-581 northbound auxiliary lane, and shoulder
- Construction of the remaining portions of eastbound Valley View Boulevard and median islands
- Construction of sound barrier walls 6 and 7

Traffic will be maintained in this stage by shifting traffic onto permanent pavement constructed in the previous stages.

Short-term lane closures will be necessary on I-581 to construct pavement tie-ins. All lane closures on I-581 and the ramps will be coordinated with the Virginia State Police. Single lane closures will occur between the hours of 8:00PM and 6:00AM, all days of the week or as directed by VDOT. If a multi-lane closure should be needed on I-581, it will consist of adjacent lanes and will only occur between the hours of 10:00PM and 6:00AM, all days of the week.

The Lick Run Greenway Trail will be maintained by utilizing the right lane of westbound Valley View Boulevard. The placement of final paving, guardrail, and pavement markings will commence at the completion of this stage.

4.5.2.6 – Public Involvement

The Public Communications Plan included in our TMP will address procedures to keep key audiences (i.e., motorists, trail users, businesses, residents, police, fire, EMS, City of Roanoke, Roanoke Regional Airport, etc.) informed about construction related impacts before and during the construction.

The plan will also communicate and promote ways that commuters can avoid construction related delays (i.e., alternative routes, rideshare, telework, public transportation, etc.). LANE will coordinate with VDOT's Salem District Office of Public Affairs on the preparation and release of public information. A point of contact and phone number will be provided to the public to use in calling to request information or express concerns throughout the duration of the project.

During construction, LANE will operate as a liaison between VDOT, the City of Roanoke and the Design-Builder's Construction Manager to confirm compliance with local ordinances and provide appropriate notification to affected property owners and stakeholders. The LANE/STV team has considered the impacts to the project's stakeholders and the surrounding area and is committed to minimizing the impacts through consistent coordination and communication with VDOT's public information officers, as well as the City of Roanoke's communication officers.

The Valley View Mall is the region's busiest shopping location and it is imperative that this business center is not impacted by the project at any time. As such, all traffic will be maintained to the mall at all times, as well as daily communications and coordination with the owners. Likewise, the Greenway Trail is critical to the pedestrians from the surrounding communities and communications related to access will be posted and updated at all times during construction. I-581 is a critical corridor for the City of Roanoke and its citizens. It is the priority of the LANE/STV team to ensure safe, smooth, and efficient traffic operations through this corridor for the duration of the project through constant and consistent communications.

4.6 - Proposal Schedule

This section may be found in the Appendices as directed by the RFP.

4.7 - Disadvantaged Business Enterprises (“DBE”)

The LANE/STV team supports VDOT's DBE program and is committed to meeting or exceeding the **16% goal** for the design and construction of this project. It is also LANE's intention to take all necessary and reasonable steps to confirm that SWaM firms have the maximum opportunity to compete for and perform services on this contract.

SPOTLIGHT ON OUR TEAM

DBE participation is represented across disciplines for both design and construction activities.

4.7.1 – Design Subconsultants

The LANE/STV team includes highly qualified subconsultants who bring specialized design services necessary for the successful completion of this design-build project, as presented in the table at the bottom of this page.

4.7.2 – Construction Subcontractors

LANE implements a subcontracting plan on all of our projects to confirm the maximum opportunity for DBE and SWaM subcontractors to qualify for and provide services. The first step is source selection. LANE researches the capabilities of several subcontractors. This includes an evaluation of past performance, socioeconomic status, financial condition, current availability, and safety performance. Based on this research, a list of potential subcontractors is developed.

The second step is the outcome of the proposal process. Once a solicitation for pricing has been set, potential subcontractors have the opportunity to respond with their site-specific worker protection program and best price proposals. LANE reviews the price proposal to determine price reasonableness. The final selection of the subcontractor is made by combining the results of the safety and price evaluations to determine the proposal that provides the best value to the Owner and LANE.

Safety is an integral part of any scope of work performed on this project. Accordingly, a subcontractor's safety approach is a key component of our evaluation process. Any subcontractor who does not meet our stringent requirements is excluded from further consideration.

LANE also conducts a technical evaluation of the qualifications presented in the subcontractor's proposal, as well as an independent review of their past performance. References provided with their price proposal are contacted and questioned about the subcontractor's past performance. The topics covered include safety, schedule and cost compliance, and quality of work. If the potential subcontractor has worked for LANE before, their past performance and safety record for LANE is also evaluated. If the potential subcontractor is required to submit a Quality Control Program or Worker Protection Program with their proposal, these documents are evaluated. If the subcontractor has not worked for LANE previously, a project interview may be required.

LANE evaluates the price proposals for reasonableness. Once these reviews are complete, our evaluation team members discuss the results and select a subcontractor based on the proposal that best meets the requirements of the contract. Any subcontractor that fails to meet the requirements in the contract can be eliminated without further consideration.

Each Subconsultant on the LANE/STV Team is a Certified Virginia DBE or SWaM		
Subconsultant	Services	Certification
Accompong Engineering Group, LLC	Traffic management plans and MOT support	SWaM/DBE/MBE No. 678765
Anderson & Associates, Inc.	Survey and utility coordination	SWaM No. 652920
DMY, Inc.	Pavement design	SWaM/DBE/MBE No. 687645
EEE Consulting, Inc.	Stream restoration/realignment and environmental	SWaM No. 7052
Mercado Consultants, Inc.	Structural engineering support and sound wall design	SWaM No. 119
NXL Construction Services	Quality assurance management	SWaM/DBE/MBE No. 626437
O.R. Colan Associates LLC	ROW services	SWaM No. 674542
Thomas L. Brown Associates, P.C.	Geotechnical and foundation design services	DBE No. 626715

Appendices

Attachment 4.0.1.1 - Technical Proposal Checklist

ATTACHMENT 4.0.1.1

I-581/Valley View Boulevard Interchange Phase II

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Offerors shall furnish a copy of this Technical Proposal Checklist, including page references, 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	Appendices Pgs.1-3
Acknowledgement of RFP, Revisions, and/or Addenda	Attachment 3.6 (Form C-78-RFP)	Sections 3.6, 4.0.1.1	no	Appendices Pg. 4
Letter of Submittal	NA	Section 4.1		Pgs. 1-2
Letter of Submittal on Offeror's letterhead	NA	Section 4.1.1	yes	Pgs. 1-2
Offeror's official representative information	NA	Section 4.1.1	yes	Pg. 2
Authorized representative's original signature	NA	Section 4.1.1	yes	Pg. 2
Declaration of intent	NA	Section 4.1.2	yes	Pg. 2
~~180~~ 120 day declaration	NA	Section 4.1.3	yes	Pg. 2
Principal Officer information	NA	Section 4.1.4	yes	Pg. 2
Proposal Payment Agreement or Waiver of Proposal Payment	Attachment 9.3.1 or 9.3.2	Section 4.1.5	no	Pg. 2
Offeror's Qualifications	NA	Section 4.2		Pgs. 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	Pg. 3

ATTACHMENT 4.0.1.1

I-581/Valley View Boulevard Interchange Phase II

TECHNICAL PROPOSAL CHECKLIST AND CONTENTS

Technical Proposal Component	Form (if any)	RFP Part 1 Cross Reference	Included within page limit?	Technical Proposal Page Reference
Organizational chart with any updates since the SOQ submittal clearly identified	NA	Section 4.2.2	yes	Pg. 3
Revised narrative when organizational chart includes updates since the SOQ submittal	NA	Section 4.2.2	yes	Not applicable
Design Concept	NA	Section 4.3		Pgs. 5-19
Conceptual Roadway Plans and description	NA	Section 4.3.1	yes	Pg. 11, plans presented in Volume II
Conceptual Structural Plans, description, and renderings	NA	Section 4.3.2	yes	Pgs. 11-14, plans presented in Volume II
Project Approach	NA	Section 4.4		Pgs. 20-38
Environmental Management	NA	Section 4.4.1	yes	Pgs. 21-24
Utilities	NA	Section 4.4.2	yes	Pgs. 24-27
Geotechnical	NA	Section 4.4.3	yes	Pgs. 27-30
Quality Assurance/ Quality Control (QA/QC)	NA	Section 4.4.4	yes	Pgs. 30-38
Construction of Project	NA	Section 4.5		Pgs. 39-43
Sequence of Construction	NA	Section 4.5.1	yes	Pgs. 39-40

ATTACHMENT 4.0.1.1

I-581/Valley View Boulevard Interchange Phase II

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	Pgs. 40-43
Proposal Schedule	NA	Section 4.6		Appendices Pgs. 9-22
Proposal Schedule	NA	Section 4.6.1	no	Appendices Pgs. 11-22
Proposal Schedule Narrative	NA	Section 4.6.2	no	Appendices Pgs. 9-10
Proposal Schedule in electronic format (CD-ROM)	NA	Section 4.6	no	Provided on CD
Disadvantaged Business Enterprises (DBE)	NA	Section 4.7		Pg. 44
Written statement of percent DBE participation	NA	Section 4.7	yes	Pg. 44
DBE subcontracting narrative	NA	Section 4.7	yes	Pg. 44

Attachment 3.6 - Form C-78-RFP
Acknowledgement of Receipt of RFP, Revisions, and/or Addenda

ATTACHMENT 3.6

(Date Issued: September 14, 2012)

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

RFQ NO. C00016595DB45

PROJECT NO.: 0581-128-109, P101, RW201, C501, B627

ACKNOWLEDGEMENT OF RFP, REVISION AND/OR ADDENDA

Acknowledgement shall be made of receipt of the Request for Proposals (RFP) and/or any and all revisions and/or addenda pertaining to the above designated project which are issued by the Department prior to the Letter of Submittal submission date shown herein. Failure to include this acknowledgement in the Letter of Submittal may result in the rejection of your proposal.

By signing this Attachment 3.6, the Offeror acknowledges receipt of the RFP and/or following revisions and/or addenda to the RFP for the above designated project which were issued under cover letter(s) of the date(s) shown hereon:

1. Cover letter of March 2, 2012 - RFP
2. Cover letter of June 21, 2012 - Addendum No. 1
3. Cover letter of July 10, 2012 – Addendum No. 2
4. Cover letter of Sept. 5, 2012 – Changes to RFP Requirements (Letter)
5. Cover letter of Sept. 13, 2012 – Interim Milestone (Letter)

SIGNATURE

September 20, 2012
DATE

R. A. McDonough, District Manager
PRINTED NAME AND 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 20th day of September, 2012, 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 **October 11, 2011** Request for Qualifications ("RFQ") and was invited to submit proposals in response to a Request for Proposals ("RFP") for the **I-581/Valley View Boulevard Interchange Phase II, Project No. 0581-128-109, P101, RW201, C501, B627** ("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: Richard A. McDonough

Title: District Manager

4.6.1 - Proposal Schedule Narrative

4.6.1 – Proposal Schedule Narrative

Integral to the design-build processes is the creation of a working CPM schedule using Primavera® software. The schedule integrates subcontracted work requirements as well as the delivery of permanent materials requiring long lead times. Time for necessary inspections is built into the scheduled activities. Potential conflicts are identified early to formulate alternate plans and allow work to proceed in an organized and timely fashion. Conversely, opportunities to advance items of work will be capitalized upon as "early finish activities" are identified.

LANE will coordinate the scope of all project-related activities to establish a timely Primavera Critical Path Method (CPM) job schedule that will help ensure on-time completion and identify potential risks. LANE's Project Controls will be centralized in the local project office. The Project Engineer will be responsible for scheduling, cost engineering, and cost forecasting. The project controls system will utilize Primavera software to develop staffing/resource allocation plans and status/progress reports. The Design-Build Project Manager, supported by the Construction Manager, is ultimately responsible for the implementation of the project controls system.

Three levels of schedules will be used: Level 1 will be the Master Schedule, a management level schedule; Level 2 will be the Critical Path Schedule, the project level schedule; and Level 3 will be the Control Level Schedule, a compilation of detailed work activity level schedules. Subcontract work and third party work will be tracked at the same detail level as LANE's self performed work. A Baseline Network Analysis Schedule will be submitted to and accepted by VDOT prior to the start of construction. Schedule maintenance is the central focus of the weekly project coordination meetings.

To address the issue of controlling time, LANE will develop a detailed, time-phased CPM project schedule, prepared with timelines outlined within the SOW to indicate the necessary procurement and construction activities for each phase of the project. The CPM will utilize the Precedence Diagram Method (PDM) to satisfy both time and cost applications. Various calendars will be incorporated into the project schedule to reflect holidays, seasonal work, temperature and precipitation restrictions, and owner requirements. An Activity Coding Structure will be utilized in the project schedule to facilitate the various organizations of the CPM schedule data output. For example, a typical activity code structure would include areas/zone/section, responsibility, phase, and type of work. The project schedule will be the tool used for coordination by both onsite and offsite project team management. The schedule updates are used as a tool by managers to review progress and coordinate the efforts of all entities involved.

SPOTLIGHT ON SCHEDULE

The critical path of this project starts with contract award and execution and leads into the completion of the initial design activities, followed by mobilization. With mobilization completion, the construction of Ramp Y in Stage 1 is critical to being able to start the widening of both the south and north sections of the Valley View Overpass (B-627). Once the north widening is complete, construction follows to the installation and construction of the sediment traps and basins in Stage 4. Upon completion of the detention basin, work will commence on the I-581 southbound roadway, taking the project to substantial completion.

The project schedule will graphically represent, in its Network Diagram, the logical sequence and duration of each activity necessary to complete the work in accordance with the contract requirements. The project schedule will include Procurement activities, Government activities, Construction Quality Management (CQM) activities, and Construction activities.

The information provided in the project schedule will include the interdependencies between LANE's activities and all other activities required for the successful completion of the contract. Milestones, as well as other significant dates provided for in the contract, will be identified.

As work progresses, start dates, finish dates, percent complete, and remaining durations are updated to report the progress of each work activity. The Construction Manager

will incorporate updated data into the CPM schedule on a monthly basis, review the results internally and with the owner, and prepare the required reports for submittal. Monthly updates of the CPM schedule provide the foundation of progress reports used by the project team.

The project schedule is based on LANE's proposed construction approach and includes milestones identified in the RFP.

The proposed DDI is the most functional design for this project. In comparison to the basic RFP design, the DDI configuration reduces ROW requirements and eliminates numerous property takes, reduces stream impacts and relocation requirements, reduces the bridge width, simplifies the operation of the intersections within the interchange, and reduces impacts to utilities. Our CPM schedule demonstrates the efficiency of DDI construction and our approach to helping VDOT realize the operational advantages of the DDI itself. And, as is most important to the stakeholders and the community, the DDI will be constructed without impacting the existing roadway and trail, enabling both to remain open at all times during construction.

SPOTLIGHT ON THE CRITICAL PATH

Critical path milestones:

(1) Contract award and execution

(2) Initial design (60%)

(3) Mobilization

(4) Construction of Ramp Y: Stage 1

(5) Construction of Valley View Overpass - South Widening: Stage 1

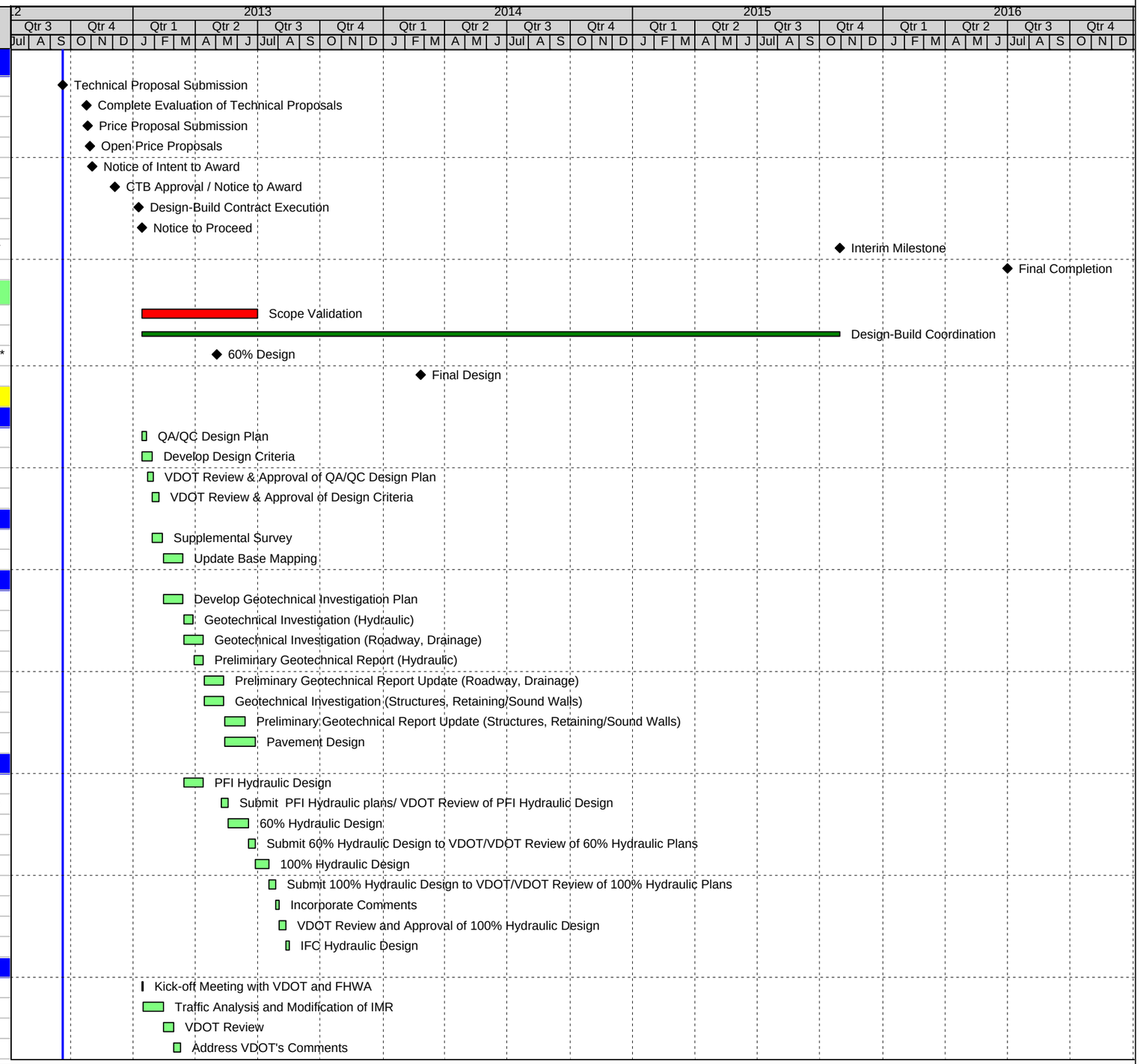
(6) Construction of Valley View Overpass - North Widening: Stage 3

(7) Sediment traps and detention basins: Stage 4

(8) Widening of I-581 southbound: Stage 4

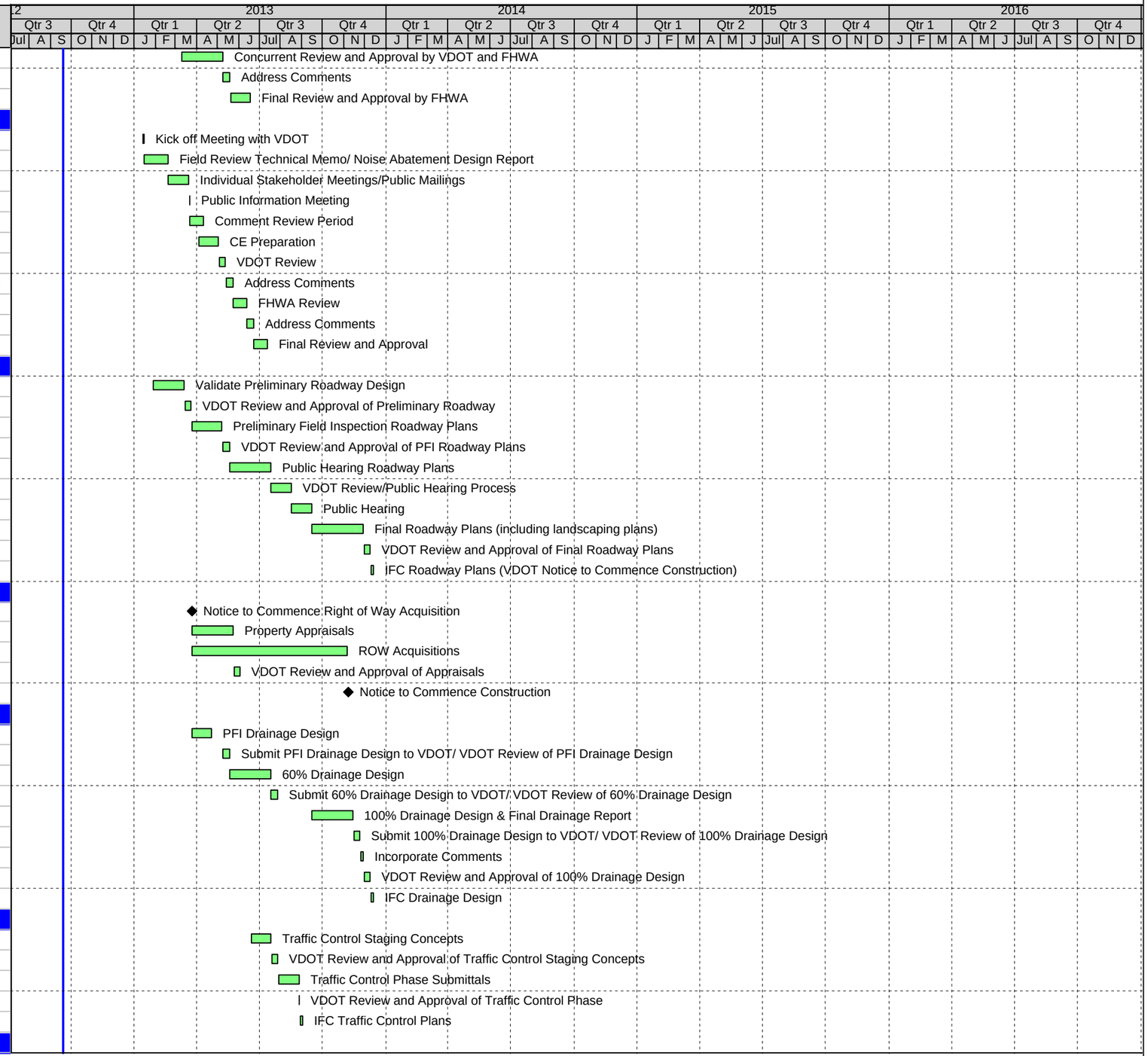
4.6.2 - Proposal Schedule

Activity ID	Activity Name	Original Duration	Start	Finish
I-581 Valley View Blvd				
0010	Technical Proposal Submission	0	20-Sep-12	
0030	Complete Evaluation of Technical Proposals	0	25-Oct-12	
0020	Price Proposal Submission	0	26-Oct-12	
0040	Open Price Proposals	0	30-Oct-12	
0050	Notice of Intent to Award	0	02-Nov-12	
0060	CTB Approval / Notice to Award	0	05-Dec-12	
0070	Design-Build Contract Execution	0	09-Jan-13	
0080	Notice to Proceed	0	14-Jan-13	
9000	Interim Milestone	0		30-Oct-15*
9010	Final Completion	0		01-Jul-16
Design				
D000	Scope Validation	120	14-Jan-13	01-Jul-13
D030	Design-Build Coordination	715	14-Jan-13	30-Oct-15
D010	60% Design	0		03-May-13*
D020	Final Design	0		24-Feb-14
Roadway Design				
Project Management				
D0030	QA/QC Design Plan	7	14-Jan-13	20-Jan-13
D0010	Develop Design Criteria	15	14-Jan-13	28-Jan-13
D0040	VDOT Review & Approval of QA/QC Design Plan	10	21-Jan-13	30-Jan-13
D0020	VDOT Review & Approval of Design Criteria	10	29-Jan-13	07-Feb-13
Supplemental Survey				
D0050	Supplemental Survey	15	29-Jan-13	12-Feb-13
D0060	Update Base Mapping	30	13-Feb-13	14-Mar-13
Geotechnical Investigation & Design				
D0070	Develop Geotechnical Investigation Plan	30	13-Feb-13	14-Mar-13
D0080	Geotechnical Investigation (Hydraulic)	15	15-Mar-13	29-Mar-13
D0090	Geotechnical Investigation (Roadway, Drainage)	30	15-Mar-13	13-Apr-13
D0110	Preliminary Geotechnical Report (Hydraulic)	15	30-Mar-13	13-Apr-13
D0120	Preliminary Geotechnical Report Update (Roadway, Drai...	30	14-Apr-13	13-May-13
D0100	Geotechnical Investigation (Structures, Retaining/Sound ...	30	14-Apr-13	13-May-13
D0130	Preliminary Geotechnical Report Update (Structures, Ret...	30	14-May-13	12-Jun-13
D0140	Pavement Design	45	14-May-13	27-Jun-13
Hydraulic (Stream) Design				
D0150	PFI Hydraulic Design	30	15-Mar-13	13-Apr-13
D0160	Submit PFI Hydraulic plans/ VDOT Review of PFI Hydra...	10	09-May-13	18-May-13
D0170	60% Hydraulic Design	30	19-May-13	17-Jun-13
D0180	Submit 60% Hydraulic Design to VDOT/VDOT Review of...	10	18-Jun-13	27-Jun-13
D0190	100% Hydraulic Design	20	28-Jun-13	17-Jul-13
D0200	Submit 100% Hydraulic Design to VDOT/VDOT Review ...	10	18-Jul-13	27-Jul-13
D0210	Incorporate Comments	5	28-Jul-13	01-Aug-13
D0220	VDOT Review and Approval of 100% Hydraulic Design	10	02-Aug-13	11-Aug-13
D0230	IFC Hydraulic Design	5	12-Aug-13	16-Aug-13
IMR				
D0240	Kick-off Meeting with VDOT and FHWA	1	14-Jan-13*	14-Jan-13
D0250	Traffic Analysis and Modification of IMR	30	15-Jan-13	13-Feb-13
D0260	VDOT Review	15	14-Feb-13	28-Feb-13
D0270	Address VDOT's Comments	10	01-Mar-13	10-Mar-13



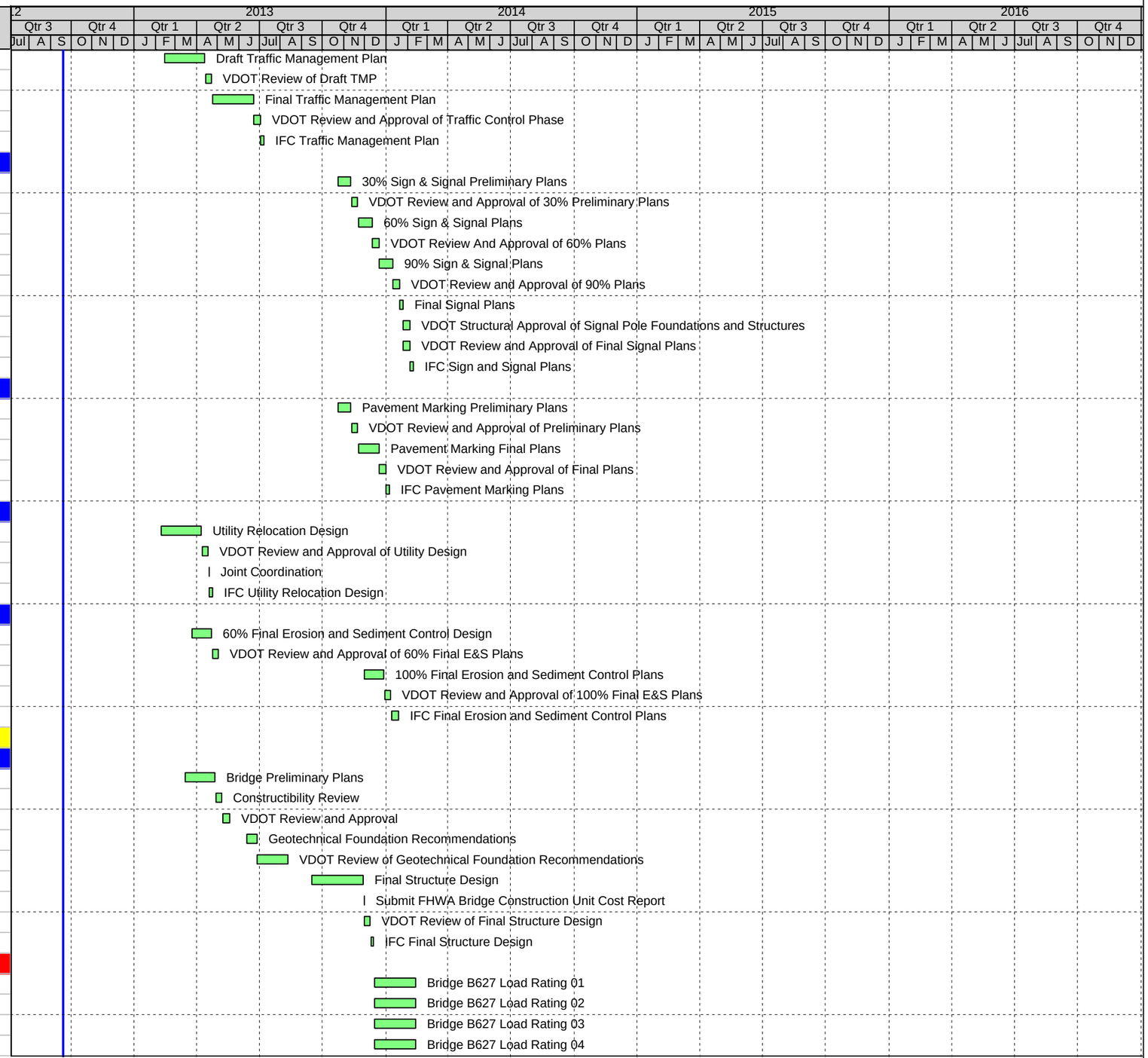
Remaining Level of Effort | Actual Work
Actual Level of Effort | Remaining Work

