PLEASANT VALLEY ROAD CORRIDOR IMPROVEMENT STUDY

Kick-Off Meeting

July 22, 2019

AGENDA

- STARS Program
- Innovative Intersections
- Pleasant Valley Road Corridor Improvement Study
  - Study Work Group
  - Project Background
  - Project Scope of Work Overview
  - Communication Protocols
  - Project Information Sharing
  - Overall Schedule and Major Milestones
- Next Steps

STARS PROGRAM

STARS PROGRAM GOALS

- Develop comprehensive, innovative transportation alternatives to relieve congestion bottlenecks and solve critical safety challenges
- Involve planners, traffic engineers, safety engineers, roadway designers, and local stakeholders

THE STARS TEAM

VDOT Districts and Residencies

- Coordinate with localities, MPOs, and PDCs
- Submit STARS applications
- Lead STARS projects
- Coordinate with consultant team

VDOT Central Office

- Provides program oversight, data analysis, and application review

Consultants

- Provide project support

Kimley»Horn

WHAT IS THE STARS PROGRAM?

Program to develop solutions to reduce crashes and congestion bottlenecks using a data-driven approach

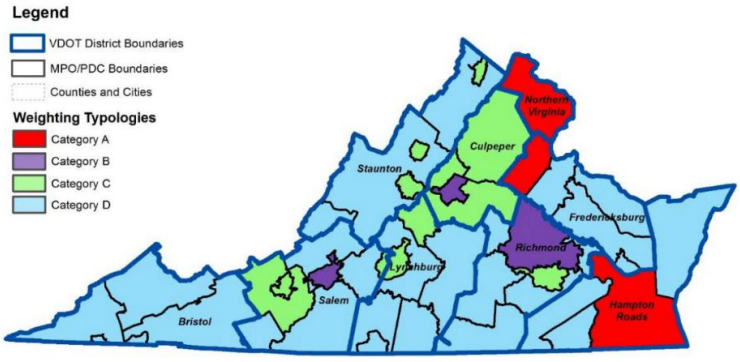
Crash hotspots
Speed data
AADT data

→ Use this information together to identify corridors with safety and congestion challenges

Overall goal of STARS is to develop solutions that can be programmed in the VDOT Six-Year Improvement Program (SYIP)

IMPORTANCE OF CORRIDOR IDENTIFICATION

Factor	Congestion Mitigation	Economic Development	Accessibility	Safety	Environmental Quality	Land Use
Category A	45%	5%	15%	5%	10%	20%
Category B	15%	20%	25%	20%	10%	10%
Category C	15%	25%	25%	25%	10%	-
Category D	10%	35%	15%	30%	10%	-



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SAMPLE STARS DELIVERABLES

HUNGARY SPRING ROAD TO WISTAR ROAD
Recommended Improvements

Operations and Safety Improvements

The following recommendations are projected to improve operations and/or safety along West Broad Street. Signal timing adjustments were made at all signalized intersections.

Hungary Spring Road
- Reconstruct eastbound median to extend left-turn lane
  - ✓ Reduces eastbound queuing during AM and PM peak hours
- Add second exclusive southbound left-turn lane
  - ✓ Reduces southbound delay and queuing during AM and PM peak hours
  - ✓ Reallocates green time to northbound approach
- Implement concurrent phasing for northbound and southbound approaches

Cardinal Road
- Construct partial directional median to restrict side street movements and eastbound left turns
  - ✓ Reduces conflict points and potential for angle crashes

Project Schedule & Preliminary Cost

Project schedules and cost estimate were developed based on information available at the time of study and should be reassessed prior to submitting funding applications.

Phase	Cost Estimate (2018 Dollars)
Preliminary Engineering	$507,000
ROW and Utility Relocation	$544,000
Construction	$3,064,000
Total Cost	**$4,125,000**

Safety Results

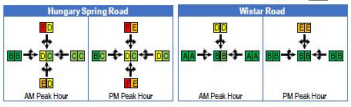
Crash modification factors (CMFs) were chosen from the approved list used for SMART SCALE to project the reduction in fatal and injury (FI) crashes reported in equivalent property damage only (EPDO) crashes.

