

I-81 Corridor Improvement Program Report



DECEMBER 2019

Prepared for:



Prepared by:



**Commonwealth
Transportation Board**

I-81 Corridor Improvement Program Report

Introduction

In April 2019, the Virginia General Assembly enacted legislation that the Governor signed into law establishing the Interstate 81 (I-81) Corridor Improvement Program and Fund, which advances the projects identified by the I-81 Corridor Improvement Plan (the Plan) to implementation. The plan was approved by the Commonwealth Transportation Board (the Board) in December 2018 following an evaluation of the corridor. Chapters 837 and 846 of the 2019 Virginia Acts of Assembly specify the roles and responsibilities of the Board and the I-81 Committee (the Committee) to enact the I-81 Corridor Improvement Program (the Program) and Fund (the Fund).

Legislative Requirements

Section 33.2-3602 of the legislation requires the Board, in consultation with the Committee, to report to the General Assembly by December 15 of each year “regarding the status and progress of implementation of the Program.” This report is mandated to include:

- ➔ The safety and performance of the I-81 corridor, including:
 - ✓ crash frequency and severity per mile, expressed in equivalent property damage only crashes
 - ✓ person-hours of delay per mile
 - ✓ frequency of lane-impacting incidents per mile
 - ✓ duration of a lane closure
- ➔ An assessment of the effectiveness of the operational strategies and capital projects implemented and funded through the Program
- ➔ The status of capital projects funded through the Program
- ➔ The current and projected balances of the Fund

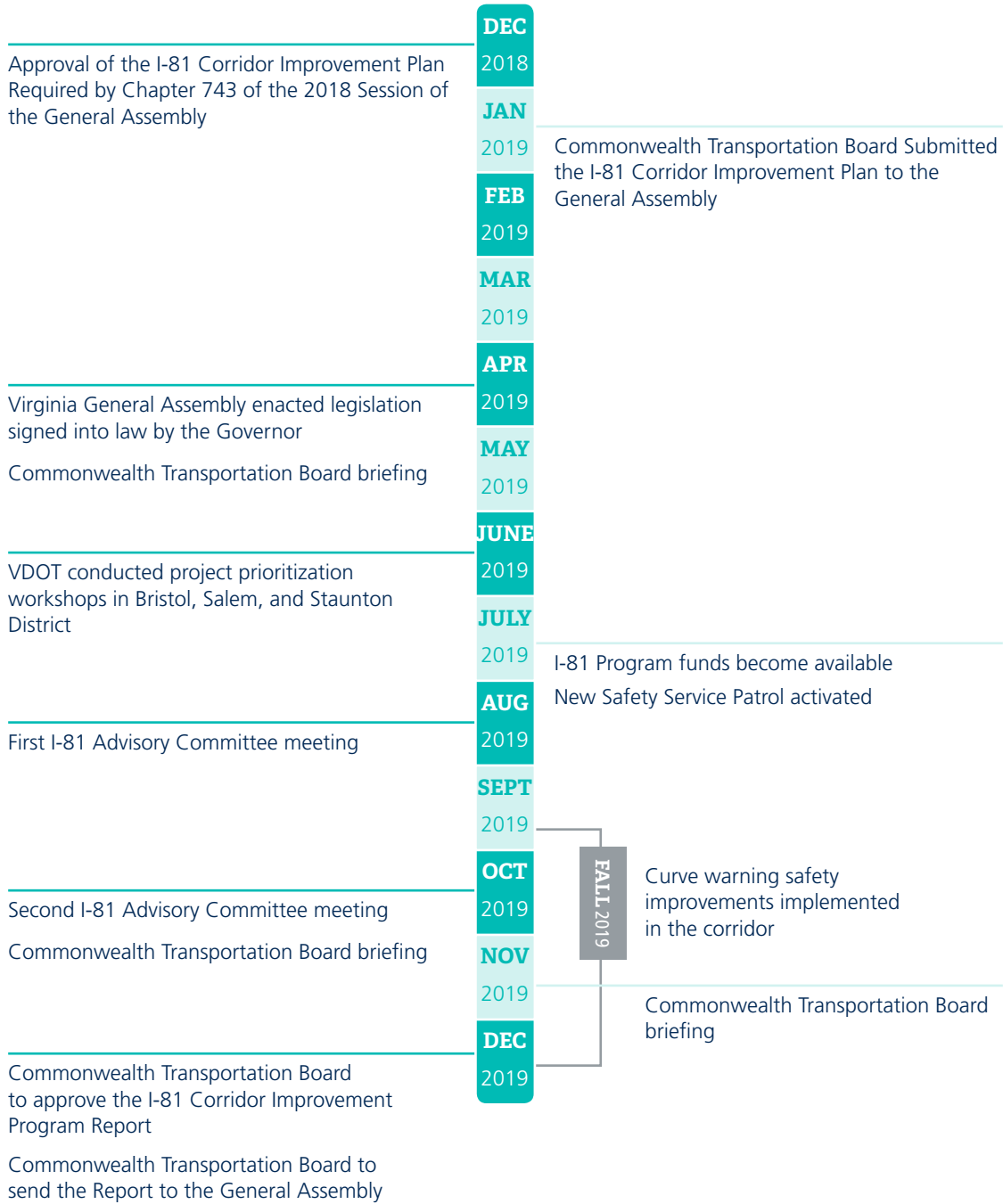
Section 33.2-3602 of the legislation requires the Board, in consultation with the Committee, to report to the General Assembly by December 15 of each year “regarding the status and progress of implementation of the Program.”

The I-81 Corridor Improvement Program project descriptions, schedules, and summary map are included in **Appendices E and F**.

House Bill 2718 (Chapter 837), introduced by Delegates Steve Landes and Terry Austin, and Senate Bill 1716 (Chapter 846), introduced by Senators Mark Obenshain and William Carrico, establish the I-81 Corridor Improvement Program, Fund, and Committee. Governor Northam announced amendments in March 2019, providing dedicated annual funding to the corridor, estimated initially as \$103 million in fiscal year 2020 and growing to an estimated \$163 million in fiscal year 2025. These funds will support a \$2 billion improvement program. The revenues for the Fund are provided through the creation of a new truck registration fee as well as establishment of an I-81 corridor regional fuels tax, statewide diesel and road taxes.



Timeline of Events



Effectiveness of the Projects Funded and Implemented Through the Program

I-81 Program funds became available on July 1, 2019. The initial phase of the Plan-recommended improvements has been implemented since that time—upgraded safety service patrols and LED-flashing curve warning signs. To show the effectiveness of a program or project, the study team will rely on a minimum of one year of data following the implementation of the program or project; therefore, there are no “after” results for 2019. The first set of post-improvement results will be shared as part of the Board’s annual report in 2020. The Plan performance measures shared with the public and adopted by the Board in late 2018 were through 2017.

For 2019, the study team prepared graphics in **Figure 1** through **Figure 4** to show how the four performance measures changed between 2017 and 2018. **Figure 1** through **Figure 4** also display the locations of the initial 48 I-81 capital improvement projects that have been included in the Six-Year Improvement Program (SYIP) by the Board as of October 17, 2019. Crash data were compared between 2013-2017 and 2014-2018. A supplementary histogram displaying crash frequency and severity per mile for truck-related crashes is included in the Appendix. Delay data (general and incident-related) were compared between 2016-2017 and 2017-2018. The study team calculated delay data for all three years (2016-2018) using an updated methodology from what was used in the Plan. The resulting delay data generally mimics the trends outlined in the Plan. Trends along the corridor demonstrate that conditions along I-81 have worsened for all four performance measures in 2018. The 2018 data presented will become the baseline against which future improvements to I-81 will be measured.

Commonwealth Transportation Board Activities

Starting in April 2019, the Office of the Secretary of Transportation in cooperation with the Virginia Department of Transportation (VDOT), delivered two I-81 briefings to the Board—one in April and the other in October. According to the legislation, the Board must submit an annual progress report to the General Assembly by December 15.

April 2019 Commonwealth Transportation Board Briefing

The Deputy Secretary of Transportation briefed the Board at its workshop on April 9 on the status of the I-81 Corridor Improvement Program and Fund legislation. The Governor signed both bills (HB2718 and SB1716) into law on April 3. An overview of amendments made to the bills is as follows:

- ➔ Both regional and state revenues increased
- ➔ Statewide revenues are distributed based on truck miles traveled on interstates

The Deputy Secretary described the various fees and taxes that will generate revenue to fund the improvements identified in the Plan as described in the bill. The presentation also included information on the development of the Committee and the required annual I-81 Corridor Report. The April presentation delivered to the Board can be found in **Appendix A**.