Activity ID	Activity Name	Original Duration	Start	Finish
D0280	Concurrent Review and Approval by VDOT and FHWA	60	11-Mar-13	09-May-13
D0290	Address Comments	10	10-May-13	19-May-13
D0300	Final Review and Approval by FHWA	30	20-May-13	18-Jun-13
CE Re-Evaluation				
D0310	Kick off Meeting with VDOT	1	14-Jan-13	14-Jan-13
D0320	Field Review Technical Memo/ Noise Abatement Design...	35	15-Jan-13	18-Feb-13
D0330	Individual Stakeholder Meetings/Public Mailings	30	19-Feb-13	20-Mar-13
D0340	Public Information Meeting	1	22-Mar-13	22-Mar-13
D0350	Comment Review Period	20	23-Mar-13	11-Apr-13
D0360	CE Preparation	30	04-Apr-13	03-May-13
D0370	VDOT Review	10	04-May-13	13-May-13
D0380	Address Comments	10	14-May-13	23-May-13
D0390	FHWA Review	20	24-May-13	12-Jun-13
D0400	Address Comments	10	13-Jun-13	22-Jun-13
D0410	Final Review and Approval	20	23-Jun-13	12-Jul-13
Roadway Design				
D0420	Validate Preliminary Roadway Design	45	29-Jan-13	14-Mar-13
D0430	VDOT Review and Approval of Preliminary Roadway	10	15-Mar-13	24-Mar-13
D0440	Preliminary Field Inspection Roadway Plans	45	25-Mar-13	08-May-13
D0450	VDOT Review and Approval of PFI Roadway Plans	10	09-May-13	18-May-13
D0460	Public Hearing Roadway Plans	60	19-May-13	17-Jul-13
D0470	VDOT Review/Public Hearing Process	30	18-Jul-13	16-Aug-13
D0480	Public Hearing	30	17-Aug-13	15-Sep-13
D0490	Final Roadway Plans (including landscaping plans)	75	16-Sep-13	29-Nov-13
D0500	VDOT Review and Approval of Final Roadway Plans	10	30-Nov-13	09-Dec-13
D0510	IFC Roadway Plans (VDOT Notice to Commence Constr...	5	10-Dec-13	14-Dec-13
Right of Way Acquisition				
R020	Notice to Commence Right of Way Acquisition	0	25-Mar-13	
D0520	Property Appraisals	45	25-Mar-13	24-May-13
R010	ROW Acquisitions	160	25-Mar-13	06-Nov-13
D0530	VDOT Review and Approval of Appraisals	10	25-May-13	03-Jun-13
R030	Notice to Commence Construction	0	07-Nov-13	
Drainage & Stormwater Management Design				
D0540	PFI Drainage Design	30	25-Mar-13	23-Apr-13
D0550	Submit PFI Drainage Design to VDOT/ VDOT Review of ...	10	09-May-13	18-May-13
D0560	60% Drainage Design	60	19-May-13	17-Jul-13
D0570	Submit 60% Drainage Design to VDOT/ VDOT Review o...	10	18-Jul-13	27-Jul-13
D0580	100% Drainage Design & Final Drainage Report	60	16-Sep-13	14-Nov-13
D0590	Submit 100% Drainage Design to VDOT/ VDOT Review ...	10	15-Nov-13	24-Nov-13
D0600	Incorporate Comments	5	25-Nov-13	29-Nov-13
D0610	VDOT Review and Approval of 100% Drainage Design	10	30-Nov-13	09-Dec-13
D0620	IFC Drainage Design	5	10-Dec-13	14-Dec-13
Traffic Control Design				
D0630	Traffic Control Staging Concepts	30	19-Jun-13	18-Jul-13
D0640	VDOT Review and Approval of Traffic Control Staging C...	10	19-Jul-13	28-Jul-13
D0650	Traffic Control Phase Submittals	30	29-Jul-13	27-Aug-13
D0660	VDOT Review and Approval of Traffic Control Phase	1	28-Aug-13	28-Aug-13
D0670	IFC Traffic Control Plans	5	29-Aug-13	02-Sep-13
Traffic Management Plan				



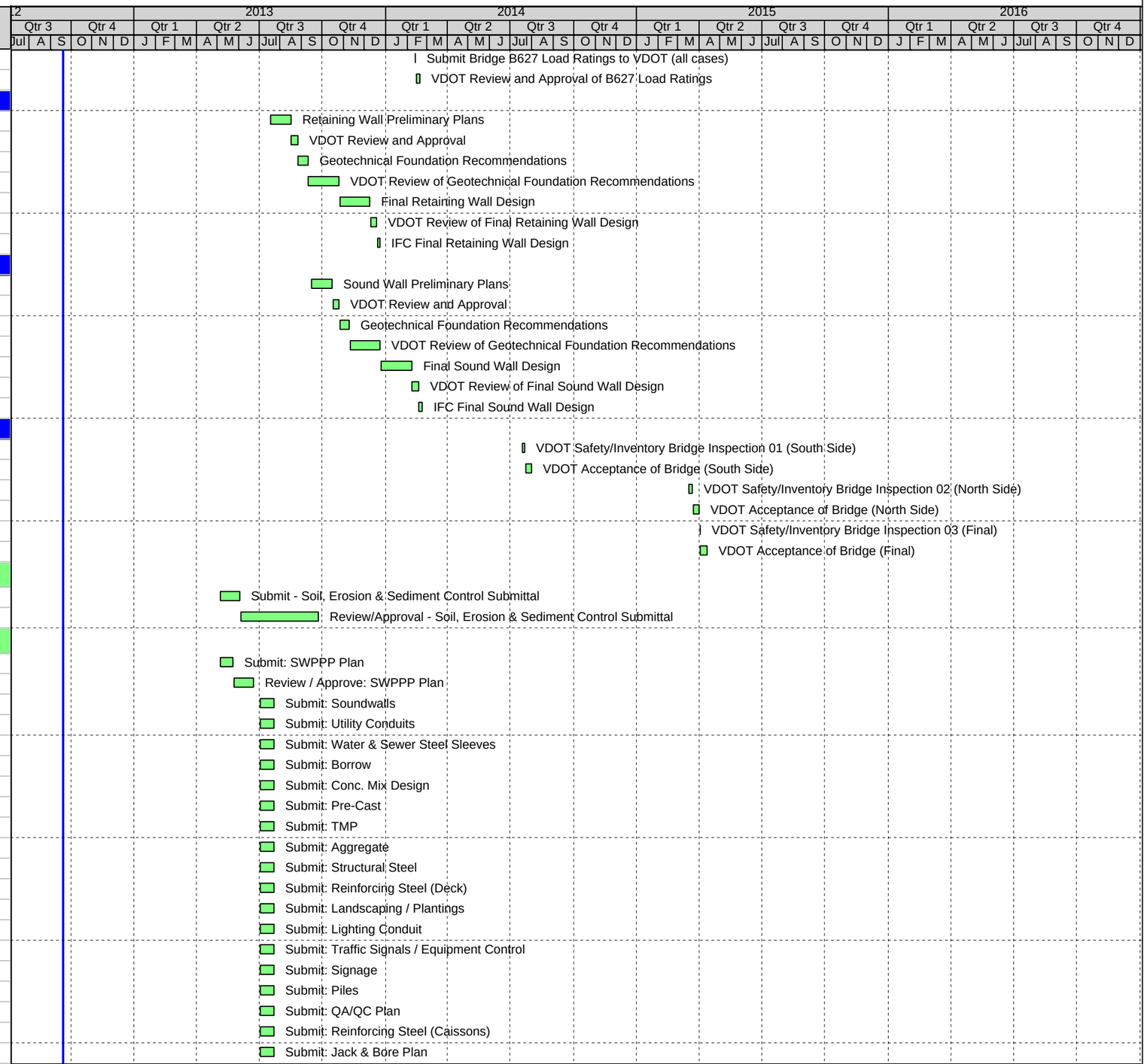
Remaining Level of Effort | Actual Work
Actual Level of Effort | Remaining Work

Activity ID	Activity Name	Original Duration	Start	Finish
D0680	Draft Traffic Management Plan	60	13-Feb-13	13-Apr-13
D0690	VDOT Review of Draft TMP	10	14-Apr-13	23-Apr-13
D0700	Final Traffic Management Plan	60	24-Apr-13	22-Jun-13
D0710	VDOT Review and Approval of Traffic Control Phase	10	23-Jun-13	02-Jul-13
D0720	IFC Traffic Management Plan	5	03-Jul-13	07-Jul-13
Sign & Signal Design				
D0730	30% Sign & Signal Preliminary Plans	20	23-Oct-13	11-Nov-13
D0740	VDOT Review and Approval of 30% Preliminary Plans	10	12-Nov-13	21-Nov-13
D0750	60% Sign & Signal Plans	20	22-Nov-13	11-Dec-13
D0760	VDOT Review And Approval of 60% Plans	10	12-Dec-13	21-Dec-13
D0770	90% Sign & Signal Plans	20	22-Dec-13	10-Jan-14
D0780	VDOT Review and Approval of 90% Plans	10	11-Jan-14	20-Jan-14
D0790	Final Signal Plans	5	21-Jan-14	25-Jan-14
D0800	VDOT Structural Approval of Signal Pole Foundations a...	10	26-Jan-14	04-Feb-14
D0810	VDOT Review and Approval of Final Signal Plans	10	26-Jan-14	04-Feb-14
D0820	IFC Sign and Signal Plans	5	05-Feb-14	09-Feb-14
Pavement Marking Design				
D0830	Pavement Marking Preliminary Plans	20	23-Oct-13	11-Nov-13
D0840	VDOT Review and Approval of Preliminary Plans	10	12-Nov-13	21-Nov-13
D0850	Pavement Marking Final Plans	30	22-Nov-13	21-Dec-13
D0860	VDOT Review and Approval of Final Plans	10	22-Dec-13	31-Dec-13
D0870	IFC Pavement Marking Plans	5	01-Jan-14	05-Jan-14
Utility Relocation Design				
D0880	Utility Relocation Design	60	08-Feb-13	08-Apr-13
D0890	VDOT Review and Approval of Utility Design	10	09-Apr-13	18-Apr-13
D0900	Joint Coordination	1	19-Apr-13	19-Apr-13
D0910	IFC Utility Relocation Design	5	20-Apr-13	24-Apr-13
Erosion & Sediment Control Design				
D0920	60% Final Erosion and Sediment Control Design	30	25-Mar-13	23-Apr-13
D0930	VDOT Review and Approval of 60% Final E&S Plans	10	24-Apr-13	03-May-13
D0940	100% Final Erosion and Sediment Control Plans	30	30-Nov-13	29-Dec-13
D0950	VDOT Review and Approval of 100% Final E&S Plans	10	30-Dec-13	08-Jan-14
D0960	IFC Final Erosion and Sediment Control Plans	10	09-Jan-14	18-Jan-14
Structure Design				
Valley View Drive Bridge B-267 Over I-581 Design				
D0970	Bridge Preliminary Plans	45	15-Mar-13	28-Apr-13
D0980	Constructibility Review	10	29-Apr-13	08-May-13
D0990	VDOT Review and Approval	10	09-May-13	18-May-13
D1000	Geotechnical Foundation Recommendations	15	13-Jun-13	27-Jun-13
D1010	VDOT Review of Geotechnical Foundation Recommend...	45	28-Jun-13	11-Aug-13
D1020	Final Structure Design	75	16-Sep-13	29-Nov-13
D1030	Submit FHWA Bridge Construction Unit Cost Report	1	30-Nov-13	30-Nov-13
D1040	VDOT Review of Final Structure Design	10	30-Nov-13	09-Dec-13
D1050	IFC Final Structure Design	5	10-Dec-13	14-Dec-13
Load Ratings				
D1060	Bridge B627 Load Rating 01	60	15-Dec-13	12-Feb-14
D1070	Bridge B627 Load Rating 02	60	15-Dec-13	12-Feb-14
D1080	Bridge B627 Load Rating 03	60	15-Dec-13	12-Feb-14
D1090	Bridge B627 Load Rating 04	60	15-Dec-13	12-Feb-14



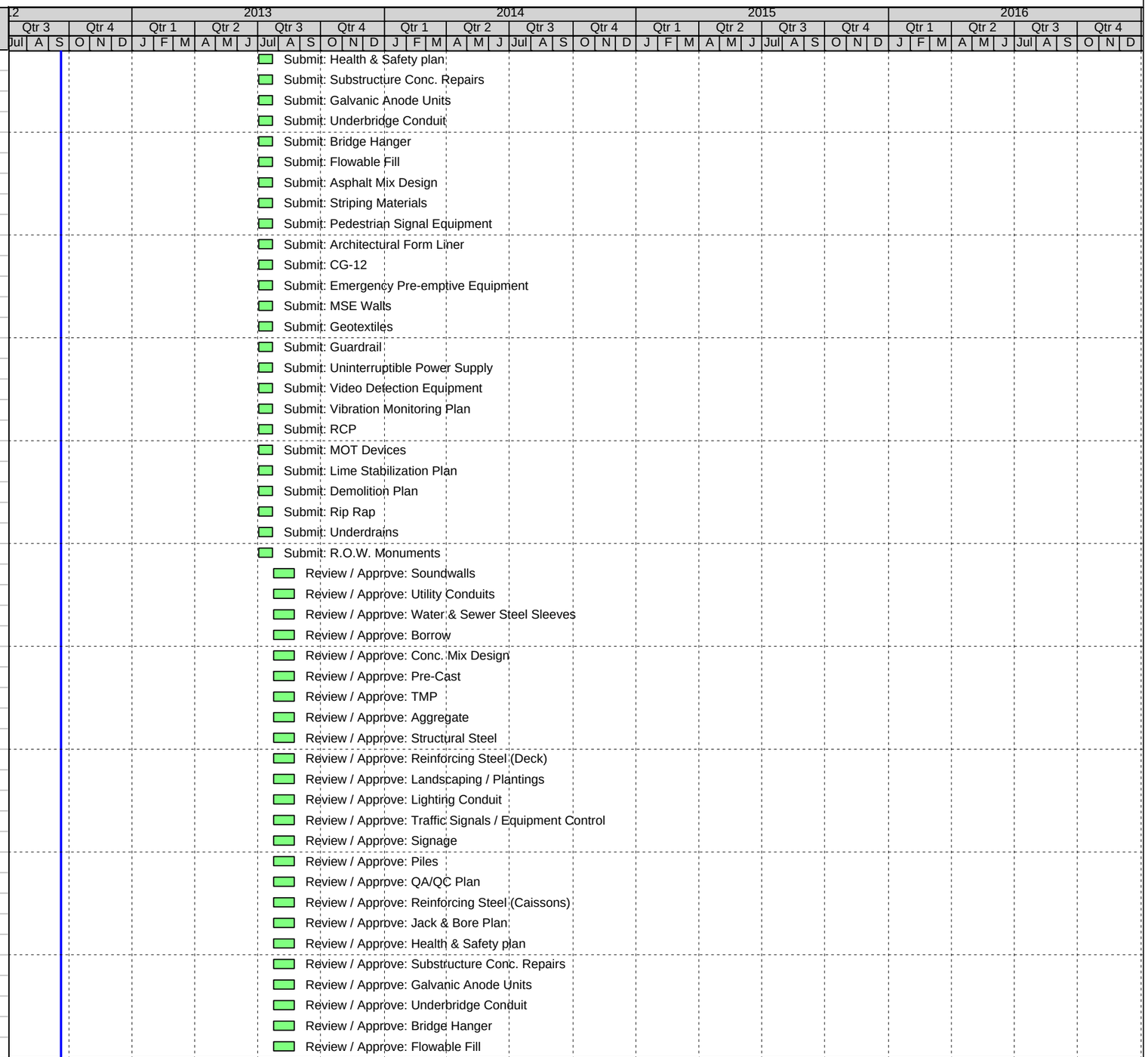
Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work

Activity ID	Activity Name	Original Duration	Start	Finish
D1100	Submit Bridge B627 Load Ratings to VDOT (all cases)	1	13-Feb-14	13-Feb-14
D1110	VDOT Review and Approval of B627 Load Ratings	7	14-Feb-14	20-Feb-14
Retaining Wall Design				
D1120	Retaining Wall Preliminary Plans	30	18-Jul-13	16-Aug-13
D1130	VDOT Review and Approval	10	17-Aug-13	26-Aug-13
D1140	Geotechnical Foundation Recommendations	15	27-Aug-13	10-Sep-13
D1150	VDOT Review of Geotechnical Foundation Recommend...	45	11-Sep-13	25-Oct-13
D1160	Final Retaining Wall Design	45	26-Oct-13	09-Dec-13
D1170	VDOT Review of Final Retaining Wall Design	10	10-Dec-13	19-Dec-13
D1180	IFC Final Retaining Wall Design	5	20-Dec-13	24-Dec-13
Sound Walls				
D1190	Sound Wall Preliminary Plans	30	16-Sep-13	15-Oct-13
D1200	VDOT Review and Approval	10	16-Oct-13	25-Oct-13
D1210	Geotechnical Foundation Recommendations	15	26-Oct-13	09-Nov-13
D1220	VDOT Review of Geotechnical Foundation Recommend...	45	10-Nov-13	24-Dec-13
D1230	Final Sound Wall Design	45	25-Dec-13	07-Feb-14
D1240	VDOT Review of Final Sound Wall Design	10	08-Feb-14	17-Feb-14
D1250	IFC Final Sound Wall Design	5	18-Feb-14	22-Feb-14
Bridge Safety Inspections				
D1260	VDOT Safety/Inventory Bridge Inspection 01 (South Side)	5	18-Jul-14	22-Jul-14
D1270	VDOT Acceptance of Bridge (South Side)	10	23-Jul-14	01-Aug-14
D1280	VDOT Safety/Inventory Bridge Inspection 02 (North Side)	5	18-Mar-15	22-Mar-15
D1290	VDOT Acceptance of Bridge (North Side)	10	23-Mar-15	01-Apr-15
D1300	VDOT Safety/Inventory Bridge Inspection 03 (Final)	1	02-Apr-15	02-Apr-15
D1310	VDOT Acceptance of Bridge (Final)	10	03-Apr-15	12-Apr-15
Permits				
P010	Submit - Soil, Erosion & Sediment Control Submittal	20	06-May-13	03-Jun-13
P020	Review/Approval - Soil, Erosion & Sediment Control Sub...	80	04-Jun-13	25-Sep-13
Submittals / Procurements				
S0220	Submit: SWPPP Plan	15	06-May-13	24-May-13
S0225	Review / Approve: SWPPP Plan	30	25-May-13	23-Jun-13
S0120	Submit: Soundwalls	15	02-Jul-13	23-Jul-13
S0440	Submit: Utility Conduits	15	02-Jul-13	23-Jul-13
S0290	Submit: Water & Sewer Steel Sleeves	15	02-Jul-13	23-Jul-13
S0010	Submit: Borrow	15	02-Jul-13	23-Jul-13
S0020	Submit: Conc. Mix Design	15	02-Jul-13	23-Jul-13
S0030	Submit: Pre-Cast	15	02-Jul-13	23-Jul-13
S0040	Submit: TMP	15	02-Jul-13	23-Jul-13
S0050	Submit: Aggregate	15	02-Jul-13	23-Jul-13
S0060	Submit: Structural Steel	15	02-Jul-13	23-Jul-13
S0070	Submit: Reinforcing Steel (Deck)	15	02-Jul-13	23-Jul-13
S0080	Submit: Landscaping / Plantings	15	02-Jul-13	23-Jul-13
S0090	Submit: Lighting Conduit	15	02-Jul-13	23-Jul-13
S0100	Submit: Traffic Signals / Equipment Control	15	02-Jul-13	23-Jul-13
S0110	Submit: Signage	15	02-Jul-13	23-Jul-13
S0130	Submit: Piles	15	02-Jul-13	23-Jul-13
S0140	Submit: QA/QC Plan	15	02-Jul-13	23-Jul-13
S0150	Submit: Reinforcing Steel (Caissons)	15	02-Jul-13	23-Jul-13
S0160	Submit: Jack & Bore Plan	15	02-Jul-13	23-Jul-13



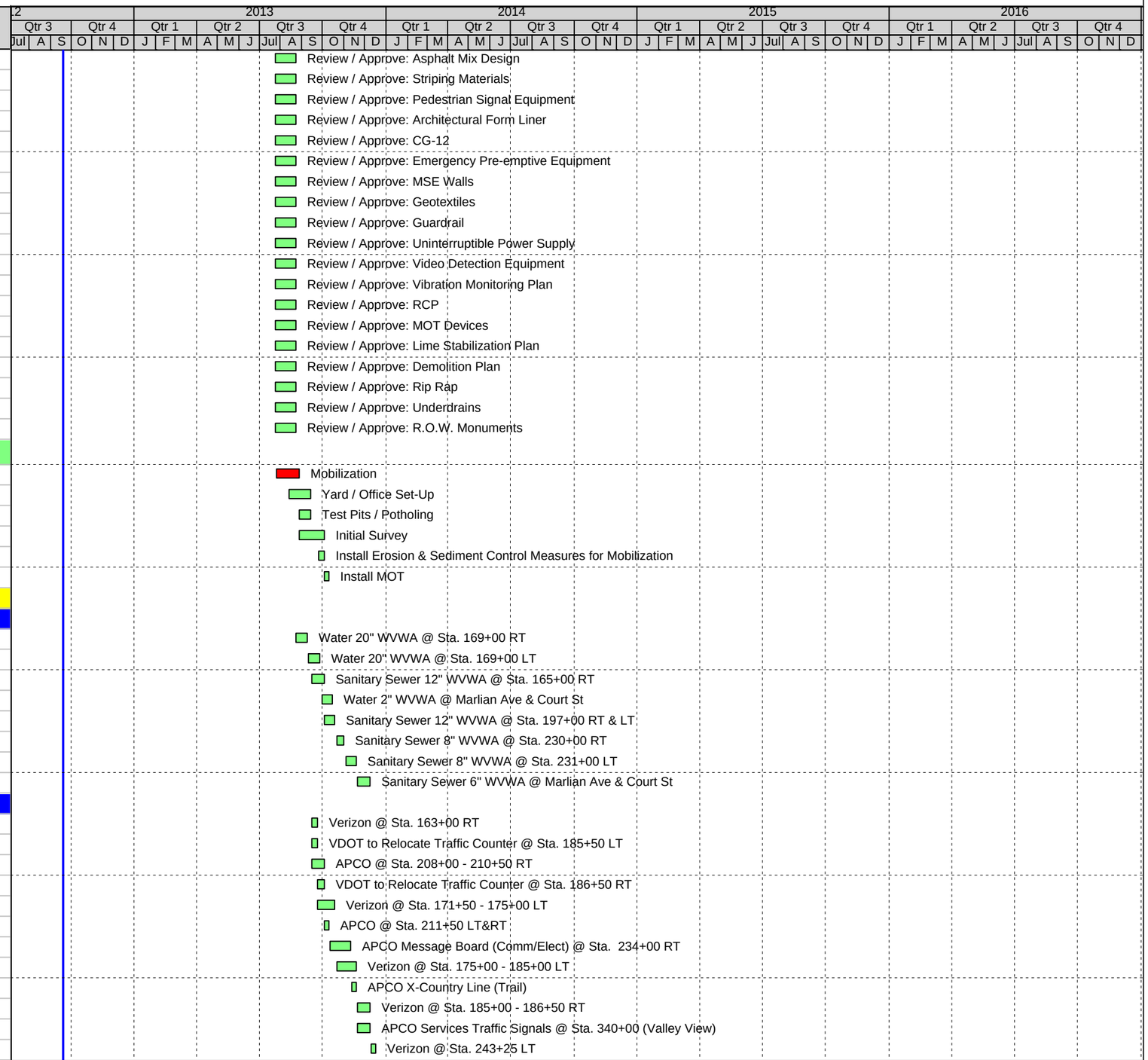
Remaining Level of Effort
Actual Work
Actual Level of Effort
Remaining Work

Activity ID	Activity Name	Original Duration	Start	Finish
S0170	Submit: Health & Safety plan	15	02-Jul-13	23-Jul-13
S0180	Submit: Substructure Conc. Repairs	15	02-Jul-13	23-Jul-13
S0190	Submit: Galvanic Anode Units	15	02-Jul-13	23-Jul-13
S0200	Submit: Underbridge Conduit	15	02-Jul-13	23-Jul-13
S0210	Submit: Bridge Hanger	15	02-Jul-13	23-Jul-13
S0230	Submit: Flowable Fill	15	02-Jul-13	23-Jul-13
S0240	Submit: Asphalt Mix Design	15	02-Jul-13	23-Jul-13
S0250	Submit: Striping Materials	15	02-Jul-13	23-Jul-13
S0260	Submit: Pedestrian Signal Equipment	15	02-Jul-13	23-Jul-13
S0270	Submit: Architectural Form Liner	15	02-Jul-13	23-Jul-13
S0280	Submit: CG-12	15	02-Jul-13	23-Jul-13
S0300	Submit: Emergency Pre-emptive Equipment	15	02-Jul-13	23-Jul-13
S0310	Submit: MSE Walls	15	02-Jul-13	23-Jul-13
S0320	Submit: Geotextiles	15	02-Jul-13	23-Jul-13
S0330	Submit: Guardrail	15	02-Jul-13	23-Jul-13
S0340	Submit: Uninterruptible Power Supply	15	02-Jul-13	23-Jul-13
S0350	Submit: Video Detection Equipment	15	02-Jul-13	23-Jul-13
S0360	Submit: Vibration Monitoring Plan	15	02-Jul-13	23-Jul-13
S0370	Submit: RCP	15	02-Jul-13	23-Jul-13
S0380	Submit: MOT Devices	15	02-Jul-13	23-Jul-13
S0390	Submit: Lime Stabilization Plan	15	02-Jul-13	23-Jul-13
S0400	Submit: Demolition Plan	15	02-Jul-13	23-Jul-13
S0410	Submit: Rip Rap	15	02-Jul-13	23-Jul-13
S0420	Submit: Underdrains	15	02-Jul-13	23-Jul-13
S0430	Submit: R.O.W. Monuments	15	02-Jul-13	23-Jul-13
S0125	Review / Approve: Soundwalls	30	24-Jul-13	22-Aug-13
S0445	Review / Approve: Utility Conduits	30	24-Jul-13	22-Aug-13
S0295	Review / Approve: Water & Sewer Steel Sleeves	30	24-Jul-13	22-Aug-13
S0015	Review / Approve: Borrow	30	24-Jul-13	22-Aug-13
S0025	Review / Approve: Conc. Mix Design	30	24-Jul-13	22-Aug-13
S0035	Review / Approve: Pre-Cast	30	24-Jul-13	22-Aug-13
S0045	Review / Approve: TMP	30	24-Jul-13	22-Aug-13
S0055	Review / Approve: Aggregate	30	24-Jul-13	22-Aug-13
S0065	Review / Approve: Structural Steel	30	24-Jul-13	22-Aug-13
S0075	Review / Approve: Reinforcing Steel (Deck)	30	24-Jul-13	22-Aug-13
S0085	Review / Approve: Landscaping / Plantings	30	24-Jul-13	22-Aug-13
S0095	Review / Approve: Lighting Conduit	30	24-Jul-13	22-Aug-13
S0105	Review / Approve: Traffic Signals / Equipment Control	30	24-Jul-13	22-Aug-13
S0115	Review / Approve: Signage	30	24-Jul-13	22-Aug-13
S0135	Review / Approve: Piles	30	24-Jul-13	22-Aug-13
S0145	Review / Approve: QA/QC Plan	30	24-Jul-13	22-Aug-13
S0155	Review / Approve: Reinforcing Steel (Caissons)	30	24-Jul-13	22-Aug-13
S0165	Review / Approve: Jack & Bore Plan	30	24-Jul-13	22-Aug-13
S0175	Review / Approve: Health & Safety plan	30	24-Jul-13	22-Aug-13
S0185	Review / Approve: Substructure Conc. Repairs	30	24-Jul-13	22-Aug-13
S0195	Review / Approve: Galvanic Anode Units	30	24-Jul-13	22-Aug-13
S0205	Review / Approve: Underbridge Conduit	30	24-Jul-13	22-Aug-13
S0215	Review / Approve: Bridge Hanger	30	24-Jul-13	22-Aug-13
S0235	Review / Approve: Flowable Fill	30	24-Jul-13	22-Aug-13