Intersection	2013-2017 EPDO (FI)	CMF	EPDO (FI) Reduction
Hungary Spring Road	150	Extend turn lane (0.97)	5
Cardinal Road	95	Remove minor approach left turns (0.65)	33
Wistar Road	55	Add crosswalk (0.85)	8

Pedestrian and Transit Improvements

The following improvements are recommended to improve access for pedestrians and transit users.
- Construct sidewalk along both sides of West Broad Street
- Construct crosswalks across all side streets
- Construct crosswalks with pedestrian refuge across one approach of West Broad Street at Hungary Spring Road and Wistar Road
- Relocate bus stops closer to proposed crosswalks to promote pedestrian safety
- Upgrade bus stops to include new shelters, concrete pads, benches, lighting, and trash cans

Traffic Operations Results



WEST BROAD STREET (US 250) CORRIDOR IMPROVEMENT STUDY

SAMPLE STARS DELIVERABLES

DOUBLE "PEANUT" ROUNDABOUT
MAIN STREET AND BEDFORD AVENUE OPERATIONAL ANALYSIS AND ALTERNATIVE CONSIDERATIONS

PROJECT COST

Preliminary Engineering	$190,000
ROW and Utility Relocation	$502,000
Construction	$1,569,000
Total Cost =	**$2,261,000**

PROJECT DESCRIPTION

- The proposed improvement consists of two, one-lane roundabouts configured adjacent to each other, creating a "peanut" roundabout.
- Single-lane approaches to the roundabout with splitter islands (minimum 50' length).
- Moderate improvements to Apple Market site anticipated (e.g., driveways, new asphalt/parking, landscaping).
- Provision for a large landscape area within each roundabout with the potential for use as a town gateway entry feature.
- Pedestrian accommodations around the new roundabouts.

Photograph 1 – Southbound Main Street/Route 29 Business Queue at Bedford Avenue Intersection

Traffic Operations Measures

Delay (sec)	AM*	PM*
2035 No-Build	19,922	22,844
2035 Build	9,840	11,744
Savings	10,082	11,100

* peak hour delay = delay per vehicle x peak hour traffic volume

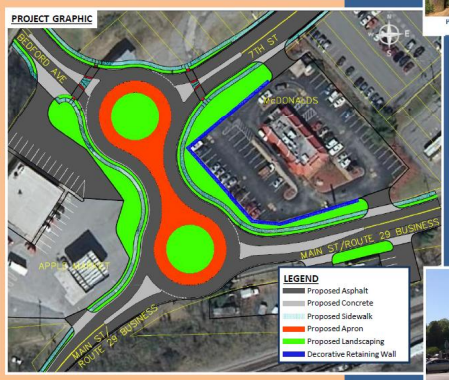
Delay Savings Measures

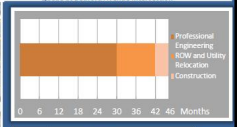
Delay Cost ($)	AM	PM
2035 No-Build	$33,090	$37,944
2035 Build	$16,344	$19,506
Savings	$16,746	$18,438

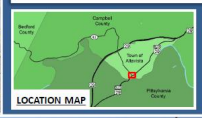
The Double "Peanut" Roundabout will improve all intersection approaches to LOS A. Additionally, based on VDOT's Proposed Safety Improvements form, the installation of a roundabout can reduce crashes by as much as 72% in all intersection-related crashes.

With an annual cost benefit of $35,184 and an estimated life cycle Maintenance & Operations (M&O) cost of $33,000 this proposed improvement offers the highest Benefit/Cost (B/C) ratio of the improvements considered in this study.