Figure 1. Annual Equivalent Property Damage Only Crashes per Mile

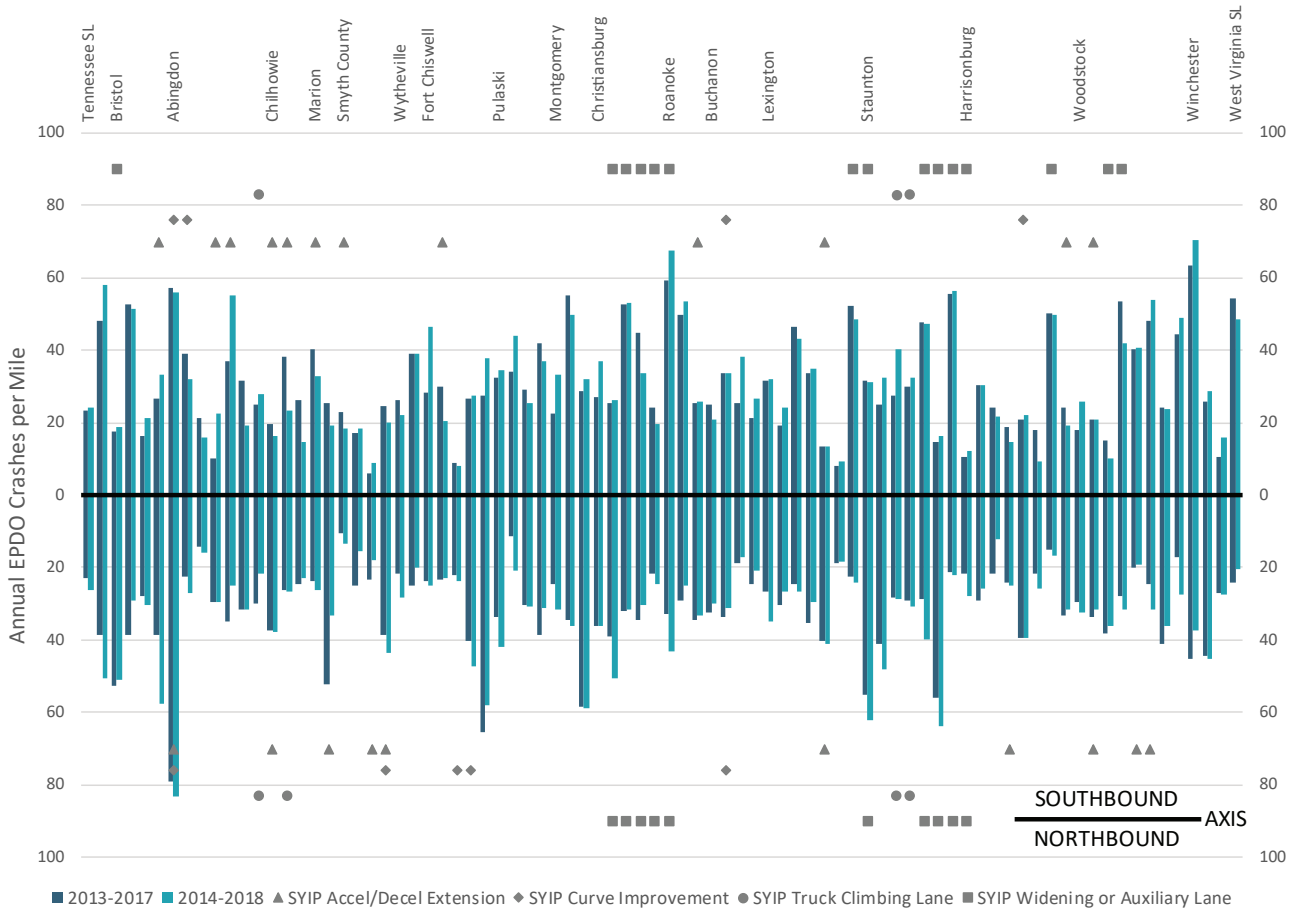


Figure 2. Annual Person-Hours of Delay per Mile

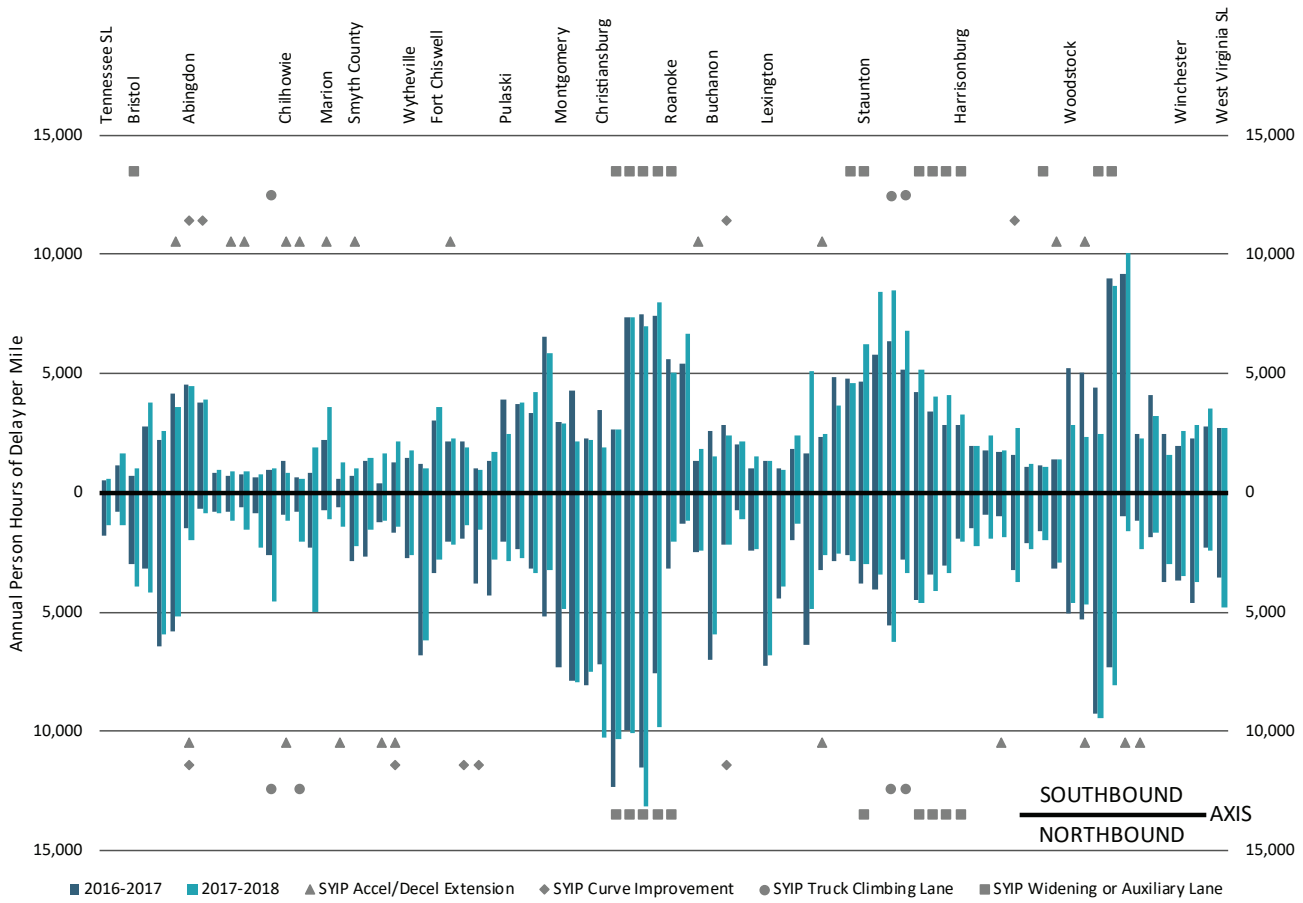


Figure 3. Annual Lane-Impacting Incidents per Mile

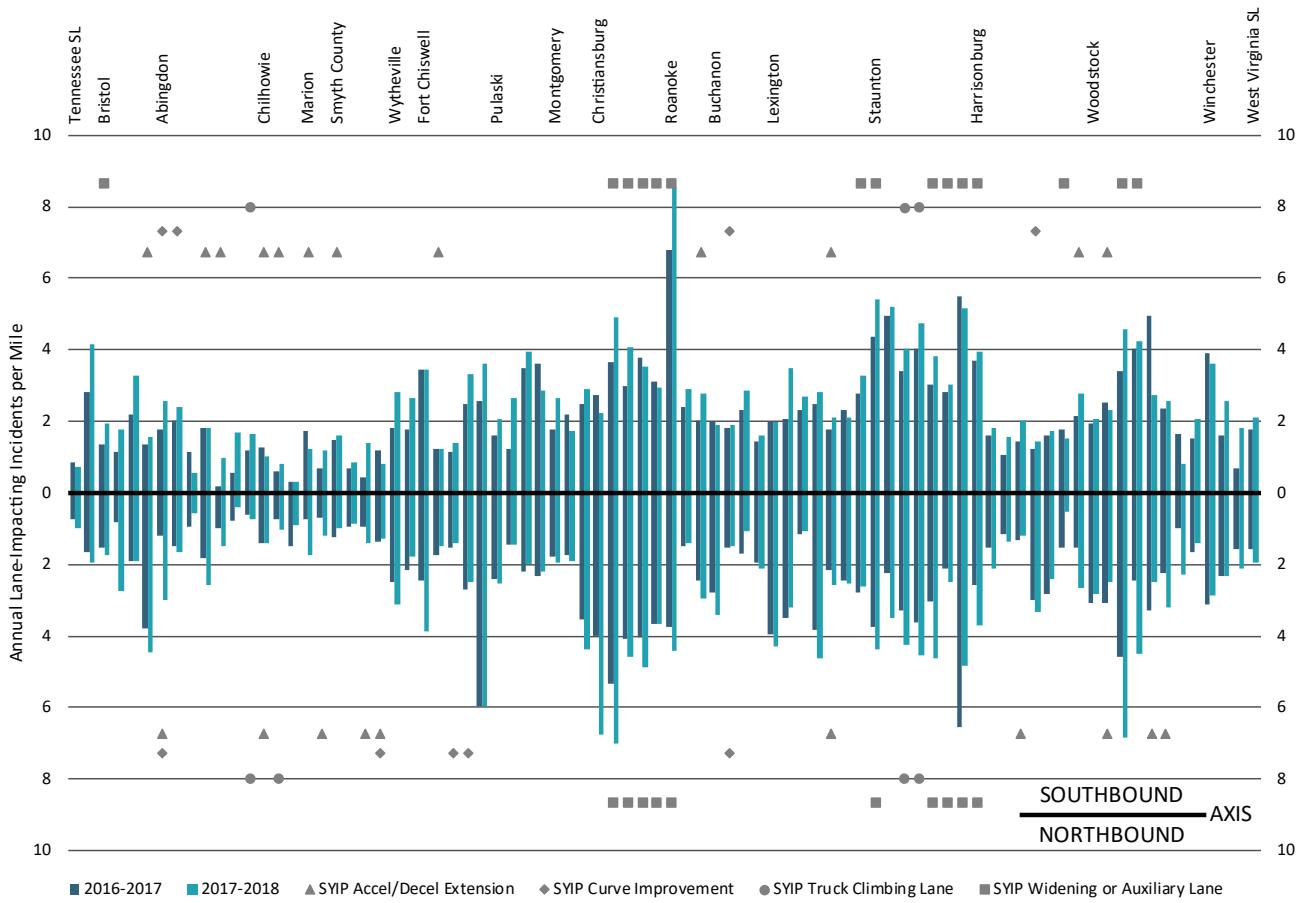
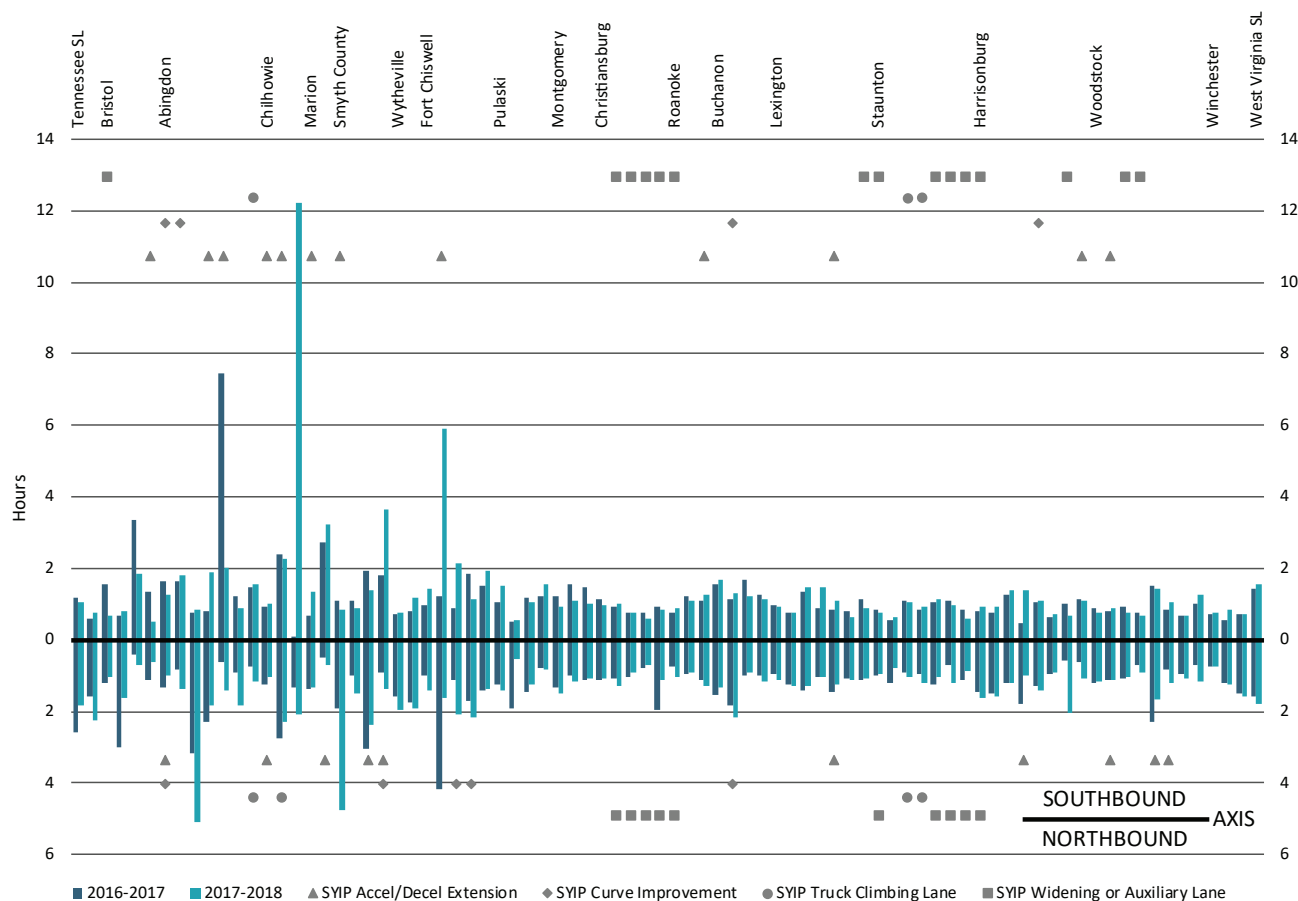


Figure 4. Average Duration of a Lane Closure (Hours)



Status of Capital Projects Funded Through the Program

On July 1, 2019, the FY2020-2025 Six-Year Improvement Program (SYIP) was adopted by the Board. The safety improvements identified in the Plan were implemented this fall, and construction is expected to begin on the capital improvements in spring of 2020. A table summarizing these projects be found in **Appendix D**. Table 1 below outlines the status of each project.

Table 1. Project Status Scorecard

Activity	Status	Anticipated Completion
Safety Service Patrol Expansion	Complete	July 2019
Curve Improvements (8)	Complete	Fall 2019
Initial Accel/Decel Lane Extensions (8)	Underway	Spring 2021
Additional Cameras (51)	Underway	Spring 2020
Additional Changeable Message Signs (31)	Underway	Fall 2020
Remaining Capital Projects (48)	TBD	Under Pay-Go Scenario, 75% complete by 2028 Under Bonding Scenario, 94% complete by 2028

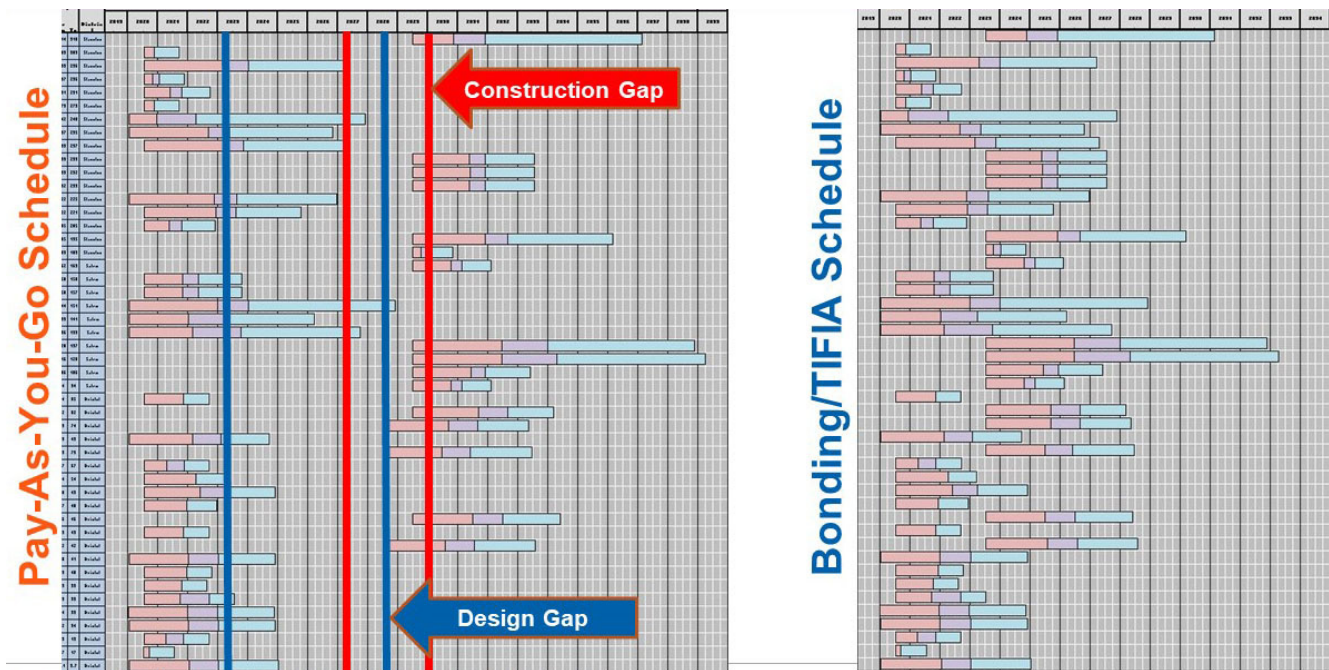
The FY2020-2025 SYIP included the initial 16 safety and capital improvement projects (e.g. flashing chevron signs, acceleration/deceleration lane extensions) worth approximately \$22.4 million and operational improvements (e.g. towing, changeable message signs, cameras) worth approximately \$14.6 million from the Plan. Expanded safety service patrol, primarily focusing on incident management and emergency response, which became effective on July 1, 2019, accounted for an additional \$1.5 million for a total of almost \$38.5 million. The eight curve safety improvements with flashing chevrons were installed during the summer of 2019.

Construction is expected to begin on the first set of eight capital improvements (a series of acceleration lane extensions at interchange on-ramps) in the spring of 2020. The other 31 capital projects added to the SYIP by the Board in October 2019 will be advancing to the preliminary engineering phase of project development.

October 2019 Commonwealth Transportation Board SYIP Amendment

The VDOT Chief Engineer, in cooperation with the I-81 Program Delivery Director, briefed the CTB at its workshop on October 16, 2019 on the I-81 Corridor Improvement Plan Project Scheduling. The Chief Engineer updated the CTB on the status of the initial 16 improvement projects in the corridor—eight curve warning sign systems underway and eight acceleration/deceleration lane extensions under design.

From a project scheduling standpoint, two options were presented—existing revenue stream (pay-go) or bonding/Transportation Infrastructure Finance and Innovation Act (TIFIA) funds. At the October action meeting, the Board amended the SYIP to add 31 additional capital improvement projects expected to start before the end of the fiscal year. These 31 projects are common to both the pay-go and TIFIA/Bonding revenue scenarios. Should the TIFIA/ Bonding scenario be authorized in the future, the remaining 17 project schedules can be advanced in the SYIP. The October presentation delivered to the CTB can be found in **Appendix C**.



Current and Projected Balances of the Fund

As of December 1, 2019, VDOT documented the current and projected balances of the Fund for the 31 projects added to the SYIP. This information is summarized in **Table 2**. The amounts shown in the table reflect the allocation of funding adopted by the Board on October 17, 2019, for the 31 projects amended to the FY2020-2025 SYIP. The full program schedule for all 64 projects is available in **Appendix E**. The full program schedule is in draft form since the remaining 17 projects have not been adopted by the Board into the SYIP. The schedule also assumes a conservative pay-go revenue scenario versus a combination of bonding and TIFIA. Should the General Assembly authorize bonding, VDOT will revise the full program schedule to accelerate the remaining 17 projects and present that information to the Board for consideration and adoption.

Table 2. *Current Versus Project Funds Available (in millions \$)*

	Current	FY21	FY22	FY23	FY24	FY25	FY26	Total
Total Available	103.5	132.0	162.1	163.4	161.9	163.4	163.4	1,049.7
Total Programmed	103.5	122.1	152.4	153.8	161.7	163.2	0	857.1
Total Remaining	0	9.9	9.7	9.6	0.2	0.2	163.4	192.6

I-81 Committee Activities

Following the April 2019 CTB meeting, the I-81 Committee was established to advise and make recommendations to the Board regarding the development of the I-81 Corridor Improvement Program. The Committee consists of 15 voting members—seven Virginia lawmakers, three Board members representing the VDOT Bristol, Salem, and Staunton construction districts, and the five chairs of the planning district commissions in the corridor. The two ex-officio and non-voting members of the Committee are the VDOT Commissioner and the Virginia Department of Rail and Public Transportation (DRPT) Director. The legislation requires the Committee to hold public meetings at least four times each fiscal year and to consult with interested stakeholders. Since April 2019, the Committee has met in August 2019 and October 2019, and plans to meet two more times before July 2020.

August 2019 Committee Meeting

The committee met at the Hampton Inn in Lexington, VA on August 13, 2019. The Secretary of Transportation provided opening remarks followed by a presentation by the Deputy Secretary of Transportation on the roles and responsibilities of the committee members. Delegate Terry Austin and Senator William Carrico were elected the chair and vice-chair of the committee. Following the voting process, the Deputy Secretary described funding options, such as pay-go and bonding/TIFIA.