Remaining Level of Effort Actual Work
Actual Level of Effort Remaining Work

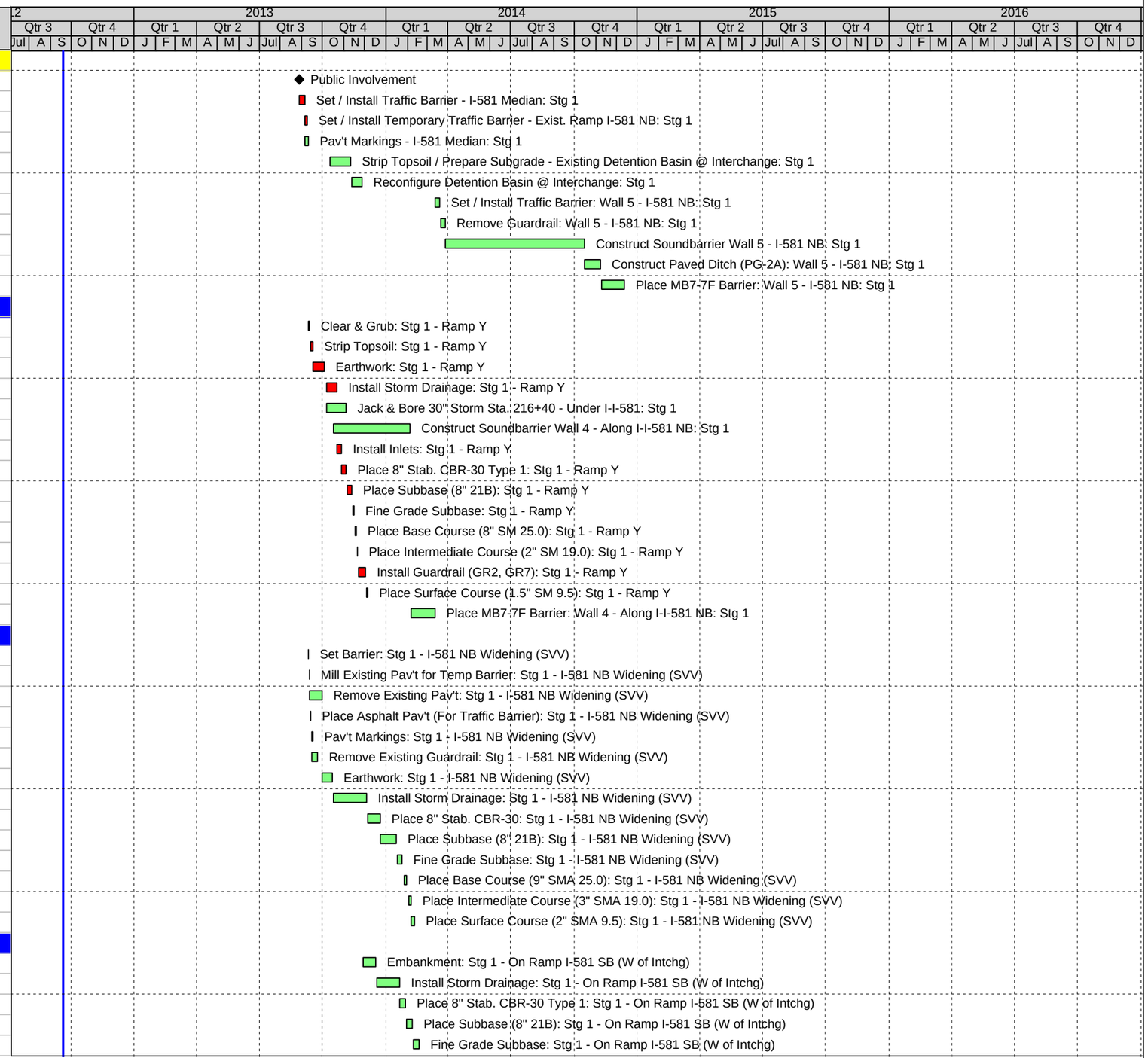
Activity ID	Activity Name	Original Duration	Start	Finish
S0245	Review / Approve: Asphalt Mix Design	30	24-Jul-13	22-Aug-13
S0255	Review / Approve: Striping Materials	30	24-Jul-13	22-Aug-13
S0265	Review / Approve: Pedestrian Signal Equipment	30	24-Jul-13	22-Aug-13
S0275	Review / Approve: Architectural Form Liner	30	24-Jul-13	22-Aug-13
S0285	Review / Approve: CG-12	30	24-Jul-13	22-Aug-13
S0305	Review / Approve: Emergency Pre-emptive Equipment	30	24-Jul-13	22-Aug-13
S0315	Review / Approve: MSE Walls	30	24-Jul-13	22-Aug-13
S0325	Review / Approve: Geotextiles	30	24-Jul-13	22-Aug-13
S0335	Review / Approve: Guardrail	30	24-Jul-13	22-Aug-13
S0345	Review / Approve: Uninterruptible Power Supply	30	24-Jul-13	22-Aug-13
S0355	Review / Approve: Video Detection Equipment	30	24-Jul-13	22-Aug-13
S0365	Review / Approve: Vibration Monitoring Plan	30	24-Jul-13	22-Aug-13
S0375	Review / Approve: RCP	30	24-Jul-13	22-Aug-13
S0385	Review / Approve: MOT Devices	30	24-Jul-13	22-Aug-13
S0395	Review / Approve: Lime Stabilization Plan	30	24-Jul-13	22-Aug-13
S0405	Review / Approve: Demolition Plan	30	24-Jul-13	22-Aug-13
S0415	Review / Approve: Rip Rap	30	24-Jul-13	22-Aug-13
S0425	Review / Approve: Underdrains	30	24-Jul-13	22-Aug-13
S0435	Review / Approve: R.O.W. Monuments	30	24-Jul-13	22-Aug-13
Construction				
0100	Mobilization	20	26-Jul-13	27-Aug-13
0110	Yard / Office Set-Up	20	13-Aug-13	13-Sep-13
0140	Test Pits / Potholing	10	28-Aug-13	13-Sep-13
0120	Initial Survey	20	28-Aug-13	03-Oct-13
0150	Install Erosion & Sediment Control Measures for Mobiliz...	5	26-Sep-13	04-Oct-13
0130	Install MOT	5	04-Oct-13	10-Oct-13
Utility Relocations / Protection				
Wet Utilities				
10700	Water 20" WVWA @ Sta. 169+00 RT	10	23-Aug-13	09-Sep-13
10710	Water 20" WVWA @ Sta. 169+00 LT	10	10-Sep-13	26-Sep-13
10000	Sanitary Sewer 12" WVWA @ Sta. 165+00 RT	10	16-Sep-13	03-Oct-13
10770	Water 2" WVWA @ Marlian Ave & Court St	10	30-Sep-13	14-Oct-13
10720	Sanitary Sewer 12" WVWA @ Sta. 197+00 RT & LT	10	04-Oct-13	18-Oct-13
10730	Sanitary Sewer 8" WVWA @ Sta. 230+00 RT	10	21-Oct-13	01-Nov-13
10740	Sanitary Sewer 8" WVWA @ Sta. 231+00 LT	10	04-Nov-13	19-Nov-13
10750	Sanitary Sewer 6" WVWA @ Marlian Ave & Court St	10	20-Nov-13	09-Dec-13
Dry Utilities				
11000	Verizon @ Sta. 163+00 RT	5	16-Sep-13	23-Sep-13
11030	VDOT to Relocate Traffic Counter @ Sta. 185+50 LT	5	16-Sep-13	23-Sep-13
11060	APCO @ Sta. 208+00 - 210+50 RT	10	16-Sep-13	03-Oct-13
11040	VDOT to Relocate Traffic Counter @ Sta. 186+50 RT	5	24-Sep-13	03-Oct-13
11010	Verizon @ Sta. 171+50 - 175+00 LT	15	24-Sep-13	18-Oct-13
11070	APCO @ Sta. 211+50 LT&RT	5	04-Oct-13	10-Oct-13
11080	APCO Message Board (Comm/Elect) @ Sta. 234+00 RT	20	11-Oct-13	11-Nov-13
11020	Verizon @ Sta. 175+00 - 185+00 LT	20	21-Oct-13	19-Nov-13
11100	APCO X-Country Line (Trail)	5	12-Nov-13	19-Nov-13
11050	Verizon @ Sta. 185+00 - 186+50 RT	10	20-Nov-13	09-Dec-13
11110	APCO Services Traffic Signals @ Sta. 340+00 (Valley Vi...	10	20-Nov-13	09-Dec-13
11090	Verizon @ Sta. 243+25 LT	5	10-Dec-13	17-Dec-13



Remaining Level of Effort
Actual Work
Actual Level of Effort
Remaining Work

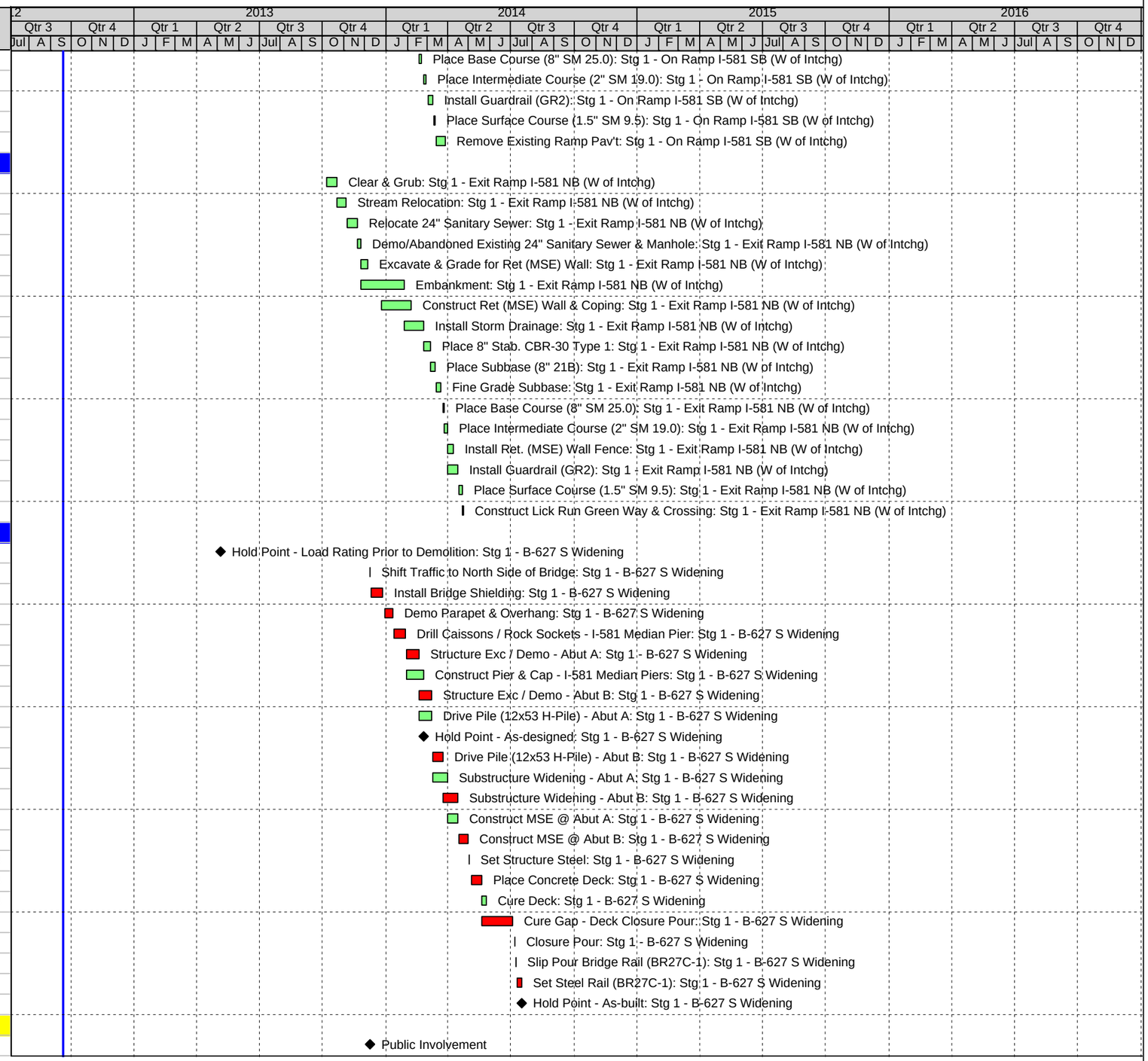
LANE

Activity ID	Activity Name	Original Duration	Start	Finish
Stage 1				
10001	Public Involvement	0	28-Aug-13	
10010	Set / Install Traffic Barrier - I-581 Median: Stg 1	5	28-Aug-13	05-Sep-13
10030	Set / Install Temporary Traffic Barrier - Exist. Ramp I-58...	2	06-Sep-13	09-Sep-13
10850	Pav't Markings - I-581 Median: Stg 1	3	06-Sep-13	10-Sep-13
10040	Strip Topsoil / Prepare Subgrade - Existing Detention Ba...	20	11-Oct-13	11-Nov-13
10050	Reconfigure Detention Basin @ Interchange: Stg 1	10	12-Nov-13	26-Nov-13
10840	Set / Install Traffic Barrier: Wall 5 - I-581 NB: Stg 1	5	13-Mar-14	20-Mar-14
10680	Remove Guardrail: Wall 5 - I-581 NB: Stg 1	5	21-Mar-14	27-Mar-14
10640	Construct Soundbarrier Wall 5 - I-581 NB: Stg 1	120	28-Mar-14	15-Oct-14
10660	Construct Paved Ditch (PG-2A): Wall 5 - I-581 NB: Stg 1	15	16-Oct-14	07-Nov-14
10650	Place MB7-7F Barrier: Wall 5 - I-581 NB: Stg 1	20	10-Nov-14	12-Dec-14
Ramp Y				
10070	Clear & Grub: Stg 1 - Ramp Y	2	10-Sep-13	12-Sep-13
10080	Strip Topsoil: Stg 1 - Ramp Y	2	13-Sep-13	16-Sep-13
10090	Earthwork: Stg 1 - Ramp Y	10	17-Sep-13	04-Oct-13
10100	Install Storm Drainage: Stg 1 - Ramp Y	10	07-Oct-13	21-Oct-13
10690	Jack & Bore 30" Storm Sta. 216+40 - Under I-I-581: Stg 1	20	07-Oct-13	04-Nov-13
10180	Construct Soundbarrier Wall 4 - Along I-I-581 NB: Stg 1	60	17-Oct-13	04-Feb-14
10110	Install Inlets: Stg 1 - Ramp Y	5	22-Oct-13	28-Oct-13
10210	Place 8" Stab. CBR-30 Type 1: Stg 1 - Ramp Y	5	29-Oct-13	04-Nov-13
10120	Place Subbase (8" 21B): Stg 1 - Ramp Y	5	05-Nov-13	12-Nov-13
10130	Fine Grade Subbase: Stg 1 - Ramp Y	2	14-Nov-13	15-Nov-13
10140	Place Base Course (8" SM 25.0): Stg 1 - Ramp Y	2	18-Nov-13	19-Nov-13
10150	Place Intermediate Course (2" SM 19.0): Stg 1 - Ramp Y	2	20-Nov-13	21-Nov-13
10170	Install Guardrail (GR2, GR7): Stg 1 - Ramp Y	5	22-Nov-13	02-Dec-13
10160	Place Surface Course (1.5" SM 9.5): Stg 1 - Ramp Y	2	03-Dec-13	05-Dec-13
10670	Place MB7-7F Barrier: Wall 4 - Along I-I-581 NB: Stg 1	20	06-Feb-14	12-Mar-14
Widening of I-581 Northbound (South of Valley View)				
10190	Set Barrier: Stg 1 - I-581 NB Widening (SVV)	1	10-Sep-13	10-Sep-13
10200	Mill Existing Pav't for Temp Barrier: Stg 1 - I-581 NB Wid...	1	12-Sep-13	12-Sep-13
10830	Remove Existing Pav't: Stg 1 - I-581 NB Widening (SVV)	10	12-Sep-13	30-Sep-13
10220	Place Asphalt Pav't (For Traffic Barrier): Stg 1 - I-581 NB...	1	13-Sep-13	13-Sep-13
10020	Pav't Markings: Stg 1 - I-581 NB Widening (SVV)	2	16-Sep-13	17-Sep-13
10320	Remove Existing Guardrail: Stg 1 - I-581 NB Widening (...	5	16-Sep-13	23-Sep-13
10230	Earthwork: Stg 1 - I-581 NB Widening (SVV)	10	01-Oct-13	15-Oct-13
10240	Install Storm Drainage: Stg 1 - I-581 NB Widening (SVV)	30	17-Oct-13	03-Dec-13
10250	Place 8" Stab. CBR-30: Stg 1 - I-581 NB Widening (SVV)	10	05-Dec-13	23-Dec-13
10260	Place Subbase (8" 21B): Stg 1 - I-581 NB Widening (SVV)	10	24-Dec-13	16-Jan-14
10270	Fine Grade Subbase: Stg 1 - I-581 NB Widening (SVV)	5	17-Jan-14	24-Jan-14
10280	Place Base Course (9" SMA 25.0): Stg 1 - I-581 NB Wid...	3	27-Jan-14	30-Jan-14
10290	Place Intermediate Course (3" SMA 19.0): Stg 1 - I-581 ...	3	03-Feb-14	06-Feb-14
10300	Place Surface Course (2" SMA 9.5): Stg 1 - I-581 NB Wi...	3	07-Feb-14	11-Feb-14
On Ramp to I-581 Southbound (West Side of Interchange) [Ramp Z]				
10330	Embankment: Stg 1 - On Ramp I-581 SB (W of Intchg)	10	29-Nov-13	17-Dec-13
10340	Install Storm Drainage: Stg 1 - On Ramp I-581 SB (W of ...	15	19-Dec-13	20-Jan-14
10400	Place 8" Stab. CBR-30 Type 1: Stg 1 - On Ramp I-581 S...	5	21-Jan-14	28-Jan-14
10350	Place Subbase (8" 21B): Stg 1 - On Ramp I-581 SB (W ...	5	30-Jan-14	07-Feb-14
10360	Fine Grade Subbase: Stg 1 - On Ramp I-581 SB (W of I...	5	10-Feb-14	17-Feb-14

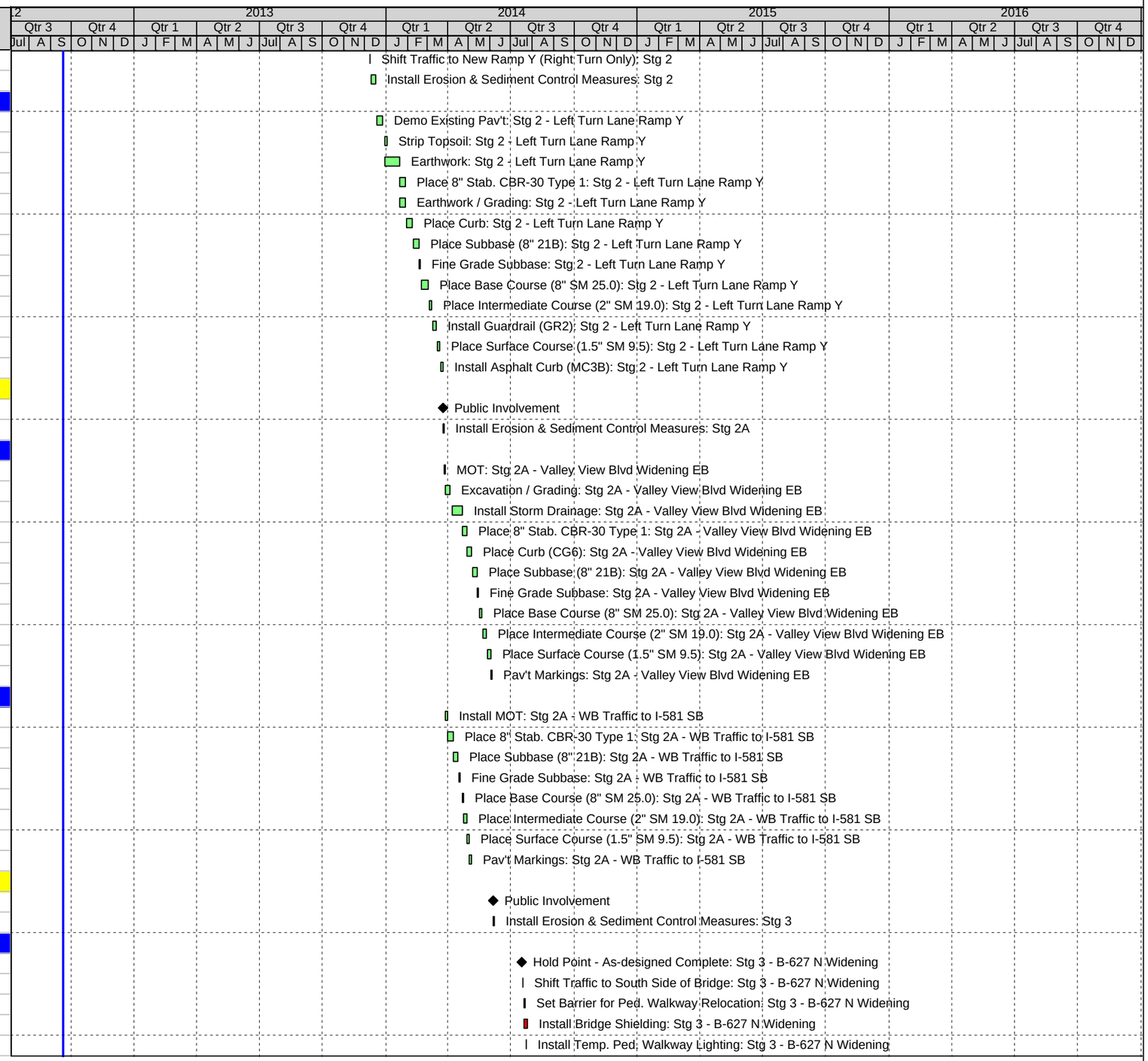


Remaining Level of Effort | Actual Work
Actual Level of Effort | Remaining Work

Activity ID	Activity Name	Original Duration	Start	Finish
10370	Place Base Course (8" SM 25.0): Stg 1 - On Ramp I-581...	3	18-Feb-14	21-Feb-14
10380	Place Intermediate Course (2" SM 19.0): Stg 1 - On Ra...	3	24-Feb-14	27-Feb-14
10500	Install Guardrail (GR2): Stg 1 - On Ramp I-581 SB (W of...	5	03-Mar-14	10-Mar-14
10390	Place Surface Course (1.5" SM 9.5): Stg 1 - On Ramp I-...	3	11-Mar-14	13-Mar-14
10820	Remove Existing Ramp Pav't: Stg 1 - On Ramp I-581 S...	10	14-Mar-14	28-Mar-14
Exit Ramp from I-581 Southbound (West Side of Interchange) [Ramp W]				
10410	Clear & Grub: Stg 1 - Exit Ramp I-581 NB (W of Intchg)	10	07-Oct-13	21-Oct-13
10890	Stream Relocation: Stg 1 - Exit Ramp I-581 NB (W of Int...	10	22-Oct-13	04-Nov-13
10900	Relocate 24" Sanitary Sewer: Stg 1 - Exit Ramp I-581 N...	10	05-Nov-13	20-Nov-13
10910	Demo/Abandoned Existing 24" Sanitary Sewer & Manhol...	3	21-Nov-13	25-Nov-13
10920	Excavate & Grade for Ret (MSE) Wall: Stg 1 - Exit Ram...	5	26-Nov-13	05-Dec-13
10420	Embankment: Stg 1 - Exit Ramp I-581 NB (W of Intchg)	30	26-Nov-13	27-Jan-14
10930	Construct Ret (MSE) Wall & Coping: Stg 1 - Exit Ramp I...	20	26-Dec-13	06-Feb-14
10430	Install Storm Drainage: Stg 1 - Exit Ramp I-581 NB (W o...	15	28-Jan-14	24-Feb-14
10490	Place 8" Stab. CBR-30 Type 1: Stg 1 - Exit Ramp I-581 ...	5	25-Feb-14	06-Mar-14
10440	Place Subbase (8" 21B): Stg 1 - Exit Ramp I-581 NB (W ...	5	07-Mar-14	13-Mar-14
10450	Fine Grade Subbase: Stg 1 - Exit Ramp I-581 NB (W of I...	5	14-Mar-14	21-Mar-14
10460	Place Base Course (8" SM 25.0): Stg 1 - Exit Ramp I-58...	3	24-Mar-14	26-Mar-14
10470	Place Intermediate Course (2" SM 19.0): Stg 1 - Exit Ra...	3	27-Mar-14	31-Mar-14
10940	Install Ret. (MSE) Wall Fence: Stg 1 - Exit Ramp I-581 N...	5	01-Apr-14	08-Apr-14
10510	Install Guardrail (GR2): Stg 1 - Exit Ramp I-581 NB (W o...	10	01-Apr-14	15-Apr-14
10480	Place Surface Course (1.5" SM 9.5): Stg 1 - Exit Ramp I...	3	17-Apr-14	21-Apr-14
10950	Construct Lick Run Green Way & Crossing: Stg 1 - Exit ...	2	22-Apr-14	23-Apr-14
Valley View Overpass (B-627) - South Widening				
H010	Hold Point - Load Rating Prior to Demolition: Stg 1 - B-6...	0	06-May-13	
10520	Shift Traffic to North Side of Bridge: Stg 1 - B-627 S Wid...	1	09-Dec-13	09-Dec-13
10530	Install Bridge Shielding: Stg 1 - B-627 S Widening	10	10-Dec-13	26-Dec-13
10540	Demo Parapet & Overhang: Stg 1 - B-627 S Widening	5	31-Dec-13	10-Jan-14
10570	Drill Caissons / Rock Sockets - I-581 Median Pier: Stg 1 ...	10	13-Jan-14	28-Jan-14
10550	Structure Exc / Demo - Abut A: Stg 1 - B-627 S Widening	10	30-Jan-14	17-Feb-14
10620	Construct Pier & Cap - I-581 Median Piers: Stg 1 - B-627...	15	30-Jan-14	25-Feb-14
10560	Structure Exc / Demo - Abut B: Stg 1 - B-627 S Widening	10	18-Feb-14	07-Mar-14
10600	Drive Pile (12x53 H-Pile) - Abut A: Stg 1 - B-627 S Wide...	10	18-Feb-14	07-Mar-14
H020	Hold Point - As-designed: Stg 1 - B-627 S Widening	0		24-Feb-14
10610	Drive Pile (12x53 H-Pile) - Abut B: Stg 1 - B-627 S Wide...	10	10-Mar-14	24-Mar-14
10580	Substructure Widening - Abut A: Stg 1 - B-627 S Widening	15	10-Mar-14	31-Mar-14
10590	Substructure Widening - Abut B: Stg 1 - B-627 S Widening	15	25-Mar-14	15-Apr-14
10860	Construct MSE @ Abut A: Stg 1 - B-627 S Widening	10	01-Apr-14	15-Apr-14
10870	Construct MSE @ Abut B: Stg 1 - B-627 S Widening	10	17-Apr-14	30-Apr-14
10630	Set Structure Steel: Stg 1 - B-627 S Widening	2	01-May-14	02-May-14
10760	Place Concrete Deck: Stg 1 - B-627 S Widening	10	05-May-14	19-May-14
10810	Cure Deck: Stg 1 - B-627 S Widening	7	20-May-14	26-May-14
10880	Cure Gap - Deck Closure Pour: Stg 1 - B-627 S Widening	45	20-May-14	03-Jul-14
10780	Closure Pour: Stg 1 - B-627 S Widening	1	07-Jul-14	07-Jul-14
10790	Slip Pour Bridge Rail (BR27C-1): Stg 1 - B-627 S Widening	2	08-Jul-14	09-Jul-14
10800	Set Steel Rail (BR27C-1): Stg 1 - B-627 S Widening	5	10-Jul-14	17-Jul-14
H030	Hold Point - As-built: Stg 1 - B-627 S Widening	0		17-Jul-14
Stage 2				
20001	Public Involvement	0	09-Dec-13	

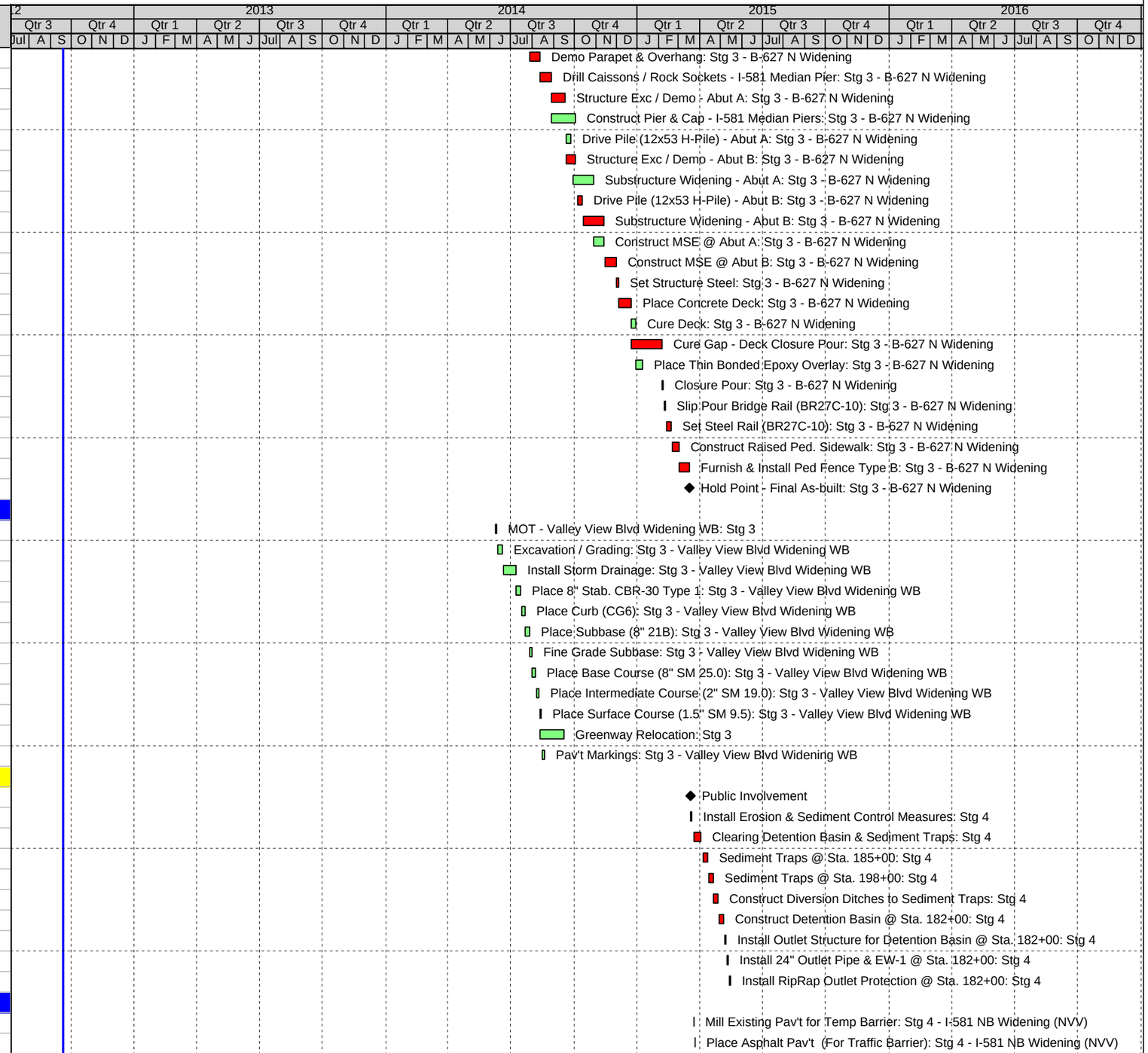


Activity ID	Activity Name	Original Duration	Start	Finish
20200	Shift Traffic to New Ramp Y (Right Turn Only): Stg 2	1	09-Dec-13	09-Dec-13
20000	Install Erosion & Sediment Control Measures: Stg 2	5	10-Dec-13	17-Dec-13
Left Turn Lane Ramp Y				
20030	Demo Existing Pav't: Stg 2 - Left Turn Lane Ramp Y	5	19-Dec-13	26-Dec-13
20010	Strip Topsoil: Stg 2 - Left Turn Lane Ramp Y	2	31-Dec-13	03-Jan-14
20040	Earthwork: Stg 2 - Left Turn Lane Ramp Y	10	31-Dec-13	20-Jan-14
20100	Place 8" Stab. CBR-30 Type 1: Stg 2 - Left Turn Lane R...	5	21-Jan-14	28-Jan-14
20020	Earthwork / Grading: Stg 2 - Left Turn Lane Ramp Y	5	21-Jan-14	28-Jan-14
20110	Place Curb: Stg 2 - Left Turn Lane Ramp Y	5	30-Jan-14	07-Feb-14
20050	Place Subbase (8" 21B): Stg 2 - Left Turn Lane Ramp Y	5	10-Feb-14	17-Feb-14
20060	Fine Grade Subbase: Stg 2 - Left Turn Lane Ramp Y	2	18-Feb-14	20-Feb-14
20070	Place Base Course (8" SM 25.0): Stg 2 - Left Turn Lane ...	5	21-Feb-14	03-Mar-14
20080	Place Intermediate Course (2" SM 19.0): Stg 2 - Left Tur...	3	04-Mar-14	07-Mar-14
20120	Install Guardrail (GR2): Stg 2 - Left Turn Lane Ramp Y	5	10-Mar-14	14-Mar-14
20090	Place Surface Course (1.5" SM 9.5): Stg 2 - Left Turn La...	3	17-Mar-14	20-Mar-14
20130	Install Asphalt Curb (MC3B): Stg 2 - Left Turn Lane Ram...	2	21-Mar-14	24-Mar-14
Stage 2A				
2A001	Public Involvement	0	25-Mar-14	
2A130	Install Erosion & Sediment Control Measures: Stg 2A	2	25-Mar-14	26-Mar-14
Valley View Blvd. Widening Eastbound				
2A010	MOT: Stg 2A - Valley View Blvd Widening EB	1	27-Mar-14	27-Mar-14
2A020	Excavation / Grading: Stg 2A - Valley View Blvd Widenin...	5	28-Mar-14	04-Apr-14
2A110	Install Storm Drainage: Stg 2A - Valley View Blvd Wideni...	10	07-Apr-14	21-Apr-14
2A080	Place 8" Stab. CBR-30 Type 1: Stg 2A - Valley View Blv...	5	22-Apr-14	28-Apr-14
2A120	Place Curb (CG6): Stg 2A - Valley View Blvd Widening EB	5	29-Apr-14	05-May-14
2A030	Place Subbase (8" 21B): Stg 2A - Valley View Blvd Wide...	5	06-May-14	13-May-14
2A040	Fine Grade Subbase: Stg 2A - Valley View Blvd Widenin...	2	14-May-14	15-May-14
2A050	Place Base Course (8" SM 25.0): Stg 2A - Valley View B...	3	16-May-14	20-May-14
2A060	Place Intermediate Course (2" SM 19.0): Stg 2A - Valley ...	3	22-May-14	27-May-14
2A070	Place Surface Course (1.5" SM 9.5): Stg 2A - Valley Vie...	3	29-May-14	02-Jun-14
2A090	Pav't Markings: Stg 2A - Valley View Blvd Widening EB	1	03-Jun-14	03-Jun-14
Diverging Diamond Interchange (DDI)				
2A100	Install MOT: Stg 2A - WB Traffic to I-581 SB	2	28-Mar-14	31-Mar-14
2A190	Place 8" Stab. CBR-30 Type 1: Stg 2A - WB Traffic to I-...	5	01-Apr-14	08-Apr-14
2A140	Place Subbase (8" 21B): Stg 2A - WB Traffic to I-581 SB	5	09-Apr-14	15-Apr-14
2A150	Fine Grade Subbase: Stg 2A - WB Traffic to I-581 SB	2	17-Apr-14	18-Apr-14
2A160	Place Base Course (8" SM 25.0): Stg 2A - WB Traffic to ...	3	21-Apr-14	23-Apr-14
2A170	Place Intermediate Course (2" SM 19.0): Stg 2A - WB Tr...	3	24-Apr-14	28-Apr-14
2A180	Place Surface Course (1.5" SM 9.5): Stg 2A - WB Traffic...	3	29-Apr-14	01-May-14
2A200	Pav't Markings: Stg 2A - WB Traffic to I-581 SB	2	02-May-14	05-May-14
Stage 3				
30001	Public Involvement	0	05-Jun-14	
30000	Install Erosion & Sediment Control Measures: Stg 3	2	05-Jun-14	06-Jun-14
Valley View Overpass (B-627) - North Widening				
H040	Hold Point - As-designed Complete: Stg 3 - B-627 N Wid...	0		17-Jul-14
30010	Shift Traffic to South Side of Bridge: Stg 3 - B-627 N Wid...	1	18-Jul-14	18-Jul-14
30200	Set Barrier for Ped. Walkway Relocation: Stg 3 - B-627 ...	2	21-Jul-14	22-Jul-14
30020	Install Bridge Shielding: Stg 3 - B-627 N Widening	5	21-Jul-14	25-Jul-14
30320	Install Temp. Ped. Walkway Lighting: Stg 3 - B-627 N Wi...	0	23-Jul-14	23-Jul-14