PROJECT GRAPHIC







Photograph 2 – Westbound Bedford Avenue Queue between 7th Street and Main Street/Route 29 Business

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MAIN STREET AND BEDFORD AVENUE
TOWN OF ALTAVISTA, VA

INNOVATIVE INTERSECTIONS

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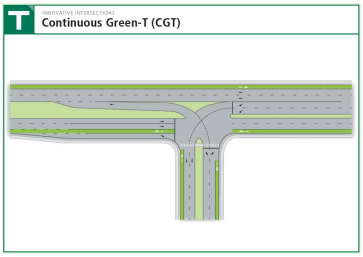
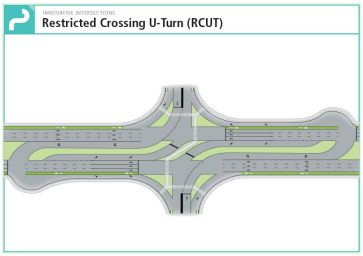
INNOVATIVE INTERSECTIONS

- What are innovative intersections?
  - Designs where traffic movements are modified to improve safety, reduce delay, increase efficiency
  - Can reduce delays and crashes as much as 50%

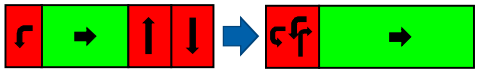




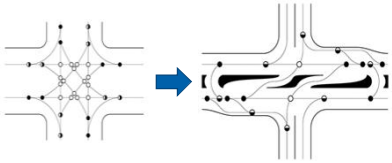
INNOVATIVE INTERSECTIONS

- Re-route Left-Turn Movements
  - More efficiently serves through traffic

- Reduce Signal Phases
  - Reduces delay



- Remove and Separate Conflicts
  - Improves safety



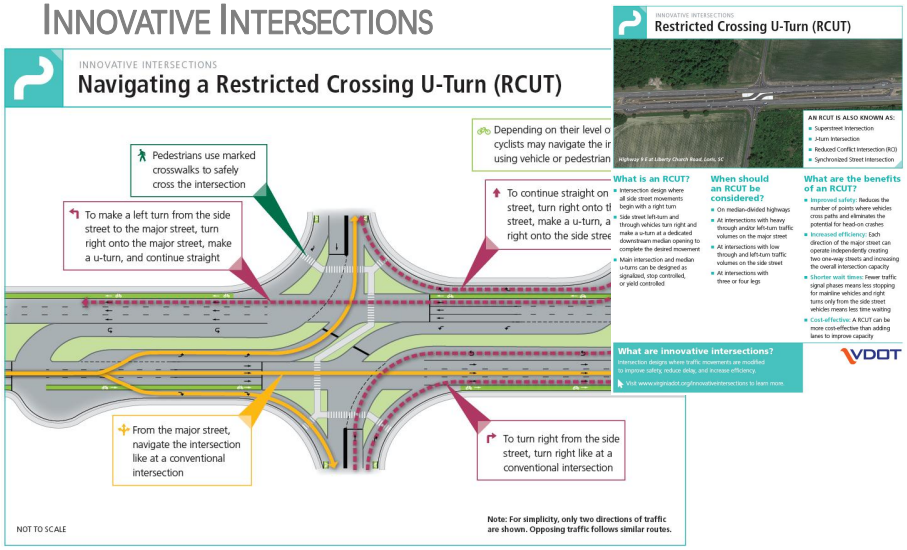
INNOVATIVE INTERSECTIONS

- Why is VDOT promoting innovative intersections?
  - Enhance mobility
  - Improve safety
  - Preserve capacity
- What information has VDOT released?
  - VDOT Junction Screening Tool (VJuST)
    - Microsoft Excel tool to screen innovative intersections/interchanges
  - Informational brochures
    - Continuous Green-T
    - Displaced Left Turn
    - Quadrant Roadway
    - Restricted Crossing U-Turn
    - Roundabout
    - Median U-Turn

VJuST VDOT Junction Screening Tool

http://www.virginiadot.org/innovativeintersections/

INNOVATIVE INTERSECTIONS



Pleasant Valley Road Corridor Improvement Study

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Study Work Group Members

- VDOT District*
  - Terry Short
  - Edwin Carter
  - Scott Alexander
  - Keith Rider
  - John-Allen Ennis
- VDOT Central Office
  - Bill Guiher
  - Terrell Hughes
- WinFred MPO
  - John Madera
- City of Winchester
  - Timothy Youmans
  - Andrew Dunn
  - Justin Hall
  - Perry Eisenach
- WinTran
  - Renee Wells
- Frederick County
  - John Bishop
- Kimley-Horn
  - Danielle McCray
  - Amanda Harmon