The VDOT Chief Engineer then described the project scheduling process considering project and environmental readiness in schedule development. The Chief Engineer described the operational improvements (e.g. safety service patrols, changeable message signs, cameras), as well as the eight safety (e.g. flashing chevron signs) and eight capital improvement projects (e.g. acceleration/ deceleration lane extensions), added to the SYIP in June 2019. Lastly, he provided a summary of a few major capital improvements in each VDOT district.

The meeting agenda, presentations, and minutes are available online at the Board website. The August presentations delivered to the Committee can be found in **Appendix B**.

October 2019 Committee Meeting

The Committee met at the Natural Bridge Conference Center in Natural Bridge, VA, on October 1. The Committee chair provided opening remarks followed by comments from the Deputy Director of the Office of Intermodal Planning and Investment on old business.

The VDOT Chief Engineer then introduced the newly appointed VDOT I-81 Program Delivery Director. The Chief Engineer provided an update on the project implementation and project scheduling process. This presentation mirrored the aforementioned presentation he delivered to the Board later in the month. The Committee endorsed the scheduling process developed by VDOT and presented by the Chief Engineer.

The meeting agenda, presentations, and minutes in addition to the project improvement summary boards (including a summary of public comments) are available online at the Board website. The October presentation delivered to the committee can be found in **Appendix C**.

Next Steps

The Committee plans to meet two more times prior to June 30, 2020. As more information on each project becomes available, VDOT may decide to implement projects using either a Design-Bid-Build or a Design-Build construction method. In November 2019, VDOT advertised projects to advance to the design phase:

1. Widening between mile markers 8 and 10 in Washington County (Bristol District)
2. Widening between mile markers 221 and 225 in Augusta County (Staunton District)
3. Widening between mile markers 144.2 and 150.5 in Botetourt/Roanoke Counties (Salem District)

Two additional projects with anticipated procurements of February 2020 were recently announced—Widening between Exit 243 to Exit 248 in Harrisonburg (Staunton District) and Widening between Exit 137 to Exit 140 Bridge Design in Salem/Roanoke County (Salem District).

VDOT will be advancing these projects through the consultant procurement phase in spring 2020.

APPENDICES

- A. April CTB Presentation
- B. August I-81 Committee Presentation
- C. October I-81 Committee and CTB Presentations
- D. CTB Resolution Amending the Six-Year Improvement Program
- E. Project Scheduling Process Charts
- F. Improvements Summary Map and Table
- G. Project Risk, Readiness, Constructability, Environmental Considerations, and Maintenance of Traffic Meetings
- H. Crash Frequency and Severity per Mile for Truck-Related Crashes

A. April CTB Presentation





COMMONWEALTH of VIRGINIA

Office of the

SECRETARY of TRANSPORTATION

Interstate 81 Corridor Improvement Fund and Program

Nick Donohue

Deputy Secretary of Transportation

April 9, 2019



Virginia Department of Rail and Public Transportation



Governor Northam's Amendments

- **Recommended 28 line amendments to both HB2718 (Landes and Austin) and SB1716 (Obenshain and Carrico)**
 - Increase in statewide truck registration fees
 - Impose a 2.1% regional fuels tax along 81 corridor
 - Increase in statewide diesel and road taxes
 - Technical amendments
 - “Kill switch” provision
 - NVTA Technical amendments

Governor Northam's Amendments

- **Approved by House 58-39 and by Senate in two blocks**
 - 25-13 for the increase in truck registration fees
 - 22-14 for the remaining amendments
- **Governor Northam signed both bills April 3, 2019**
- **Amendments were supported by multiple organizations**
 - Virginia Trucking Association
 - Virginia Chamber of Commerce
 - Virginia FREE
 - Virginia Transportation Construction Alliance

Overview of Amendments

- **Raises both statewide and regional revenues**
- **Statewide revenues are distributed based on of truck miles traveled on Interstate highways**
 - **41.0% to Interstate 81 corridor**
 - **17.9% to Interstate 95 corridor (outside NOVA)**
 - **12.6% to Interstate 64 corridor**
 - **9.1% to the Northern Virginia Transportation Authority**
 - **19.4% for other improvements to Interstate highway corridors**

Revenue Estimates

	FY20	FY21	FY22	FY23	FY24	FY25
Truck Reg Fees	77.0	77.0	77.0	77.0	77.0	77.0
Diesel Tax	-	-	70.8	70.6	70.4	70.7
Road Tax *	23.8	73.4	73.4	73.4	73.4	73.4
Regional Fuels Tax	55.0	60.7	61.3	61.3	61.2	61.3

Figures in millions

* New estimates are being developed based restructuring of tax

Revenue Distribution

	FY20	FY21	FY22	FY23	FY24	FY25
Interstate 81 Corridor Imp Fund	96.4	122.4	152.1	152.0	151.8	152.1
Interstate 95 Corridor	18.0	26.9	39.5	39.5	39.5	39.5
Interstate 64 Corridor	12.7	18.9	27.8	27.8	27.8	27.8
NVTA Fund	9.2	13.7	20.2	20.1	20.1	20.1
Other Imp to Interstates	19.6	29.2	42.9	42.9	42.9	42.9
TOTAL	155.8	211.1	282.5	282.3	282.0	282.4

Truck Registration Fees

(58.1-697.2)

- **Increases maintain Virginia's progressive fee structure**
- **Captures both in-state and interstate trucks through International Registration Plan**
- **Increases bring Virginia more in-line with other I-81 corridor states**
- **Fees for farm vehicles remain ½ of the fee for heavy trucks as of January 1, 2019**

2.1% Regional Fuels Tax

(58.1-2295.1)

- **Applies in Planning District Commissions in which Interstate 81 is located**
 - PDCs 3, 4, 5, 6, and 7
- **Functions the same as the regional fuels tax in Hampton Roads and Northern Virginia**
- **100% of revenues are deposited in Interstate 81 Corridor Improvement Fund**

Road Tax

(58.1-2701)

- Road Tax is a surcharge on diesel fuel paid by trucks through International Fuels Tax Agreement that—
 - Have two axles and weight greater than 26,000 pounds
 - Have three or more axles
 - Are combination vehicles with a weight greater than 26,000 pounds
- Current rate is \$0.035 per gallon

Road Tax

(58.1-2701)

- **Starting July 1, 2019 the rate will be \$0.01125 times the average fuel economy for heavy trucks**
 - Current average mpg is 6
 - $6 \times \$0.01125 = \0.0675 per gallon
 - An increase of \$0.0325 per gallon
- **Starting July 1, 2020, rate will be \$0.0225 x average mpg**
 - $6 \times \$0.0225 = \0.135 per gallon
 - An increase from current rates of \$0.10 per gallon

Diesel Tax

(58.1-2217.1)

- **Amendments impose an additional diesel tax at the wholesale level of 2.03%**
 - Results in an \$0.068 increase in diesel tax rate
- **Starts July 1, 2021**
- **Includes the floor from HB2313 (2013)**

Interstate 81 Corridor Improvement Fund and Program

(33.2-3601 and 33.2-3602)

- **Moneys may only be used for capital, operating and other improvement costs identified in an adopted Interstate 81 Corridor Improvement Plan**
- **Board must, starting July 1, 2020, annually update and adopt the 81 Corridor Improvement Program**
 - **Must consult with Interstate 81 Committee and review their recommendations**
 - **Must report on status and effectiveness of projects**

Interstate 81 Corridor Report

(33.2-3602 D)

- **Board must report to the General Assembly by December 15 each year on—**
 - **Safety and performance of Interstate 81**
 - **Assessment of effectiveness of the operational strategies and capital projects implemented through the Program**
 - **Status of projects funded through the Program**
 - **Current and projected balances of the Fund**

Interstate 81 Committee

(33.2-3603)

- **Board must establish Interstate 81 Committee**
- **15 voting members and two ex-officio**
 - 5 planning district commission chairs
 - 4 members of the House of Delegates
 - 3 members of the Senate
 - 3 CTB members from Bristol, Salem and Staunton
 - VDOT Commissioner and DRPT Director ex-officio
- **Required to hold 4 public meetings each year**

Interstate 81 Committee

(33.2-3603)

- **Purpose is to provide advice and recommendations to the Board—**
 - **Development of the Program**
 - **Updates to the I-81 Corridor Improvement Plan**
- **Committee shall review the Interstate 81 Corridor Improvement Plan as it relates to project prioritization and funding options**
 - **Must report to the General Assembly and Governor by December 15, 2019 on recommendations**

Interstate 81 Corridor Improvement Plan

(33.2-3604)

- **Requires the Board to regularly update the Plan and establishes requirements for such updates—**
 - Needs assessment
 - Solutions identification
 - Prioritization of potential solutions
 - Incident management and truck parking
- **Moneys in the Fund can only be used for items included in the Plan**

Northern Virginia Transportation Authority

(Enactment Clauses 6 and 7)

- Revenues are deposited into the Northern Virginia Transportation Authority Fund and distributed
 - 30% to local governments
 - 70% to the Authority for regional projects
- Moneys for purposes of the benefits calculation and distribution to local governments are determined to be generated by locality in the same manner as the retail sales and use tax
- These revenues may not support debt

Interstate Highway Corridors

- **~50% of statewide revenue increases**
- **Operational improvements and other enhancements to interstate corridors to improve**
 - **Safety**
 - **Reliability**
 - **Travel flow**
- **Any Interstate with 10%+ of Interstate truck traffic shall receive an amount approximately equal its percentage of Interstate truck traffic over time**

Other Provisions

- Revenues raised by the legislation expire December 31 in any year the General Assembly uses the funds for a non-transportation purpose
- If any part of the legislation is found to be unconstitutional the remaining portions shall remain in effect
- Board and VDOT shall continue to undertake all work on I-81 that they undertook as of July 1, 2019

B. August I-81 Committe Presentation



I-81 CORRIDOR IMPROVEMENT PLAN PROJECT PRIORITIZATION PROCESS

I-81 Committee Briefing

Bart Thrasher, PE
VDOT Chief Engineer

August 13, 2019

Proposed Implementation Plan

Following the adoption of the I-81 Corridor Improvement Plan, VDOT began development of a draft implementation plan based upon:

- **Evaluating projects based on project readiness**
- **Evaluating projects based on environmental readiness**
- **Scope of Project**
- **Project Delivery Method**

Step 1. Evaluate Project Readiness

Identify and evaluate schedule risk

- Constructibility
- Right-of-way
- Utilities
- Maintenance of traffic
- Soil/rock conditions
- Interchange impacts
- Structures (bridges, walls, etc.)



Step 2. Evaluate Environmental Readiness

Identify and evaluate environmental schedule risk

- Cultural resources
- Water quality (streams, wetlands, permits, etc.)
- Threatened and endangered (T&E) species



Step 3. Internal Discussions

Individual Meetings

- Evaluate project readiness and environmental readiness
- Identify steps for further due diligence with scope, cost, and schedule
- Discuss program delivery effects
 - Length of work zones
 - Efficient widening strategies
 - Timeline of construction
 - Potential delivery methods



Step 4. Develop a Schedule

- **Account for readiness and availability of funding**
 - Additional factors from Committee
- **Develop draft project schedules and spend plan**
- **Goal is to balance project efforts (PE, RW and Construction) with revenue forecast and develop a spend plan**
- **Look at options for project delivery**

GOAL

Balance project efforts (PE, RW and Construction) with revenue forecast and develop a spend plan

Typical Project Development Timeframes

Depending on project scope, project development timeframes can vary significantly:

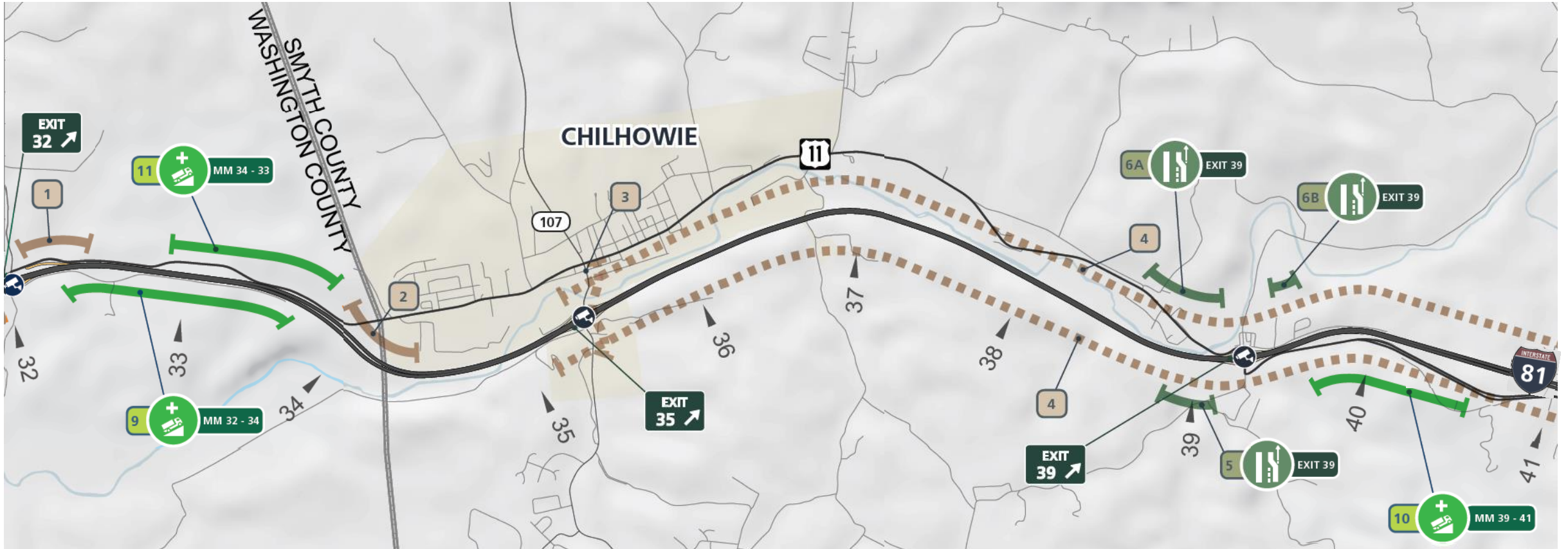
- **Preliminary Engineering/NEPA: 6-24 months**
- **Right of Way: 0-24 months**
- **Construction: 6-36 months**

Emphasizes need to start design work early on larger projects

\$2 billion in I-81 Plan Capital Improvements

District	Number of Projects by Type							Total Number of Projects	Total Cost (millions \$)
	Widening	Auxiliary Lane	Truck Climbing Lane	Acceleration Lane Extension	Deceleration Lane Extension	Curve Improvement	Shoulder Widening		
Bristol District	1	3	3	6	10	4	0	27	\$285.2
Salem District	4	0	0	4	2	3	0	13	\$875.3
Staunton District	4	1	2	10	4	1	1	23	\$838.1
Total I-81 Corridor Number of Improvements	9	4	5	20	16	8	1	63	\$1,998.8