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work

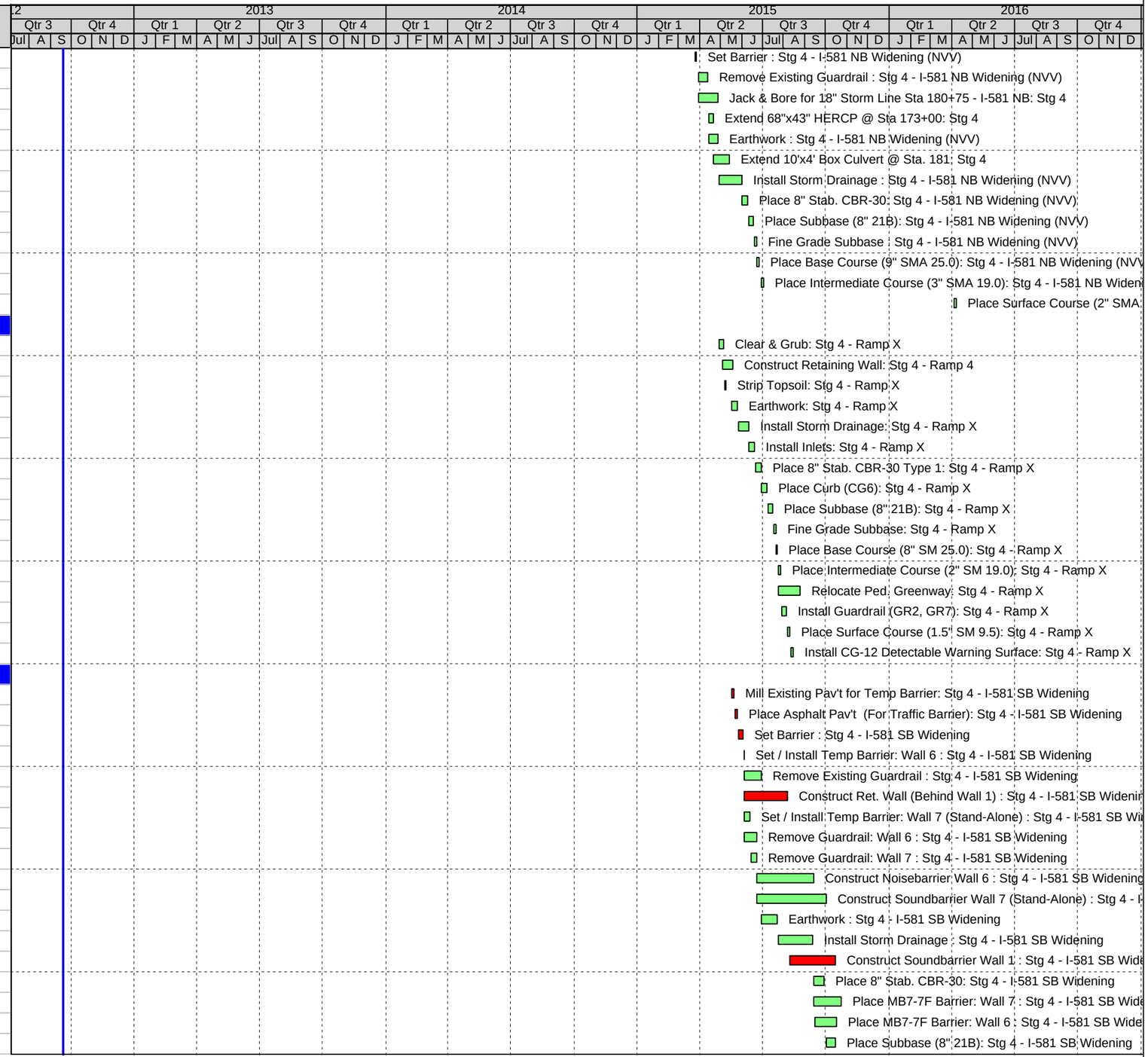
Activity ID	Activity Name	Original Duration	Start	Finish
30030	Demo Parapet & Overhang: Stg 3 - B-627 N Widening	10	28-Jul-14	12-Aug-14
30060	Drill Caissons / Rock Sockets - I-581 Median Pier: Stg 3 ...	10	13-Aug-14	28-Aug-14
30040	Structure Exc / Demo - Abut A: Stg 3 - B-627 N Widening	10	29-Aug-14	18-Sep-14
30110	Construct Pier & Cap - I-581 Median Piers: Stg 3 - B-627...	20	29-Aug-14	03-Oct-14
30090	Drive Pile (12x53 H-Pile) - Abut A: Stg 3 - B-627 N Wide...	5	19-Sep-14	26-Sep-14
30050	Structure Exc / Demo - Abut B: Stg 3 - B-627 N Widening	10	19-Sep-14	03-Oct-14
30070	Substructure Widening - Abut A: Stg 3 - B-627 N Widening	20	29-Sep-14	28-Oct-14
30100	Drive Pile (12x53 H-Pile) - Abut B: Stg 3 - B-627 N Wide...	5	06-Oct-14	13-Oct-14
30080	Substructure Widening - Abut B: Stg 3 - B-627 N Widening	20	14-Oct-14	13-Nov-14
30400	Construct MSE @ Abut A: Stg 3 - B-627 N Widening	10	29-Oct-14	13-Nov-14
30410	Construct MSE @ Abut B: Stg 3 - B-627 N Widening	10	14-Nov-14	01-Dec-14
30120	Set Structure Steel: Stg 3 - B-627 N Widening	2	02-Dec-14	04-Dec-14
30130	Place Concrete Deck: Stg 3 - B-627 N Widening	10	05-Dec-14	22-Dec-14
30170	Cure Deck: Stg 3 - B-627 N Widening	7	23-Dec-14	29-Dec-14
30350	Cure Gap - Deck Closure Pour: Stg 3 - B-627 N Widening	45	23-Dec-14	05-Feb-15
30330	Place Thin Bonded Epoxy Overlay: Stg 3 - B-627 N Wid...	3	30-Dec-14	08-Jan-15
30140	Closure Pour: Stg 3 - B-627 N Widening	1	06-Feb-15	06-Feb-15
30150	Slip Pour Bridge Rail (BR27C-10): Stg 3 - B-627 N Wide...	2	09-Feb-15	10-Feb-15
30160	Set Steel Rail (BR27C-10): Stg 3 - B-627 N Widening	5	12-Feb-15	19-Feb-15
30180	Construct Raised Ped. Sidewalk: Stg 3 - B-627 N Wideni...	5	20-Feb-15	02-Mar-15
30190	Furnish & Install Ped Fence Type B: Stg 3 - B-627 N Wi...	10	03-Mar-15	17-Mar-15
H050	Hold Point - Final As-built: Stg 3 - B-627 N Widening	0		17-Mar-15
Valley View Blvd. Widening Westbound				
30210	MOT - Valley View Blvd Widening WB: Stg 3	2	09-Jun-14	10-Jun-14
30220	Excavation / Grading: Stg 3 - Valley View Blvd Widening...	5	12-Jun-14	19-Jun-14
30300	Install Storm Drainage: Stg 3 - Valley View Blvd Widenin...	10	20-Jun-14	08-Jul-14
30280	Place 8" Stab. CBR-30 Type 1: Stg 3 - Valley View Blvd ...	5	09-Jul-14	15-Jul-14
30310	Place Curb (CG6): Stg 3 - Valley View Blvd Widening WB	3	17-Jul-14	21-Jul-14
30230	Place Subbase (8" 21B): Stg 3 - Valley View Blvd Wideni...	5	22-Jul-14	28-Jul-14
30240	Fine Grade Subbase: Stg 3 - Valley View Blvd Widening ...	2	29-Jul-14	31-Jul-14
30250	Place Base Course (8" SM 25.0): Stg 3 - Valley View Blv...	3	01-Aug-14	05-Aug-14
30260	Place Intermediate Course (2" SM 19.0): Stg 3 - Valley V...	3	07-Aug-14	11-Aug-14
30270	Place Surface Course (1.5" SM 9.5): Stg 3 - Valley View ...	3	12-Aug-14	14-Aug-14
30340	Greenway Relocation: Stg 3	20	12-Aug-14	16-Sep-14
30290	Pav't Markings: Stg 3 - Valley View Blvd Widening WB	2	15-Aug-14	18-Aug-14
Stage 4				
40001	Public Involvement	0	19-Mar-15	
40560	Install Erosion & Sediment Control Measures: Stg 4	2	19-Mar-15	20-Mar-15
40460	Clearing Detention Basin & Sediment Traps: Stg 4	10	23-Mar-15	03-Apr-15
40480	Sediment Traps @ Sta. 185+00: Stg 4	5	06-Apr-15	13-Apr-15
40490	Sediment Traps @ Sta. 198+00: Stg 4	5	14-Apr-15	20-Apr-15
40500	Construct Diversion Ditches to Sediment Traps: Stg 4	5	21-Apr-15	28-Apr-15
40470	Construct Detention Basin @ Sta. 182+00: Stg 4	5	29-Apr-15	05-May-15
40530	Install Outlet Structure for Detention Basin @ Sta. 182+0...	2	07-May-15	08-May-15
40540	Install 24" Outlet Pipe & EW-1 @ Sta. 182+00: Stg 4	2	11-May-15	12-May-15
40550	Install RipRap Outlet Protection @ Sta. 182+00: Stg 4	2	14-May-15	15-May-15
Widening of I-581 Northbound (North of Valley View)				
40020	Mill Existing Pav't for Temp Barrier: Stg 4 - I-581 NB Wid...	2	23-Mar-15	24-Mar-15
40030	Place Asphalt Pav't (For Traffic Barrier): Stg 4 - I-581 N...	1	25-Mar-15	25-Mar-15



Remaining Level of Effort
Actual Work
Actual Level of Effort
Remaining Work

LANE

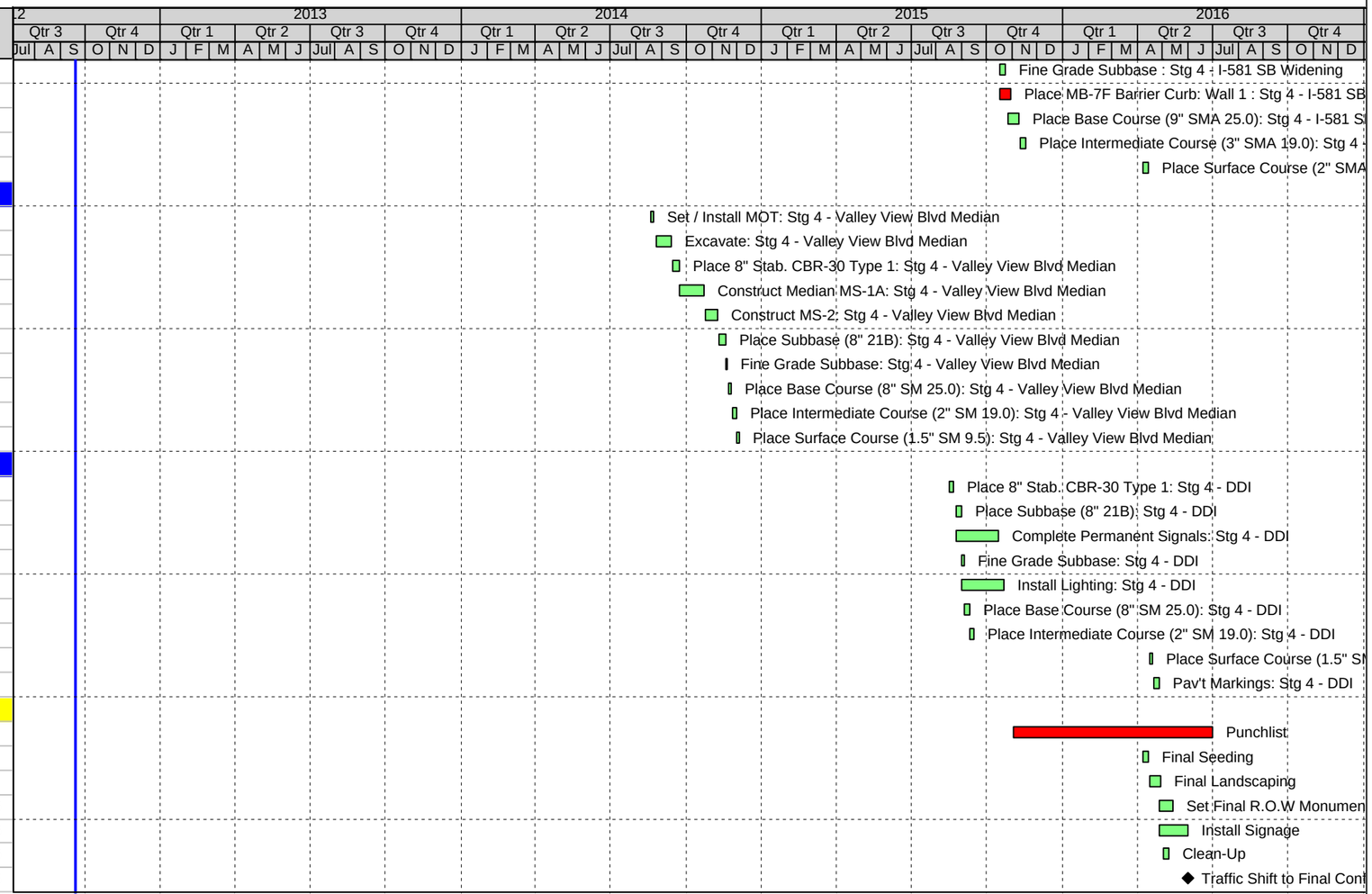
Activity ID	Activity Name	Original Duration	Start	Finish
40010	Set Barrier : Stg 4 - I-581 NB Widening (NVV)	2	26-Mar-15	27-Mar-15
40130	Remove Existing Guardrail : Stg 4 - I-581 NB Widening (...	10	30-Mar-15	13-Apr-15
40450	Jack & Bore for 18" Storm Line Sta 180+75 - I-581 NB: ...	20	30-Mar-15	28-Apr-15
40510	Extend 68"x43" HERCP @ Sta 173+00: Stg 4	5	14-Apr-15	20-Apr-15
40040	Earthwork : Stg 4 - I-581 NB Widening (NVV)	10	14-Apr-15	28-Apr-15
40520	Extend 10'x4' Box Culvert @ Sta. 181: Stg 4	15	21-Apr-15	14-May-15
40050	Install Storm Drainage : Stg 4 - I-581 NB Widening (NVV)	20	29-Apr-15	01-Jun-15
40060	Place 8" Stab. CBR-30: Stg 4 - I-581 NB Widening (NVV)	5	02-Jun-15	09-Jun-15
40070	Place Subbase (8" 21B): Stg 4 - I-581 NB Widening (NVV)	5	11-Jun-15	18-Jun-15
40080	Fine Grade Subbase : Stg 4 - I-581 NB Widening (NVV)	2	19-Jun-15	22-Jun-15
40090	Place Base Course (9" SMA 25.0): Stg 4 - I-581 NB Wid...	3	23-Jun-15	26-Jun-15
40100	Place Intermediate Course (3" SMA 19.0): Stg 4 - I-581 ...	3	29-Jun-15	02-Jul-15
40110	Place Surface Course (2" SMA 9.5): Stg 4 - I-581 NB Wi...	3	04-Apr-16*	07-Apr-16
Ramp X				
40140	Clear & Grub: Stg 4 - Ramp X	5	29-Apr-15	05-May-15
40440	Construct Retaining Wall: Stg 4 - Ramp 4	10	04-May-15	19-May-15
40150	Strip Topsoil: Stg 4 - Ramp X	2	07-May-15	08-May-15
40160	Earthwork: Stg 4 - Ramp X	5	18-May-15	26-May-15
40170	Install Storm Drainage: Stg 4 - Ramp X	10	27-May-15	11-Jun-15
40180	Install Inlets: Stg 4 - Ramp X	5	12-Jun-15	19-Jun-15
40260	Place 8" Stab. CBR-30 Type 1: Stg 4 - Ramp X	5	22-Jun-15	29-Jun-15
40270	Place Curb (CG6): Stg 4 - Ramp X	5	30-Jun-15	08-Jul-15
40190	Place Subbase (8" 21B): Stg 4 - Ramp X	5	09-Jul-15	16-Jul-15
40200	Fine Grade Subbase: Stg 4 - Ramp X	2	17-Jul-15	20-Jul-15
40210	Place Base Course (8" SM 25.0): Stg 4 - Ramp X	3	21-Jul-15	23-Jul-15
40220	Place Intermediate Course (2" SM 19.0): Stg 4 - Ramp X	3	24-Jul-15	28-Jul-15
40420	Relocate Ped. Greenway: Stg 4 - Ramp X	20	24-Jul-15	24-Aug-15
40240	Install Guardrail (GR2, GR7): Stg 4 - Ramp X	5	30-Jul-15	05-Aug-15
40230	Place Surface Course (1.5" SM 9.5): Stg 4 - Ramp X	3	06-Aug-15	10-Aug-15
40280	Install CG-12 Detectable Warning Surface: Stg 4 - Ramp X	3	11-Aug-15	14-Aug-15
Widening of I-581 SB				
40290	Mill Existing Pav't for Temp Barrier: Stg 4 - I-581 SB Wid...	3	18-May-15	21-May-15
40300	Place Asphalt Pav't (For Traffic Barrier): Stg 4 - I-581 S...	2	22-May-15	26-May-15
40250	Set Barrier : Stg 4 - I-581 SB Widening	5	27-May-15	02-Jun-15
20210	Set / Install Temp Barrier: Wall 6 : Stg 4 - I-581 SB Wide...	1	04-Jun-15	04-Jun-15
40400	Remove Existing Guardrail : Stg 4 - I-581 SB Widening	15	04-Jun-15	29-Jun-15
40430	Construct Ret. Wall (Behind Wall 1) : Stg 4 - I-581 SB W...	40	04-Jun-15	07-Aug-15
20220	Set / Install Temp Barrier: Wall 7 (Stand-Alone) : Stg 4 - ...	5	05-Jun-15	12-Jun-15
20180	Remove Guardrail: Wall 6 : Stg 4 - I-581 SB Widening	10	05-Jun-15	22-Jun-15
20190	Remove Guardrail: Wall 7 : Stg 4 - I-581 SB Widening	5	15-Jun-15	22-Jun-15
20140	Construct Noisebarrier Wall 6 : Stg 4 - I-581 SB Widening	50	23-Jun-15	14-Sep-15
20150	Construct Soundbarrier Wall 7 (Stand-Alone) : Stg 4 - I-5...	60	23-Jun-15	01-Oct-15
40310	Earthwork : Stg 4 - I-581 SB Widening	15	30-Jun-15	23-Jul-15
40320	Install Storm Drainage : Stg 4 - I-581 SB Widening	30	24-Jul-15	11-Sep-15
40410	Construct Soundbarrier Wall 1 : Stg 4 - I-581 SB Widening	40	10-Aug-15	15-Oct-15
40330	Place 8" Stab. CBR-30: Stg 4 - I-581 SB Widening	10	14-Sep-15	29-Sep-15
20170	Place MB7-7F Barrier: Wall 7 : Stg 4 - I-581 SB Widening	25	14-Sep-15	23-Oct-15
20160	Place MB7-7F Barrier: Wall 6 : Stg 4 - I-581 SB Widening	20	15-Sep-15	16-Oct-15
40340	Place Subbase (8" 21B): Stg 4 - I-581 SB Widening	10	01-Oct-15	15-Oct-15



Remaining Level of Effort
Actual Work
Actual Level of Effort
Remaining Work

LANE

Activity ID	Activity Name	Original Duration	Start	Finish
40350	Fine Grade Subbase : Stg 4 - I-581 SB Widening	5	16-Oct-15	23-Oct-15
40390	Place MB-7F Barrier Curb: Wall 1 : Stg 4 - I-581 SB Wid...	10	16-Oct-15	30-Oct-15
40360	Place Base Course (9" SMA 25.0): Stg 4 - I-581 SB Wid...	10	26-Oct-15	09-Nov-15
40370	Place Intermediate Course (3" SMA 19.0): Stg 4 - I-581 ...	5	10-Nov-15	17-Nov-15
40380	Place Surface Course (2" SMA 9.5): Stg 4 - I-581 SB Wi...	5	08-Apr-16	14-Apr-16
Valley View Blvd Median				
40780	Set / Install MOT: Stg 4 - Valley View Blvd Median	3	19-Aug-14	22-Aug-14
40600	Excavate: Stg 4 - Valley View Blvd Median	10	25-Aug-14	12-Sep-14
40620	Place 8" Stab. CBR-30 Type 1: Stg 4 - Valley View Blvd ...	5	15-Sep-14	22-Sep-14
40610	Construct Median MS-1A: Stg 4 - Valley View Blvd Median	20	23-Sep-14	23-Oct-14
40680	Construct MS-2: Stg 4 - Valley View Blvd Median	10	24-Oct-14	07-Nov-14
40630	Place Subbase (8" 21B): Stg 4 - Valley View Blvd Median	5	10-Nov-14	17-Nov-14
40640	Fine Grade Subbase: Stg 4 - Valley View Blvd Median	2	18-Nov-14	20-Nov-14
40650	Place Base Course (8" SM 25.0): Stg 4 - Valley View Blv...	3	21-Nov-14	25-Nov-14
40660	Place Intermediate Course (2" SM 19.0): Stg 4 - Valley V...	3	26-Nov-14	01-Dec-14
40670	Place Surface Course (1.5" SM 9.5): Stg 4 - Valley View ...	3	02-Dec-14	05-Dec-14
Complete Diverging Diamond Interchange EB				
40690	Place 8" Stab. CBR-30 Type 1: Stg 4 - DDI	5	17-Aug-15	21-Aug-15
40700	Place Subbase (8" 21B): Stg 4 - DDI	5	24-Aug-15	31-Aug-15
40750	Complete Permanent Signals: Stg 4 - DDI	30	24-Aug-15	14-Oct-15
40710	Fine Grade Subbase: Stg 4 - DDI	2	01-Sep-15	03-Sep-15
40760	Install Lighting: Stg 4 - DDI	30	01-Sep-15	22-Oct-15
40720	Place Base Course (8" SM 25.0): Stg 4 - DDI	3	04-Sep-15	10-Sep-15
40730	Place Intermediate Course (2" SM 19.0): Stg 4 - DDI	3	11-Sep-15	15-Sep-15
40740	Place Surface Course (1.5" SM 9.5): Stg 4 - DDI	3	15-Apr-16	19-Apr-16
40770	Pav't Markings: Stg 4 - DDI	5	21-Apr-16	27-Apr-16
Project Closeout				
0950	Punchlist	139	02-Nov-15	01-Jul-16
0910	Final Seeding	5	08-Apr-16	14-Apr-16
0920	Final Landscaping	10	15-Apr-16	29-Apr-16
0930	Set Final R.O.W Monuments	10	28-Apr-16	13-May-16
0900	Install Signage	20	28-Apr-16	31-May-16
0940	Clean-Up	5	02-May-16	09-May-16
0960	Traffic Shift to Final Configuration	0		31-May-16



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work

LANE

Volume II: Design Plans | Electronic Submission

Original

I-581/Valley View Blvd. Interchange Phase II D-B

State Project No.: 0581-128-109, P101, RW201, C501, B627
Federal Project No.: NH-581-5 (035)
Contract ID No.: C00016595DB45
I-581 / Valley View Boulevard Interchange Phase II
09/20/12; 4:00 P.M.

LANE in association with STV 100 Years

Conceptual Roadway Plans

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

LIMITED ACCESS HIGHWAY — By Resolution of Commonwealth Transportation Board dated January 1, 1987

THIS PROJECT WAS DEVELOPED UTILIZING THE DEPARTMENT'S ENGINEERING DESIGN PACKAGE (GEOPAK).
GEOPAK Computer Identification No. 16595

FHWA 534 DATA 3A101

STATE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	NH-581-5( ) (SEE TABULATION BELOW FOR SECTION NUMBERS)	581	(F0) 0581-128-109 (SEE TABULATION BELOW FOR SECTION NUMBERS)	1

INDEX OF SHEETS

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

DESIGN-BUILD PROJECT RFP PLANS

CITY OF ROANOKE
Interstate 581, Valley View Blvd Interchange

From: 0.240 Miles South of Route 101 (Hershberger Rd.)
To: 1.561 Miles South of Route 101 (Hershberger Rd.)

FUNCTIONAL CLASSIFICATION AND TRAFFIC DATA			
	INTERSTATE 581	VALLEY VIEW BLVD	INTERCHANGE RAMPS
From: To:	0.240 MI. S. Route 101 1.561 MI. S. Route 101	0.095 MI. W. I-581 0.214 MI. E. I-581	
FUNCTIONAL CLASSIFICATION	Urban Principal Arterial	Urban Major Collector	Interchange Ramp
MIN. DESIGN SPEED	60 MPH	30 MPH	30 MPH**
ADT (2010)	73,100	19,700	VARIES
ADT (2036)	93,000	33,900	VARIES
DHV	8,490	2,970	VARIES
D (%) (design hour)	52	56	N/A
T (%) (design hour)	7	2	2
V (MPH)	*	*	*
TC STD.	TC-5.01R	TC-5.04ULS	TC-5.01R
GEOMETRIC STD.	GS-5 (Freeway)	GS-7	GS-R

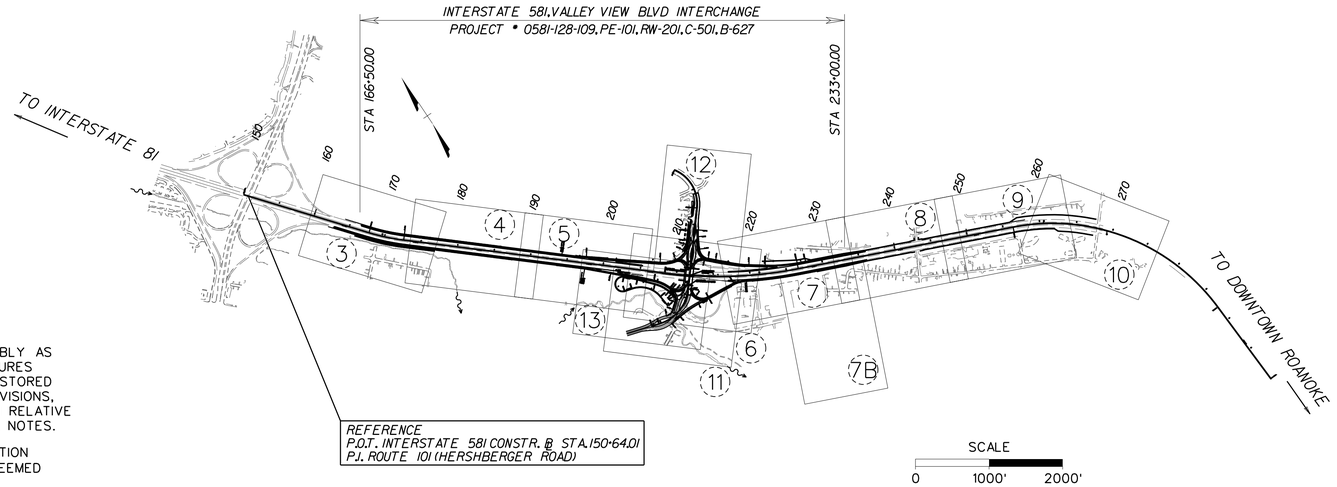
* See Plan for horizontal curve design speeds.

** Does not apply to ramp terminals at Valley View Blvd. Ramp terminals shall be designed in accordance with AASHTO guidelines.

CONVENTIONAL SIGNS

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

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



Population City of Roanoke 97,032 (2010 Census)

STATE PROJECT NO.	SECTION	FEDERAL AID PROJECT NO.	TYPE CODE	UPC NO.	EQUALITIES	LENGTH INCLUDING BRIDGE(S)		LENGTH EXCLUDING BRIDGE(S)		BRIDGE PLAN NO.	TYPE PROJECT	DESCRIPTION
					FEET	FEET	MILES	FEET	MILES			
0581-128-109	PE-101	NH-581-5(035)	PENG	16595		13,213.18	2.502	12,975.12	2.457		PREL. ENGR	From: 0.240 Mi. S. of Route 101
												To: 1.561 Mi. S. of Route 101
	RW-201	NH-581-5( )	ROWA	16595		13,213.18	2.502	12,975.12	2.457		R.O.W.	From: 0.240 Mi. S. of Route 101
												To: 1.561 Mi. S. of Route 101
	C-501	NH-581-5( )	1000	16595		13,213.18	2.502	12,975.12	2.457		CONSTRUCTION	From: 0.240 Mi. S. of Route 101
												To: 1.561 Mi. S. of Route 101
	B-627	NH-581-5( )	X771	16595		238.06	0.045				BRIDGE	Bridge over Interstate 581

Project Lengths are based on Interstate 581 ℄ and Valley View Blvd and Ramp W, X, Y, and Z Constr. ℄

THE COMPLETE ELECTRONIC PDF VERSION OF THE PLAN ASSEMBLY AS AWARDED HAS BEEN SEALED AND SIGNED USING DIGITAL SIGNATURES AND THE OFFICIAL PLAN ASSEMBLY IN ELECTRONIC FORMAT IS STORED IN THE VDOT CENTRAL OFFICE, INCLUDING ALL SUBSEQUENT REVISIONS, WILL BE THE OFFICIAL CONSTRUCTION PLANS. FOR INFORMATION RELATIVE TO ELECTRONIC FILES AND LAYERED PLANS, SEE THE GENERAL NOTES.