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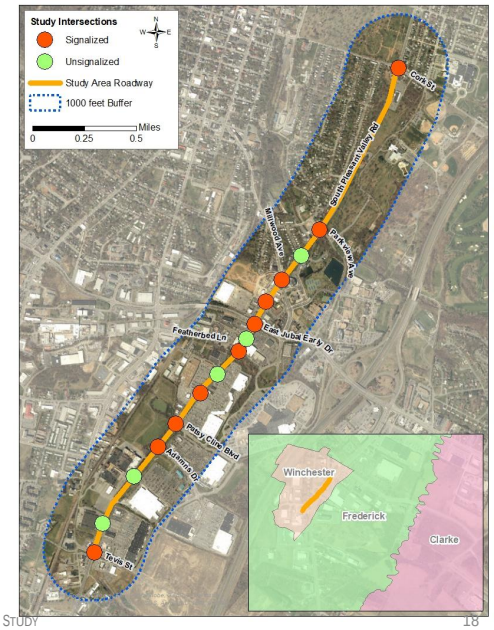
*May include other support staff as necessary

Study Work Group Roles and Responsibilities

- Attend meetings and/or workshops
  - Anticipated three in-person meetings and/or workshops
  - Technical conference calls
- Provide input in your focus area
  - Traffic engineering and traffic signal operations
  - Transportation planning
  - Preliminary design and cost estimating
  - Local familiarity
- Review interim and final deliverables
- Technical Committee
  - Provide guidance and review of detailed analyses

Project Study Area

- Pleasant Valley Road in City of Winchester
  - 4-lane undivided roadway
- 2.2-mile study corridor
- 10 signalized intersections
- 5 unsignalized intersections



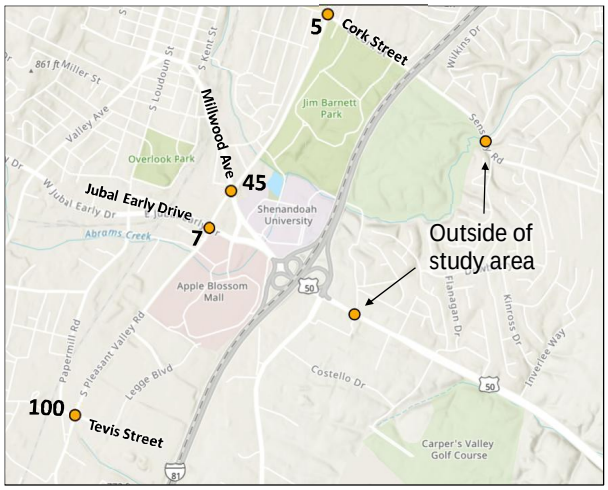
Pleasant Valley Road

Existing Safety and Traffic operations Overview

Pleasant Valley Road: High Crash Locations

- Potential for Safety Improvement (PSI)
  Estimates how much the long term crash frequency could be reduced at an intersection or segment
- Segment Rankings
  Ranked by total PSI within Staunton District
  - 7, 9, and 19 – Between Tevis Street and Jubal Early Drive
  - 66 and 84 – Between Jubal Early Drive and Millwood Avenue
  - 42, 108, and 16 – Between Millwood Avenue and Cork Street
- Intersection Rankings
  - Ranked by total PSI within Staunton District
  - 5 – Cork Street
  - 7 – Jubal Early Drive
  - 45 – Millwood Avenue
  - 100 – Tevis Street

