OVERVIEW

- STARS Program Goals
- Project Background
- Scope of Work Overview
- Existing Conditions Overview
- Alternatives Analysis
- Recommendations
- Next Steps
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

Develop Projects to Program in the VDOT Six-Year Improvement Program
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)
REVIEW POTENTIAL PROJECT CORRIDORS
REVIEW POTENTIAL PROJECT CORRIDORS

<table>
<thead>
<tr>
<th>Potential Mile Marker</th>
<th>Potential Length (miles)</th>
<th>CoD5 Overtake</th>
<th>Urban Design</th>
<th>VISP Project</th>
<th>2000-2012 Crashes</th>
<th>Max PSI for Road (PSI)</th>
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<th>Max PSI for Lanes (PSI)</th>
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Additional Information Needed

In Long Range Plan?

In State Highway Plan?

VISP Study

Corridor Master Study

District Identified Problems

District Administrative Support

Local / MPO Support

Funding Idea Official

Economic Development Impact

Notes

Route 3 from Harrison Rd to US 17 (Dixon St)
REVIEW POTENTIAL PROJECT CORRIDORS

- US 17B AND Rte 3 Corridor Improvement Study

- Review Potential Project Corridors

- US 17 from Cardinal Forest Dr to US 1

- MARYLAND

- Planning Designations:
  - Safety
  - Operations
  - District Coordination

- Stafford County

- Legend:
  - 2014 V/C Ratio
  - 2025 V/C Ratio
  - PS Segments
  - PS Scope
  - PS Interaction Rank

- Locations of Potential Corridors:
  - Includes PS Segments: 18, 38, 39, 41, 43, 45, 49, 54, 56, 58, 59, 108
  - Includes PS Intersection: 40, 31, 38, 39, 43
  - PS Project (Construction Started): Reconstruction w/ Added Capacity (From 0.036 mi S of Mile Lane Dr to 0.326 mi W of Stafford Lakes Pkwy)
STARS PROGRAMMED PROJECTS
## Selected STARS Projects - 2016

<table>
<thead>
<tr>
<th>District</th>
<th>Route</th>
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<tr>
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<td>US 460 Business</td>
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<td>Northern Virginia</td>
<td>Route 4361</td>
<td>City of Manassas/Prince William County</td>
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<td>Northern Virginia</td>
<td>Route 7</td>
<td>Loudoun County/Town of Leesburg</td>
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<tr>
<td>Staunton</td>
<td>Route 55</td>
<td>Warren County</td>
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**US 17B and Rte 3 Corridor Improvement Study**
Project Background

Project Purpose
- Evaluate operational and safety conditions on:
  - US 17 BUS - East of I-95 to Washington Street
  - Route 3 – East of I-95 to Dixon Street (Rte 2)
- Develop potential projects to improve safety and operations in the study area
- Identify improvements that can be programmed into the VDOT Six-Year Improvement Program (SYIP)
PROJECT STUDY AREA

- US 17 BUS in Fredericksburg, VA
- 1.55 mile study corridor
- 5 study area intersections

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**Project Study Area**

- Route 3 in Fredericksburg
- 2.55-mile study corridor
- 8 study area intersections

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City of Fredericksburg

US 17B AND RTE 3 CORRIDOR IMPROVEMENT STUDY
STUDY PROCESS OVERVIEW

- Data Collection and Field Review
- Crash Analysis
- Existing Conditions Operational Analysis
- Future No-Build Conditions Operational Analysis
- Development of Improvement Alternatives
- Future Build Conditions Operational Analysis
- Planning-Level Cost and Schedule Estimates
- Citizens Information Meeting
- Prioritization of Improvements
- Reporting
EXISTING CONDITIONS OVERVIEW

- **US 17 BUS**
  - VDOT functional classification: Other Principal Arterial
  - 4-lane divided and undivided roadway

- **Route 3**
  - VDOT functional classification: Other Principal Arterial
  - 4-lane divided and undivided roadway
SCOPE OF WORK OVERVIEW

- **Operations Analysis**
- **Analysis Periods**
  - AM and PM peak hours
  - Existing Conditions – **2016**
  - Future Conditions – **2030**
- **Measures of Effectiveness**
  - Intersections: Control Delay (sec/veh), Queue Length (feet)
  - Arterials: Travel Time (sec), Average Travel Speed (ATS) (mph), ATS as a % of BFFS
EXISTING CONDITIONS OVERVIEW – US 17 BUS

Source: Google Maps
EXISTING CONDITIONS OVERVIEW — US 17 BUS

- **Traffic Volume Data**
  - Intersection counts (6) collected on 5/17/16 – 5/19/16
  - 48-hour classification counts (2) collected on 5/17/16 - 5/18/16

- **Peak Hours**
  - AM Peak Hour
    - 7:30 – 8:30AM
  - PM Peak Hour
    - 4:45 – 5:45 PM

- **Average Daily Traffic (ADT)**
  - Based on 48-hour vehicle classification counts
    - Route 17 west of I-95 NB to EB Ramps: 36,131 vpd
    - Route 17 west of Cambridge Street: 33,936 vpd
EXISTING (2016) OPERATIONS RESULTS
Existing Conditions Overview – Route 3