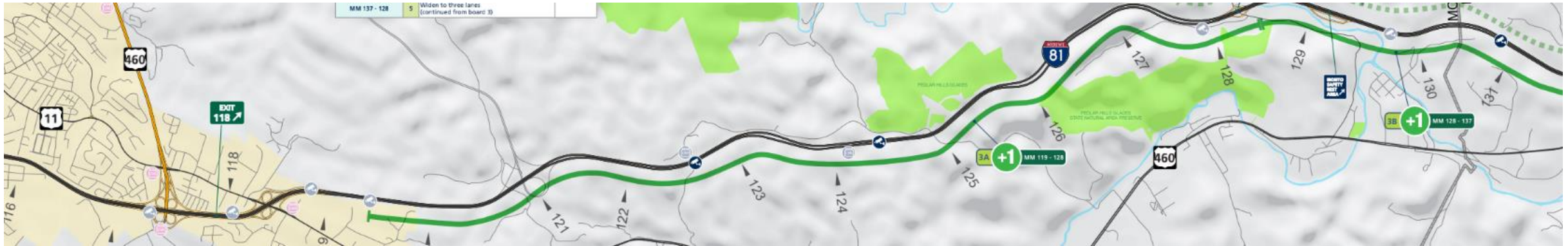
Bristol District Improvement Locations



Truck Climbing Lanes Near Chilhowie

Proposed improvements represented by solid green lines

Salem District Improvement Locations



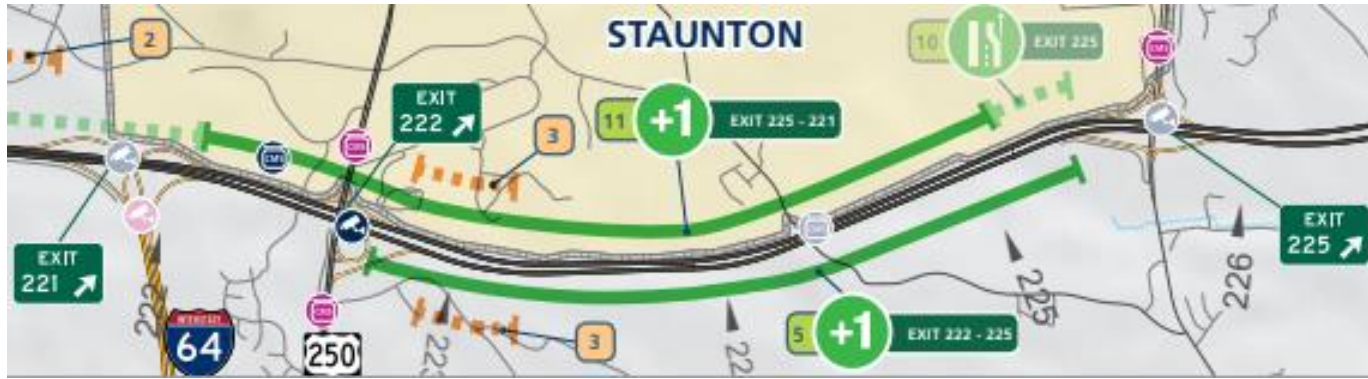
MM 119 to 141 northbound widening

Proposed improvements represented by solid green lines



**MM 144 to 150 northbound and southbound widening
Exit 141 to Exit 137 southbound widening**

Staunton District Improvement Locations - South



Exit 222-225 northbound widening
Exit 225-221 southbound widening



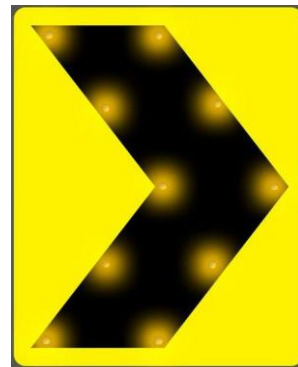
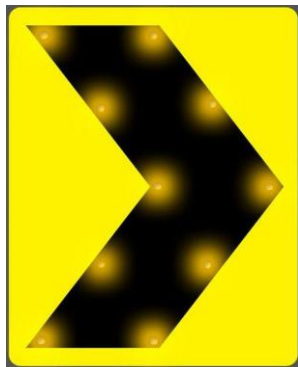
Weyers Cave (Exit 235)
northbound and southbound truck climbing lanes

Proposed improvements represented by solid green lines

Mainline Safety Capital Improvements Underway

Curve Improvements (Static and/or Flashing Chevrons)

District	Number of Locations	Planned Installation Date
Bristol District	4	Fall 2019
Salem District	3	Fall 2019
Staunton District	1	Fall 2019
Total	8	



I-81 Operational Improvements Plan

Components currently underway include:

- Expanded Safety Service Patrols in July 2019
- 30 changeable message signs and 45 camera installations starting in Fall 2019

Components coming as the plan develops

- Upgrades to detour routes and improvements to parallel facilities
- Contract emergency clearance

Total Estimated Implementation Cost **\$46 million**

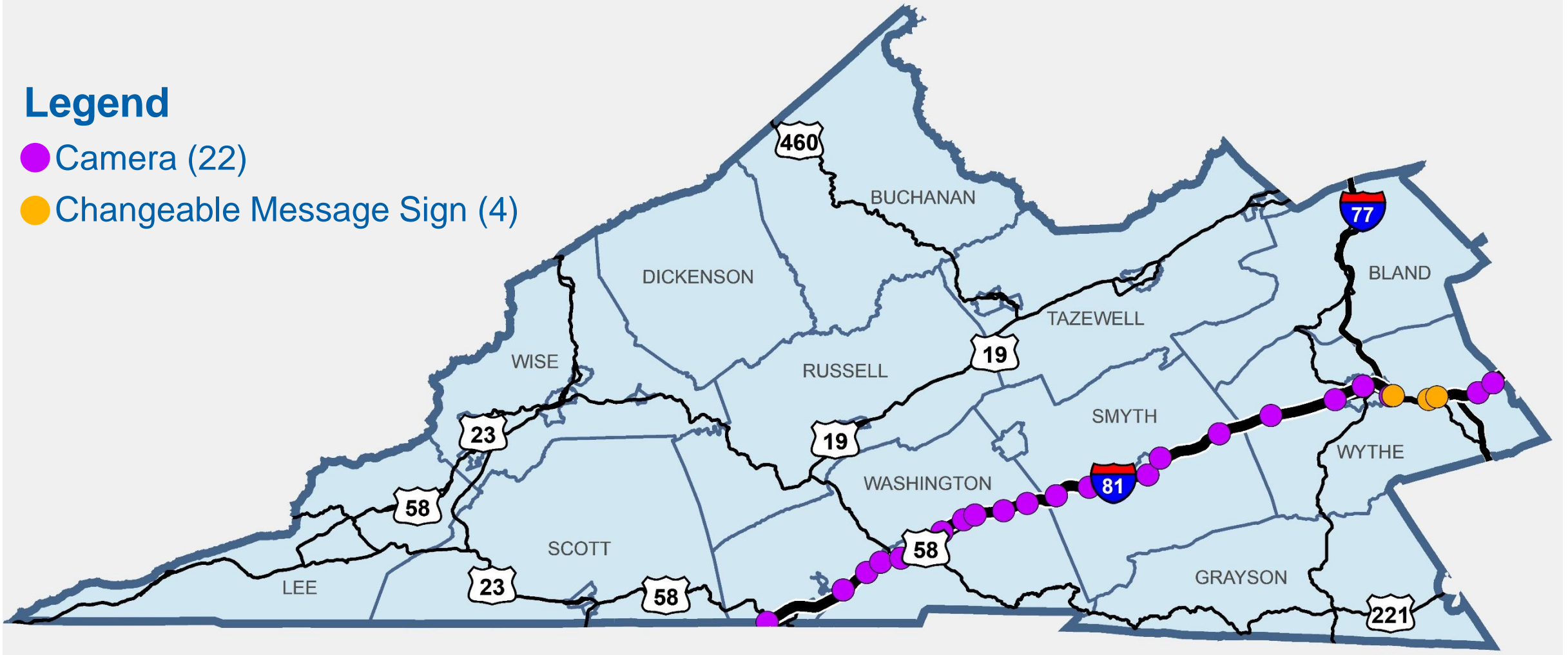


Bristol District ITS Device Locations

Legend

● Camera (22)

● Changeable Message Sign (4)

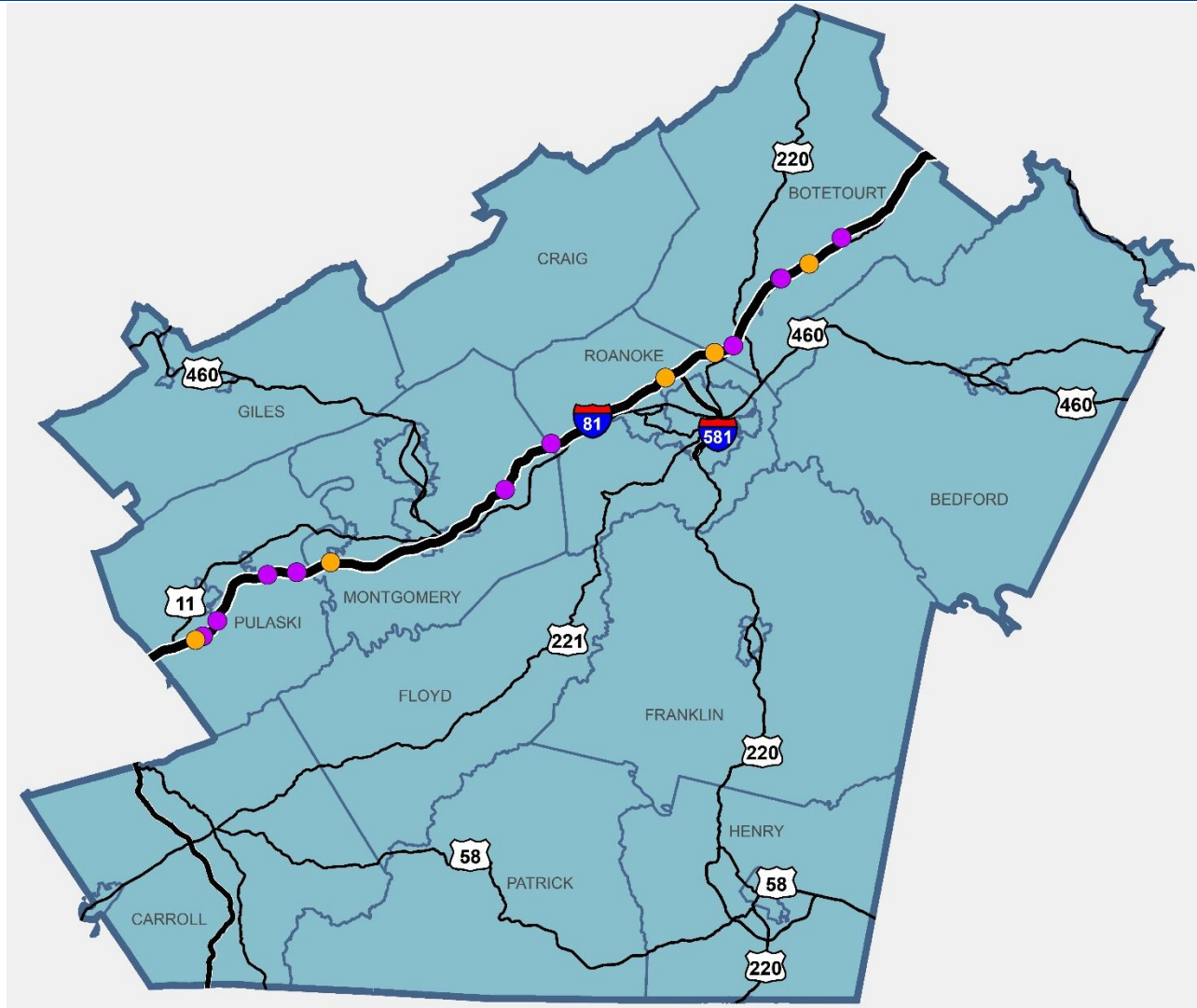


Salem District ITS Device Locations

Legend

● Camera (10)

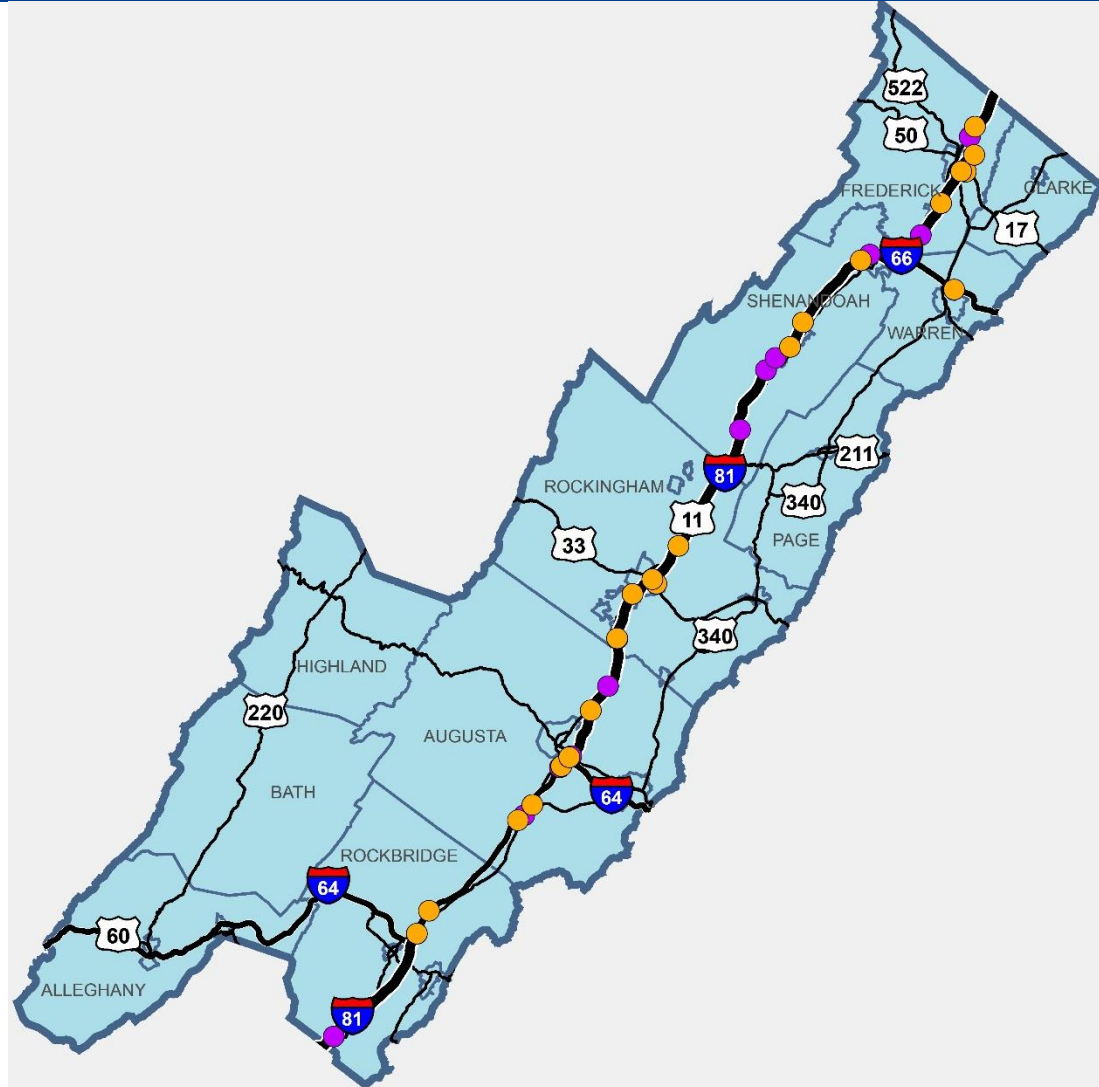
● Changeable Message Sign (5)



Staunton District ITS Device Locations

Legend

- Camera (13)
- Changeable Message Sign (21)



47 Remaining Capital Improvements

Bristol District

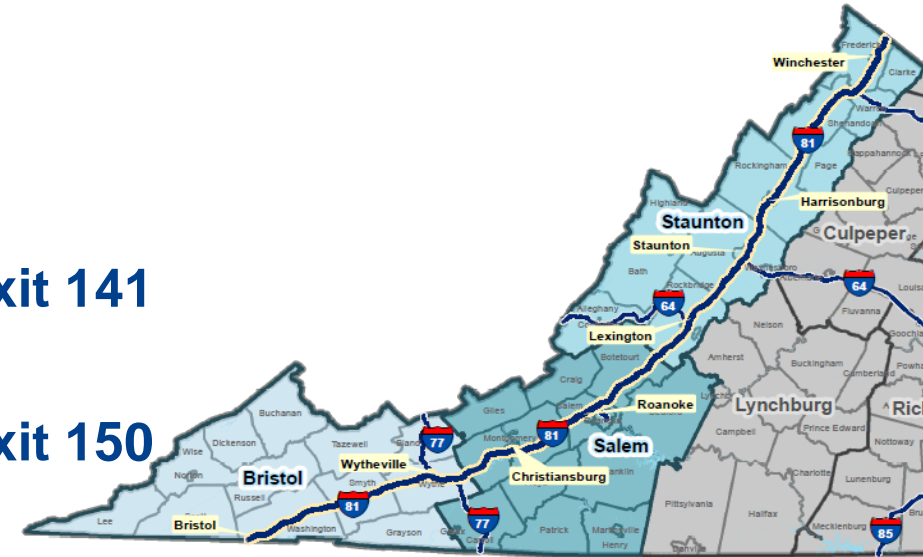
- Add northbound truck climbing lane from Exit 32 and from Exit 39
- Add a southbound truck climbing lane (Chilhowie)
- Improvements at the I-77/I-81 interchange