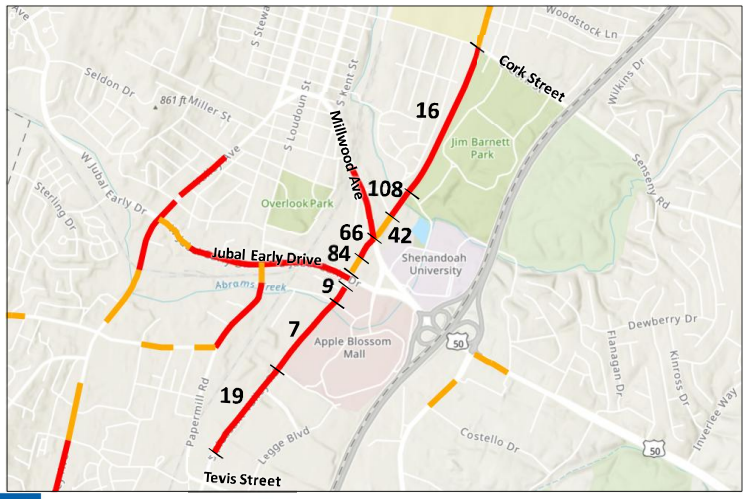
Pleasant Valley Road: Potential for Safety Improvement and Target Safety Needs



Source: 2017 PSI Intersections – Staunton District

PSI/TSN (Intersection)

Pleasant Valley Road: Potential for Safety Improvement and Target Safety Needs



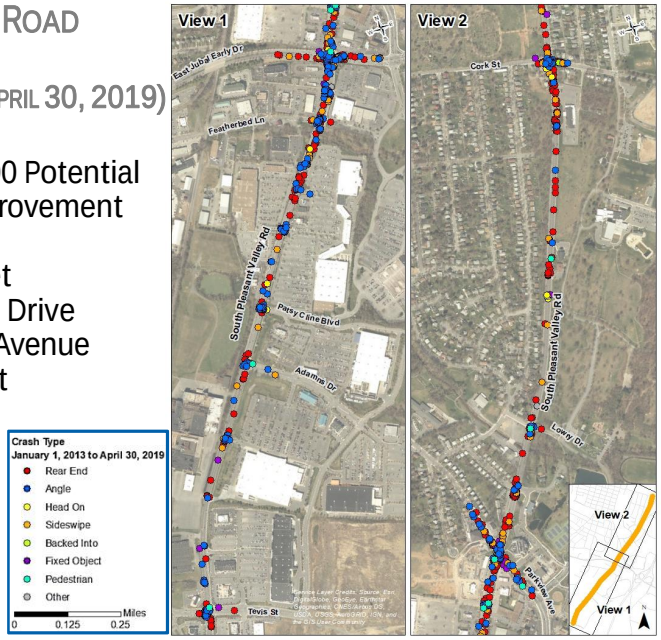
Source: 2017 PSI Segments – Staunton District

PSI (Segment) TSN (Segment)

Pleasant Valley Road

Crash Data (January 1, 2013-April 30, 2019)

- VDOT's Top 100 Potential for Safety Improvement Intersections
  - Tevis Street
  - Jubal Early Drive
  - Millwood Avenue
  - Cork Street



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Pleasant Valley Road

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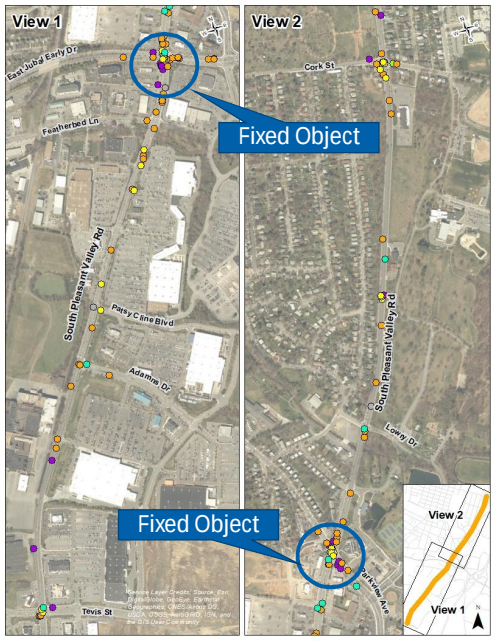

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Pleasant Valley Road

Crash Data (January 1, 2013-April 30, 2019)