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

THIS PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT'S 2007 ROAD AND BRIDGE SPECIFICATIONS, 2008 ROAD AND BRIDGE STANDARDS, 2009 MUTCD, 2011 VIRGINIA SUPPLEMENT TO THE MUTCD, 2011 VIRGINIA WORK AREA PROTECTION MANUAL AND AS AMENDED BY CONTRACT PROVISIONS AND THE COMPLETE ELECTRONIC PDF VERSION OF THE PLAN ASSEMBLY.

ALL CURVES ARE TO BE SUPERELEVATED, TRANSITIONED AND WIDENED IN ACCORDANCE WITH STANDARD TC-5.01R, EXCEPT WHERE OTHERWISE NOTED.

THE ORIGINAL APPROVED TITLE SHEET(S), INCLUDING ORIGINAL SIGNATURES, ARE FILED IN THE VDOT CENTRAL OFFICE PLAN LIBRARY. ANY MISUSE OF ELECTRONIC FILES, INCLUDING SCANNED SIGNATURES, IS ILLEGAL AND ENFORCED TO THE FULL EXTENT OF THE LAW.

RFP PLANS
For Information Only

DATE: 09-20-2012

THE LANE CONSTRUCTION CORPORATION

R.F.P. PLANS

ADDITIONAL EASEMENTS FOR UTILITY RELOCATIONS MAY BE REQUIRED BEYOND THE PROPOSED RIGHT OF WAY SHOWN ON THESE PLANS.

PRELIMINARY EASEMENT FOR UTILITY RELOCATIONS ARE APPROXIMATE ONLY AND SUBJECT TO CHANGE AS PROJECT DESIGN IS FINALIZED.

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

PROJECT MANAGER Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated (571) 633-2220
DESIGNED BY STV Incorporated (571) 633-2220

CODE NO. 6010

PROJECT	SHEET NO.
0581-128-109	1

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

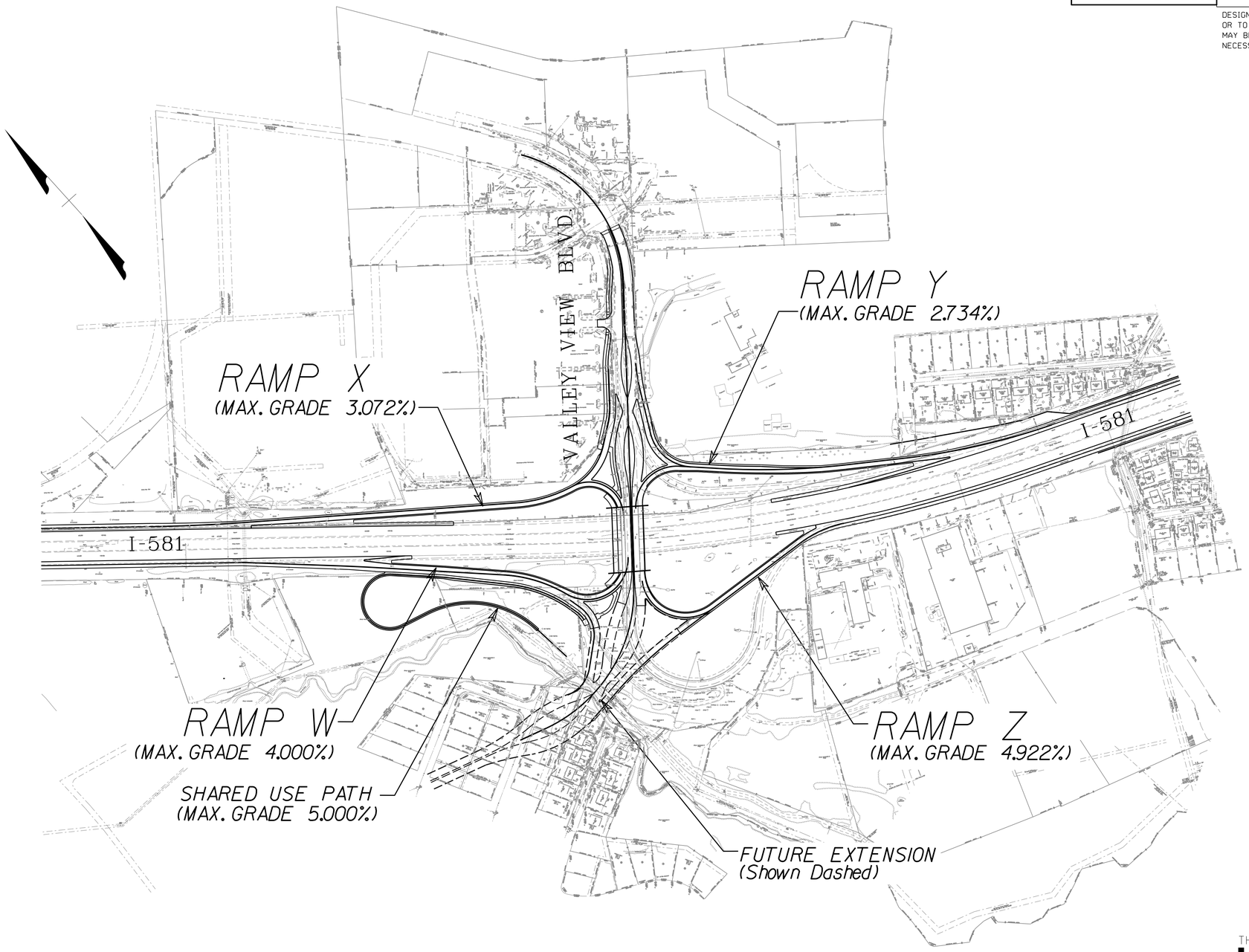
PROJECT MANAGER Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Wolfpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	1A

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

INTERCHANGE OVERVIEW



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THE LANE CONSTRUCTION CORPORATION

SCALE
0 200' 400'

PROJECT	SHEET NO.
0581-128-109	1A

NOTE: THIS PLAN SHEET WAS REVISED IN ACCORDANCE WITH VDOT'S LETTER OF SEPTEMBER 5, 2012 AND AS DESCRIBED IN THE TECHNICAL PROPOSAL.

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 — LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER_ Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert,Inc.& Rice Associates,Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

SEQUENCE OF CONSTRUCTION
STAGE I

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE		SHEET NO.
		ROUTE	PROJECT	
	VA.	581	0581-128-109, RW-201, C-501	

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

CONSTRUCTION ACTIVITIES

1. CONSTRUCT NORTHBOUND I-581 OFF-RAMP.
2. WIDEN OF I-581 SOUTH OF VALLEY VIEW BLVD.
3. DEMOLISH AND WIDEN OF THE SOUTHERN SIDE OF THE BRIDGE.
4. CONSTRUCT NEW ON-RAMP TO I-581 SOUTHBOUND.
5. CONSTRUCT TEMPORARY TRAIL CONNECTION TO BE USED FOR THE DURATION OF CONSTRUCTION.
6. PLACE TEMPORARY PAVEMENT IN THE OFF-RAMP GORA AREA TO FACILITATE LANE SHIFT.
7. CONSTRUCT NEW I-581 SOUTHBOUND OFF-RAMP.
8. REMOVE PORTIONS OF MEDIAN BARRIER AND PLACE TEMPORARY PAVEMENT TO BE USED IN PHASE II.

MAJOR TRAFFIC SHIFTS

1. SHIFT I-581 NORTHBOUND OFF-RAMP UTILIZING TEMPORARY PAVEMENT TO FACILITATE CONSTRUCTION OF NEW RAMP AT VALLEY VIEW BLVD TIE-IN.

Matchline - See Sheet IK(2)

Matchline - See Sheet IK(2)

DIRECTION OF TRAFFIC

DIRECTION OF TRAIL TRAFFIC

TEMPORARY TRAIL CONNECTION

DENOTES TEMPORARY PAVEMENT IN THIS STAGE

DENOTES CONSTRUCTION IN THIS STAGE

R.F.P. PLANS

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THE LANE CONSTRUCTION CORPORATION

SCALE 0 50' 100'

PROJECT	SHEET NO.
0581-128-109	IK(1)

NOTE: THIS PLAN SHEET WAS REVISED IN ACCORDANCE WITH VDOT'S LETTER OF SEPTEMBER 5, 2012 AND AS DESCRIBED IN THE TECHNICAL PROPOSAL.

PLOT_MOT-Phase 1_dl6595des.dgn
Plotted By: matterrw

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER_Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	

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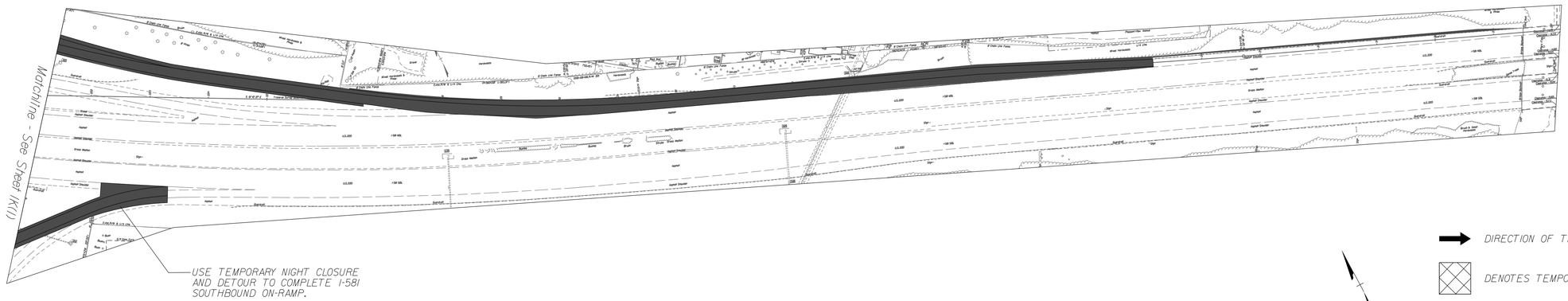
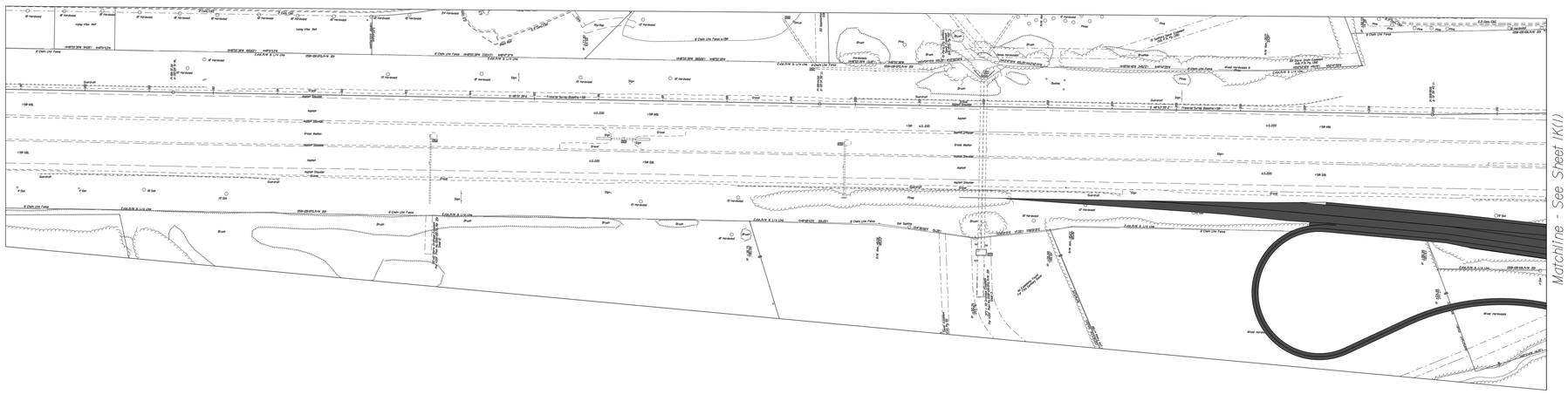
SEQUENCE OF CONSTRUCTION
STAGE I



DIRECTION OF TRAFFIC.

DENOTES TEMPORARY PAVEMENT IN THIS STAGE

DENOTES CONSTRUCTION IN THIS STAGE



1. CONSTRUCT NORTHBOUND I-581 OFF-RAMP.
2. WIDEN OF I-581 SOUTH OF VALLEY VIEW BLVD.
3. DEMOLISH AND WIDEN OF THE SOUTHERN SIDE OF THE BRIDGE.
4. CONSTRUCT NEW ON-RAMP TO I-581 SOUTHBOUND.
5. CONSTRUCT TEMPORARY TRAIL CONNECTION TO BE USED FOR THE DURATION OF CONSTRUCTION.
6. PLACE TEMPORARY PAVEMENT IN THE OFF-RAMP GORA AREA TO FACILITATE LANE SHIFT.
7. CONSTRUCT NEW I-581 SOUTHBOUND OFF-RAMP.
8. REMOVE PORTIONS OF MEDIAN BARRIER AND PLACE TEMPORARY PAVEMENT TO BE USED IN PHASE II.

MAJOR TRAFFIC SHIFTS

1. SHIFT I-581 NORTHBOUND OFF-RAMP UTILIZING TEMPORARY PAVEMENT TO FACILITATE CONSTRUCTION OF NEW RAMP AT VALLEY VIEW BLVD TIE-IN.

SCALE
0 100' 200'

THE LANE CONSTRUCTION CORPORATION

R.F.P. PLANS

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PROJECT	SHEET NO.
0581-128-109	IK(2)

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PROJECT MANAGER_ Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

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

LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	

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

SEQUENCE OF CONSTRUCTION
STAGE II

CONSTRUCTION ACTIVITIES

1. CONSTRUCT LEFT TURN LANE OF I-581 NORTHBOUND OFF-RAMP.
2. CONSTRUCT VALLEY VIEW BLVD EASTBOUND WIDENING.
3. CONSTRUCT INITIAL PORTION OF THE EASTERN MOST DIVERGING DIAMOND.
4. REMOVE PORTIONS OF CENTER MEDIAN ON VALLEY VIEW BLVD AND PLACE TEMPORARY PAVEMENT TO BE USED IN PHASE 3.

MAJOR TRAFFIC SHIFTS

1. SHIFT TRAFFIC ONTO THE NEWLY CONSTRUCTED PORTION OF THE I-581 NORTHBOUND OFF-RAMP.
2. SHIFT TRAFFIC ONTO THE NEWLY WIDENED PORTION OF THE BRIDGE AND NEWLY CONSTRUCTED I-581 ON-RAMP.

DIRECTION OF TRAFFIC

DIRECTION OF TRAIL TRAFFIC

TEMPORARY TRAIL CONNECTION

DENOTES TEMPORARY PAVEMENT IN THIS STAGE

DENOTES CONSTRUCTION IN THIS STAGE

THE LANE CONSTRUCTION CORPORATION

R.F.P. PLANS

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SCALE
0 50' 100'

PROJECT	SHEET NO.
0581-128-109	1K(3)

NOTE: THIS PLAN SHEET WAS REVISED IN ACCORDANCE WITH VDOT'S LETTER OF SEPTEMBER 5, 2012 AND AS DESCRIBED IN THE TECHNICAL PROPOSAL.

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

LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

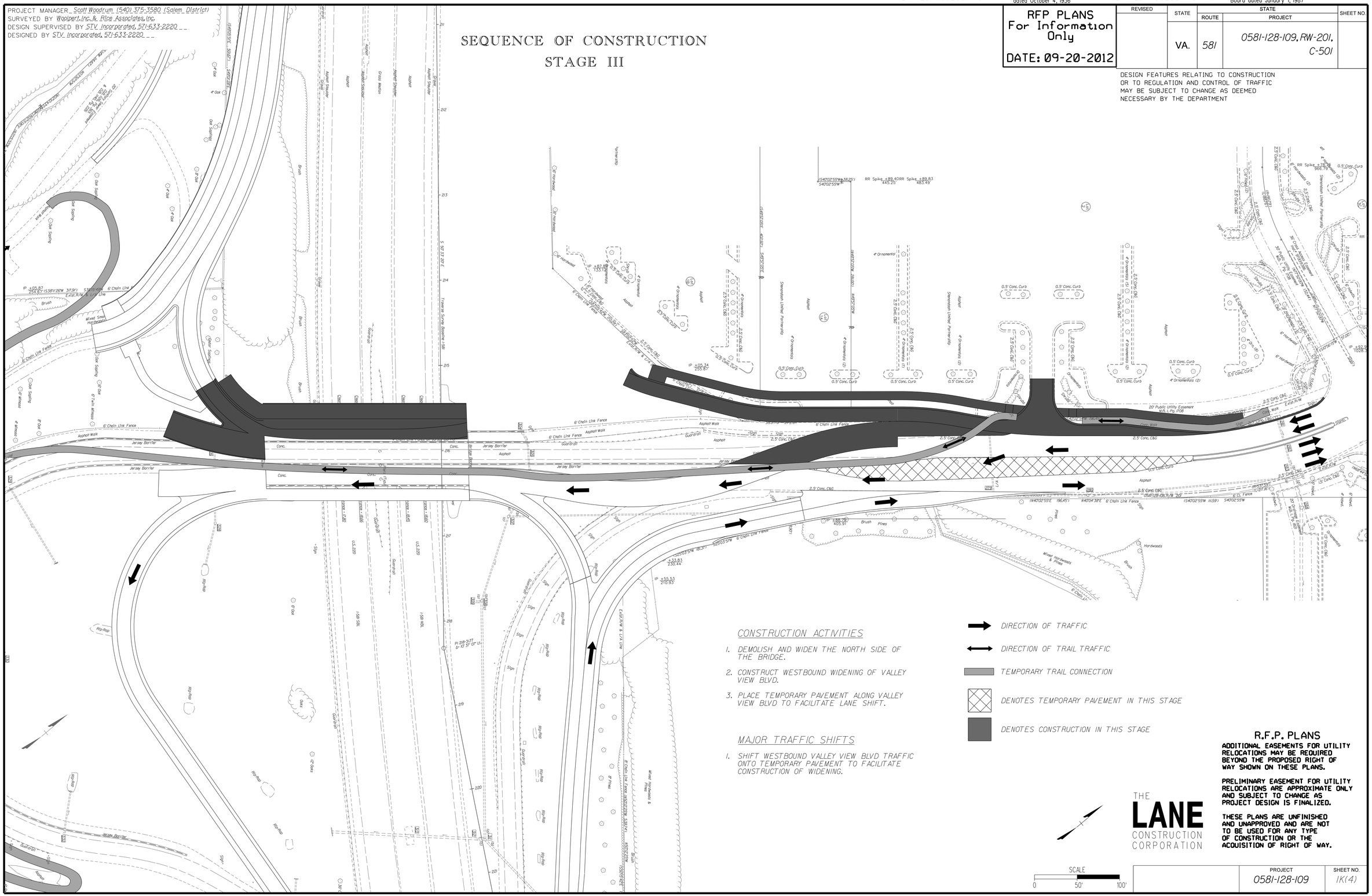
PROJECT MANAGER_ Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert,Inc.& Rice Associates,Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	

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

SEQUENCE OF CONSTRUCTION
STAGE III



CONSTRUCTION ACTIVITIES

1. DEMOLISH AND WIDEN THE NORTH SIDE OF THE BRIDGE.
2. CONSTRUCT WESTBOUND WIDENING OF VALLEY VIEW BLVD.
3. PLACE TEMPORARY PAVEMENT ALONG VALLEY VIEW BLVD TO FACILITATE LANE SHIFT.

MAJOR TRAFFIC SHIFTS

1. SHIFT WESTBOUND VALLEY VIEW BLVD TRAFFIC ONTO TEMPORARY PAVEMENT TO FACILITATE CONSTRUCTION OF WIDENING.

DIRECTION OF TRAFFIC

DIRECTION OF TRAIL TRAFFIC

TEMPORARY TRAIL CONNECTION

DENOTES TEMPORARY PAVEMENT IN THIS STAGE

DENOTES CONSTRUCTION IN THIS STAGE

R.F.P. PLANS

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THE LANE CONSTRUCTION CORPORATION

SCALE 0 50' 100'

PROJECT	SHEET NO.
0581-128-109	IK(4)

NOTE: THIS PLAN SHEET WAS REVISED IN ACCORDANCE WITH VDOT'S LETTER OF SEPTEMBER 5, 2012 AND AS DESCRIBED IN THE TECHNICAL PROPOSAL.

9/19/2012
10:48:23 AM

PLOT_MOT-Phase 4_dl6595des.dgn
Plotted By: matterrw

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 — LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

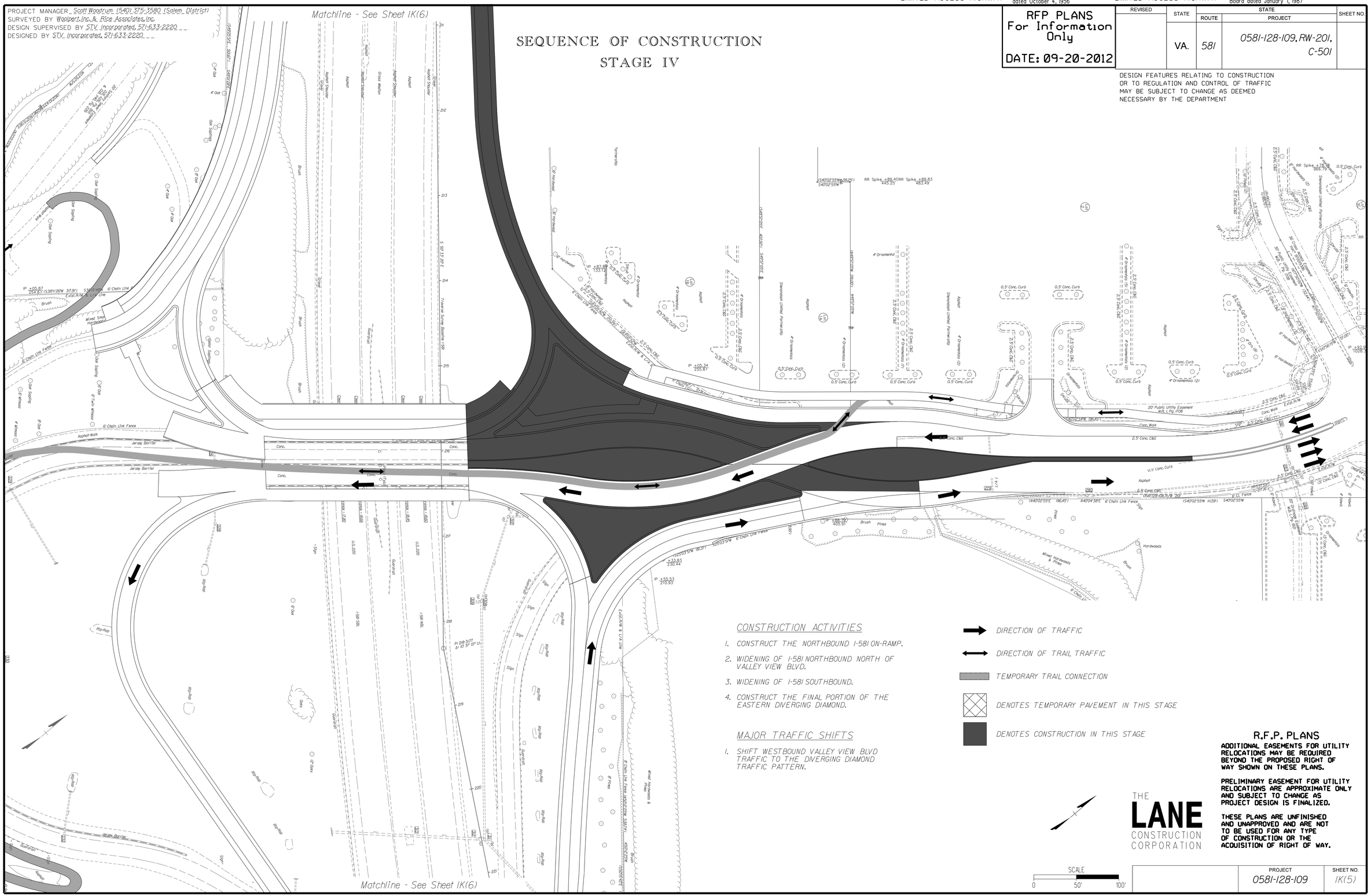
PROJECT MANAGER_ Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert,Inc.& Rice Associates,Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	

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

SEQUENCE OF CONSTRUCTION
STAGE IV



CONSTRUCTION ACTIVITIES

1. CONSTRUCT THE NORTHBOUND I-581 ON-RAMP.
2. WIDENING OF I-581 NORTHBOUND NORTH OF VALLEY VIEW BLVD.
3. WIDENING OF I-581 SOUTHBOUND.
4. CONSTRUCT THE FINAL PORTION OF THE EASTERN DIVERGING DIAMOND.

MAJOR TRAFFIC SHIFTS

1. SHIFT WESTBOUND VALLEY VIEW BLVD TRAFFIC TO THE DIVERGING DIAMOND TRAFFIC PATTERN.

DIRECTION OF TRAFFIC

DIRECTION OF TRAIL TRAFFIC

TEMPORARY TRAIL CONNECTION

DENOTES TEMPORARY PAVEMENT IN THIS STAGE

DENOTES CONSTRUCTION IN THIS STAGE

R.F.P. PLANS

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THE LANE CONSTRUCTION CORPORATION

SCALE 0 50' 100'

PROJECT	SHEET NO.
0581-128-109	IK(5)

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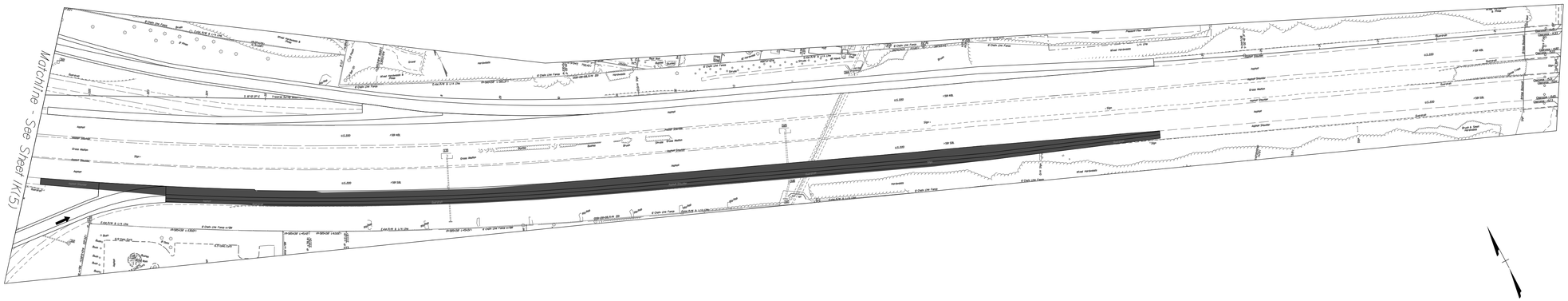
PROJECT MANAGER_ Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

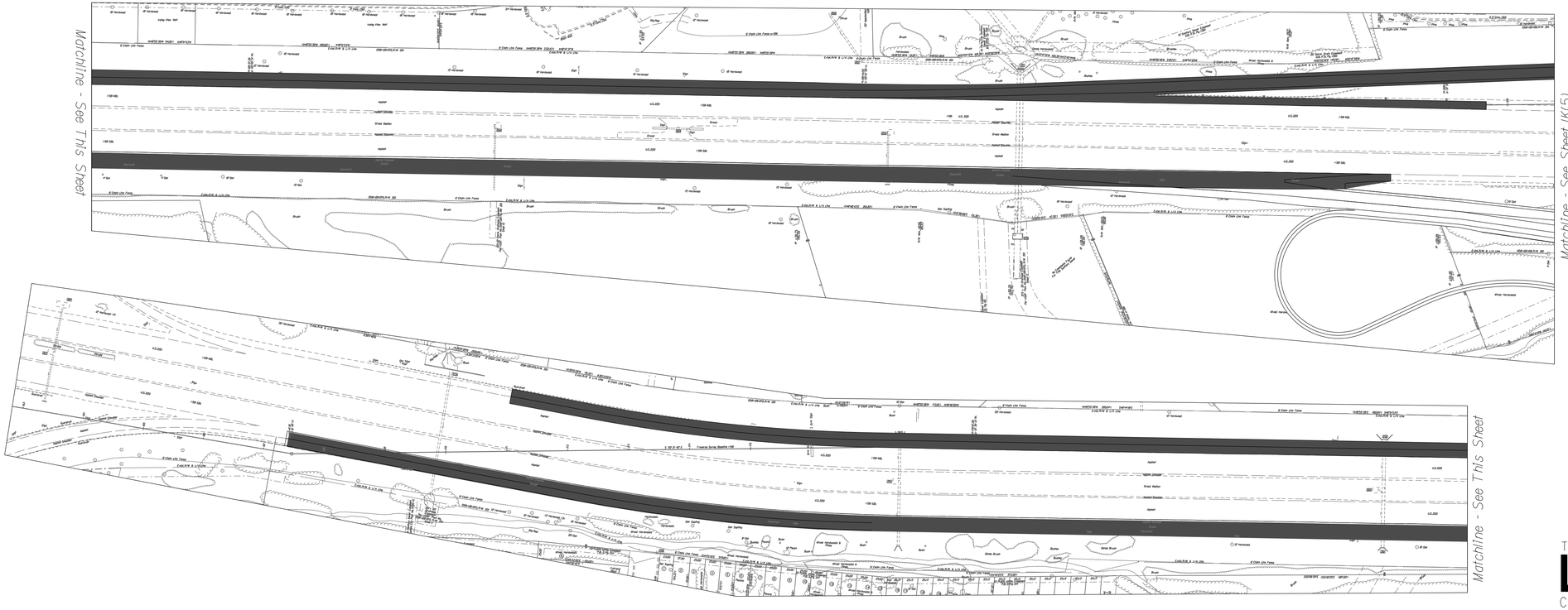
RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	

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

SEQUENCE OF CONSTRUCTION
STAGE IV





DIRECTION OF TRAFFIC.

DENOTES TEMPORARY PAVEMENT IN THIS STAGE

DENOTES CONSTRUCTION IN THIS STAGE

CONSTRUCTION ACTIVITIES

1. CONSTRUCT THE NORTHBOUND I-581 ON-RAMP.
2. WIDENING OF I-581 NORTHBOUND NORTH OF VALLEY VIEW BLVD.
3. WIDENING OF I-581 SOUTHBOUND.
4. CONSTRUCT THE FINAL PORTION OF THE EASTERN DIVERGING DIAMOND.