- **Traffic Volume Data**
  - Intersection counts (8) collected on 4/25/16 – 4/26/16
  - 7-day classification count (1) collected on 4/26/16 – 5/2/16
  - 48-hour classification counts (3) collected on 4/25/16 – 4/27/16

- **Peak Hours**
  - AM Peak Hour
    - 7:30 – 8:30 AM
  - PM Peak Hour
    - 4:45 – 5:45 PM

- **Average Daily Traffic (ADT)**
  - Based on 48-hour vehicle classification counts
    - Route 3 east of Route 1: **46,340 vpd**
EXISTING (2016) OPERATIONS RESULTS

Route 3 Project Area

Intersection Level of Service (LOS)

X(X) = AM/PM Peak
Arterial Segments LOS

- LOS C or better
- LOS D
- LOS E or worse

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City and County of Fredericksburg
CRASH ANALYSIS

- For Both Corridors
  - Source: VDOT Crashtools Database
  - Latest five years of crash data (2011-2016)
  - US 17/Warrenton Road – 352 Crashes
  - SR 3/Plank Road/William Street/Blue and Gray Parkway – 936 Crashes
RECOMMENDED IMPROVEMENTS

US 17 BUS
Final Conceptual Layout:
- Install Raised Median at the Short Street intersection to prohibit the Route 17 Eastbound and Westbound Left Turns and to allow the Short Street Northbound Right Turns only.
- Install Raised Median between Short Street and Olde Forge Drive.
- Add pavement for extending the I-95 Off-Ramp merge lane and Route 17 eastbound right lane drop at Olde Forge Drive.
- Install sidewalk along south side of Route 17 from Short Street to Lendall Lane.
Final Conceptual Layout:
- Install Raised Median between Short Street and Olde Forge Drive.
- Add pavement for new Route 17 eastbound right lane drop at Olde Forge Drive.
- Realign RV Parkway across Olde Forge Drive; add new traffic signal and pavement markings.
- Install sidewalk along south side of Route 17 from Short Street to Leeland Lane.
US 17 Business (Warrenton Road)

Legend:
- Proposed Raised Median
- Proposed Pavement
- Pavement Demo
- New Signal
- Existing Signal

Final Conceptual Layout:
- Install sidewalk along south side of Route 17 from Olde Forge Drive to Lendall Lane
- Install Raised Median between Solomon Drive / Lendall Lane east to existing median
- Convert Solomon Drive southbound center lane to a shared Thru / Left and adjust signal heads; Add pedestrian signal equipment and adjust pedestrian clearance timing

Convert Center Lane to Shared Thru/Left
Refresh Existing Crosswalk Markings; Add Pedestrian Signals to New Crosswalks; Adjust Pedestrian Clearance Time
Install Sidewalk Connection
Convert 2 Entrances
Install Crosswalk and Stop Bar
Close Driveway
Final Conceptual Layout:
- Install Raised Median between Solomon Drive / Lendall Lane east to existing median, with a median break for the industrial site truck traffic
- Install Raised Median at Wyne Drive intersection
- Add right turn lane taper on Route 17 westbound at Wyne Drive
RECOMMENDED IMPROVEMENTS

Route 3
US 17B and Rte 3 Corridor Improvement Study

Legend:
- Proposed Raised Median
- Proposed Pavement
- Demo
- Proposed Pedestrian Bridge
- Existing Signal

Final Conceptual Layout:
- Install additional left turn lane on eastbound Route 3 at Gateway Blvd
- Adjust lane assignments (pavement markings and signal heads) for eastbound Route 3 at Gateway Blvd, converting outside lane from right turn only to shared through / right
- Adjust lane assignments (pavement markings and signal heads) for northbound Gateway Blvd, converting middle lane from shared through / left to left turn only and converting outside lane from right turn only to shared through / right

Conclusion of Frontage Road to be addressed by others with design of Gateway Blvd (Extended)
Ramp Improvements by Others
Close Entrance
Replace Traffic Signal by Others (will accommodate longer arm for dual left turn lane)
Install New Sign Structure
Install Additional Left Turn Lane
Add Supplemental Up Arrow Panel (No. 3) to JCT 95 Interstate Route Marker
Ramp Removed by Others
Roadway Improvements by Others
US 17B and Rte 3 Corridor Improvement Study

Legend:
- Proposed Raised Median
- Proposed Pavement
- Demo
- Proposed Pedestrian Bridge
- Existing Signal

Final Conceptual Layout:
- Eradicate Existing Gore and Arrow pavement markings on westbound Route 3 approaching Malone Street to convert outside lane into shared through/right turn lane.
- Install new right turn lane (100' storage length) on westbound Route 3 approaching Malone Street.
- Install new mast arm with signal heads on westbound Route 3.