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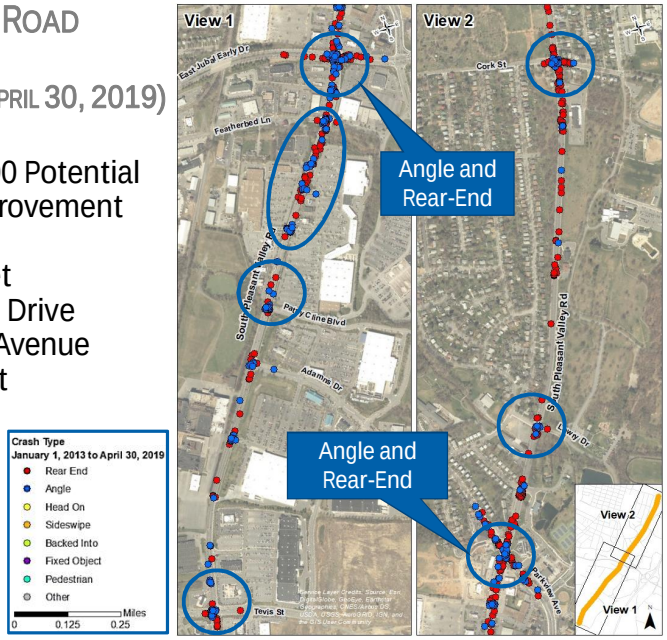

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Pleasant Valley Road

Project Purpose and Scope Overview

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Project Purpose

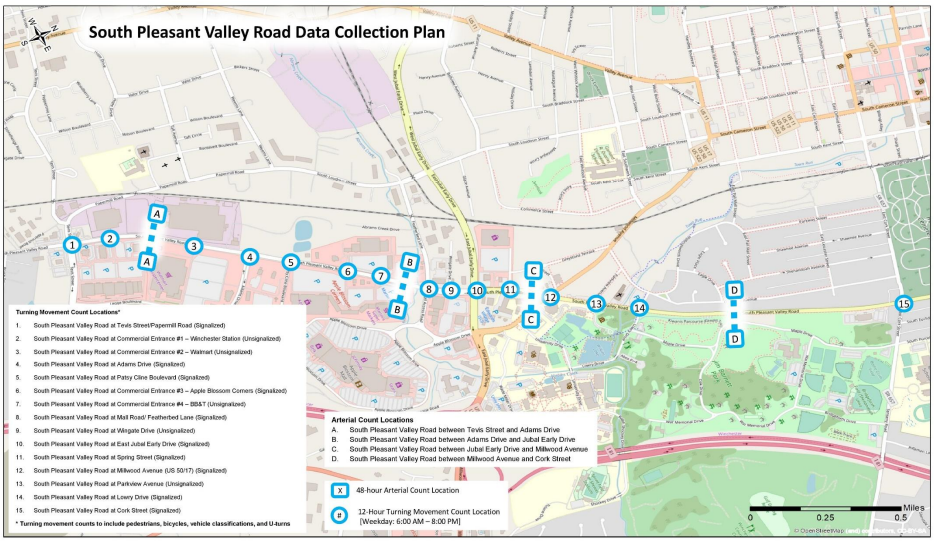
- Evaluate operational and safety conditions within study area
- Develop potential projects to improve safety and operations
- Consider innovative intersection designs, where applicable
- Identify improvements that can be advanced to funding
  - Programmed into the VDOT Six-Year Improvement Program (SYIP)

Scope of Work Overview

- Data Collection and Field Review
- Crash Analysis
- Existing Conditions Operational Analysis
- Traffic Forecasting
- Future No-Build Conditions Operational Analysis
- Concept Development and Screening
- Future Build Conditions Operational Analysis
- Cost and Schedule Estimates
- STARS Improvement Summary Sheets
- Reporting
- Public Engagement

Critical scoping items requiring consensus

DATA COLLECTION OVERVIEW



DATA COLLECTION OVERVIEW

- Traffic Volume Data – Week of 8/19/19
  - 15 12-hour turning movement counts
    - Includes U-turns, heavy vehicles, and pedestrians
  - Four 48-hour classification counts collected to help understand recent growth patterns
  - Travel time runs
- Field Observations
  - Observe traffic operations and safety condition during AM and PM peak periods – Week of 8/19/19
    - AM peak: 6:30 a.m. to 8:30 a.m.
    - PM peak: 4:00 p.m. to 6:00 p.m.