MAJOR TRAFFIC SHIFTS

1. SHIFT WESTBOUND VALLEY VIEW BLVD TRAFFIC TO THE DIVERGING DIAMOND TRAFFIC PATTERN.

THE LANE CONSTRUCTION CORPORATION

R.F.P. PLANS

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SCALE 0 100' 200'

PROJECT	SHEET NO.
0581-128-109	IK(6)

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PROJECT MANAGER Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

TYPICAL SECTIONS

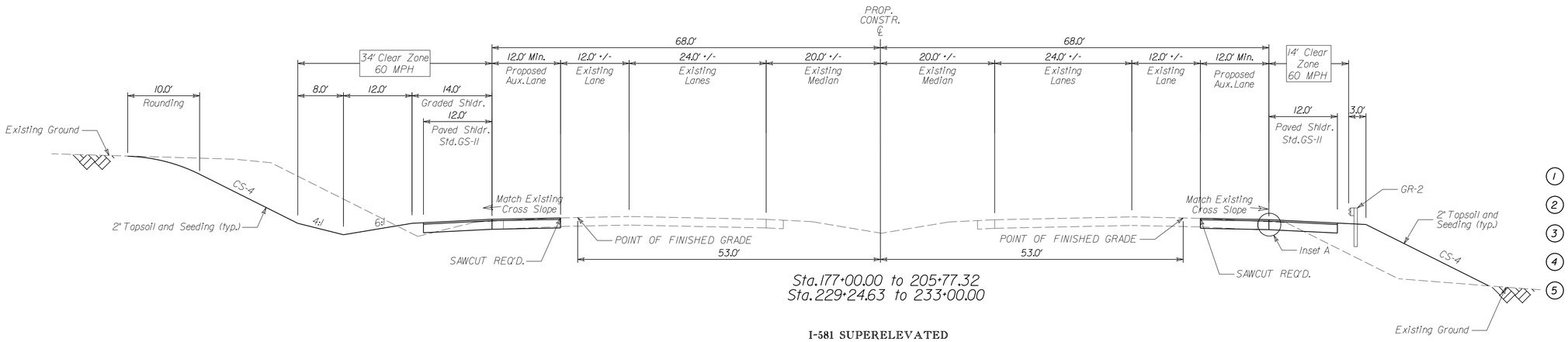
RFP PLANS For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	2A(1)

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

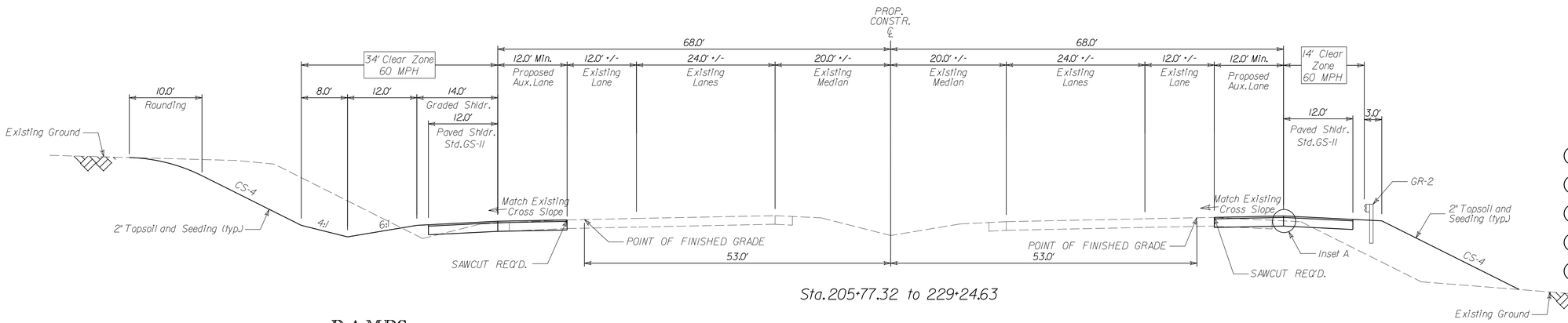
INTERSTATE 581

NORMAL CROWN



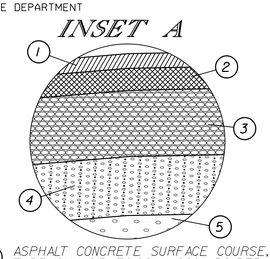
Sta. 177+00.00 to 205+77.32
Sta. 229+24.63 to 233+00.00

I-581 SUPERELEVATED



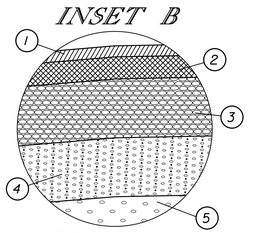
Sta. 205+77.32 to 229+24.63

INSET A



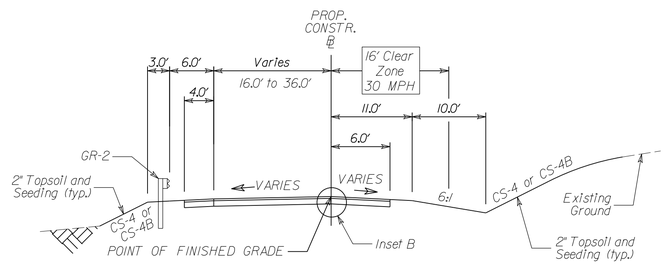
1. ASPHALT CONCRETE SURFACE COURSE, TYPE SMA-12.5 (76-22) @ 220 LBS. PER SQ.YD.
2. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE IM-19.0D
3. 9" ASPHALT CONCRETE BASE COURSE, TYPE BM-25.0A
4. 8" AGGREGATE BASE MATERIAL, TYPE I, No.21B
5. 8" SELECT MATERIAL, TYPE I, Min. CBR-30

INSET B



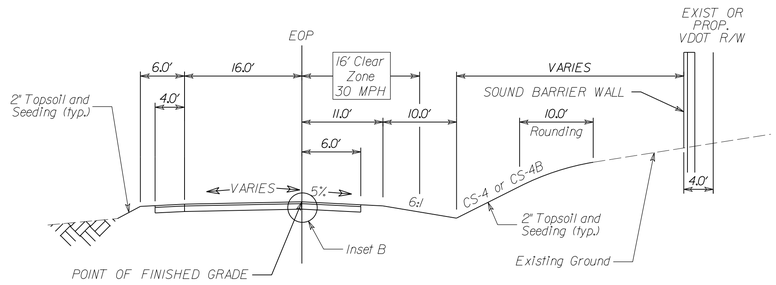
1. ASPHALT CONCRETE SURFACE COURSE, TYPE SM-9.5D @ 165 LBS. PER SQ.YD.
2. 2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE IM-19.0D
3. 8" ASPHALT CONCRETE BASE COURSE, TYPE BM-25.0A
4. 8" AGGREGATE BASE MATERIAL, TYPE I, No.21B
5. 8" SELECT MATERIAL, TYPE I, Min. CBR-30

RAMPS



Ramp W - Sta. 10+00.00 to 25+19.54
Ramp W-1 - Sta. 10+00.00 to 11+42.00
Ramp X - Sta. 37+56.86 to 55+67.51
Ramp X-1 - Sta. 10+00.00 to 14+74.96
Ramp Y - Sta. 9+32.09 to 25+61.04
Ramp Y-1 - Sta. 10+00.00 to 14+68.69
Ramp Z - Sta. 9+68.47 to 18+77.45

RAMP WITH SOUND BARRIER WALL



Ramp Y - Sta. 19+54.29 to 25+61.04

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R.F.P. PLANS

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THE LANE CONSTRUCTION CORPORATION

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PROJECT	SHEET NO.
0581-128-109	2A(1)

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DDI_I6595002A(2).DGN
10:26:20 AM

9/19/2012
Plotted By: moorea1

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 — LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

TYPICAL SECTIONS

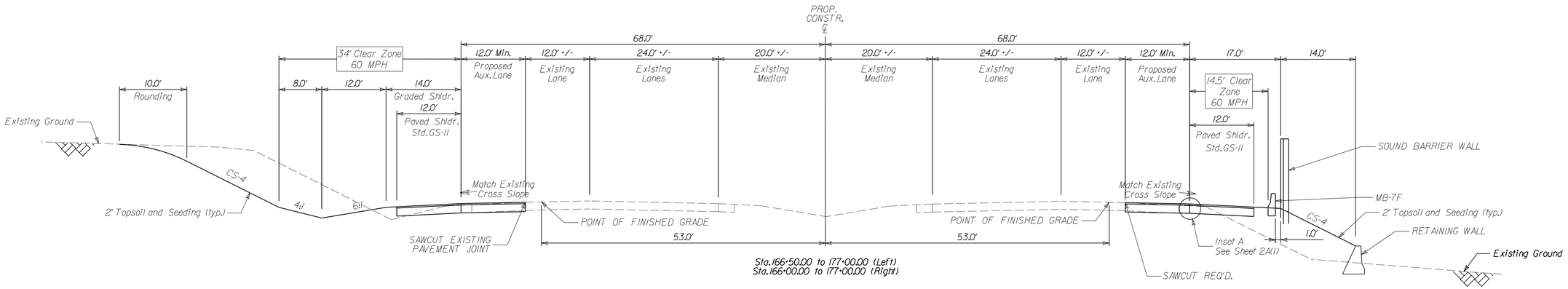
INTERSTATE 581

RFP PLANS For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	2A(2)

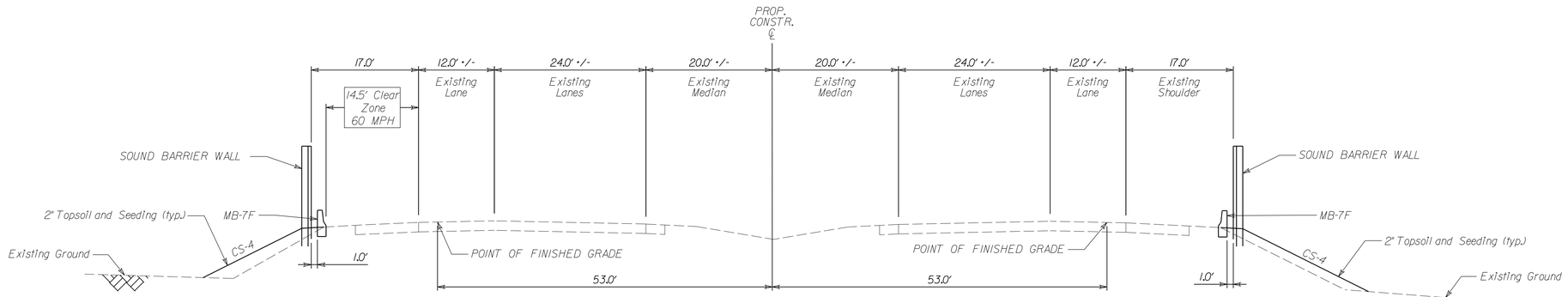
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

RETAINING WALL NEAR LICK RUN



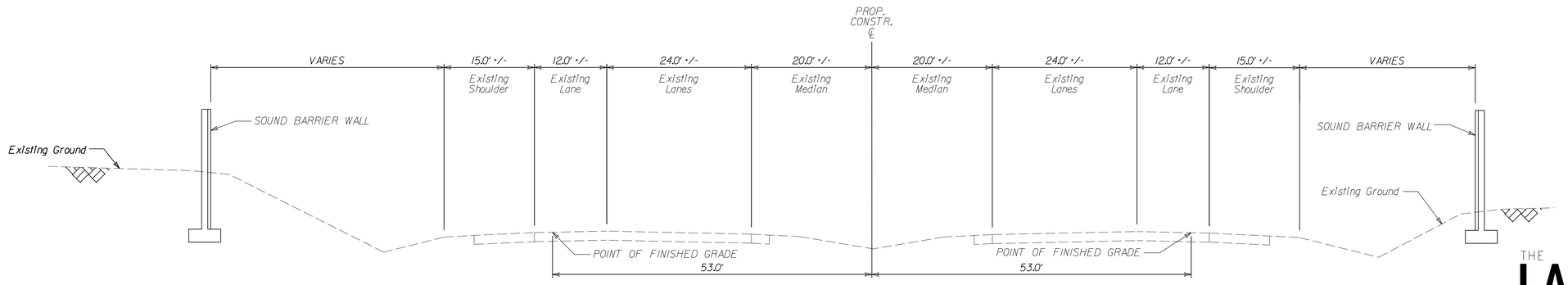
Sta. 166+50.00 to 177+00.00 (Left)
Sta. 166+00.00 to 177+00.00 (Right)

I-581 IN ORIGINAL FILL CONDITION



Sta. 236+00.00 to 256+00.00 (Left)
Sta. 236+00.00 to 262+00.00 (Right)

I-581 IN ORIGINAL CUT CONDITION NEAR LIBERTY ROAD BRIDGE



Sta. 256+00.00 to 267+50.05 (Left)
Sta. 262+00.00 to 267+49.92 (Right)

THE LANE CONSTRUCTION CORPORATION

R.F.P. PLANS

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PROJECT	SHEET NO.
0581-128-109	2A(2)

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 — LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER_ Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert,Inc.& Rice Associates,Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

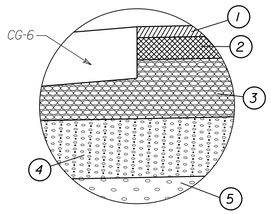
TYPICAL SECTIONS

RFP PLANS For Information Only
DATE: 09-20-2012

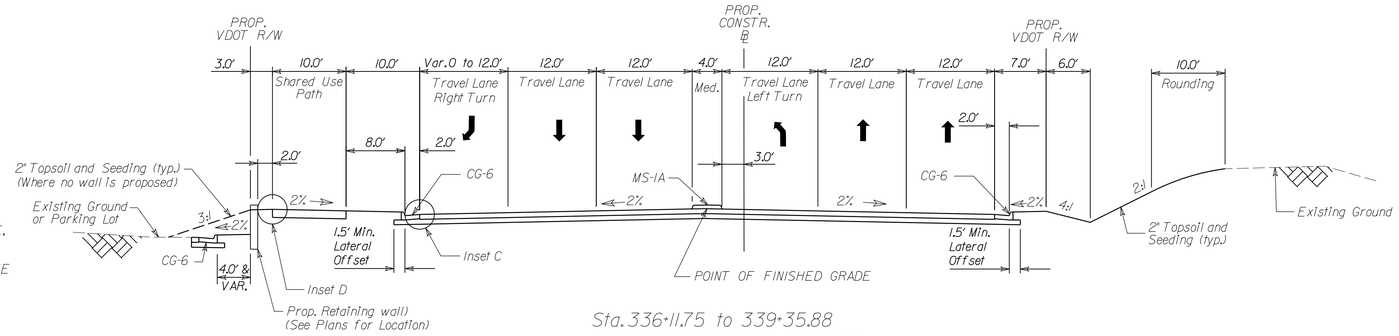
REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	2A(3)

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

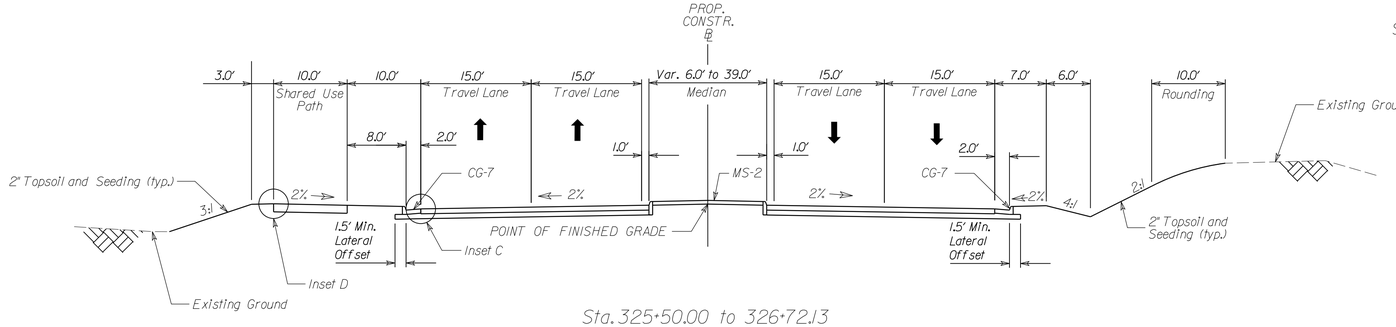
INSET C



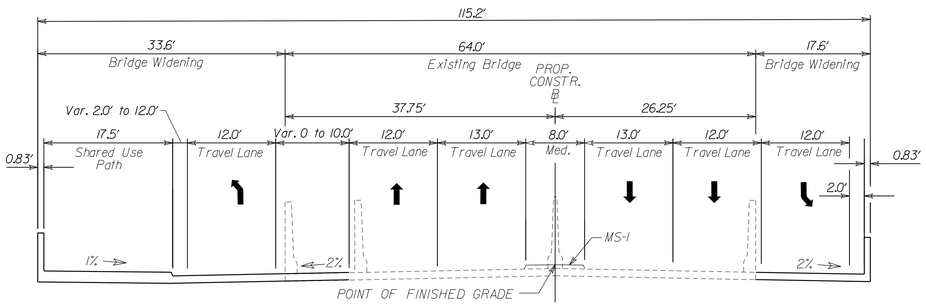
1. ASPHALT CONCRETE SURFACE COURSE, TYPE SM-9.5D @ 165 LBS.PER SQ.Y.D.
2. 2" ASPHALT CONCRETE INTERMEDIATE COURSE,TYPE IM-19.0D
3. 8" ASPHALT CONCRETE BASE COURSE,TYPE BM-25.0A
4. 8" AGGREGATE BASE MATERIAL, TYPE I,No.21B
5. 8" SELECT MATERIAL, TYPE I,Min.CBR-30



Sta.336+11.75 to 339+35.88
VALLEY VIEW BLVD



Sta.325+50.00 to 326+72.13
Sta.329+12.84 to 336+11.75
VALLEY VIEW BLVD



Sta.326+72.13 to 329+12.84
VALLEY VIEW BLVD. OVERPASS BRIDGE

PRIVATE AND COMMERCIAL ENTRANCES

TYPE I
Crusher Run Aggr.

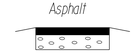
6" Crusher Run Aggr. 25 or 26

TYPE II
Concrete

Concrete Entrance Pavement 7" HES
4" Aggr. Base Mat'l. Ty. I No. 21A or 21B

NOT TO SCALE

TYPE III
Asphalt



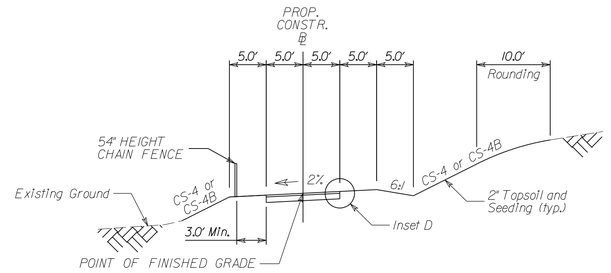
Asphalt Conc.Type SM-9.5A or SM-9.5D @ 220 Lbs. per S.Y.
4" Aggr. Base Mat'l. Ty. I No. 21A or 21B

TYPE IV
Asphalt Commercial

Asphalt Conc. Type SM-9.5A or SM-9.5D @ 165 Lbs. per S.Y.
4" Asphalt Conc. Base Course BM-25.0
6" Aggr. Base Mat'l. Ty. I No. 21A or 21B

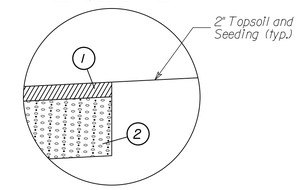
The type of entrance (I, II, III, IV) to be constructed will be determined by the existing condition at the time of construction.

SHARED USE PATH



Shared Use Path - 18+75.00 to 26+75.00

INSET D



1. ASPHALT CONCRETE SURFACE COURSE, TYPE SM-9.5AL @ 220 LBS.PER SQ.YD.
2. 8" AGGREGATE BASE MATERIAL, TYPE I,No.21B

THE LANE CONSTRUCTION CORPORATION

R.F.P. PLANS

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	PROJECT	SHEET NO.
	0581-128-109	2A(3)

NOTE: THIS PLAN SHEET WAS REVISED IN ACCORDANCE WITH VDOT'S LETTER OF SEPTEMBER 5, 2012 AND AS DESCRIBED IN THE TECHNICAL PROPOSAL.

DDI_I6595003.dgn
10:27:44 AM

9/19/2012
Plotted By: moorearl

PROJECT MANAGER_ Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 — LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	3

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

PROJECT * 0581-128-109, PE-101, RW-201, C-501
BEGIN PROJECT
INTERSTATE 581 CONSTR. ℄ STA. 166+50.00

BEGIN CONSTRUCTION
INTERSTATE 581
CONSTR. ℄ STA. 163+00.00

Interstate 581 Constr. ℄
PI = 170+20.44
DELTA = 9° 39' 43.00" (LT)
D = 2° 00' 00"
T = 242.12'
L = 483.10'
R = 2,864.79'
PC = 167+78.32
PT = 172+61.41
V = 60 MPH
E = 5.20%

LEWIS-GALE BUILDING CORPORATION
D.B. 1528 PG. 1954
T.M. 2490107
2.611 Ac.

PC 167+78.32
PT 172+61.41
EXIST. R/W & L/A LINE
TEMP. CONSTR. EASEMENT
RAMP X CONSTR. ℄
FULL DEPTH Asphalt SAWCUT REQ'D
INTERSTATE 581 CONSTR. ℄
MATCH LINE STA. 175+00 SEE SHEET 4
BEGIN SOUND BARRIER WALL 1
INTERSTATE 581 CONSTR. ℄
STA. 166+00.00 (85.13' RT)
STD. GR-F0A-2, TYPE 1 REQ'D.
TIE TO EXISTING GR-2
EXIST. R/W & L/A LINE
SOUND BARRIER WALL WITH STD. MB-7F REQ'D.
TEMP. CONSTR. EASEMENT
BEGIN RETAINING WALL
INTERSTATE 581 CONSTR. ℄
STA. 166+00.00
PROP. RETAINING WALL
PETER HUFF RING
TM. 0000015637
DB. 2490/1067

SUBSURFACE UTILITY OWNERS

APPALACHIAN POWER
802 RIVER AVENUE
ROANOKE, VA 24022
ROBERT McKINNEY
(540) 982-7445

COX COMMUNICATIONS
5404 FALLOWATER LANE
ROANOKE, VA 24036
GEORGE BOWER
(540) 777-4236

LEVEL 3 (TELCOVE)
NETWORK-OPERATIONS
ONE TECHNOLOGY CENTER
100 SOUTH CINCINNATI AVENUE
TULSA, OK 74103
JUDITH LAKE
(918) 547-9919

NTELOS
1900 ROANOKE ROAD
P.O. BOX 174
DALEVILLE, VA 24083
(877) 468-3567

ROANOKE GAS
615 KIMBALL AVENUE
ROANOKE, VA 24030
PETER ORR
(540) 777-3874

VERIZON
4843 OAKLAND BOULEVARD
ROANOKE, VA 24030
JEFF DRAPER
(540) 265-7567

WESTERN VIRGINIA WATER AUTHORITY
601 SOUTH JEFFERSON STREET
ROANOKE, VA 24011
GREGG REED
(540) 853-5468

Note: Figures in parenthesis and dot - dot - dashed lines denote Temporary Easements.
Note: Figures in brackets and dot - dashed lines denote Permanent Easements.
C _ _ _ _ Denotes Construction Limits in Cuts
F _ _ _ Denotes Construction Limits in Fills

1. DENOTES REMOVAL OF EXISTING GUARDRAIL
2. DENOTES REMOVAL OF EXISTING FENCE
3. DENOTES STD. GR-2 REQ'D.
4. DENOTES STD. RADIAL GR-2 REQ'D.
5. DENOTES STD. GR-7 REQ'D.
6. DENOTES STD. GR-9 REQ'D.
7. DENOTES STD. GR-11 REQ'D.
8. DENOTES STD. CG-3 REQ'D.
9. DENOTES STD. CG-6 REQ'D.
10. DENOTES STD. CG-7 REQ'D.
11. DENOTES STD. MS-1A REQ'D.
12. DENOTES STD. MS-2 REQ'D.
13. DENOTES DRAINAGE STRUCTURE TO BE REMOVED.
14. DENOTES DRAINAGE STRUCTURE TO BE RETAINED.

Denotes Demolition of Pavement
Denotes Proposed Asphalt Pavement
Denotes Proposed Asphalt Shoulder

SCALE 0 50' 100'

R.F.P. PLANS

LIMITED ACCESS LINES SHALL BE ESTABLISHED BY THE CONTRACTOR AS THE PROJECT DESIGN IS FINALIZED. THE CONTRACTOR SHALL PREPARE ALL NECESSARY DOCUMENTATION FOR USE BY THE DEPARTMENT TO PROCESS THE LIMITED ACCESS CHANGES IN ACCORDANCE WITH COMMONWEALTH TRANSPORTATION BOARD POLICIES AND PROCEDURES.

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THE LANE CONSTRUCTION CORPORATION

PROJECT	SHEET NO.
0581-128-109	3

DDI_I6595004.dgn
10:30:28 AM

9/19/2012
Plotted By: moorearl

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 — LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	4

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

MATCH LINE STA.175+00 SEE SHEET 3

MATCH LINE STA.190+00 SEE SHEET 5

EXIST.R/W & L/A LINE

END SOUND BARRIER WALL 1
INTERSTATE 581 CONSTR. ℄
STA.177+00.00 (85.13' RT)

SOUND BARRIER WALL
WITH STD. MB-7F REQ'D.

PROP.RETAINING WALL

STD. GR-FOA-2,
TYPE 2 REQ'D.

END RETAINING WALL
INTERSTATE 581 CONSTR. ℄
STA.177+00.00

S 48° 52' 48" E

INTERSTATE 581 CONSTR. ℄

SEDIMENT TRAP

TEMP. CONSTR. EASEMENT

FOREBAY

PROP. PERMANENT DRAINAGE EASEMENT

PROP. R/W

FINCASTLE EQUIPMENT COMPANY, LLC
Instr. 000000812 3
T.M. 24714 01
32.487 Ac.

PETER HUFF RING, ET ALS
Instr. 000001563 7
T.M. 23601 01
23.47 Ac.

Valley View Mall — Ring Road — Private Ring Road Easement Variable Width M.B. I, Pg. 337 — Brooklyn Drive — Mixed Hardwoods — Dense Mixed Hardwoods — Brush — Asphalt — Asphalt Shoulder — Bruce-Stoffer — U.S.220 — I-581 NBL

R.F.P. PLANS

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THE LANE CONSTRUCTION CORPORATION

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F _ _ _ _ Denotes Construction Limits in Fills

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2. DENOTES REMOVAL OF EXISTING FENCE
3. DENOTES STD.GR-2 REQ'D.
4. DENOTES STD.RADIAL GR-2 REQ'D.
5. DENOTES STD.GR-7 REQ'D.
6. DENOTES STD.GR-9 REQ'D.
7. DENOTES STD.GR-11 REQ'D.
8. DENOTES STD.CG-3 REQ'D.
9. DENOTES STD.CG-6 REQ'D.
10. DENOTES STD.CG-7 REQ'D.
11. DENOTES STD.MS-1A REQ'D.
12. DENOTES STD.MS-2 REQ'D.
13. DENOTES DRAINAGE STRUCTURE TO BE REMOVED.
14. DENOTES DRAINAGE STRUCTURE TO BE RETAINED.

Denotes Demolition of Pavement — Denotes Proposed Asphalt Pavement — Denotes Proposed Asphalt Shoulder

SCALE 0 50' 100'

PROJECT	SHEET NO.
0581-128-109	4

DDI_I6595005.dgn
10:29:16 AM

9/19/2012
Plotted By: moored

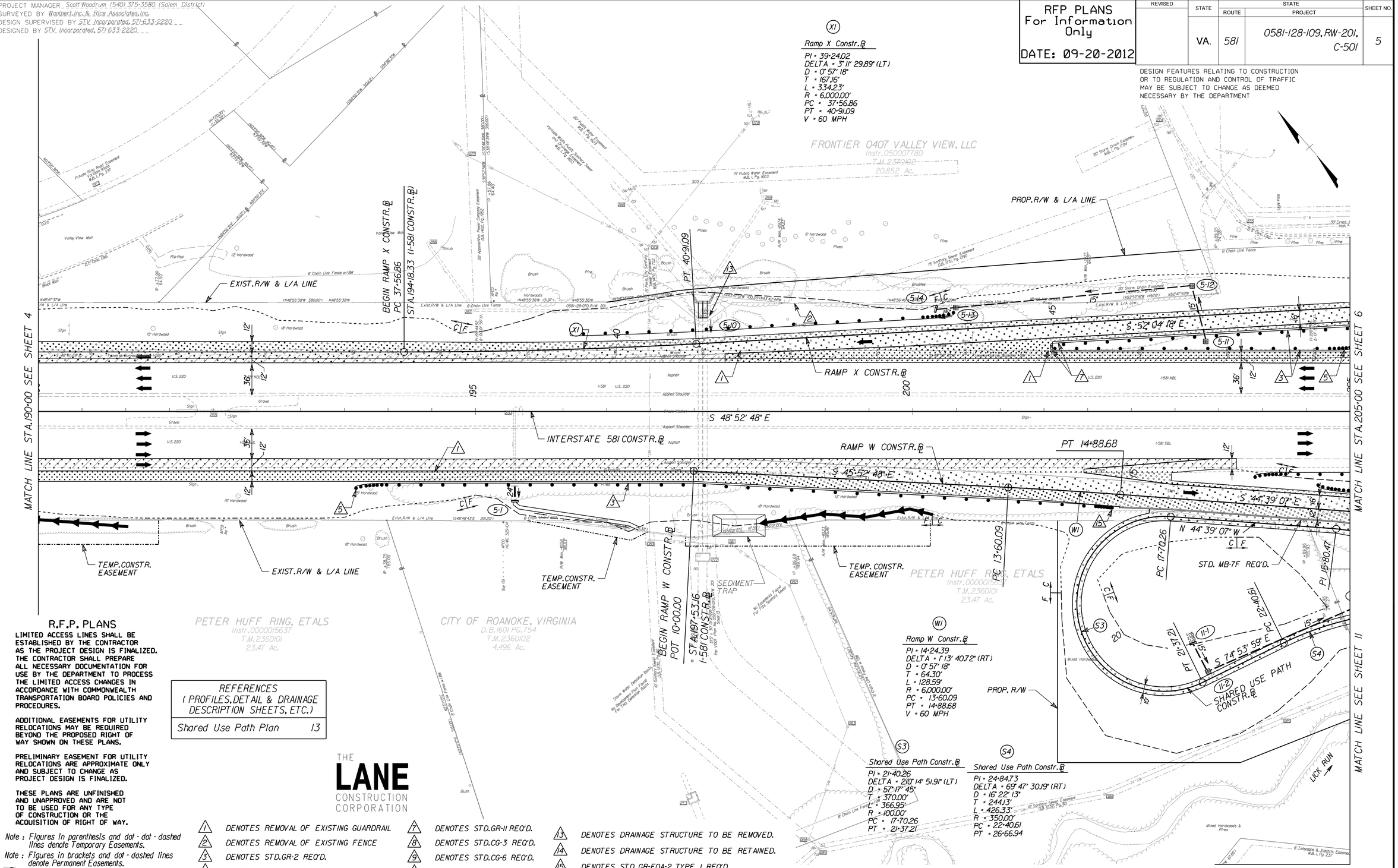
LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 — LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

RFP PLANS For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	5

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



X1 **Ramp X Constr.℄**
PI = 39+24.02
DELTA = 3°11' 29.89" (LT)
D = 0°57' 18"
T = 167.16'
L = 334.23'
R = 6,000.00'
PC = 37+56.86
PT = 40+91.09
V = 60 MPH

W1 **Ramp W Constr.℄**
PI = 14+24.39
DELTA = 1°13' 40.72" (RT)
D = 0°57' 18"
T = 64.30'
L = 128.59'
R = 6,000.00'
PC = 13+60.09
PT = 14+88.68
V = 60 MPH

S3 **Shared Use Path Constr.℄**
PI = 21+40.26
DELTA = 210° 14' 51.91" (LT)
D = 57° 17' 45"
T = 370.00'
L = 366.95'
R = 100.00'
PC = 17+70.26
PT = 21+37.21

S4 **Shared Use Path Constr.℄**
PI = 24+84.73
DELTA = 69° 47' 30.19" (RT)
D = 16° 22' 13"
T = 244.13'
L = 426.33'
R = 350.00'
PC = 22+40.61
PT = 26+66.94

R.F.P. PLANS

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REFERENCES (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)	
Shared Use Path Plan	13

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F Denotes Construction Limits in Fills

THE LANE CONSTRUCTION CORPORATION

1 DENOTES REMOVAL OF EXISTING GUARDRAIL
2 DENOTES REMOVAL OF EXISTING FENCE
3 DENOTES STD.GR-2 REQ'D.
4 DENOTES STD.RADIAL GR-2 REQ'D.
5 DENOTES STD.GR-7 REQ'D.
6 DENOTES STD.GR-9 REQ'D.
7 DENOTES STD.GR-11 REQ'D.
8 DENOTES STD.CG-3 REQ'D.
9 DENOTES STD.CG-6 REQ'D.
10 DENOTES STD.CG-7 REQ'D.
11 DENOTES STD.MS-1A REQ'D.
12 DENOTES STD.MS-2 REQ'D.
13 DENOTES DRAINAGE STRUCTURE TO BE REMOVED.
14 DENOTES DRAINAGE STRUCTURE TO BE RETAINED.
15 DENOTES STD. GR-FOA-2, TYPE I, REQ'D.