Salem District

- Widen northbound from Exit 119 to Exit 137
- Widen northbound and southbound from Exit 137 to Exit 141
 - Connects to active widening from Exit 141 to Exit 143
- Widen northbound and southbound from Exit 143 to Exit 150

Staunton District

- Widen northbound and southbound from Exit 222 to Exit 225 (Staunton)
- Add northbound and southbound truck climbing lanes (Weyers Cave)
- Widen northbound and southbound from Exit 243 to 248 (Harrisonburg)
- Widen northbound and southbound from Exit 313 to Exit 317 (Winchester)



Next Steps

- **VDOT will:**
 - **Develop project development and delivery durations based upon constructability and environmental readiness**
 - **Use readiness information along with revenue scenarios to develop preliminary project schedule**
 - **Develop project delivery method options**
 - **Present results at next Committee meeting**
- **What does the committee need from VDOT to help develop and deliver a draft schedule?**

C. October I-81 Committee and CTB Presentations



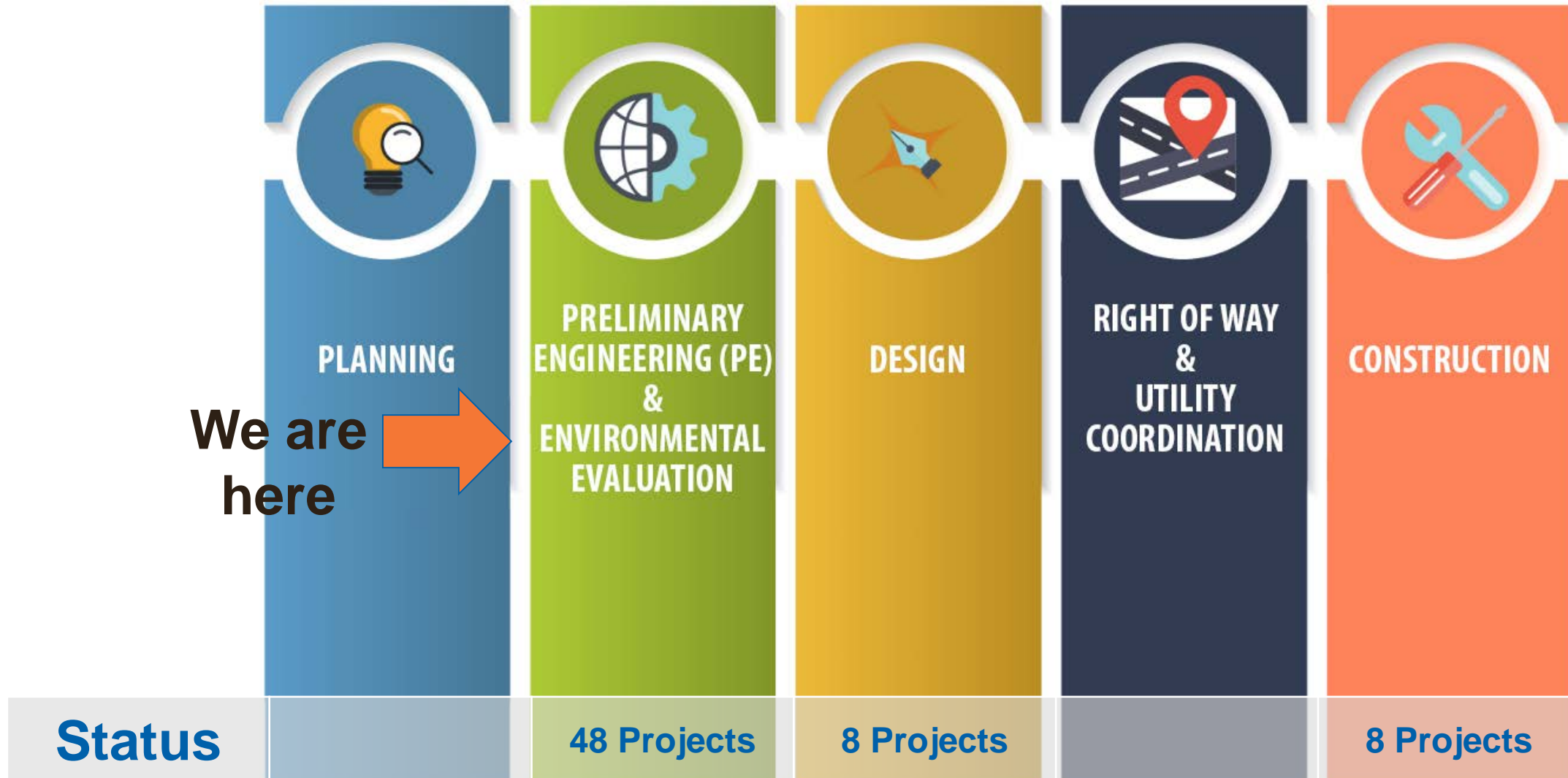
I-81 CORRIDOR IMPROVEMENT PLAN PROJECT SCHEDULING

I-81 Committee Briefing

Bart Thrasher, PE
VDOT Chief Engineer

October 1, 2019

Project Development Process



Status

48 Projects

8 Projects

8 Projects

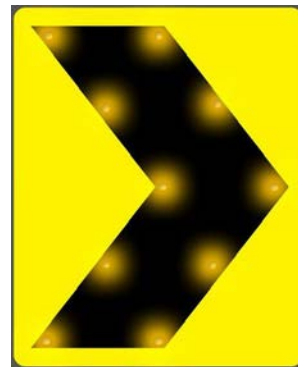
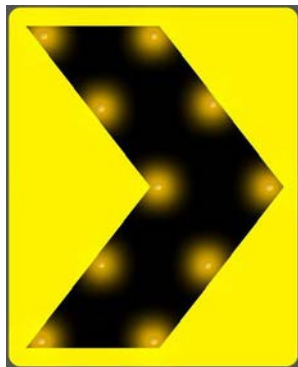
\$2 billion in I-81 Plan Capital Improvements

District	Number of Projects by Type							Total Number of Projects	Total Cost (millions \$) 2018 \$
	Widening	Auxiliary Lane	Truck Climbing Lane	Acceleration Lane Extension	Deceleration Lane Extension	Curve Improvement	Shoulder Widening		
Bristol District	1	3	3	6	10	4	0	27	\$285.3
Salem District	5	0	0	4	2	3	0	14	\$875.4
Staunton District	4	1	2	10	4	1	1	23	\$838.1
Total I-81 Corridor Number of Improvements	10	4	5	20	16	8	1	64	\$1,998.8

Mainline Safety Capital Improvements Underway

Curve Improvements (Static and/or Flashing Chevrons)

District	Number of Locations	Planned Installation Date
Bristol District	4	Fall 2019
Salem District	3	Fall 2019
Staunton District	1	Fall 2019
Total	8	



Mainline Capital Improvements Under Design

Acceleration/Deceleration Lane Extensions

District	Number of Locations	Project Status
Bristol District	2	Underway
Salem District	1	Underway
Staunton District	5	Underway
Total	8	

- All of these projects are included in the FY20-25 Six-Year Improvement Program
- Of the 16 initial programmed projects, 8 will be complete, and 5 will be under construction in 2020

48 Remaining Capital Improvement Highlights

Bristol District

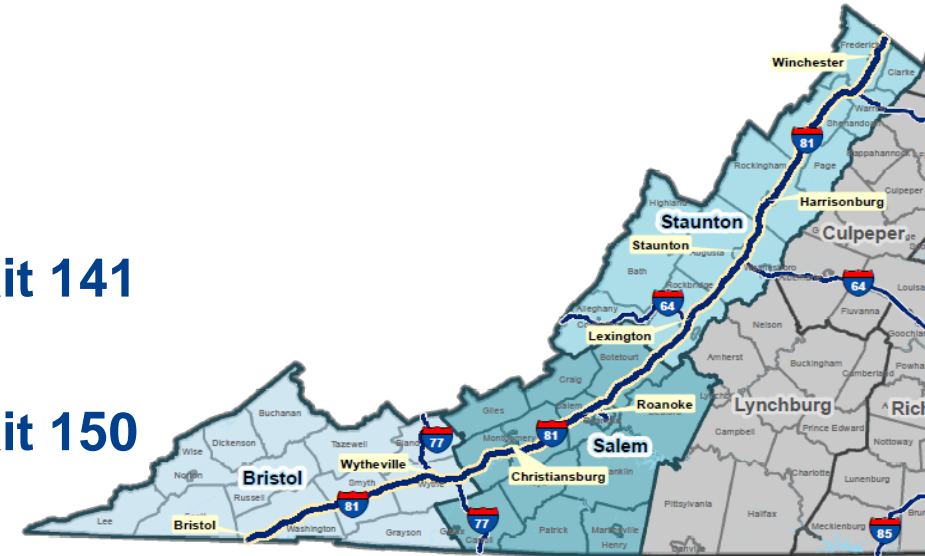
- Add northbound truck climbing lane from Exit 32 and from Exit 39
- Add a southbound truck climbing lane (Chilhowie)
- Various improvements at both I-77/I-81 interchanges

Salem District

- Widen northbound from Exit 119 to Exit 137
- Widen northbound and southbound from Exit 137 to Exit 141
 - Connects to active widening from Exit 141 to Exit 143
- Widen northbound and southbound from Exit 143 to Exit 150

Staunton District

- Widen northbound and southbound from Exit 222 to Exit 225 (Staunton)
- Add northbound and southbound truck climbing lanes (Weyers Cave)
- Widen northbound and southbound from Exit 243 to 248 (Harrisonburg)
- Widen northbound and southbound from Exit 313 to Exit 317 (Winchester)



Develop Planning Level Costs and Schedule

- **Planning level cost estimates have been reviewed and refined**
 - **VDOT internal review**
 - **Independent consultant**
- **Costs are still at an order of magnitude level and will change as VDOT progresses through scoping and design-**
 - ***“we don’t know what we don’t know”***
- **Draft project schedules, anticipated environmental clearances and spend plans developed**

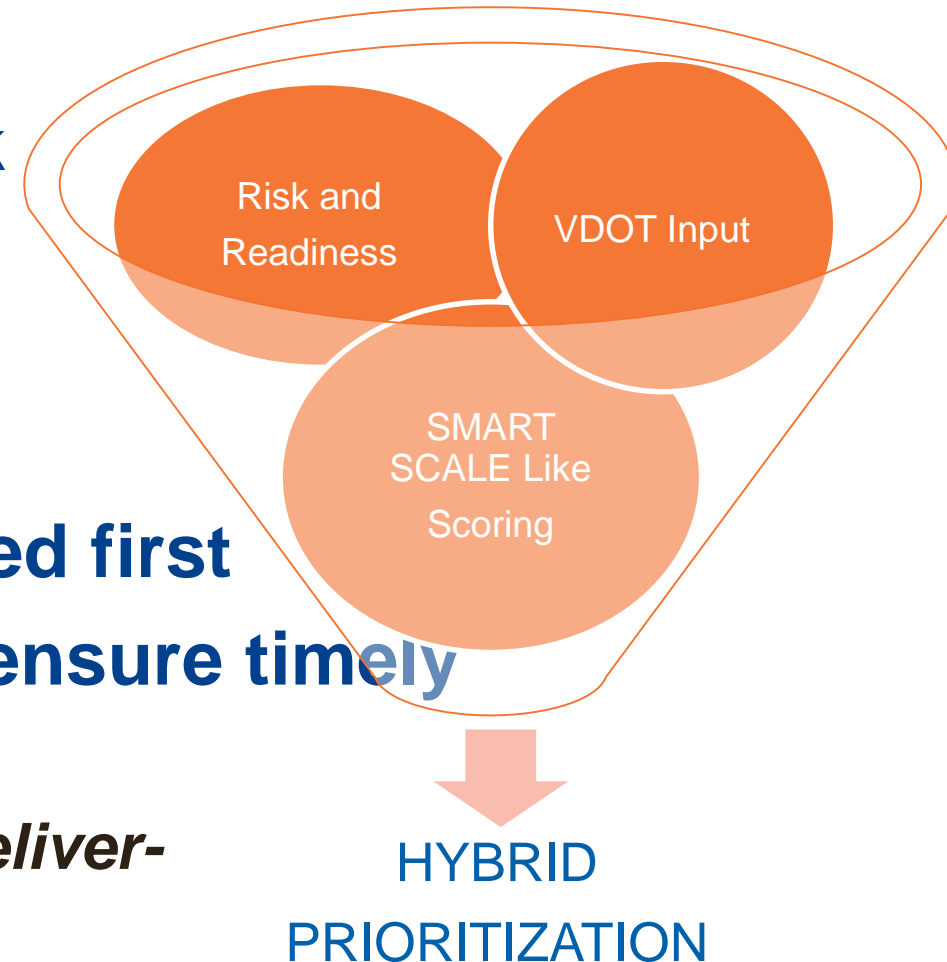
Draft Schedule: Prioritization

“Prioritizing the Priorities” – Hybrid Prioritization

- “SMART SCALE-like” scoring
- Project readiness, constructability, risk
- VDOT Input- MoT, sequencing, SYIP

Will help inform

- WHAT projects SHOULD be implemented first
- WHEN does a project NEED to start to ensure timely delivery?
 - *Large projects need time to develop and deliver-
we need to start now*



