US 33 Arterial Management Plan Kick-Off Meeting
Friday, September 18, 2020
9:30 – 11:30 AM
Agenda

• Introductions
• Where Have We Been?
  • US 33 Background
• Where Are We Going?
  • Arterial Preservation Program Background and Implementation Strategies
• US 33 Arterial Management Plan
  • Purpose and Vision
  • Study Work Group Responsibilities
  • Project Scope of Work Overview
  • Communication Protocols
  • Project Information Sharing
  • Overall Schedule and Major Milestones
• Next Steps
Introductions
Study Work Group Members

- **VDOT Staunton District**
  - Brad Reed, VDOT Project Manager
  - Terry Short, District Planner
  - David Atwood, Area Land Use Engineer
  - Matt Dana, District Asst. DA/PIM
  - Jeff Lineberry, District Land Use Director
  - Matt Bond, Asst. District Traffic Engineer
  - Keith Rider, District Traffic Engineer
  - David Morris, District Safety Engineer
  - John-Allen Ennis, District L&D Manager
  - Tim Gregory, Asst. L&D Manager

- **VDOT Central Office**
  - Phil Kempf
  - Erik Johnson

- **VDOT Harrisonburg Residency**
  - Don Komara, Residency Administrator
  - Burgess Lindsey, Asst. Residency Administrator

- **Rockingham County**
  - Rhonda Cooper, Community Development Director
  - Bradford Dyjak, Planning Director
  - Patrick Wilcox, Senior Planner

- **Town of Elkton**
  - Josh Gooden
  - Gaither Hurt

- **City of Harrisonburg**
  - Erin Yancey

- **Harrisonburg Rockingham MPO**
  - Jonathan Howard
  - Ann Cundy

- **Kimley-Horn**
  - Amanda Harmon
  - Caitlin Kovel
Icebreaker

What is your perspective on the US 33 corridor related to existing traffic operations, safety, and access management?
Where Have We Been?

US 33 Background
2006 Route 33 Access Management Study

- “The primary goal of the study is to develop an access plan to improve local access, maintain mobility, enhance bicycle and pedestrian access in the corridor, and to develop a set of specific physical and operational measures to provide these results.”
- 2006 & 2020 operations analysis
  - 3% growth vs. <1% actual
- High level safety analysis
- Limited public polling
  - 23 votes on alternatives
- Public preference innovative intersection alternatives over traffic signals
VDOT 2006 to 2020

2007
VA GA directs VDOT to develop access management regulations and standards

2007
Virginia Tech Access Spacing Study explores relationship between managing access near intersections and crash rates

2008
VA GA passes current access management standards
VDOT 2006 to 2020

2017
CTB adopts the Arterial Preservation Program and Arterial Preservation Network, which includes US 33
VDOT 2006 to 2020

2017
VDOT adopts IIM-TMPD-2.0, Process for Conducting Planning Studies on the Arterial Preservation Network

• “...All AMPs and corridor studies on the Arterial Preservation Network shall evaluate existing traffic signals and consider:
  • Can existing traffic signals feasibly and reasonably be consolidated...?
  • Can the existing traffic signal feasibly and reasonably be eliminated...could constitute...conversion of the intersection to a non-signalized Alternative...
  • If existing signals are to remain, can the signal be feasibly and reasonably redesigned to reduce...signal phases and maximize...green time allotted to the major street? ...consideration...of Alternative Intersection...designs.
  • VDOT’s Junction Screening Tool (VJuST) should be used where applicable to evaluate and screen feasible Alternative Intersection...configurations.”

• Project Steering Committee shall identify a representative number (between 5 and 15) stakeholders need to be interviewed
Where Are We Going?

Arterial Management Program Background and Implementation Strategies
What is the Arterial Preservation Program?

• The **Arterial Preservation Program** is designed to preserve and enhance the safety and capacity of the critical transportation highways included in the **Arterial Preservation Network**.