Denotes Demolition of Pavement
Denotes Proposed Asphalt Pavement
Denotes Proposed Asphalt Shoulder

SCALE 0 50' 100'

PROJECT	SHEET NO.
0581-128-109	5

DDI_I6595006.dgn
10:31:39 AM

9/19/2012
Plotted By: moored

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 — LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

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REFERENCES (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)	
Shared Use Path Plan	13

RFP PLANS For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501, B-627	6

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

R.F.P. PLANS

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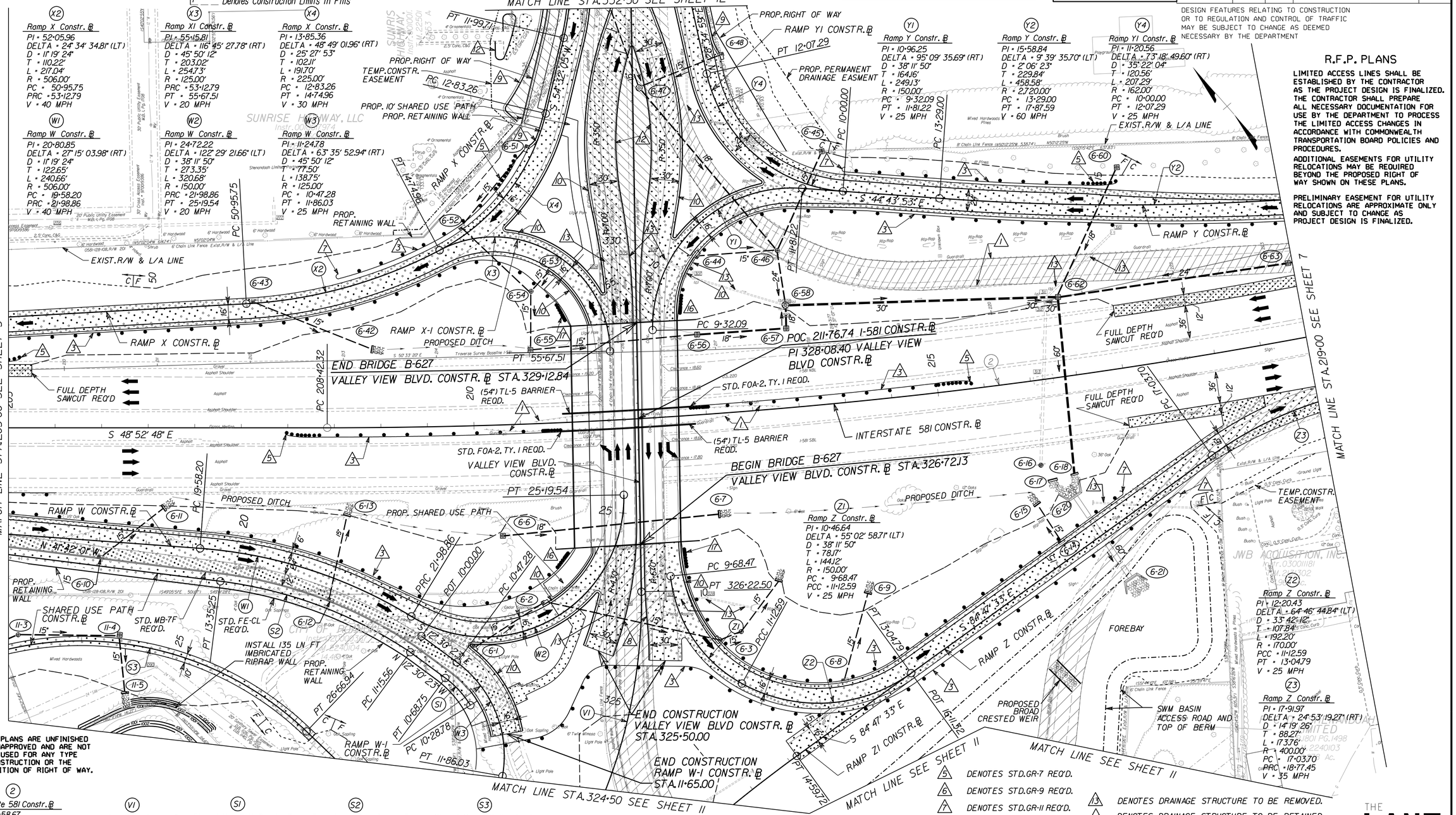

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THE LANE CONSTRUCTION CORPORATION

PROJECT	SHEET NO.
0581-128-109	6

NOTE: THIS PLAN SHEET WAS REVISED IN ACCORDANCE WITH VDOT'S LETTER OF SEPTEMBER 5, 2012 AND AS DESCRIBED IN THE TECHNICAL PROPOSAL.

DDI_I6595007.dgn
10:32:33 AM

9/19/2012
Plotted By: mooregl

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

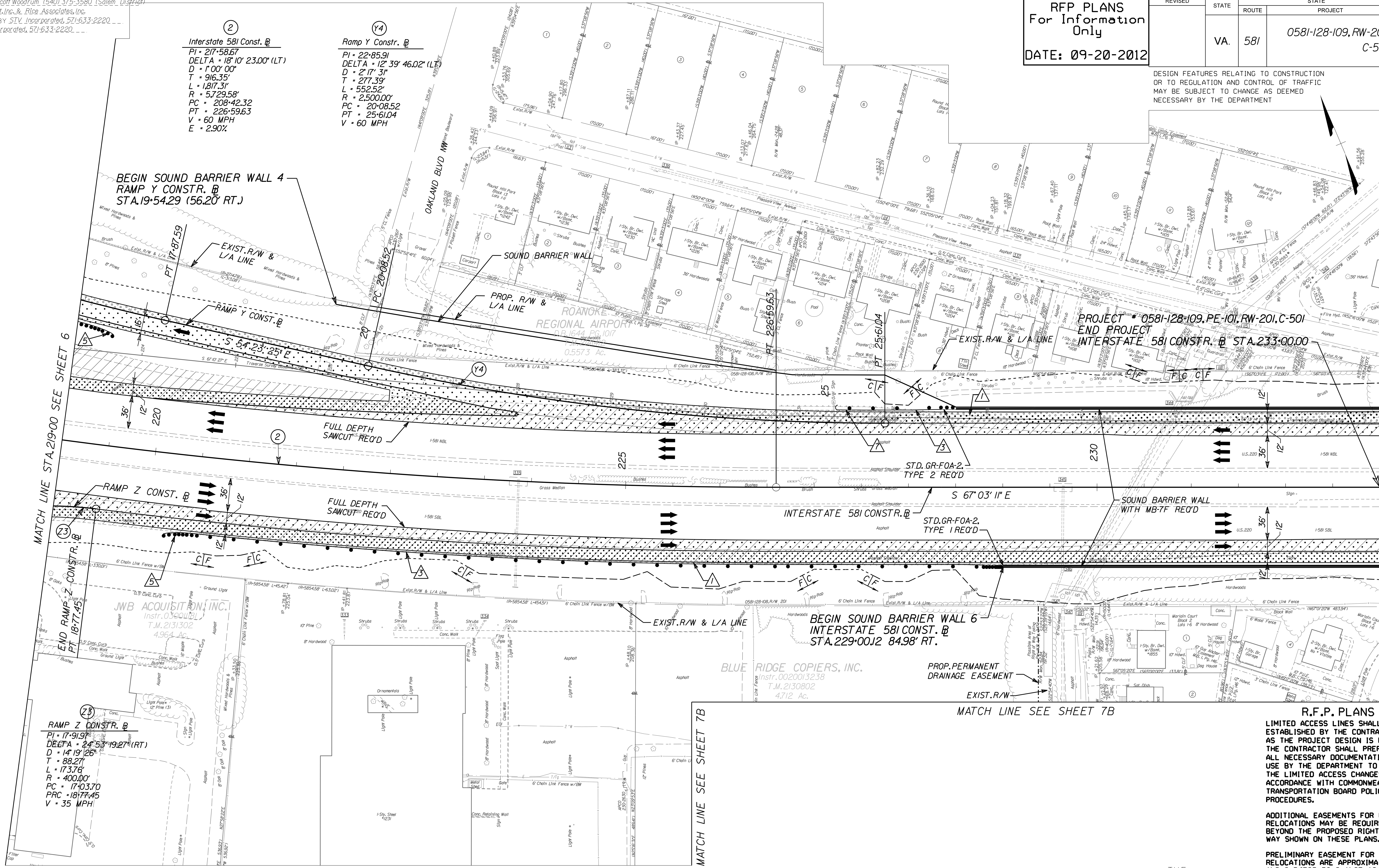
LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	7

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



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

(1) DENOTES REMOVAL OF EXISTING GUARDRAIL
(2) DENOTES REMOVAL OF EXISTING FENCE
(3) DENOTES STD. GR-2 REQ'D.
(4) DENOTES STD. RADIAL GR-2 REQ'D.
(5) DENOTES STD. GR-7 REQ'D.
(6) DENOTES STD. GR-9 REQ'D.
(7) DENOTES STD. GR-11 REQ'D.
(8) DENOTES STD. CG-3 REQ'D.
(9) DENOTES STD. CG-6 REQ'D.
(10) DENOTES STD. CG-7 REQ'D.
(11) DENOTES STD. MS-1A REQ'D.
(12) DENOTES STD. MS-2 REQ'D.
(13) DENOTES DRAINAGE STRUCTURE TO BE REMOVED.
(14) DENOTES DRAINAGE STRUCTURE TO BE RETAINED.

Denotes Demolition of Pavement
Denotes Proposed Asphalt Pavement
Denotes Proposed Asphalt Shoulder

SCALE 0 50′ 100′

R.F.P. PLANS

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THE LANE CONSTRUCTION CORPORATION

DDI_I6595008.dgn
10:33:14 AM

9/19/2012
Plotted By: moorearl

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

LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	8

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MATCH LINE STA.233+00 SEE SHEET 7

MATCH LINE STA.248+00 SEE SHEET 9

END SOUND BARRIER WALL 4
INTERSTATE 581 CONSTR. ℄
STA.242+82.67 (113.45' LT.)

BEGIN SOUND BARRIER WALL 5
INTERSTATE 581 CONSTR. ℄
STA.243+43.17 (112.90' LT.)

END CONSTRUCTION
INTERSTATE 581 CONSTR. ℄
STA.236+00.00

SOUND BARRIER WALL WITH MB-7F REQ'D.

FULL DEPTH SAWCUT REQ'D.

TIE MB-7F TO BRIDGE PARAPET

INTERSTATE 581 CONSTR. ℄

S 67°03' 11" E

EXIST. R/W & L/A LINE

END SOUND BARRIER WALL 6
INTERSTATE 581 CONSTR. ℄
STA.242+63.67 (77.14' RT.)

BEGIN SOUND BARRIER WALL 7
INTERSTATE 581 CONSTR. ℄
STA.243+42.22 (77.02' RT.)

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Denotes Demolition of Pavement

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Denotes Proposed Asphalt Shoulder

SCALE 0 50' 100'

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THE LANE CONSTRUCTION CORPORATION

PROJECT	SHEET NO.
0581-128-109	8

DDI_I6595009.dgn
10:33:54 AM

9/19/2012
Plotted By: moorearl

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 — LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

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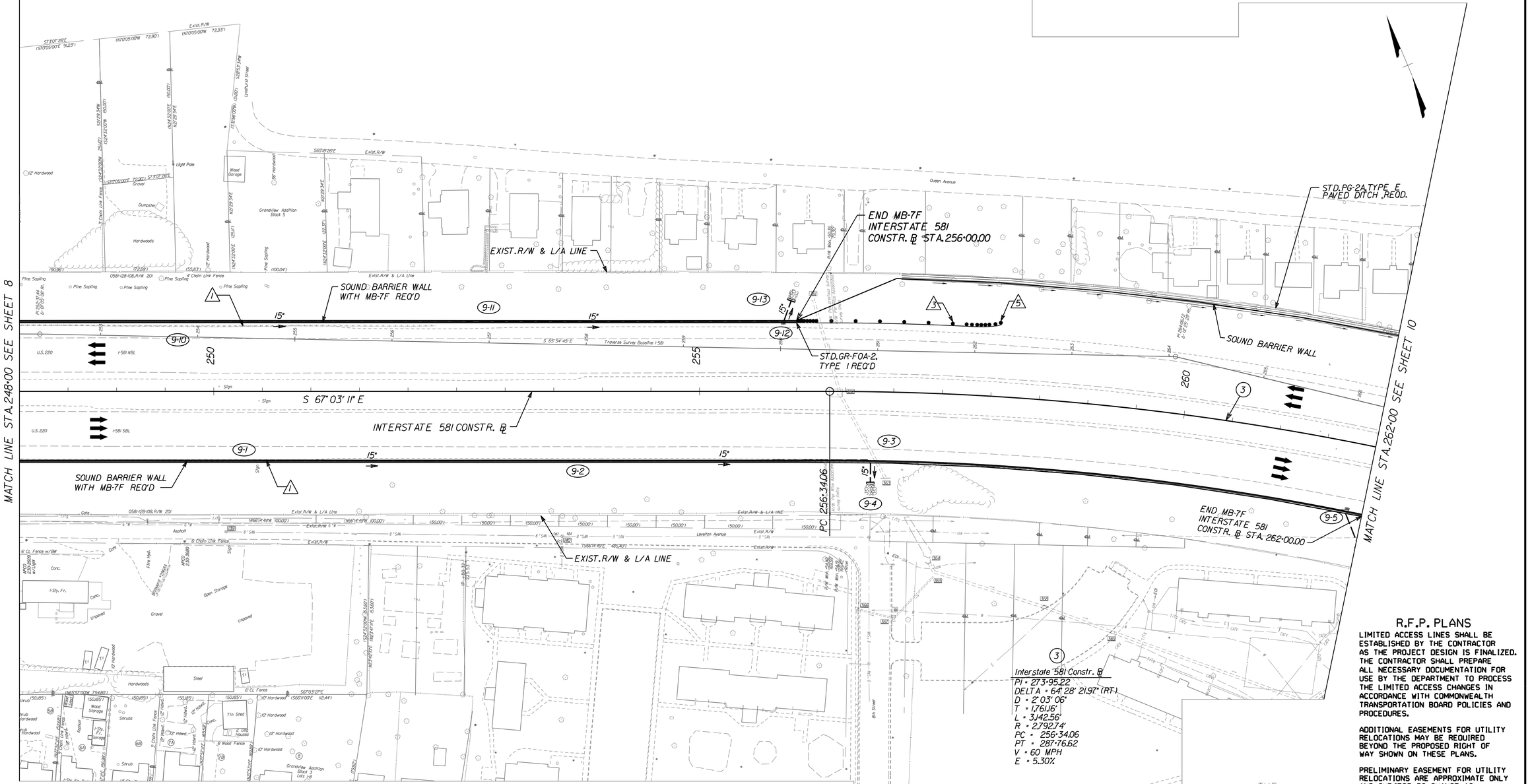
RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	9

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



Interstate 581 Constr. ℄
PI = 273+95.22
DELTA = 64° 28' 21.97" (RT.)
D = 2° 03' 06"
T = 1,761.16'
L = 3,142.56'
R = 2,792.74'
PC = 256+34.06
PT = 287+76.62
V = 60 MPH
E = 5.30%

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SCALE 0 50' 100'

THE LANE CONSTRUCTION CORPORATION

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PROJECT	SHEET NO.
0581-128-109	9

DDI_I659501O.dgn
10:34:38 AM

9/19/2012
Plotted By: moored

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For Information Only
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REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	10

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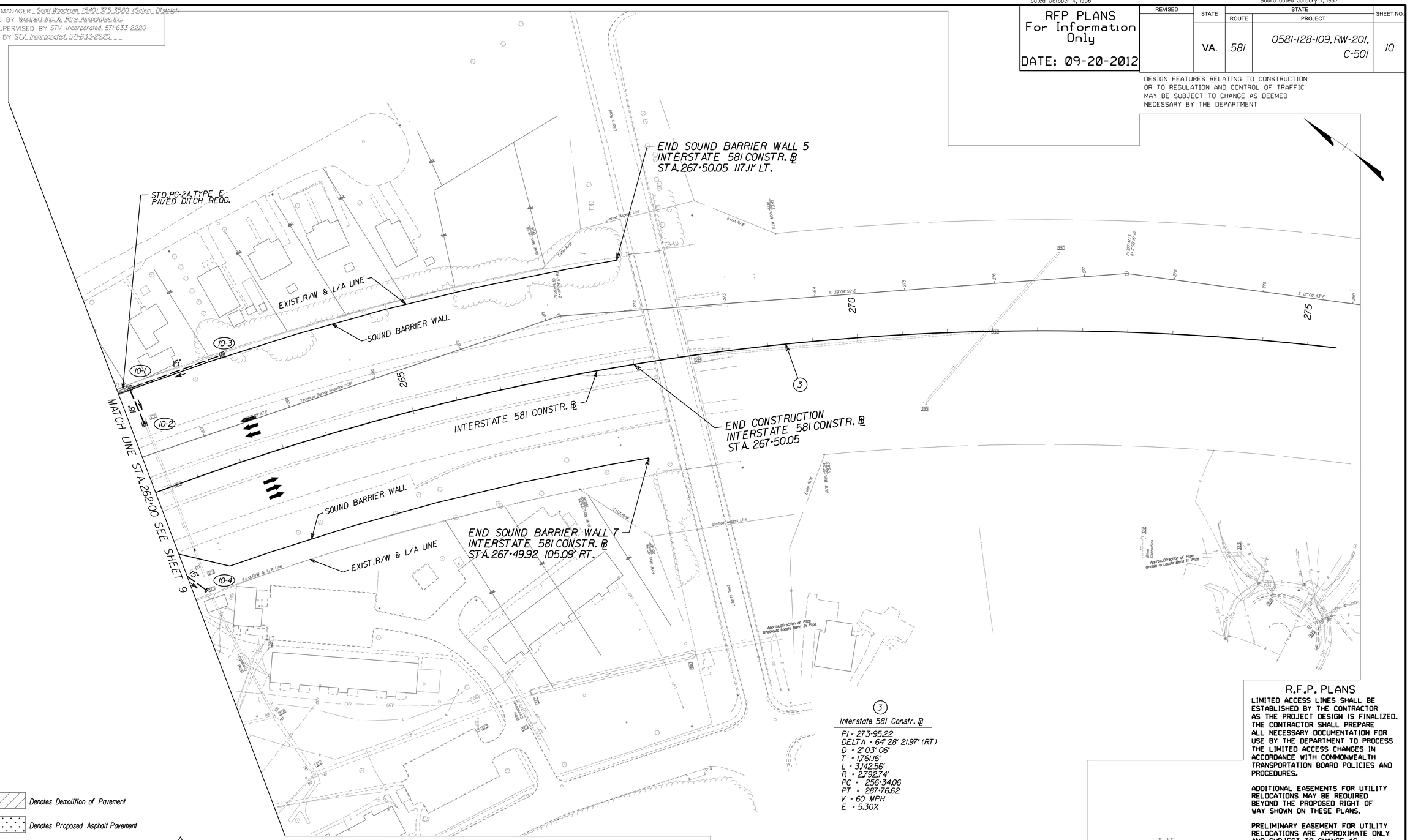

(3) Interstate 581 Constr. ℄

PI = 273+95.22
DELTA = 64° 28' 21.97" (RT)
D = 2° 03' 06"
T = 1,761.16'
L = 3,142.56'
R = 2,792.74'
PC = 256+34.06
PT = 287+76.62
V = 60 MPH
E = 5.30%

Denotes Demolition of Pavement
Denotes Proposed Asphalt Pavement
Denotes Proposed Asphalt Shoulder
Note : Figures in parenthesis and dot - dot - dashed lines denote Temporary Easements.
Note : Figures in brackets and dot - dashed lines denote Permanent Easements.
C ____ Denotes Construction Limits in Cuts
F __ __ Denotes Construction Limits in Fills

1. DENOTES REMOVAL OF EXISTING GUARDRAIL
2. DENOTES REMOVAL OF EXISTING FENCE
3. DENOTES STD.GR-2 REQ'D.
4. DENOTES STD.RADIAL GR-2 REQ'D.
5. DENOTES STD.GR-7 REQ'D.
6. DENOTES STD.GR-9 REQ'D.
7. DENOTES STD.GR-11 REQ'D.
8. DENOTES STD.CG-3 REQ'D.
9. DENOTES STD.CG-6 REQ'D.
10. DENOTES STD.CG-7 REQ'D.
11. DENOTES STD.MS-1A REQ'D.
12. DENOTES STD.MS-2 REQ'D.
13. DENOTES DRAINAGE STRUCTURE TO BE REMOVED.
14. DENOTES DRAINAGE STRUCTURE TO BE RETAINED.

R.F.P. PLANS

LIMITED ACCESS LINES SHALL BE ESTABLISHED BY THE CONTRACTOR AS THE PROJECT DESIGN IS FINALIZED. THE CONTRACTOR SHALL PREPARE ALL NECESSARY DOCUMENTATION FOR USE BY THE DEPARTMENT TO PROCESS THE LIMITED ACCESS CHANGES IN ACCORDANCE WITH COMMONWEALTH TRANSPORTATION BOARD POLICIES AND PROCEDURES.

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THE LANE CONSTRUCTION CORPORATION

SCALE 0 50' 100'

PROJECT	SHEET NO.
0581-128-109	10

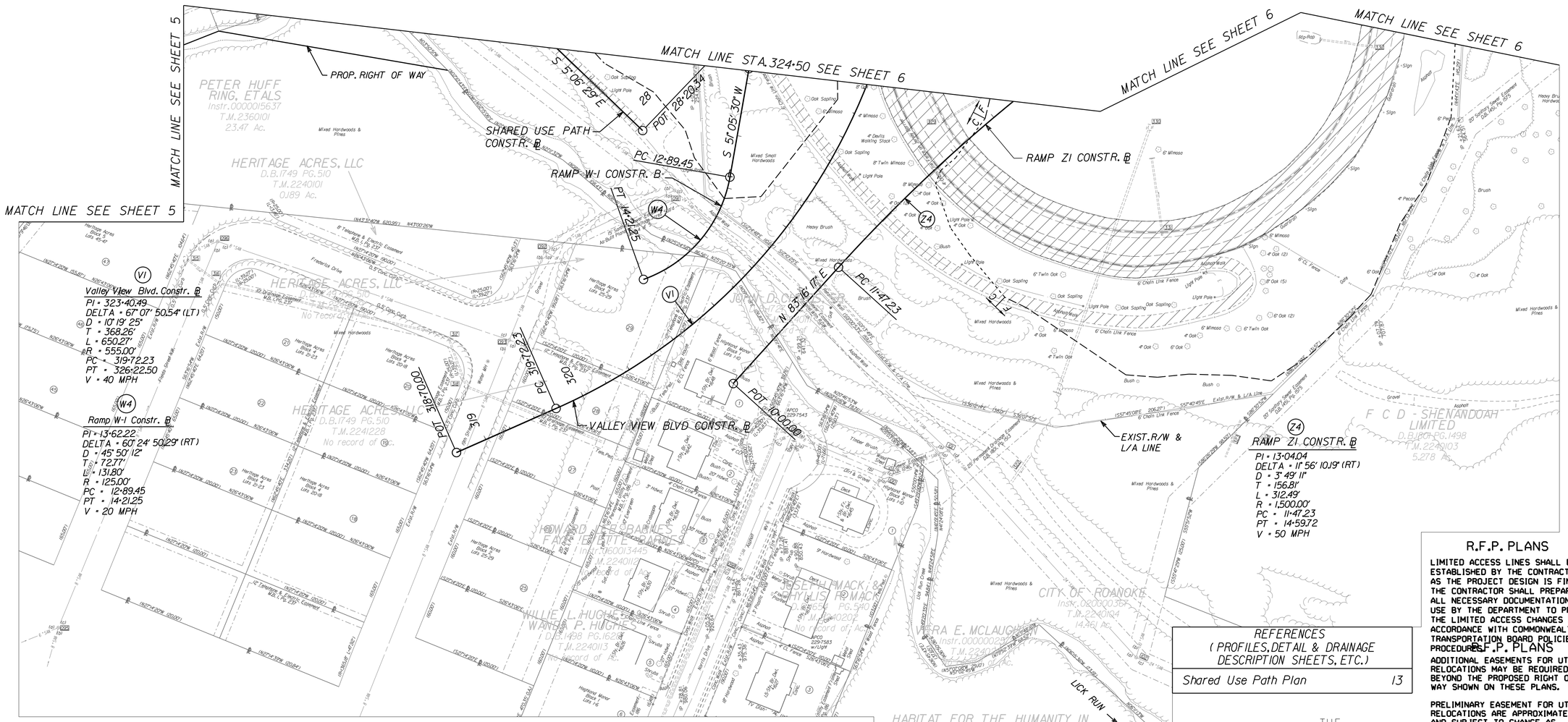
LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 — LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER_ Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	11

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



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6. DENOTES STD.GR-9 REQ'D.
7. DENOTES STD.GR-11 REQ'D.
8. DENOTES STD.CG-3 REQ'D.
9. DENOTES STD.CG-6 REQ'D.
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Denotes Demolition of Pavement
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SCALE 0 50' 100'

R.F.P. PLANS

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R.F.P. PLANS

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THE LANE CONSTRUCTION CORPORATION

PROJECT	SHEET NO.
0581-128-109	11

NOTE: THIS PLAN SHEET WAS REVISED IN ACCORDANCE WITH VDOT'S LETTER OF SEPTEMBER 5, 2012 AND AS DESCRIBED IN THE TECHNICAL PROPOSAL.

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10:36:05 AM

9/19/2012
Plotted By: mooreal

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 — LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	STATE ROUTE	STATE PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	12

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

MATCH LINE STA.332+50 SEE SHEET 6

(X5) Ramp X Constr. ℄
PI = 11+68.20
DELTA = 14° 31' 13.02" (RT)
D = 22° 55' 06"
T = 31.85'
L = 63.36'
R = 250.00'
PC = 11+36.35
PT = 11+99.71
V = 30 MPH

(V2) Valley View Blvd. Constr. ℄
PI = 341+04.15
DELTA = 73° 26' 58.49" (LT)
D = 11° 27' 33"
T = 373.03'
L = 640.97'
R = 500.00'
PC = 337+31.13
PT = 343+72.10
V = 35 MPH
E = 2.00%

(Y5) Ramp Y1 Constr. ℄
PI = 14+22.51
DELTA = 8° 50' 11.86" (RT)
D = 9° 32' 57"
T = 46.36'
L = 92.54'
R = 600.00'
PC = 13+76.15
PT = 14+68.69
V = 40 MPH

STAPLES THE OFFICE SUPERSTORES EAST, INC. LLC
Instr. 080001571
T.M. 2250109
2.375 Ac.

DAYTON HUDSON CORPORATION
Instr. 970019385
T.M. 2250101
9.952 Ac.

CITY OF ROANOKE
D.B. 1066 PG. 375
T.M. 2250102
15.952 Ac.

ECM ROANOKE, LLC
Instr. 060007...
T.M. 2250...
...III Ac.

TEMP. CONSTR. EASEMENT
PROP. 10' SHARED USE PATH
PROP. RETAINING WALL
FULL DEPTH SAWCUT REQ'D.
EXIST. R/W & L/A LINE
STD. CG-12 TYPE 'B' REQ'D
PROP. R/W
PROP. 10' SHARED USE PATH
PC 11+36.35
POT 10+00.00
PC 337+31.13
S 40° 00' 52" W
R=350'
R=700'
R=33'
VALLEY VIEW BLVD CONSTR. ℄
EXIST. R/W & L/A LINE
PROP. R/W
STD. PG2A, TYPE E REQ'D.
RAMP Y1 CONSTR. ℄
PROP. PERMANENT DRAINAGE EASEMENT
PC 13+76.15
PT 14+68.69
PT 343+72.10
END CONSTRUCTION VALLEY VIEW BLVD CONSTR. ℄ STA. 339+35.88
FULL DEPTH SAWCUT REQ'D.
END FULL DEPTH CONSTRUCTION
BEGIN MILLING AND RESURFACING VALLEY VIEW BLVD CONSTR. ℄
STA. 339+25.00

Denotes Demolition of Pavement
Denotes Milling and Resurfacing
Denotes Proposed Asphalt Pavement
Denotes Proposed Asphalt Shoulder
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5. DENOTES STD. GR-7 REQ'D.
6. DENOTES STD. GR-9 REQ'D.
7. DENOTES STD. GR-11 REQ'D.
8. DENOTES STD. CG-3 REQ'D.
9. DENOTES STD. CG-6 REQ'D.
10. DENOTES STD. CG-7 REQ'D.
11. DENOTES STD. MS-1A REQ'D.
12. DENOTES STD. MS-2 REQ'D.
13. DENOTES DRAINAGE STRUCTURE TO BE REMOVED.
14. DENOTES DRAINAGE STRUCTURE TO BE RETAINED.