Install Stop Bar and Stop Sign (R1-1) closer to roadway Replacement Channelizing island
Convert existing right turn lane into shared through/right lane (eradicate existing gore and arrow markings)
Close Entrance
Install New Mast Arm
Add Right Turn Lane
Close Entrance

Route 3 (Plank Road)
Route 3 (William Street)
Atcoona Drive
Final Conceptual Layout:
- Install channelizing median at Westwood Village Shopping Center to only allow westbound Route 3 left turn movement.
- Convert lane assignments on Woodyln Drive and Huntington Hills Lane to left turn and right turn only (no through movements allowed), add lane control signage and pavement markings.

Legend:
- Proposed Raised Median
- Proposed Pavement
- Install No Left Turn sign (R3-2) and Stop sign (R7-1)
- Install Through Movement Prohibition lane control sign (R3-27)
- Install Signal Ahead sign (W3-3) per MUTCD
- Install Channelizing Median to only allow westbound Route 3 Left Turn movement
- Install Street Name signs at Intersection
- Install Signal Ahead sign (W3-3) per MUTCD
- Remove Existing Signal Ahead sign and install New Signal Ahead sign (W3-3) with Flashers
- Upgrade intersection street name sign blades

MAPSCALE 0 100' 200'
Final Conceptual Layout:

- Upgrade southbound Route 1 off-ramp onto westbound Route 3 with a 90-degree intersection
- Convert both eastbound and westbound Route 3 off-ramps onto Route 1 from yield controlled to stop controlled movements

Legend:
- Proposed Raised Median
- Proposed Pavement
- Demo
- Proposed Pedestrian Bridge
- Existing Signal
Final Conceptual Layout:

- Upgrade northbound Route 1 off-ramp onto eastbound Route 3 with a 90 degree intersection
- Extend outer right turn lane on southbound William Street to 315’ storage
- Extend raised median along William Street through the Spotsylvania Avenue intersection; install channelized median on Spotsylvania Avenue for right in / right out movements

Legend:
- Proposed Raised Median
- Proposed Pavement
- Demo
- Proposed Pedestrian Bridge
- Existing Signal
Remove Existing Crosswalk, Ramps and Pedestrian Signal Equipment at Intersection

Install Shared Use Path Outside Existing Guardrail

Remove Existing Sidewalk, Ramps, and Crosswalk Markings

Remove Existing Path

Remove Existing Pedestrian Refuge Area

Remove Existing Yield Sign

Roadway Improvements by Others (Right Turn Lane from SB Lafayette Blvd., Median Work at Alum Spring Rd., Median Work at Alum Spring Rd., Additional Lane on SB Lafayette Blvd.)

Final Conceptual Layout:
- Extend eastbound Route 3 left turn storage length to 300'
- Extend westbound Route 3 dual left turn storage length to 350'
- Extend northbound Lafayette Blvd. left turn storage length to 250'
- Install eastbound Route 3 auxiliary lane for northbound Lafayette Blvd. right turns

Install Lane Reduction arrows and Lane Ends sign (W4-2) per MUTCD

Install Right Turn Auxiliary Lane
Final Conceptual Layout:
- Extend westbound Route 3 dual left turn storage length to 350’ at Lafayette Blvd.
- Install eastbound Route 3 auxiliary lane for northbound Lafayette Blvd, right turn, right turn lane drop onto Summit Street.

Legend:
- Proposed Raised Median
- Proposed Pavement
- Demo
- Proposed Pedestrian Bridge
- Existing Signal

Route 3 (Blue & Gray Parkway)
Extend westbound Route 3 left turn lane storage length to 225'
PLEASE PROVIDE YOUR COMMENTS

Your Input

Prioritization of Improvements

Final Recommendations
Thank you!
2030 No Build Traffic Analysis

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Route 17B Project Area

- Intersection
- Centerlines
- Study Area
- Project Area

LOS X(Y) = AM(PM)
- LOS C or better
- LOS D
- LOS E or worse

Miles

Stafford County

Town of Falmouth

STARS

US 17B and Rte 3 Corridor Improvement Study

43
2030 No Build Traffic Analysis

Route 3 Project Area

- Intersections
- Study Area
- Project Area

LOS

(XY) = AM(PM)

- LOS C or better
- LOS D
- LOS E or worse

City and County of Fredericksburg

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7 | Rte 3 at Lafayette Blvd | Signalized
8 | Rte 3 at Blevin Road | Signalized
US 17B: 2030 Build Traffic Analysis Results

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Intersection Level of Service (LOS)

\[ X(X) = \text{AM(PM) Peak} \]

Arterial Segments LOS

- LOS C or better
- LOS D
- LOS E or worse

Route 17B Project Area

- Intersection
- Centerlines
- Study Area
- Project Area

Town of Falmouth
ROUTE 3: 2030 BUILD TRAFFIC ANALYSIS RESULTS

Route 3 Project Area

Intersection Level of Service (LOS)

X(X) = AM(PM) Peak

Arterial Segments LOS
- LOS C or better
- LOS D
- LOS E or worse

City and County of Fredericksburg

Route 3 Project Area

- Intersections
- Study Area
- Project Area

0 0.2 0.4 Miles

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