Draft Schedule: Project Readiness/ Constructability/ Risk

Identify and evaluate schedule risk

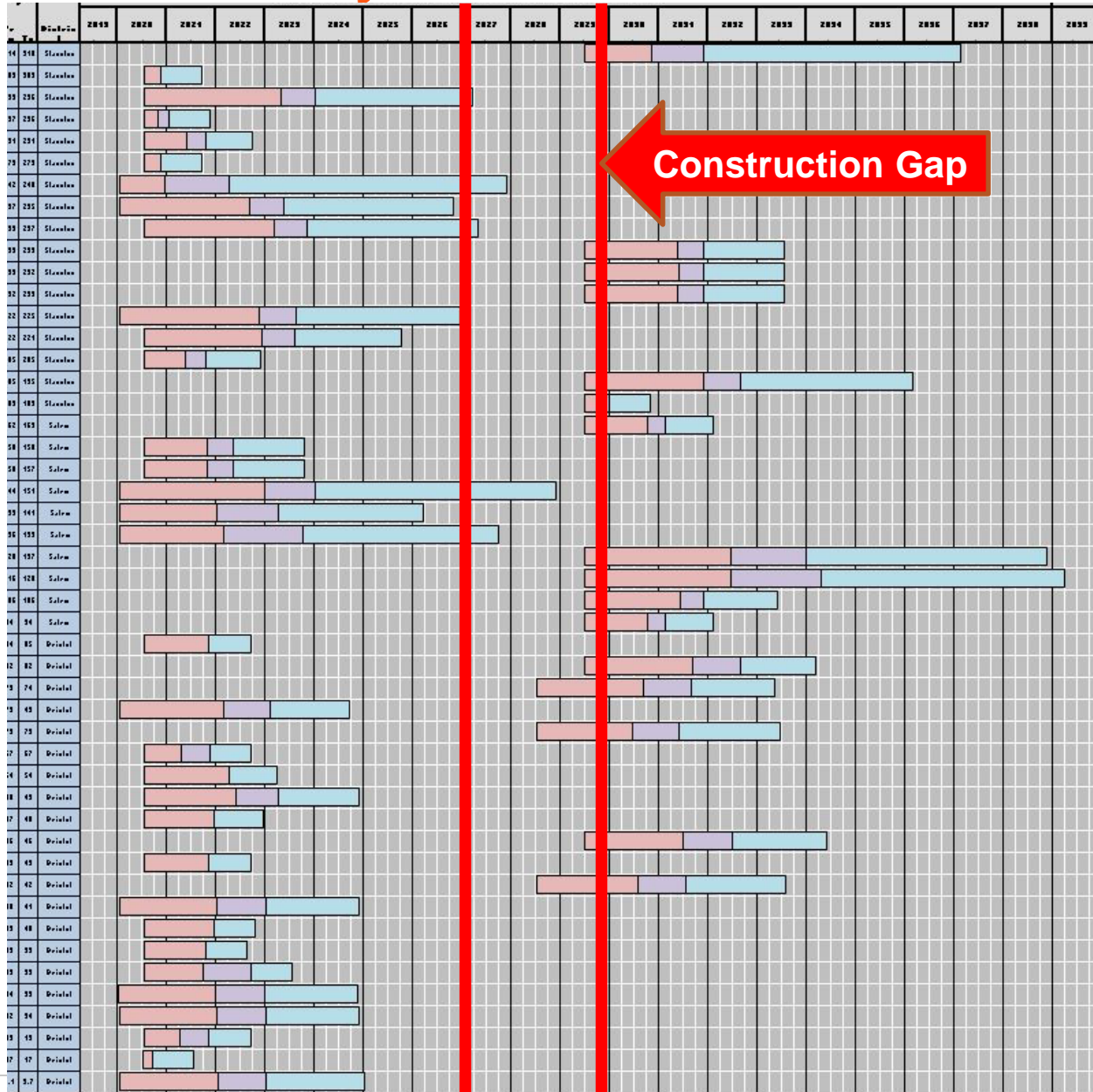
- **Constructability**
- **Right-of-way**
- **Utilities**
- **Maintenance of traffic**
- **Soil/rock conditions**
- **Interchange impacts**
- **Structures (bridges, walls, etc.)**
- **Environmental clearances**



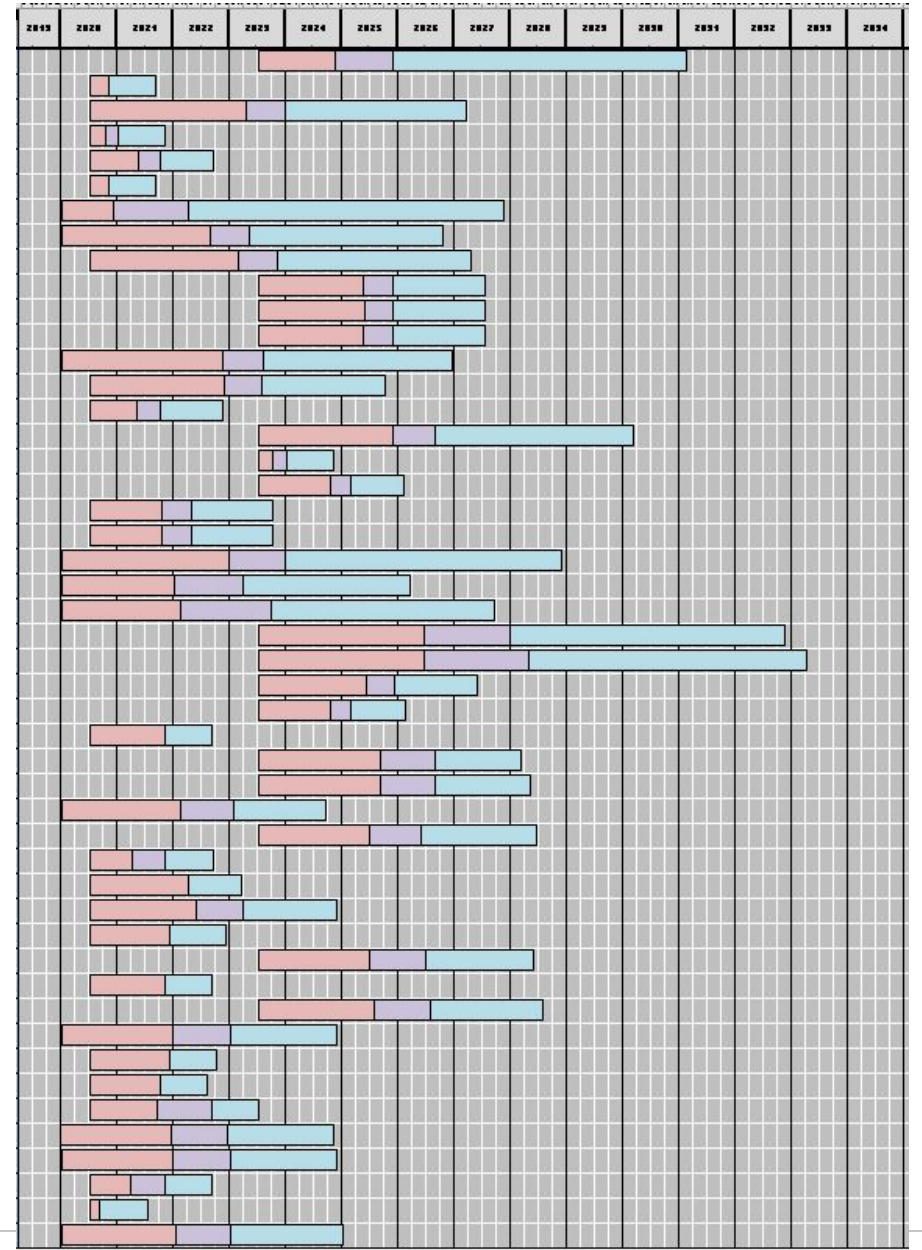
Draft Schedule for Priority Recommendations

- **Reflects a hybrid prioritization**
- **Two scheduling options presented**
 - Existing revenue stream (pay-go)
 - Bonding/TIFIA
- **Existing revenue stream (pay-go)**
 - 48 out of 64 projects completed by 2028
- **Bonding/TIFIA option**
 - Creates sustainable pipeline of projects
 - Minimizes disruption for drivers and industry along corridor
 - 60 out of 64 projects completed by 2028

Pay-Go Schedule



Bonding/TIFIA Schedule



Reading the Draft Schedule

Mile Marker		District	Jurisdiction	Study Project ID	Direction	Improvement Description	Hybrid Prioritization Rank	SMART SCALE Benefit/Mile Rank (25%)	Risk and Readiness Rank (15%)	VDOT Input (60%)	SMART SCALE Benefit Rank	Proposed Environmental Document Type	Proposed Delivery Method	Order of Magnitude Estimate Range
From	To													
162	163	Salem	Buchanan / Botetourt County	33	NB only	Extend acceleration lane	16	32	4	2	29	PCE	D/B/B	\$5M - \$8M

Hybrid Prioritization Rank: incorporates SMART SCALE benefit/mile (25% weight); Risk, Readiness Rank and District Input (75% weight)- includes sequencing and coordination with SYIP projects

Hybrid Prioritization Rank
16

SMART SCALE Benefit/Mile Rank (25%)	Risk and Readiness Rank (15%)	VDOT Input (60%)
32	4	2

Hybrid Prioritization Key Factors

Reading the Draft Schedule

Mile Marker		District	Jurisdiction	Study Project ID	Direction	Improvement Description	Hybrid Priorization Rank	SMART SCALE Benefit/Mile Rank (25%)	Risk and Readiness Rank (15%)	VDOT Input (60%)	SMART SCALE Benefit Rank	Proposed Environmental Document Type	Proposed Delivery Method	Order of Magnitude Estimate Range
From	To													
162	163	Salem	Buchanan / Botetourt County	33	NB only	Extend acceleration lane	16	32	4	2	29	PCE	D/B/B	\$5M - \$8M

Proposed Environmental Document Type	Proposed Delivery Method
PCE	D/B/B

Order of Magnitude Estimate Range
\$5M - \$8M

Refined order of magnitude level cost estimate range based on additional review

Anticipated level of environmental document required

Proposed delivery method- Design-Bid-Build (D/B/B) or Design-Build (D/B)

- Preliminary Engineering
- Right of Way Acquisition
- Construction

Project Delivery Options

- **VDOT is collaborating with industry on the I-81 project listing and draft schedule**
- **Industry feedback on delivery timeframes is being incorporated**
- **Options for project delivery**
 - **Design-Bid-Build: projects are largely defined**
 - **Design-Build: opportunities identified for innovation and risk transfer**

Takeaway Scorecard

Activity	Status	Anticipated Completion
Safety Service Patrol expansion	Complete	July 2019
Curve improvements (8)	Underway	Fall 2019
Initial accel/decel lane extensions (8)	Underway	Spring 2021
Additional cameras (51)	Underway	Spring 2020
Additional changeable message signs (31)	Underway	Spring 2020
Remaining capital projects (48)	TBD	Under Pay-Go scenario, 75% complete by 2028 Under bonding scenario, 94% complete by 2028

Next Steps

- **Receive feedback**
- **Start preliminary engineering**
- **Recognize schedules will change based on:**
 - **Financing options (to be determined)**
 - **Collaboration with industry**
- **Introduce I-81 Program Delivery Director**
- **Schedule next Committee meeting and status update**
- **I-81 website: www.VA81corridor.org**

D. CTB Resolution Amending the Six-Year Improvement Program





COMMONWEALTH of VIRGINIA

Commonwealth Transportation Board

Shannon Valentine
Chairperson

1401 East Broad Street
Richmond, Virginia 23219

(804) 786-2701
Fax: (804) 786-2940

Agenda item # 6

RESOLUTION OF THE COMMONWEALTH TRANSPORTATION BOARD

October 17, 2019

MOTION

Made By: Mr. Brown, Seconded By: Mr. Johnsen
Action: Motion Carried, Unanimously

Title: Addition of Projects to the Six-Year Improvement Program for
Fiscal Years 2020-2025

WHEREAS, Section 33.2-214(B) of the *Code of Virginia* requires the Commonwealth Transportation Board (Board) to adopt by July 1st of each year a Six-Year Improvement Program (Program) of anticipated projects and programs and that the Program shall be based on the most recent official revenue forecasts and a debt management policy; and

WHEREAS, after due consideration the Board adopted a Final Fiscal Years 2020-2025 Program on June 19, 2019; and

WHEREAS, the Board is required by §§ 33.2-214(B) and 33.2-221(C) of the *Code of Virginia* to administer and allocate funds in the Transportation Trust Fund; and

WHEREAS, § 33.2-214(B) of the *Code of Virginia* provides that the Board is to coordinate the planning for financing of transportation needs, including needs for highways, railways, seaports, airports, and public transportation and is to allocate funds for these needs pursuant to §§ 33.2-358 and 58.1-638 of the *Code of Virginia*, by adopting a Program; and

WHEREAS, § 58.1-638 authorizes allocations to local governing bodies, transportation district commissions, or public service corporations for, among other things, capital project costs for public transportation and ridesharing equipment, facilities, and associated costs; and

Resolution of the Board
Addition of Projects to the SYIP
October 17, 2019
Page 2 of 2

WHEREAS, the projects shown in Appendix A were not included in the FY 2020-2025 Program adopted by the Board on June 19, 2019; and

WHEREAS, the Board recognizes that the projects are appropriate for the efficient movement of people and freight and, therefore, for the common good of the Commonwealth.

NOW THEREFORE, BE IT RESOLVED, by the Commonwealth Transportation Board, that the projects shown in Appendix A are added to the Six-Year Improvement Program of projects and programs for Fiscal Years 2020 through 2025 and are approved.

#####

CTB Decision Brief

Addition of Projects to the Six-Year Improvement Program for Fiscal Years 2020 - 2025

Issue: Each year the Commonwealth Transportation Board (CTB) must adopt a Six-Year Improvement Program (Program) and allocations in accordance with the statutory formula.

Facts: The CTB must adopt a Program of anticipated projects and programs by July 1st of each year in accordance with § 33.2-214(B) of the *Code of Virginia*. On June 19, 2019, after due consideration, the CTB adopted a Final FY 2020-2025 Program. The projects shown in Appendix A were not in the Final FY 2020-2025 Program adopted by the CTB.

Recommendations: The Virginia Department of Transportation (VDOT) recommends the addition of the projects in Appendix A to the Program for FY 2020–2025.

Action Required by CTB: The CTB will be presented with a resolution for a formal vote to add the projects listed in Appendix A to the Program for FY 2020–2025 to meet the CTB’s statutory requirements.

Result, if Approved: If the resolution is approved, the projects listed in Appendix A will be added to the Program for FY 2020-2025.

Options: Approve, Deny, or Defer.

Public Comments/Reactions: None

Appendix A
Amendments to the FY2020-2025 SYIP

Row	UPC	District	Jurisdiction	Route	Project Description	Total Cost	Total Allocation	Balance	Major Fund Source	Fully Funded
NA	116155	Bristol	Abingdon	81	I-81 Corridor (ID 2) NB MM 19.2 Decel Lane	\$ 2,546,030	\$ 2,546,030	\$0	Interstate Corridor Funds	Yes
NA	116156	Bristol	Washington County	81	I-81 Corridor (ID # 3) NB MM32.4 Truck Climbing Lane	\$ 23,916,180	\$ 23,916,180	\$0	Interstate Corridor Funds	Yes
NA	116157	Bristol	Smyth County	81	I-81 Corridor (ID #4) NB MM 39.5 Add Truck Climbing Lane	\$ 21,618,865	\$ 21,618,865	\$0	Interstate Corridor Funds	Yes
NA	116159	Bristol	Smyth County	81	I-81 Corridor (ID #5) NB MM 38.9 Extend Decel Lane	\$ 2,071,030	\$ 2,071,030	\$0	Interstate Corridor Funds	Yes
NA	116161	Bristol	Smyth County	81	I-81 Corridor (ID # 7) NB MM 48.1 Extend Accel lane	\$ 19,303,220	\$ 19,303,220	\$0	Interstate Corridor Funds	Yes
NA	116162	Bristol	Wytheville	81	I-81 Corridor (ID # 8) NB MM 67.3 Extend Accel lane	\$ 3,647,420	\$ 3,647,420	\$0	Interstate Corridor Funds	Yes
NA	116164	Bristol	Wytheville	81	I-81 Corridor (ID # 11) NB MM 73.0 Decel and Loop	\$ 22,118,865	\$ 22,118,865	\$0	Interstate Corridor Funds	Yes
NA	116165	Bristol	Wythe County	81	I-81 Corridor (ID # 12) SB MM 84.3 Extend Decel Lane	\$ 3,156,921	\$ 3,156,921	\$0	Interstate Corridor Funds	Yes
NA	116169	Bristol	Smyth County	81	I-81 Corridor (ID # 15) SB MM 54.1 Extend Ramp to Rest Area	\$ 5,794,536	\$ 5,794,536	\$0	Interstate Corridor Funds	Yes
NA	116158	Bristol	Smyth County	81	I-81 Corridor (ID16) SB MM 47.4 Extend Accel Lane	\$ 4,470,563	\$ 4,470,563	\$0	Interstate Corridor Funds	Yes
NA	116167	Bristol	Smyth County	81	I-81 Corridor (ID 17) SB MM 42.8 Extend Accel Lane	\$ 4,189,720	\$ 4,189,720	\$0	Interstate Corridor Funds	Yes
NA	116174	Bristol	Smyth County	81	I-81 Corridor (ID # 19) MM 39.4 Extend Decel Lane	\$ 1,617,036	\$ 1,617,036	\$0	Interstate Corridor Funds	Yes
NA	116173	Bristol	Smyth County	81	I-81 Corridor (ID # 20) SB MM 38.7 Extend Accel Lane	\$ 6,106,170	\$ 6,106,170	\$0	Interstate Corridor Funds	Yes
NA	116172	Bristol	Washington County	81	I-81 Corridor (ID # 21) SB MM 34.0 Truck Climbing Lane	\$ 18,938,545	\$ 18,938,545	\$0	Interstate Corridor Funds	Yes
NA	116171	Bristol	Abingdon	81	I-81 Corridor (ID # 26) SB MM 16.6 Extend Accel Lane	\$ 3,704,108	\$ 3,704,107	\$0	Interstate Corridor Funds	Yes
NA	116170	Bristol	Washington County	81	I-81 Corridor (ID # 27) SB MM 8.1 Widen to three lanes	\$ 37,116,200	\$ 37,116,200	\$0	Interstate Corridor Funds	No
NA	115730	Hampton Roads	Chesapeake	664	I-664 NB & SB Western Branch Signing	\$ 12,392	\$ 12,392	\$0	Local Accounts Receivable	Yes
NA	TBD	Richmond	Districtwide	NA	Ashland to Petersburg Trail	\$ 4,000,000	\$ 4,000,000	\$0	Intoxicated Driver Penalty	Yes
NA	116201	Salem	Roanoke County	81	#I-81 CIP - MM 144 to Exit 150 adding NB and SB lanes	\$ 322,157,080	\$ 61,753,790	\$260,403,290	Interstate Corridor Funds	No
NA	116202	Salem	Botetourt County	81	#I-81 CIP - Extend lanes at Troutville Safety Rest Area	\$ 10,042,040	\$ 10,042,040	\$0	Interstate Corridor Funds	Yes
NA	116203	Salem	Roanoke County	81	#I-81 - MM136 to MM139 adding lane in each direction	\$ 174,608,365	\$ 82,569,556	\$92,038,809	Interstate Corridor Funds	No