• Within the framework of the **Arterial Preservation Program**, VDOT is developing methodologies to consistently and programmatically evaluate the corridors through the use of **Arterial Management Plans**, creating a toolbox of safety, preservation, and enhancement strategies and identifying opportunities for implementation.
Arterial Preservation Network (APN)

Based on NHS
- VDOT Maintained
- Non limited-access
- Additional connectors
Slow Erosion of Safety and Capacity

• Virginia’s arterials have become “main streets” for local growth
• Placing direct access and traffic signals at every business or residential development adds to congestion on primary routes
• Serves the local economy and tax revenues but over time at the expense of safety, capacity, and mobility— affecting the movement of people and goods across the region and state
Why This Matters

• Preparing for future traffic and economic development reduces the need for expensive, disruptive “retrofit” projects

• US 33 is anticipated to see additional commercial and residential development within the UDA

• Preparing for planned growth allows us to preserve and enhance the US 33 corridor while supporting economic development
Arterial Management Plans

• Planning study designed to meet program goals
• Emphasis on low-cost solutions to increase safety and preserve capacity
• Coordination with local stakeholders
• Multiple opportunities for public input
• “SMART SCALE Ready” deliverables
• Typically led by District planning staff
Arterial Management Plans

Green – Completed
Yellow – Underway
Implementation Strategies and Benefits

Access Management

• Access management involves the location, spacing, and design of driveways, medians, median openings, traffic signals, and interchanges

• Guiding Principles
  • Limit the number of conflict points
  • Separate conflict points
  • Review conflict points from a network perspective
  • Increase traffic signal, median opening, and driveway spacing
Implementation Strategies and Benefits

Conflict Points

**FULL UNSIGNALIZED MEDIAN OPENING**
- General Issue: Conflict Points
- Description: 32 TOTAL CONFLICT POINTS

**DIRECTIONAL MEDIAN OPENING**
- General Issue: Conflict Points
- Description: 10 TOTAL CONFLICT POINTS

**RIGHT-IN/RIGHT-OUT DRIVEWAY**
- General Issue: Conflict Points
- Description: 4 TOTAL CONFLICT POINTS
Implementation Strategies and Benefits
Access Management Guidelines

VDOT Spacing Standards (35-45 MPH Principal Arterial)
Implementation Strategies and Benefits

Innovative Intersections

• Intersection designs which:
  • Improve safety
  • Reduce delay
  • Increase efficiency

• Can reduce delays and crashes as much as 50%

• Also known as:
  • Alternative
  • Non-traditional
  • Unconventional
  • Reduced Conflict

http://www.virginiadot.org/innovativeintersections/
US 33 Arterial Management Plan
US 33 AMP Study Area

From City of Harrisonburg to Route 33B (Old Spotswood Trail)

- Approximately 13 miles
- Speed 45mph-55mph
- 10 signalized intersections
- 37 unsignalized intersections,
  5 crossovers that do not serve street or entrance
Project Purpose

• Evaluate operational and safety conditions along US 33 within the study area limits
• Develop potential projects to improve safety and operations in the study area, and maintain an efficient east-west corridor
• Accommodate future growth and vision
• Consider innovative intersections
• Consider pedestrian and bicycle improvements
• Identify improvements that can be advanced to funding
  • Programmed into the VDOT Six-Year Improvement Program (SYIP)
Corridor Visioning

Stone Spring UDA

Legend
US 33 Study Corridor

DIAGRAM: NEW DEVELOPMENT AND TRANSITION ZONES

Virginia Department of Transportation
Study Work Group Roles and Responsibilities

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

Outlines the study assumptions and methodology related to:

• Data Collection and Sources
• Access Management
• Traffic Analysis
• Recommendations
• Public Outreach
• Implementation
Scope of Work Overview

- Visioning and Goal Setting
- Data Collection and Field Review
- Traffic Analysis
  - Existing Conditions Operational Analysis
  - Traffic Forecasting
  - Future No-Build Conditions Operational Analysis
  - Future Build Conditions Operational Analysis
- Safety Analysis
  - Crash Analysis
  - Crash Reduction Treatments
- Development and Screening of Improvement Alternatives
- Cost and Schedule Estimates
- Corridor Recommendation Summary
- Reporting
- Public Engagement
  - MetroQuest Surveys
  - Stakeholder Interviews
  - Public Meetings
Existing Planning and Governance Documents

• Planning and Zoning
  • Rockingham County Comprehensive Plan (2015)
  • HRMPO 2040 Long Range Transportation Plan (2019)
  • Rockingham County Stone Spring Urban Development Area Plan (2020)

• Bike/Ped
  • HRMPO Bicycle and Pedestrian Plan (2016)
  • Rockingham County Bicycle and Pedestrian Plan (2016)

• Public Involvement
  • HRMPO Public Participation Plan (2019)
  • VDOT IIM-TMPD-2.0
Existing Data and Studies

