ROUTE 29 / NEW BALTIMORE ADVISORY PANEL MEETING #6

January 24, 2019

U.S. 29 New Baltimore Advisory Panel

Agenda, Meeting #6

January 24, 2019

1 p.m. – 3 p.m.

1st Floor Conference Room of the Warren Green Building, 10 Hotel Street, Warrenton

1. Introductions/ Panel Comments — 5 minutes

2. Meeting #5 Summary - Review of Minutes — 5 minutes
   a. Interests Defined
      i. Safety (traveling public, pedestrians)
      ii. Throughput (local, through and commuting traffic)
      iii. Access/convenience (getting to/from business/residence)
      iv. Economic Development/Success
      v. Home & Property Values
      vi. Historical
      vii. Environmental

3. Public Feedback and Follow-ups — 10 minutes
   a. Concern at Cerro Gordo in Prince William
   b. Comments from Cheesecake Heaven

4. Update 29/215 Sight Distance Project (Cut the Hills) — 40 minutes
   a. Environmental 106 & NEPA Process and Progress Update
   b. Historic Process and Update
   c. SWM Update
   d. Project Schedule Scenarios (Construction 2019 and 2020).

5. Update on Intersection Concepts: Traffic Analysis, LOS — 40 minutes
   a. U.S. 29/Route 215 (Vint Hill Road)
   b. U.S. 29/Route 600 (Broad Run Church Road)
   c. Signal Timing and Optimization.

6. Meeting Calendar – monthly, time, location — 10 minutes
   - February 28, 2019
   - March 28, 2019

   All meetings 1-3 p.m., Board of Supervisors Meeting Room
   Warren Green Building, 10 Hotel Street, Warrenton

7. New business and wrap-up — 5 minutes

8. Adjourn

Purpose and Need

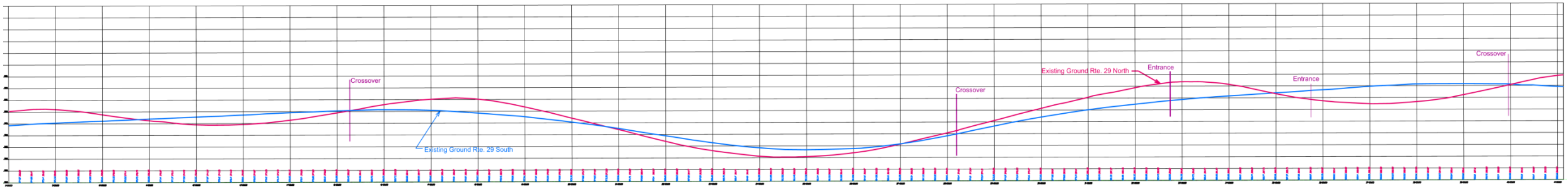
1. Improve safety along the northbound approach to the existing signalized intersection

- The US-15/29 and VA-215 intersection consistently ranks as the #1 highest Targeted Safety Need in the Culpeper District with the highest potential for safety improvement based on statewide statistical data.
- High speed approaches and heavy volumes create conditions where substandard geometrics contribute to frequent crashes due to motorists overdriving conditions.
- There have been 113 crashes in the 5-year period from 2013-2017 within the approximate project limits.

Purpose and Need

2. Address substandard vertical alignment

- There is a need to improve the vertical alignment of US Route 15/29 in the northbound lanes.
- The existing vertical curves approaching the US-15/29 and VA-215 intersection provide sight distance for an equivalent 35 mph design speed, well below the 60 mph design speed of the corridor.



Design Issues / Challenges

- **Funding Constraints**
  - $7.4 million HSIP Funds Total Allocation
  - $4.7 million HSIP Funds Available (based on B/C = 1)
  - Target $3 million CN cost (Cut the Hills)
- **Maintenance of Traffic**
  - Total Road Closure NB US 29
    - 3 week max duration
  - Detours via US 17 / I-66 & Secondary Road
  - Maintain Access to Adjacent Properties
- **Environmental**
  - Categorical Exclusion (CE) assuming Minimal to No RW Acquisition
    - FHWA Concurrence
  - Section 106 Historic Properties (Buckland Battlefield)
- **Geotechnical / Materials**
  - Potential Rock Excavation