Appendix A
Amendments to the FY2020-2025 SYIP

Row	UPC	District	Jurisdiction	Route	Project Description	Total Cost	Total Allocation	Balance	Major Fund Source	Fully Funded
NA	115937	Salem	Roanoke County	81	#I-81 CIP -- MM139 to MM141 adding lane in each direction	\$ 117,871,895	\$ 97,871,895	\$20,000,000	Interstate Corridor Funds	No
NA	116277	Staunton	Augusta County	81	NB I-81 MM 233 to 237, WEYERS CAVE TCL (Study ID #44)	\$ 100,798,170	\$ 95,798,170	\$5,000,000	Interstate Corridor Funds	No
NA	116270	Staunton	Shenandoah County	81	NB I-81 Exit 291 Extend ACCELERATION LANE (Study ID #46)	\$ 3,392,569	\$ 3,392,569	\$0	Interstate Corridor Funds	Yes
NA	116236	Staunton	Frederick County	81	I-81 NB EXIT 302 EXTEND ACCELERATION LANE (Study ID #47)	\$ 2,418,000	\$ 2,418,000	\$0	Interstate Corridor Funds	Yes
NA	116268	Staunton	Shenandoah County	81	SB I-81 MM 296 to 299, 3-LANE WIDENING (Study ID #50)	\$ 117,561,402	\$ 97,561,402	\$20,000,000	Interstate Corridor Funds	No
NA	116244	Staunton	Shenandoah County	81	I-81 SB EXIT 296 EXTEND ACCELERATION LANE (Study ID #51)	\$ 1,647,718	\$ 1,647,718	\$0	Interstate Corridor Funds	Yes
NA	116243	Staunton	Shenandoah County	81	I-81 SB EXIT 279 EXTEND ACCELERATION LANE (Study ID #53)	\$ 2,248,000	\$ 2,248,000	\$0	Interstate Corridor Funds	Yes
NA	116278	Staunton	Augusta County	81	SB I-81 MM 234 to 236, WEYERS CAVE TCL (Study ID #55)	\$ 29,581,960	\$ 10,765,797	\$18,816,163	Interstate Corridor Funds	No
NA	116279	Staunton	Augusta County	81	SB I-81 MM 221 to 220, AUXILIARY LANE (Study ID #58)	\$ 14,326,755	\$ 14,326,755	\$0	Interstate Corridor Funds	Yes
NA	116245	Staunton	Rockbridge County	81	I-81 SB EXIT 205 EXTEND ACCELERATION LANE (Study ID #59)	\$ 3,483,323	\$ 3,483,323	\$0	Interstate Corridor Funds	Yes
NA	116269	Staunton	Augusta County	81	NB & SB I-81 MM 221 to 225, 3-LANE WIDENING (Study ID #61)	\$ 140,209,650	\$ 122,060,585	\$18,149,065	Interstate Corridor Funds	No
NA	116280	Staunton	Harrisonburg	81	NB & SB I-81 MM 242 to 248, 3-LANE WIDENING (Study ID #62)	\$ 272,074,995	\$ 155,574,995	\$116,500,000	Interstate Corridor Funds	No
NA	T-23458	Staunton	Clarke County	7	ROUTE 7 WEST BOUND RAMP WIDENING TO ROUTE 340 NORTH	\$ 50,000	\$ 50,000	\$0	STP <5K	Yes
NA	T-23459	Staunton	Clarke County	7	ROUTE 7 DYNAMIC FLASHERS AT ROUTE 601 INTERSECTION	\$ 100,000	\$ 100,000	\$0	STP <5K	Yes
NA	T-23460	Staunton	Clarke County	9999	Enhanced Law Enforcement Route 9 Closure	\$ 21,472	\$ 21,472	\$0	STP <5K	Yes

E. Project Scheduling Process Charts



**I-81 Study Project Prioritization
Capital Projects in the Program
Order of Projects is North to South**

October 1, 2019

Mile Marker From To		District	Jurisdiction	UPC	Study Project ID	Improvement Description	Proposed Environmental Document Type	Proposed Delivery Method	Direction	Program Allocation	Estimated Project Development and Delivery Timeline (using D/B/B as schedule)				
											2019	2020	2021	2022	2023
303.7	303.9	Staunton	Frederick County	115803	49	Truck Scales NB Accel Extension ¹	PCE	D/B/B	NB only	\$1,980,000					
302.1	302.2	Staunton	Frederick County	115870	48	Exit 302 NB Decel Extension ¹	PCE	D/B/B	NB only	\$1,047,000					
283.3	282.9	Staunton	Shenandoah County	115804	52	Exit 283 SB Accel Extension ¹	PCE	D/B/B	SB only	\$2,354,000					
272.3	272.3	Staunton	Shenandoah County	115848	54	SB Flashing Chevron	PCE	D/B/B	SB only	\$163,000					
268.8	268.9	Staunton	Shenandoah County	115802	45	Exit 269 NB Decel Extension ¹	PCE	D/B/B	NB only	\$1,000,000					
205.3	205.7	Staunton	Rockbridge County	115801	42	Exit 205 NB Accel Extension ²	PCE	D/B/B	NB only	\$2,354,000					
175.3	171.4	Salem	Botetourt County	115794	35	MM 176-172 curve improvements (flashing chevron) ¹	PCE	D/B/B	SB only	\$163,000					
171.7	175.6	Salem	Botetourt County	115794	34	MM 172-176 curve improvements (flashing chevron) ¹	PCE	D/B/B	NB only	\$163,000					
90.2	90.7	Salem	Pulaski County	115795	29	Extend acceleration lane (Exit 89)	PCE	D/B/B	NB only	\$4,784,500					
88	88	Salem	Pulaski County	115794	28	MM 88 curve improvements (flashing chevron) ¹	PCE	D/B/B	NB only	\$163,000					
67.6	67.6	Bristol	Wytheville	115600	9	MM 68 curve improvements (flashing chevron)	PCE	D/B/B	NB only	\$163,000					
26.7	26.8	Bristol	Washington County	115345	22	Extend deceleration lane	PCE	D/B/B	SB only	\$5,528,000					
25.9	26.1	Bristol	Washington County	115346	23	Extend acceleration lane	PCE	D/B/B	SB only	\$2,005,000					
21.5	21.5	Bristol	Washington County	115395	24	MM 22 curve improvement (chevrons)	PCE	D/B/B	SB only	\$163,000					
17.9	17.9	Bristol	Abingdon	115393	1	MM 18 curve improvement (flashing chevron)	PCE	D/B/B	NB only	\$163,000					
17.6	17.6	Bristol	Abingdon	115394	25	MM 18 curve improvement (flashing chevron)	PCE	D/B/B	SB only	\$163,000					
Total Allocations in the Program										\$22,356,500					

Preliminary Engineering
 Right of Way Acquisition
 Construction

¹ Opportunity to Bundle with other I-81 Study Projects

² Coordinate/ Opportunity to Bundle with other projects in the SYIP

Preliminary I-81 Study Project Prioritization Bonded Scenario Order of Projects is North to South

Table with columns: Mile Marker (From, To), District, Jurisdiction, Study Project ID, Direction, Improvement Description, Hybrid Prioritization Rank, SMART SCALE Benefit/Mile Rank (25%), Risk and Readiness Rank (15%), VDOT Input (60%), SMART SCALE Benefit Rank, Proposed Environmental Document Type, Proposed Delivery Method, Order of Magnitude Estimate Range, and Estimated Project Development and Delivery Timeline (using D/B/B as schedule) from 2019 to 2039.

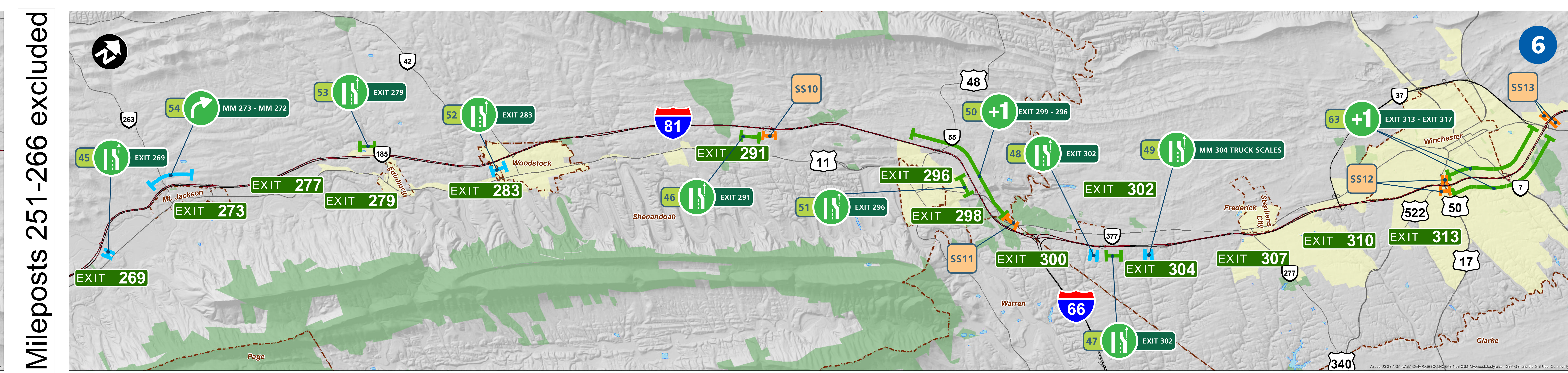
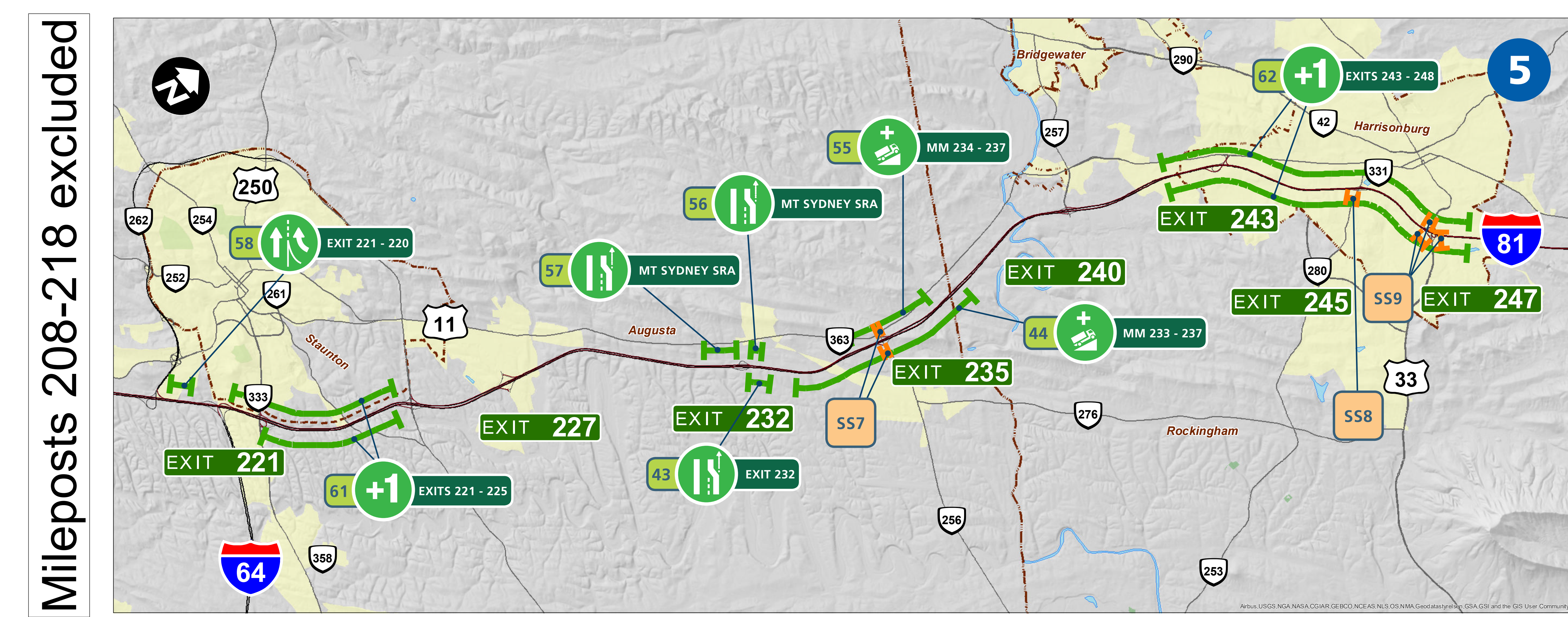
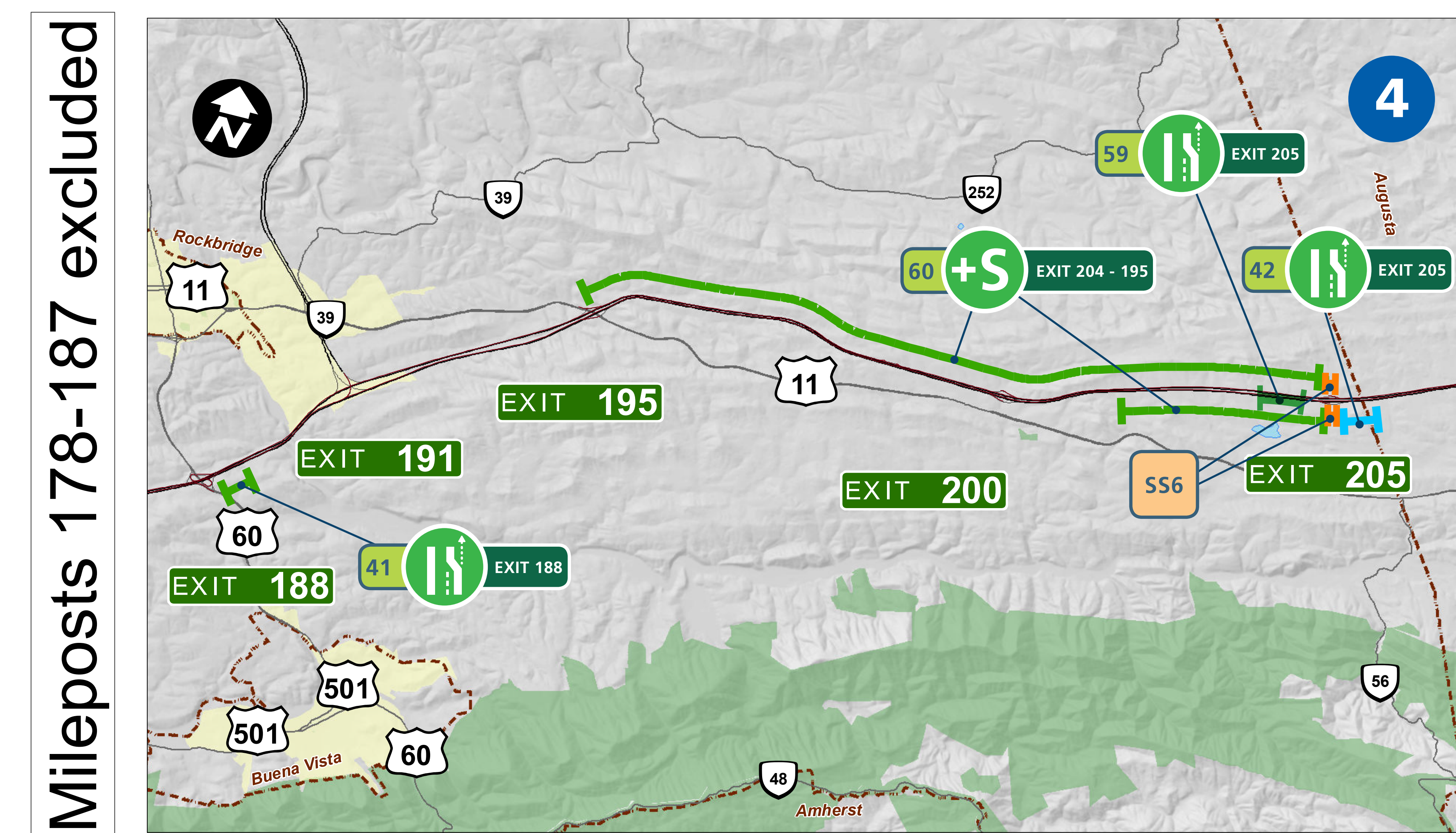
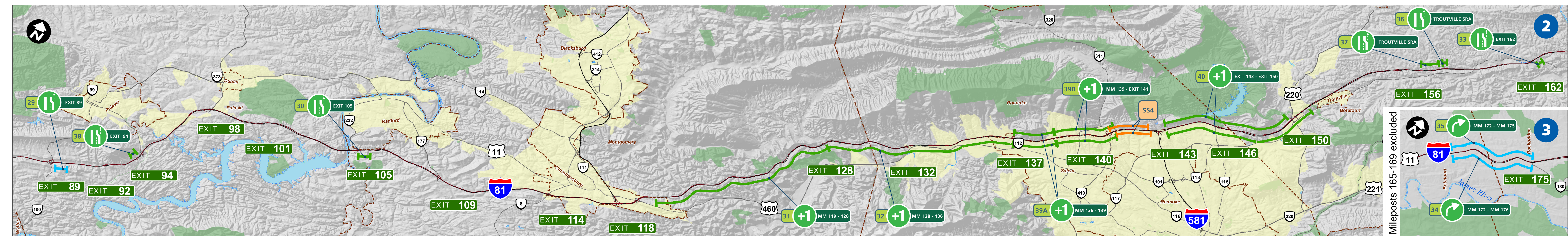
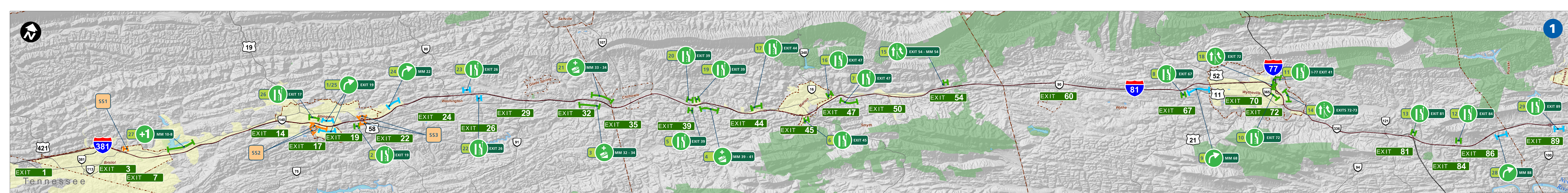
Legend: Preliminary Engineering (Red), Right of Way Acquisition (Purple), Construction (Blue)