THE LANE CONSTRUCTION CORPORATION

SCALE 0 50' 100'

PROJECT	SHEET NO.
0581-128-109	12

NOTE: THIS PLAN SHEET WAS REVISED IN ACCORDANCE WITH VDOT'S LETTER OF SEPTEMBER 5, 2012 AND AS DESCRIBED IN THE TECHNICAL PROPOSAL.

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated October 4, 1956 LIMITED ACCESS HIGHWAY By Resolution of Commonwealth Transportation Board dated January 1, 1987

PROJECT MANAGER Scott Woodrum (540) 375-3580 (Salem District)
SURVEYED BY Woolpert, Inc. & Rice Associates, Inc.
DESIGN SUPERVISED BY STV Incorporated, 571-633-2220
DESIGNED BY STV Incorporated, 571-633-2220

SHARED USE PATH AND LICK RUN RELOCATION DETAIL

RFP PLANS
For Information Only
DATE: 09-20-2012

REVISED	STATE	ROUTE	PROJECT	SHEET NO.
	VA.	581	0581-128-109, RW-201, C-501	13

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

R.F.P. PLANS

LIMITED ACCESS LINES SHALL BE ESTABLISHED BY THE CONTRACTOR AS THE PROJECT DESIGN IS FINALIZED. THE CONTRACTOR SHALL PREPARE ALL NECESSARY DOCUMENTATION FOR USE BY THE DEPARTMENT TO PROCESS THE LIMITED ACCESS CHANGES IN ACCORDANCE WITH COMMONWEALTH TRANSPORTATION BOARD POLICIES AND PROCEDURES.

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(W1) Ramp W Constr. ℄
PI = 14+24.39
DELTA = 1° 13' 40.72" (RT)
D = 0° 57' 18"
T = 64.30'
L = 128.59'
R = 6,000.00'
PC = 13+60.09
PT = 14+88.68
V = 60 MPH

(W2) Ramp W Constr. ℄
PI = 24+72.22
DELTA = 122° 29' 21.66" (LT)
D = 38° 11' 50"
T = 273.35'
L = 320.68'
R = 150.00'
PRC = 21+98.86
PT = 25+19.54
V = 25 MPH

(W3) Ramp W Constr. ℄
PI = 11+24.78
DELTA = 63° 35' 52.94" (RT)
D = 45° 50' 12"
T = 77.50'
L = 138.75'
R = 125.00'
PC = 10+47.28
PT = 11+86.03
V = 25 MPH

(W4) Ramp W-1 Constr. B
PI = 13+62.22
DELTA = 60° 24' 50.29" (RT)
D = 45° 50' 12"
T = 72.77'
L = 131.80'
R = 125.00'
PC = 12+89.45
PT = 14+21.25
V = 20 MPH

(S1) Shared Use Path Constr. ℄
PI = 10+49.01
DELTA = 22° 01' 13.56" (LT)
D = 55° 05' 32"
T = 20.23'
L = 39.97'
R = 104.00'
PC = 10+28.78
PT = 10+68.75

(S2) Shared Use Path Constr. ℄
PI = 12+27.21
DELTA = 26° 40' 01.68" (LT)
D = 12° 06' 48"
T = 112.11'
L = 220.15'
R = 473.00'
PC = 11+15.10
PT = 13+35.25

(Z1) Ramp Z Constr. ℄
PI = 10+31.30
DELTA = 50° 51' 41.37" (LT)
D = 38° 11' 50"
T = 71.32'
L = 133.16'
R = 150.00'
PC = 9+59.98
PCC = 10+93.14
V = 25 MPH

(Z4) RAMP Z1 CONSTR. ℄
PI = 13+04.04
DELTA = 11° 56' 10.19" (RT)
D = 3° 49' 11"
T = 156.81'
L = 312.49'
R = 1,500.00'
PC = 11+47.23
PT = 14+59.72
V = 50 MPH

(S3) Shared Use Path Const. ℄
PI = 21+40.26
DELTA = 210° 14' 51.91" (LT)
D = 57° 17' 45"
T = 370.00'
L = 366.95'
R = 100.00'
PC = 17+70.26
PT = 21+37.21

(S4) Shared Use Path Const. ℄
PI = 24+84.73
DELTA = 69° 47' 30.19" (RT)
D = 16° 22' 13"
T = 244.13'
L = 426.33'
R = 350.00'
PC = 22+40.61
PT = 26+66.94

(V1) Valley View Blvd. Constr. ℄
PI = 323+40.49
DELTA = 67° 07' 50.54" (LT)
D = 10° 19' 25"
T = 368.26'
L = 650.27'
R = 555.00'
PC = 319+72.23
PT = 326+22.50
V = 40 MPH

THE LANE CONSTRUCTION CORPORATION

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4 — DENOTES STD. RADIAL GR-2 REQ'D.
5 — DENOTES STD. GR-7 REQ'D.
6 — DENOTES STD. GR-9 REQ'D.
7 — DENOTES STD. GR-11 REQ'D.
8 — DENOTES STD. CG-3 REQ'D.
9 — DENOTES STD. CG-6 REQ'D.
10 — DENOTES STD. CG-7 REQ'D.
11 — DENOTES STD. MS-1A REQ'D.
12 — DENOTES STD. MS-2 REQ'D.
13 — DENOTES DRAINAGE STRUCTURE TO BE REMOVED.
14 — DENOTES DRAINAGE STRUCTURE TO BE RETAINED.
15 — DENOTES STD. GR-FOA-2, TYPE 1 REQ'D.
16 — DENOTES STD. GR-FOA-1, TYPE 1 REQ'D.
17 — DENOTES STD. GR-FOA-1, TYPE 2 REQ'D.

Denotes Demolition of Pavement
Denotes Proposed Asphalt Pavement
Denotes Proposed Asphalt Shoulder

SCALE 0 50' 100'

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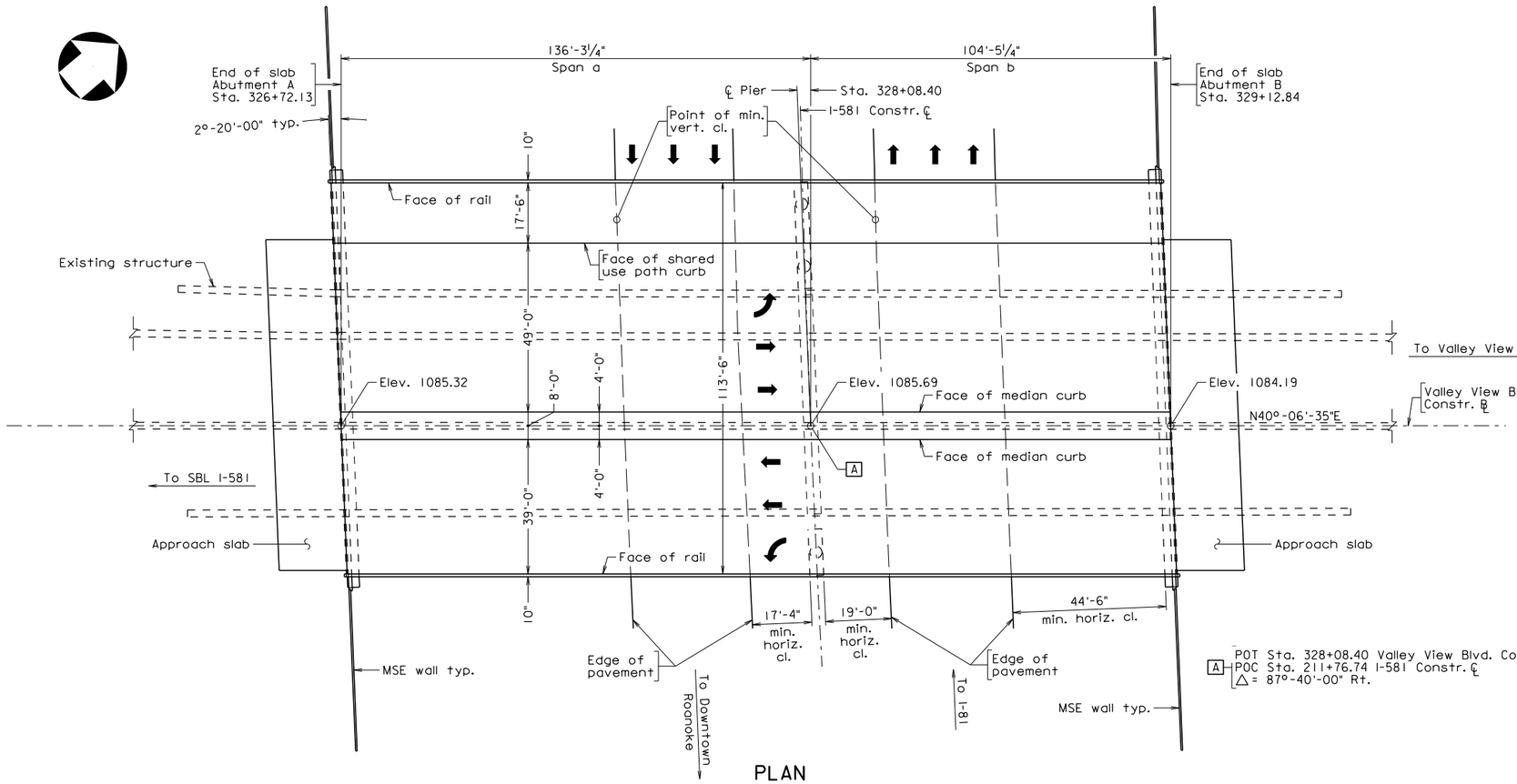
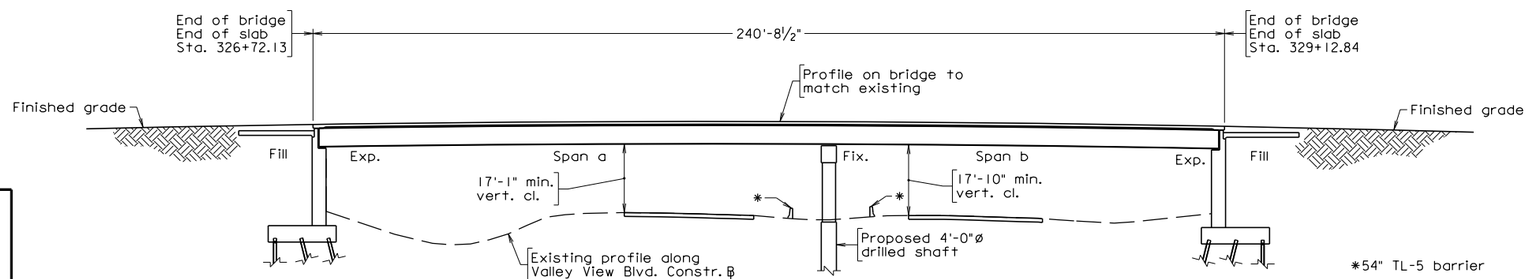
Conceptual Structural Plans and Renderings

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	NH-581-5(035)	581	0581-128-109, B627	14(1)
NBIS Number: 000000000025427			UPC No. 16595		
Federal Oversight Code: FO			FHWA Construction and Scour Code: X771-SN		



PLAN



ABUTMENT A PIER ABUTMENT B

DEVELOPED SECTION ALONG CONSTR. ℄

DESIGN EXCEPTION(S):

None

GENERAL NOTES:

Widths: 17'-6" shared use path, 49'-0" roadway, 8'-0" median, 39'-0" roadway. Overall width 113'-6" face-to-face of rails. Includes widening of 33'-7¼" on left side of traffic and 17'-7" on right side of traffic.

Span layout: 136'-104' continuous steel plate girder spans.

Capacity: HL-93 loading.

Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2007.

Design: AASHTO LRFD Bridge Design Specifications, 5th Edition; 2010; 2010 Interim Specifications; and VDOT Modifications.

All structural steel, including bearings, shall be ASTM A709 Grade 50W and shall be unpainted.

THE LANE CONSTRUCTION CORPORATION

VDOT

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
PROPOSED BRIDGE WIDENING ON VALLEY VIEW BOULEVARD OVER I-581 CITY OF ROANOKE - 4.0 MI. S. OF I-81 PROJ. 0581-128-109, B627

STV/RALPH WHITEHEAD ASSOC.
RICHMOND, VA
STRUCTURAL ENGINEER

PLANS BY:	Consultant
COORDINATED:	
SUPERVISED:	Ronald C. Briggs
DESIGNED:	Derek B. Overstreet
DRAWN:	Kurtis R. Jackson
CHECKED:	Virginia J. Epperly

No.	Description	Date

REVISIONS

For Table of Revisions, see Sheet 2.

Scale: 1" = 20'

Recommended for Approval: _____ State Structure and Bridge Engineer Date

Approved: _____ Chief Engineer Date

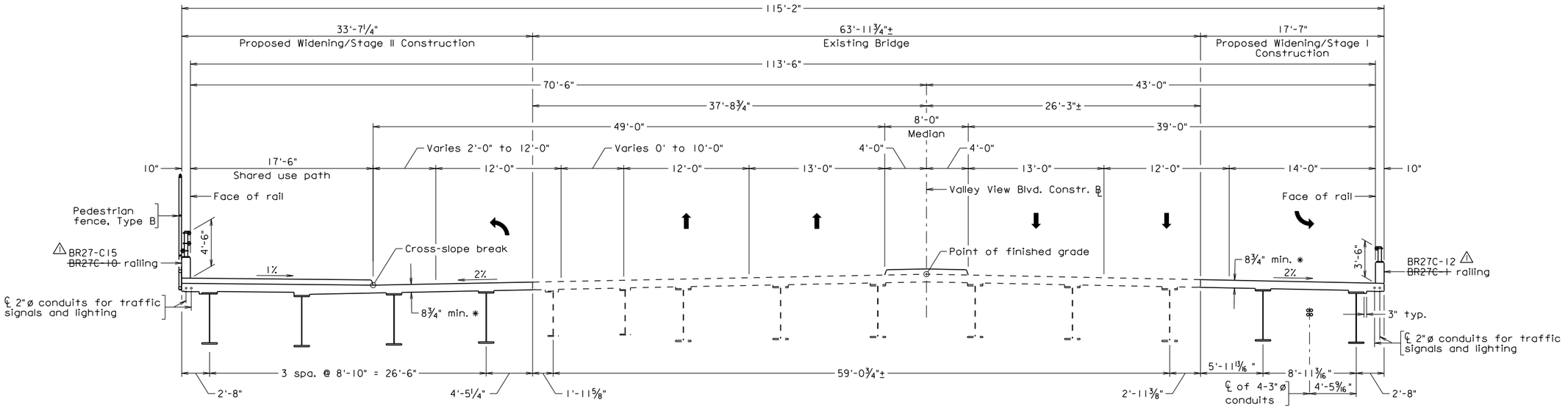
Date: Sept. 20, 2012

276-84A

Sheet 1 of 4

b276844001.dgn

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—			0581-128-109, B627	14(2)



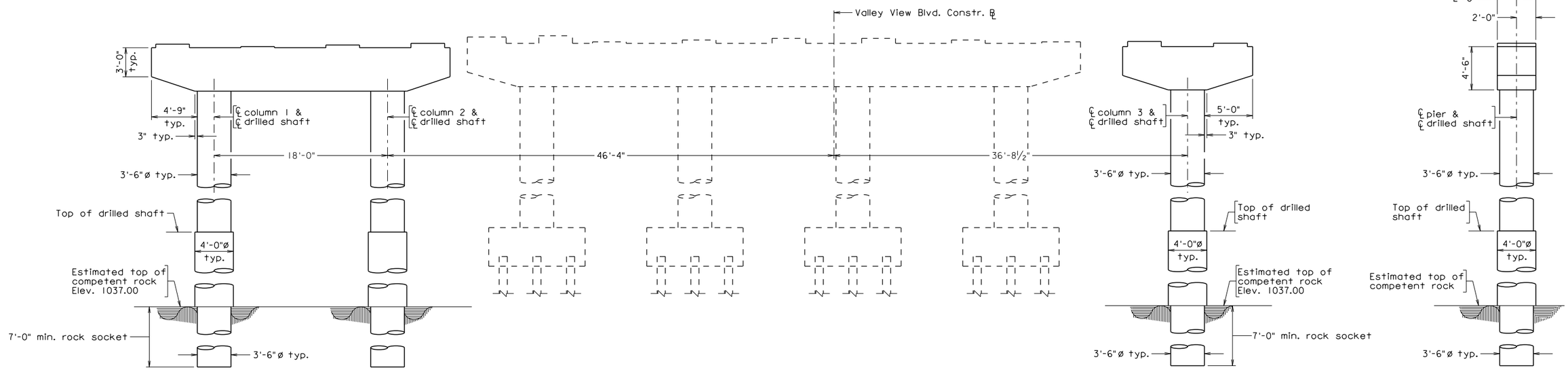
* Deck thickness to match existing

TRANSVERSE SECTION

Note: The entire riding surface shall receive a uniform layer of a VDOT approved thin bonded epoxy overlay.

LEGEND:

- - - Existing structure



ELEVATION
PIER

END VIEW

b276844002-rev1.dgn

NOTE: THIS PLAN SHEET WAS REVISED IN ACCORDANCE WITH VDOT'S LETTER OF SEPTEMBER 5, 2012 AND AS DESCRIBED IN THE TECHNICAL PROPOSAL.

Scale: ³⁄₁₆" = 1'-0"

STV/RALPH WHITEHEAD ASSOC.
RICHMOND, VA
STRUCTURAL ENGINEER

THE LANE CONSTRUCTION CORPORATION

No.	Description	Date
⚠	Railing Desig.	09-20-12

Revisions

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

TRANSVERSE SECTION AND PIER

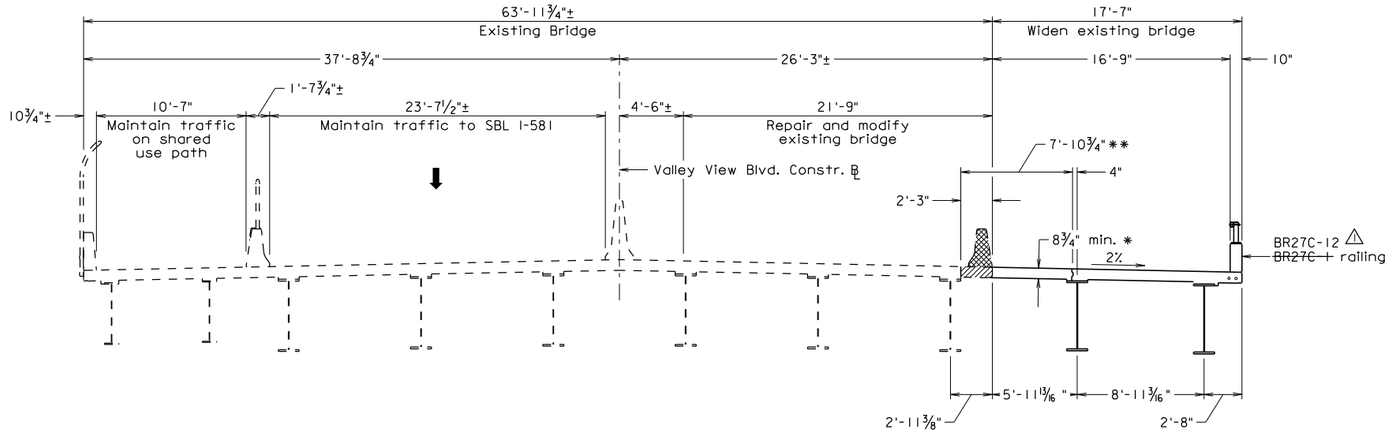
Designed: DRO
Drawn: KRJ
Checked: MCR

Date	Plan No.	Sheet No.
Sept. 2012	276-84A	2 of 4

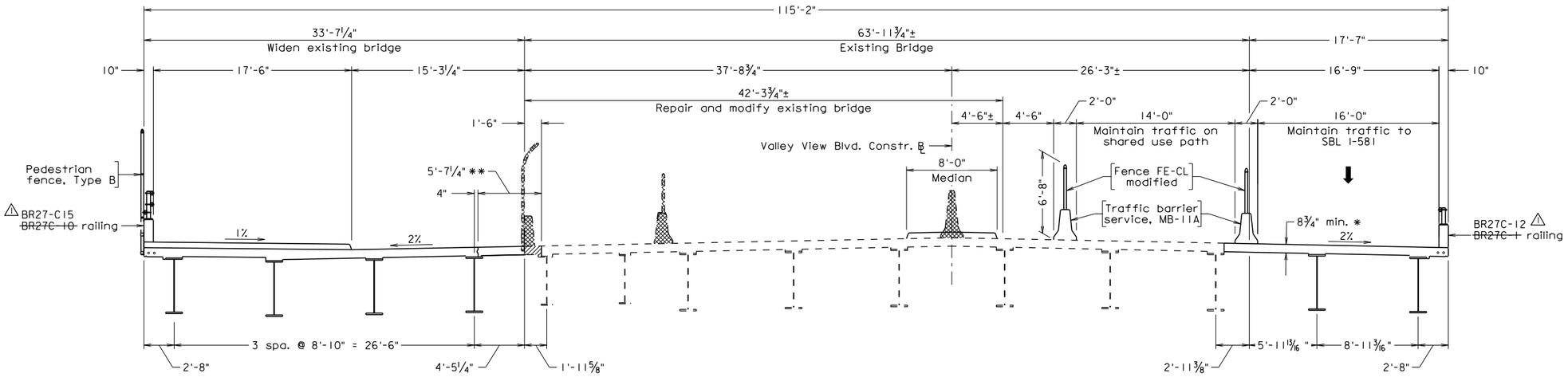
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	——			0581-128-109, B627	14(3)

LEGEND:

- – – – Denotes existing bridge.
- Denotes limits of demolition of existing bridge elements.
- Denotes limits of existing concrete removal. Existing transverse reinforcing steel shall be retained to lap with new reinforcing steel.
- * Deck thickness to match existing.
- ** Denotes width of deck closure pour. Deck closure pour shall occur after 45 days of new deck pour.



STAGE I CONSTRUCTION



STAGE II CONSTRUCTION

NOTE: THIS PLAN SHEET WAS REVISED IN ACCORDANCE WITH VDOT'S LETTER OF SEPTEMBER 5, 2012 AND AS DESCRIBED IN THE TECHNICAL PROPOSAL.

b27684A003-rev1.dgn

STV/RALPH WHITEHEAD ASSOC.
RICHMOND, VA
STRUCTURAL ENGINEER

THE LANE CONSTRUCTION CORPORATION

Scale: ³⁄₁₆" = 1'-0"

No.	Description	Date
⚠	Railing Desig.	09-20-12
Revisions		

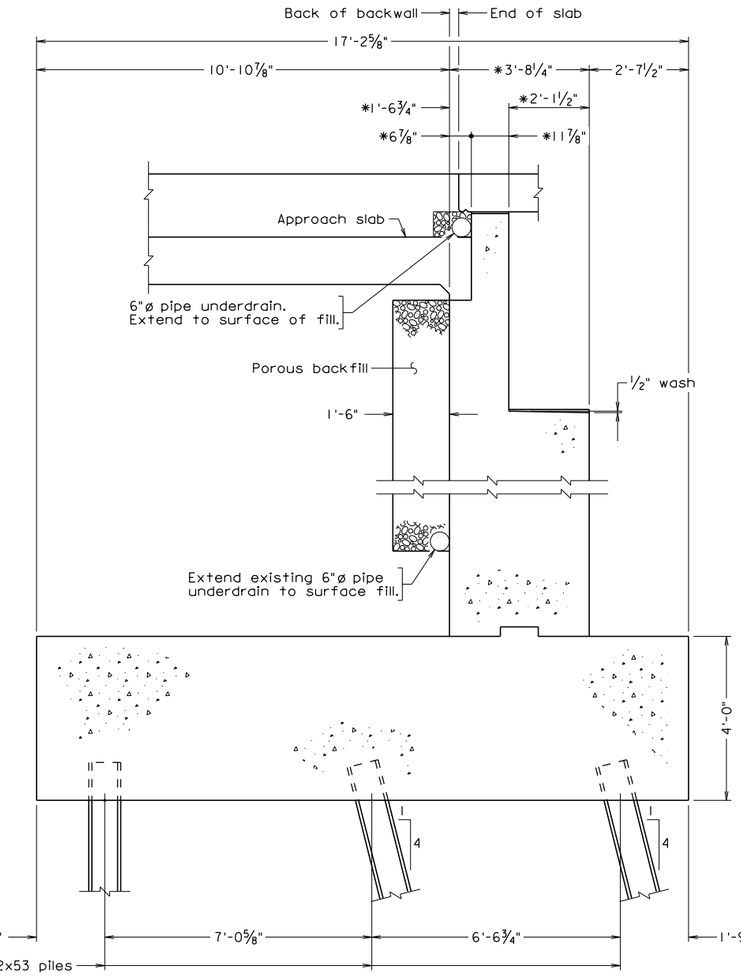
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

CONSTRUCTION SEQUENCE

Designed: DRO	Date	Plan No.	Sheet No.
Drawn: KRJ	Sept. 2012	276-84A	3 of 4
Checked: RCB			

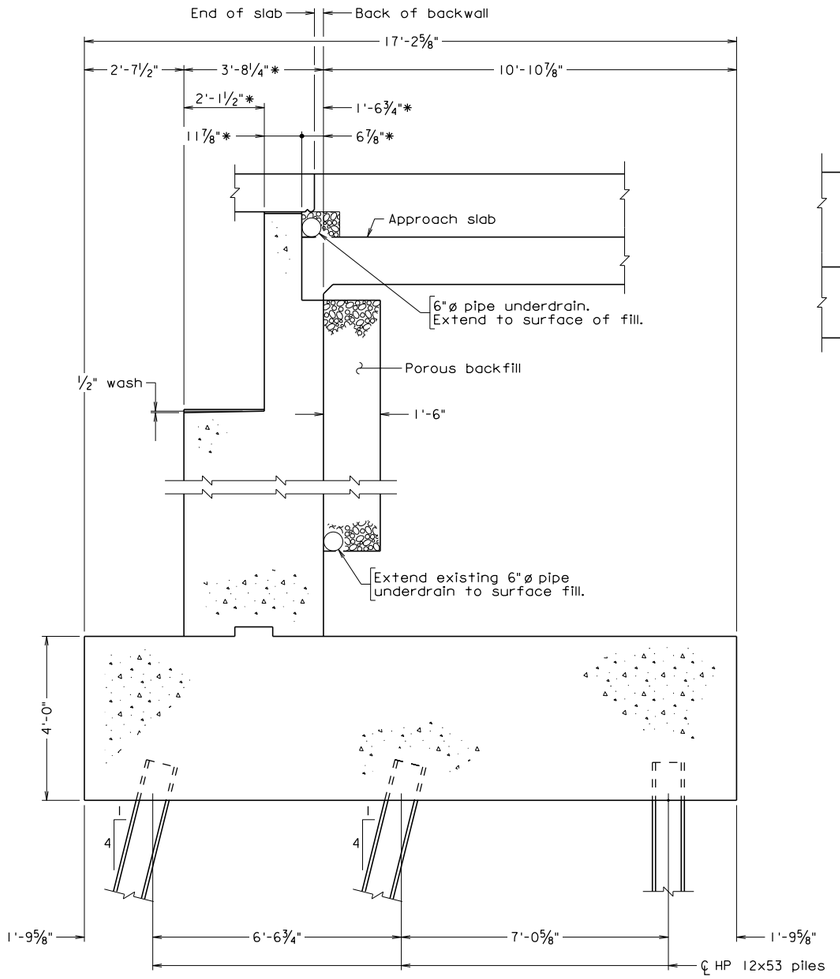
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—			0581-128-109, B627	14(4)



* Dimension set to match existing abutment.

TYPICAL SECTION THRU WIDENED PORTION OF ABUTMENT A

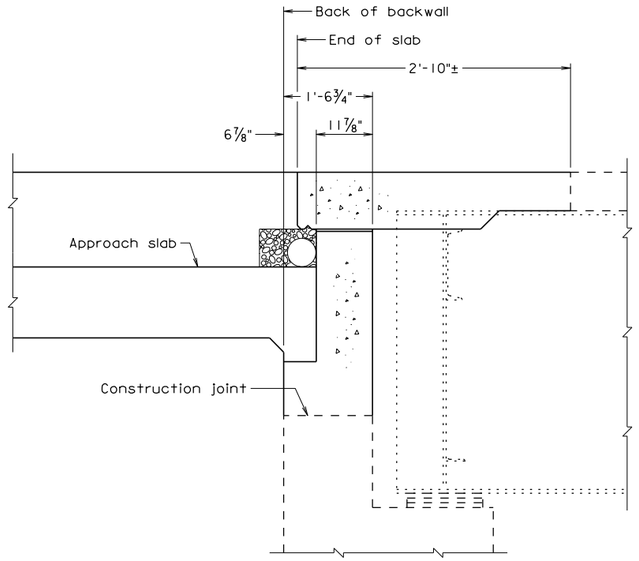
Scale: ½" = 1'-0"



* Dimension set to match existing abutment.

TYPICAL SECTION THRU WIDENED PORTION OF ABUTMENT B

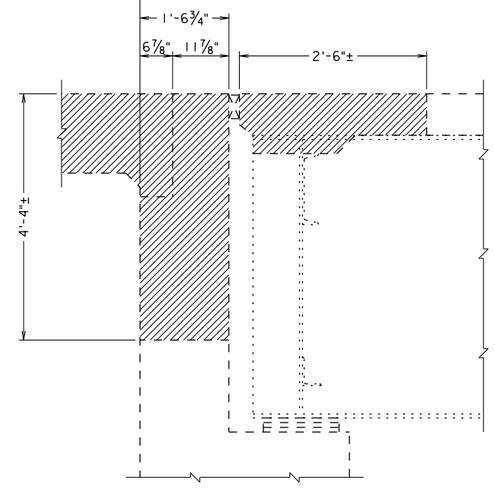
Scale: ½" = 1'-0"



PARTIAL SECTION THRU EXISTING ABUTMENT

Details of abutment modification work shown.

Scale: ¾" = 1'-0"



PARTIAL SECTION THRU EXISTING ABUTMENT

Details of abutment demolition work shown.

Scale: ¾" = 1'-0"

▨ Denotes limits of existing concrete removal. Existing longitudinal reinforcing steel in deck slab and vertical reinforcing steel in abutment backwall shall be retained to lap with new reinforcing steel.

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STV/RALPH WHITEHEAD ASSOC.
RICHMOND, VA
STRUCTURAL ENGINEER

THE LANE CONSTRUCTION CORPORATION

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

ABUTMENT DETAILS

Designed: DBO	Date	Plan No.	Sheet No.
Drawn: KRJ	Sept. 2012	276-84A	4 of 4
Checked: RCB			