Design Issues / Challenges

- **Stormwater Management Regulations**
  - Potential DEQ Exception (Safety Project)
  - Underground Detention (48” – 60” pipes) if no Exception
- **Private Entrances**
  - William F. Springer (Single Family Residence)
  - Battlefield Baptist Church (Single Family Residence)
  - TCE Will Be Needed to Adjust Entrance Profiles
  - Pursue Permanent Access Easement across Springer parcel to Route 215
- **Utilities**
  - Overhead Power Lines
    - Shift Horizontal Alignment as Necessary to Avoid
  - Underground Fiber Optic Lines

Alternative 1

❖ Advantages

- ❑ Lowest CN Cost ($3.0 - $3.2 million)
- ❑ Shortest Construction Time

❖ Disadvantages

- ❑ Does Not Fully Address Purpose & Need or VDOT Commitment (to cut both hills)
- ❑ Significant Grade Change (8-9 ft. cut) at Private Entrance (Springer)
  - Coordinate permanent access easement across adjacent parcel (also owned by Springer)

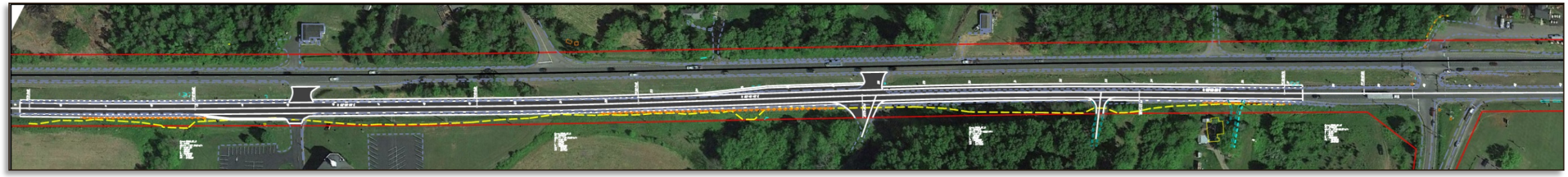
Alternative 2

❖ Advantages

- ❑ Fully Addresses Purpose & Need and VDOT Commitment (to cut both hills)
- ❑ Minimal Grade Change at Private Entrance (Battlefield Baptist) & Median Crossover

❖ Disadvantages

- ❑ Requires 8 ft. Horizontal Shift
- ❑ Significant Grade Change (8-9 ft. cut) at Private Entrance (Springer)
  - Coordinate permanent access easement across adjacent parcel (also owned by Springer)
- ❑ Highest Excavation Quantity (Rock Excavation)
- ❑ May Require Slope Easement(s) for Fill Slope South of Battlefield Baptist
- ❑ Highest CN Cost ($5.7 - $5.9 million)



Alternative 3

❖ Advantages

- ❑ Fully Addresses Purpose & Need and VDOT Commitment (to cut both hills)
- ❑ Less Excavation than Alternative 2
- ❑ Lower CN Cost than Alternative 2 ($4.8 - $5.0 million)

❖ Disadvantages

- ❑ Requires 12 ft. Horizontal Shift
- ❑ Higher Fill Slope than Alternative 2
- ❑ Significant Grade Change (7 ft. cut) at Private Entrance (Springer)
- ❑ Significant Grade Change (3 ft. fill) at Median Crossover & Private Entrance (Battlefield Baptist)
- ❑ May Require Slope Easement(s) for Fill Slope South of Battlefield Baptist

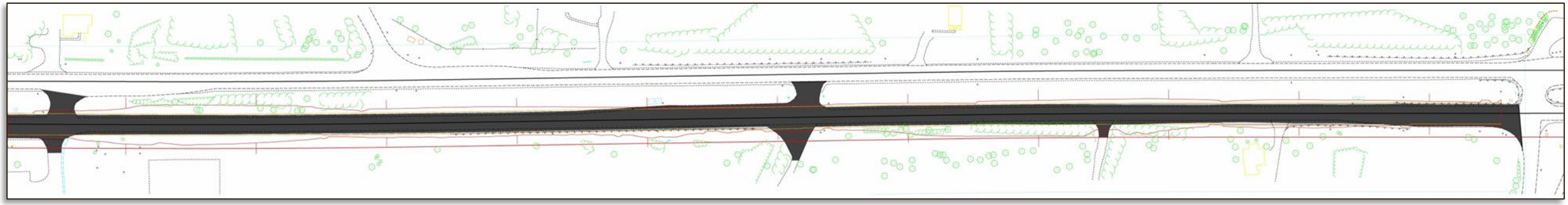
Scope of Work - Alternative 4

❖ Advantages

- ❑ Fully Addresses Purpose & Need and VDOT Commitment (to cut both hills)
- ❑ Less Excavation than Alternatives 2 & 3
- ❑ Lower CN Cost than Alternative 3 (approx. $3.0 million)
- ❑ Stays close to existing horizontal alignment
- ❑ Insignificant Grade Change at Median Crossover & Private Entrance (Battlefield Baptist)