Analysis Scenarios

- Analysis Tools and Measures of Effectiveness
  - Synchro 9
    - Control delay (seconds per vehicle)
    - 95th percentile queue length (feet)
  - SimTraffic 9
    - Microsimulation delay (seconds per vehicle)
    - Maximum percentile queue length (feet)
  - SIDRA 8
    - Tool to evaluate proposed roundabout geometry, if necessary
- Analysis Periods
  - AM and PM peak hours
  - Existing Conditions – 2019
  - Future Conditions – 2035 or 2040

Additional Data Collection

- Request Synchro files and signal timing plans
- Crash data – will obtain last 5 years from VDOT
- Current or proposed transit stop locations
- Other studies, existing data
- Forecasting
  - SPS data
  - Regional travel demand model
  - Other?

PUBLIC ENGAGEMENT

- Public Outreach Meeting
  - One public meeting to be held within study area
  - Potential stakeholder meeting with businesses prior to public meeting
  - Public notification/available tools/outreach/locality role(s)
- Potential Online Survey Tool
  - Mapping feature for public input
- SWG members to brief respective organizations

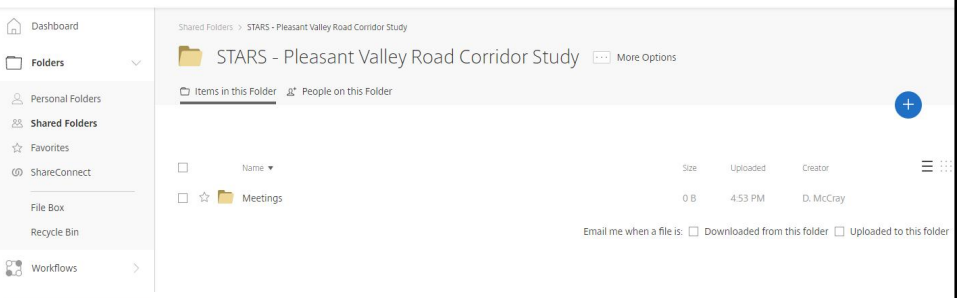
COMMUNICATION PROTOCOLS

- VDOT Staunton District
  - Terry Short – Terry.Shortjr@vdot.virginia.gov
- VDOT Central Office
  - Terrell Hughes – Terrell.Hughes@vdot.virginia.gov
- City of Winchester
  - Perry Eisenach - Perry.Eisenach@winchesterva.gov
- Frederick County
  - John Bishop – jbishop@fcva.us
- Kimley-Horn
  - Danielle McCray – Danielle.McCray@kimley-horn.com
    - (703) 674-1381
  - Amanda Harmon – Amanda.Harmon@kimley-horn.com
    - (804) 672-4704

PROJECT INFORMATION SHARING

- Website: https://kimley-horn.securevdr.com/Authentication/Login
- Username: email address
- Password: you will create

Kimley»Horn



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OVERALL SCHEDULE AND MAJOR MILESTONES

- June-July – Kick-Off Meeting and Scoping
  - Full SWG Meeting
- August – Data Collection and Field Visit
- September – 2019 Existing Conditions Analysis
  - Technical Committee Review and Meeting
- October-November – No-Build Analysis/Concept Development and Screening
  - Full SWG Meeting
- December – Build Analysis
  - Technical Committee Review and Meeting
  - Full SWG Meeting
- January-March – Cost Estimates, Schedules, Reporting
  - Technical Committee Review and Meeting
  - Full SWG Meeting
  - Public Engagement

SMART SCALE portal opens in March

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Next Steps

- Finalize framework document
- Complete data collection and field visit
- Approve scope of work
- Base conditions analysis

STARS
STRATEGICALLY TARGETED AND AFFORDABLE ROADWAY SOLUTIONS

Pleasant Valley Road Corridor Improvement Study

Thank you.

VDOT