1 Opportunity to Bundle with other I-81 Study Projects

2 Coordinate/ Opportunity to Bundle with other projects in the SYIP

E. Improvements Summary Map and Table





LEGEND

Infrastructure

- +1 Widen by One Lane
- +S Add Truck Climbing Lane
- Extend Acceleration/Deceleration Lane
- Add Auxiliary Lane
- Curve Improvement
- Shoulder Widening

Improvements

- 16 Projects Currently FY20 SYP
- 48 Remaining Projects
- Smart Scale Funded Project

0 2.5 5 10 Miles

Office of INTERMODAL Planning and Investment

VDOT Virginia Department of Transportation

October 1, 2019

I-81 CORRIDOR IMPROVEMENTS PLAN

RECOMMENDED IMPROVEMENTS

Study Project ID	UPC	District	Jurisdiction(s)	Direction	Mile Marker			Improvement Description
					From	to	To	
1	115393	Bristol	Abingdon	NB only	17.9	to	17.9	Curve improvement (flashing chevron)
2	116155	Bristol	Abingdon / Washington County	NB only	19.2	to	19.3	Exit 19 deceleration lane extension
3	116156	Bristol	Chilhowie / Washington County	NB only	32.4	to	33.5	Add truck climbing lane
4	116157	Bristol	Chilhowie / Smyth County	NB only	39.5	to	40.6	Add truck climbing lane
5	116159	Bristol	Smyth County	NB only	38.9	to	39	Exit 39 deceleration lane extension
6	116160	Bristol	Marion / Smyth County	NB only	45.5	to	45.6	Exit 45 deceleration lane extension
7	116161	Bristol	Marion / Smyth County	NB only	48.1	to	48.9	Exit 47 acceleration lane extension
8	116162	Bristol	Wytheville	NB only	67.3	to	67.4	Exit 67 deceleration lane extension
9	115600	Bristol	Wytheville	NB only	67.6	to	67.6	Curve improvements (flashing chevron)
10	116163	Bristol	Wytheville	NB only	72.7	to	72.9	Exit 72 deceleration lane extension
11	116164	Bristol	Wytheville	NB only	73.0	to	42.9	I-77 deceleration lane extension and reconfigure off-ramp
12	116165	Bristol	Wythe County	SB only	84.3	to	84.5	Exit 84 deceleration lane extension
13	116166	Bristol	Wythe County	SB only	81.7	to	81.9	Exit 81 deceleration lane extension
14	116168	Bristol	Wytheville	SB only	73.2	to	73.8	Add auxiliary lane between Exit 73 and Exit 72
15	116169	Bristol	Smyth County	SB only	54.1	to	54.4	Add auxiliary lane between Exit 54 and Smyth Safety Rest Area
16	116158	Bristol	Marion / Smyth County	SB only	47.4	to	47.6	Exit 47 acceleration lane extension
17	116167	Bristol	Marion / Smyth County	SB only	42.8	to	43	Exit 44 acceleration lane extension
18	116175	Bristol	Wythe County	SB only	41.6	to	41.8	Add auxiliary lane between Exit 40 on I-77 and Exit 72 on I-81 and extend acceleration lane from I-77 SB to I-81 SB
19	116174	Bristol	Smyth County	SB only	39.4	to	39.5	Exit 39 deceleration lane extension
20	116173	Bristol	Smyth County	SB only	38.7	to	38.9	Exit 39 acceleration lane extension
21	116172	Bristol	Washington County	SB only	34	to	33	Add truck climbing lane
22	115345	Bristol	Washington County	SB only	26.7	to	26.8	Exit 26 deceleration lane extension
23	115346	Bristol	Washington County	SB only	25.9	to	26.1	Exit 26 acceleration lane extension
24	115395	Bristol	Washington County	SB only	21.5	to	21.5	Curve improvement (chevrons)
25	115394	Bristol	Abingdon	SB only	17.6	to	17.6	Curve improvement (flashing chevron)
26	116171	Bristol	Abingdon	SB only	16.6	to	16.7	Exit 17 acceleration lane extension
27	116170	Bristol	Bristol / Washington County	SB only	8.1	to	9.7	Widen to three lanes
28	115794	Salem	Pulaski County	NB only	88	to	88	Curve improvements (flashing chevron)
29	115795	Salem	Pulaski County	NB only	90.2	to	90.7	Exit 89 acceleration lane extension
30	116198	Salem	Radford / Montgomery County	NB only	105.5	to	106	Exit 105 acceleration lane extension
31	116196	Salem	Christiansburg / Montgomery County	NB only	119	to	128.4	Widen to three lanes from MM 116 to Exit 128
32	116197	Salem	Montgomery County / Roanoke County / Salem	NB only	128.4	to	136	Widen to three lanes from Exit 128 to MM 136
33	116199	Salem	Buchanan / Botetourt County	NB only	162.4	to	162.9	Exit 162 acceleration lane extension
34	115794	Salem	Botetourt County	NB only	171.7	to	175.6	Curve improvements (flashing chevron)
35	115794	Salem	Botetourt County	SB only	175.3	to	171.4	Curve improvements (flashing chevron)
36	116202	Salem	Botetourt County	SB only	158.4	to	158.2	Troutville Safety Rest Area deceleration lane extension
37	116202	Salem	Botetourt County	SB only	158	to	157.2	Troutville Safety Rest Area acceleration lane extension
38	116200	Salem	Pulaski / Pulaski County	SB only	94.2	to	93.7	Exit 94 acceleration lane extension
39A	116203	Salem	Salem / Roanoke County	Both Directions	136	to	139	Widen to three lanes between MM 136 to MM 139
39B	115937	Salem	Salem / Roanoke County	Both Directions	139	to	141	Widen to three lanes between MM 139 and Exit 141
40	116201	Salem	Roanoke / Roanoke County	Both Directions	144.2	to	151.3	Widen to three lanes between Exit 143 and Exit 150
41	116246	Staunton	Rockbridge County	NB only	189	to	189.4	Exit 188 acceleration lane extension
42	115801	Staunton	Rockbridge County	NB only	205.3	to	205.7	Exit 205 acceleration lane extension
43	116271	Staunton	Augusta County	NB only	232.4	to	232.8	Mt. Sidney Rest Area acceleration lane extension
44	116277	Staunton	Augusta County / Rockingham County	NB only	233.3	to	237.4	Weyers Cave truck climbing lane
45	115802	Staunton	Shenandoah County	NB only	268.8	to	268.9	Exit 269 deceleration lane extension
46	116270	Staunton	Shenandoah County	NB only	290.6	to	291.1	Exit 291 acceleration lane extension
47	116236	Staunton	Frederick County	NB only	302.5	to	302.9	Exit 302 acceleration lane extension
48	115870	Staunton	Frederick County	NB only	302.1	to	302.2	Exit 302 deceleration lane extension
49	115803	Staunton	Frederick County	NB only	303.7	to	303.9	Truck Scales acceleration lane extension
50	116268	Staunton	Shenandoah County / Warren County / Frederick County	SB only	299.2	to	295.7	Widen to three lanes between Exit 299 and Exit 296
51	116244	Staunton	Shenandoah County	SB only	296.7	to	296.3	Exit 296 acceleration lane extension
52	115804	Staunton	Shenandoah County	SB only	283.3	to	282.9	Exit 283 acceleration lane extension
53	116243	Staunton	Shenandoah County	SB only	279.2	to	278.7	Exit 279 acceleration lane extension
54	115848	Staunton	Shenandoah County	SB only	272.3	to	272.3	Curve improvements (flashing chevron)
55	116278	Staunton	Augusta County	SB only	236.5	to	234.6	Weyers Cave truck climbing lane
56	116275	Staunton	Augusta County	SB only	232.9	to	232.7	Mt. Sidney Rest Area deceleration lane extension
57	116276	Staunton	Augusta County	SB only	232.5	to	231.9	Mt. Sidney Rest Area acceleration lane extension
58	116279	Staunton	Augusta County	SB only	221.5	to	221.2	Add auxiliary lane between Exit 220 and Exit 221
59	116245	Staunton	Rockbridge County	SB only	205.2	to	204.7	Exit 205 acceleration lane extension
60	116282	Staunton	Rockbridge County	SB Only	204.5	to	195.1	Rockbridge County shoulder improvements
61	116269	Staunton	Augusta County / Staunton	Both Directions	221.8	to	225.3	Widen to three lanes between Exit 221 and Exit 225
62	116280	Staunton	Rockingham County / Harrisonburg	Both Directions	242.2	to	248.1	Widen to three lanes between Exit 243 and Exit 248
63	116281	Staunton	Frederick County / Winchester	Both Directions	313.8	to	317.5	Widen to three lanes between Exit 313 and Exit 317

SMARTSCALE

ID	UPC	District	Direction	Location	Description (Year Construction Starts)
SS1	105309	Bristol	SB	Exit 5	Exit 5 - widen Route 11 (Lee Highway) & widen I-81 off-ramps (2021)
SS2	109419	Bristol	NB	Exit 17	Exit 17 interchange improvements (2021)
SS3	109440	Bristol	Both	Exit 19	Exit 19 interchange improvements (2020)
SS4	108906, 111373	Salem	Both	Exit 141 to 143	Add auxiliary lanes between Exit 141 and Exit 143 (2019)
SS5*	111359	Salem	SB	MM 167.4 to MM 169.5	Safety improvements between MM 167.4 to MM 169.5 (2020)
SS6	109370	Staunton	Both	Exit 205	Exit 205 ramp terminal intersection improvements (2021)
SS7	111055	Staunton	Both	Exit 235	Exit 235 access improvements (2021)
SS8	108809	Staunton	NB	Exit 245	Exit 245 interchange improvements (2019)
SS9	111230	Staunton	Both	Exit 247	Exit 247 interchange improvements (2022)
SS10	115129	Staunton	NB	Exit 291	Exit 291 northbound ramp widening (2028)
SS11	111054	Staunton	SB	Exit 300	Exit 300 acceleration Lane extension (2021)
SS12	115717	Staunton	Both	Exit 313	Exit 313 bridge capacity improvement (2028)
SS13	115181	Staunton	Both	Exit 317	Exit 317 acceleration and deceleration lane extensions (2028)

LEGEND

- 16 Projects Currently FY20 SYIP
- 48 Remaining Projects
- Smart Scale Funded Project

October 1, 2019



* SS5 - Project is not depicted on map.

G. Project Risk, Readiness, Constructability, Environmental Considerations, and Maintenance of Traffic Meetings

Under the I-81 Corridor Improvement Plan, 64 projects were advanced to the implementation phase. To prepare these projects for implementation, the study team developed a scheduling matrix identifying key risk and readiness factors. Readiness was separated into project and environmental readiness scores. Project readiness consisted of factors such as constructability, right-of-way impacts, maintenance of traffic, and soil and rock conditions. Environmental readiness consisted of the following risk factors: anticipated level of environmental document, cultural resources, water quality, and threatened and endangered species. These scheduling factors were individually discussed with the three VDOT districts to determine whether each factor should be considered a low, medium, or high risk.

Following the development and refinement of the draft project scheduling matrix, the study team met individually with all three districts in the spring of 2019 to discuss the preliminary evaluation. The study team adjusted the draft schedule.



H. Crash Frequency and Severity per Mile for Truck-Related Crashes