• Completed Planning Efforts
  • 2006: Route 33 East Access Management Study

• 2011: Roadway Safety Assessments
  • US 33 between Route 276 (Cross Keys Road/Indian Trails Road) and Penn Laird Drive
  • US 33 between Route 1165 (Robin Road) and 0.41 miles east of Route 1165

• 2015: VDOT/Kimley-Horn US-33 Corridor Signal Timing Optimization

• 2018: East Market Street STARS Study (Adjacent to study area)

• 2020: East Market Street Corridor Signal Timing Optimization Program (Adjacent to study area)
Existing Data and Studies

• SMART SCALE Applications
  • FY 2017
    • I-81 Exit 247 Improvements – Not Funded (Adjacent to study area)
  • FY 2018
    • I-81 Exit 247 Interchange Improvements – Funded (Adjacent to study area)
    • I-81 Exit 247 Bridge & Interchange Improvements – Not Funded (Adjacent to study area)
  • FY 2020
    • US 33 & Route 620 Turn Lanes – Funded
    • US 33 & I-81 Exit 247 Improvements – Funded (Adjacent to study area)

• Six Year Improvement Plan
  • UPC 105706 – Route 687/Massanetta Springs Reconstruction (Complete)
  • UPC 108876 – Right Turn Lane from Route 280 to Route 687 (Complete)
  • UPC 112941 – Spotswood High School Dual Left Turn Lanes (ROW phase)
  • UPC 115718 – US 33 (Market Street) and I-81 Improvements (Under Design)
  • UPC 115719 – US 33 and Route 620 Turn Lanes (Under Design)
Forecast Traffic Conditions
Estimated Future Congestion

2040 V/C Ratio
HRMPO Travel Demand Model

2045 V/C Ratio
VDOT Estimate
Existing Safety Conditions
High Crash Locations

• Potential for Safety Improvement (PSI)
  • Screening tool identifying locations with higher than expected crashes

• District Rank for VDOT Intersections:
  • 36 – Rt 981 Rockingham Pike / Shopping Center
  • 54 – Rt 647 McGahey Lane/ Judy Lane
  • 62 – Rt 687 Massanetta Springs Road
  • 69 – Rt 655 Lawyer Road
  • 78 – Rt 644 Resort Drive/ Mt Olivet Church Road
  • 80 – Rt 602 E Point Road/ Rockingham Pike
Existing Safety Conditions
VDOT 2018 PSI Locations
Existing Safety Conditions
VDOT Pedestrian Safety Action Plan
Existing Safety Conditions
2015-2019 Crashes

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<tr>
<td>K. Fatal Injury</td>
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<tr>
<td>A. Severe Injury</td>
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<tr>
<td>B. Visible Injury</td>
<td>115</td>
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<tr>
<td>C. Nonvisible Injury</td>
<td>16</td>
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<td>PDO. Property Damage Only</td>
<td>397</td>
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<tr>
<td>Grand Total</td>
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Existing Access Management

Access Review

• 52 full access median crossovers, including
  • 47 intersections (10 signalized, 37 unsignalized)
  • 5 crossovers that do not serve a street or entrance
  • 0 directional median openings

• 24 crossovers have no (or partial) left turn lanes
  • 19 crossovers have no left turn lanes
  • 5 crossovers have left turn lanes for only one direction of a 4-way intersection

• Approximately 2/3 of crossovers do not meet current VDOT spacing requirements
Data Collection Plan Overview

- **Previously Collected 2015 Data**: 8-hour TMCs (AM, MID, PM) and 7-day tube counts
- **2020 Data Collection**: 12-hour TMCs (6:30 AM – 6:30 PM) and 3-day tube counts
**Data Collection Plan Overview**

**Study Intersections**

1. US 33 at Rt 280-Stone Spring Road / Private Drive (Signalized)
2. US 33 at Rt 687-Massanutta Springs Road (Signalized)
3. US 33 at Confederacy Drive (Unsignalized)
4. US 33 at Rockingham Park (Unsignalized)
5. US 33 at Rt 276-Cross Keys Road / Rt 620-Indian Trail Road (Signalized)
6. US 33 at Rt 655-Penn Laird Drive / Private Drive (Unsignalized)
7. US 33 at Rt 655-Lawyer Road (Signalized)
8. US 33 at Rt 996-McGaheysville Road (Signalized)
9. US 33 at Rt 842-Mountain Grove Road / Slate Road (Unsignalized)
10. US 33 at Blazer Drive (Signalized)
11. US 33 at McGaheysville Elementary School (Unsignalized)
12. US 33 at Rt 991-Conn Road / Warble Road (Unsignalized)
13. US 33 at Rt 647-McGahey Lane / Rt 647-Judy Lane (Unsignalized)
14. US 33 at Rt 649-Island Ford Road / Stover Drive (Signalized)
15. US 33 at Rt 646-Bloomer Springs Road / New Hope Road (Unsignalized)
16. US 33 at Rt 996-McGaheysville Road (Unsignalized)
17. US 33 at Rt 644-Resort Drive / Rt 644-Mt Olivet Church Road (Signalized)
18. US 33 at Rt 602-E Point Road / Rt 981-Rockingham Pike (Signalized)
19. US 33 at Sentara Health Center / Private Drive (Unsignalized)
20. US 33 at Myers Ford / VFW (Unsignalized)
21. US 33 at Rt 829-Mt Hermon Road / Rt 829-Independent Road (Unsignalized)
22. US 33 at Rt 979-Mt Hermon Road / Rt 979-Solsburg Road (Unsignalized)
23. US 33 at Rt 981-Rockingham Pike / Shopping Center (Signalized)
24. US 33 at US-33B-Old Spotswood Trail / Private Drive (Unsignalized)
Data Collection Overview

• **Traffic Volume Data**
  • Additional turning movement counts?
  • Network-wide peak hour will be determined based on counts

• **Field Observations**
  • Observe traffic operations and safety condition during AM and PM peak periods
  • Safety issues at crash hotspots and PSI locations

• **Access Management**
  • State of existing access points – spacing, sight lines, safety issues

• **Land Use Data**
  • Comprehensive Plan, UDA Plan
  • Known & anticipated development

• **Traffic Analysis**
  • Request Synchro files and signal timing plans
  • Forecasting
    • Regional Travel Demand Model
    • Other studies

• **Safety Analysis**
  • Crash data – will obtain last 5 years from VDOT

• **Other studies and existing data**
  • Current and proposed bike/ped facilities
  • Future transit stop locations
Access Management & Land Use Planning

- Define goals, constraints, and measures of effectiveness for access management
- Evaluate existing entrance spacing, safety issues, opportunities
- Identify opportunities for access management improvements (e.g., shared entrances, frontage roads, bike/ped connections)
- Gather known and anticipated development, develop land use & trip generation/distribution assumptions for 2040 forecast

A
Anticipated

S
Speculative

K
Known
Traffic Analysis

• Analysis Tools and Measures of Effectiveness
  • Synchro 10
    • Control delay
    • 95\textsuperscript{th} Percentile Queue Length
    • Intersection results to screen alternatives
    • Tool to optimize future traffic signal timings

• Analysis Periods
  • AM and PM peak hours
    • Existing Conditions – 2020
    • Future Conditions – 2040
    • Other scenarios?
Safety Analysis

- Intersection Crash Summaries
  - Conflict Point Review
  - EPDO Score Ranking
  - Collision Diagrams
- Crash Modification Factors (CMFs)
Public Involvement

• MetroQuest surveys administered by VDOT
  • Survey #1 – Existing Conditions and Visioning
  • Survey #2 – Preferred Alternative Selection
  • Virtual public information videos to present preferred alternative selection
• Stakeholder interviews
• Hybrid in-person/virtual meetings
• Outreach at community events
Stakeholder Interviews

- 5+ interviews with regional stakeholders
  - How is the corridor today?
  - How do you view the corridor in the future?
  - What are the most important land use and transportation issues on the corridor?
  - Can you identify opportunities/willingness for shared access points?
Overall Schedule and Major Milestones

- **September:** Kick-Off Meeting and Scoping
  - Full SWG Meeting *(scope, schedule, stakeholders)*
- **October-December:** Data Collection and Existing Conditions
  - Technical Committee Review and Meeting
  - MetroQuest Survey #1
- **January-February:** Land Use Planning and Traffic Forecasting
  - Technical Committee Review and Meeting *(land use planning session)*
  - Full SWG Meeting
- **February-March:** No-Build Conditions, Concept Development and Screening
  - Full SWG Meeting
- **April-June:** Cost Estimates, Schedules, Reporting
  - MetroQuest Survey #2
  - Technical Committee Review and Meeting
  - Full SWG Meeting
Next Steps

• Finalize framework document
• Approve scope of work
• Collect traffic data