❖ Disadvantages

- ❑ Lower Design Speed achieved
- ❑ Slight Grade Change (approx. 3 ft. cut) at Private Entrance (Springer)
- ❑ May Require Slope Easement(s) for Cut Slope near Private Entrance (Springer)



Section 106 Process

- **Process set out in the National Environmental Policy Act**
  - Define the federal action, identify participants
    - The action is to improve the existing deficient vertical sight distances on Route 29
    - Participants include FHWA, Va. Dept. of Historic Resources, other consulting parties
  - Section 106 Coordination: By letter to DHR & consulting parties
  - Identify historic properties within Area of Potential Effects
  - Assess effects of project on identified property: Buckland Mills Battlefield
  - Determination of effects: “Not adverse,” by letter to DHR & consulting parties

- **In the case of this project:**
  - The scope is solely to improve the vertical sight distance on Route 29
  - The project has independent utility separate from intersection improvements at Route 215 (Vint Hill Road) and Route 600 (Broad Run Church Road)
  - The intersection improvements will be addressed as separate projects as funding is available

Work in Progress

❖ Environmental

- ❑ Federal Highway Administration concurred with Categorical Exclusion level of NEPA document
- ❑ No adverse impacts to water, air, noise or hazardous materials anticipated
- ❑ Section 106 Coordination: Determination of no adverse effects by Jan. 14 letter to Va. Department of Historic Resources and Consulting Parties that started 30-day review period
- ❑ No Section 4(f) or 6(f) properties impacted by project
- ❑ No Virginia Outdoors Foundation existing or proposed open-space easements in vicinity
- ❑ Threatened and Endangered Species permit clearance being coordinated with U.S. Fish and Wildlife Service
- ❑ John Marshall Soil and Water Conservation District had no concerns
- ❑ Piedmont Environmental Council: “Expectation that an archeologist will be on site during land-moving operations … to document any remnants of the Fauquier and Alexandria Turnpike…”

‘Cut the Hills’ Project Schedule

2019 Construction

• Request for Proposals release	Feb. 4, 2019
• CTB contract award	April 10, 2019
• Route 29 Northbound full closure	July 8 to Aug. 2, 2019
• Final project completion	Sept. 30, 2019

2020 Construction

• Request for Proposals release	Aug. 13, 2019
• CTB contract award	Feb. 19, 2020
• Route 29 Northbound full closure	July 7 to July 31, 2020
• Final project completion	Sept. 30, 2020

Virginia Department of Transportation

TRAFFIC ANALYSIS
& SIGNAL OPTIMIZATION
ROUTE 29-215 & 29-600 INTERSECTIONS

January 24, 2019

Route 29 - 215 Existing Conditions Analysis

US 29 & Rte. 215 (Vint Hill Rd.)

Existing Conditons

Approach		AM Peak Hour			PM Peak Hour		
		Queue 95th (ft)	Delay (s)	Delay/LOS	Queue 95th (ft)	Delay (s)	Delay/LOS
NB US 29	NBL	-	-	156.7 (F)	-	-	34.1 (C)
	NBT	2080	209.7		852	47.9	
	NBR	75	13.6		50	16.5	
SB US 29	SBL	523	251.1		595	87.2	
	SBT	248	8.3		512	9.4	
	SBR	0	5.2		1	2.6	
WB Rte. 215	WBL	685	234.6		170	66.3	
	WBT	685	234.6		170	66.3	
	WBR	69	49.4		88	48.4	
EB Rte. 215	EBL	0	0.0		0	0	
	EBT	0	47.6		0	45.3	
	EBR	0	0.0		0	0	

Route 29 - 215 Preferred Scenario Analysis

US 29 & Rte. 215 (Vint Hill Rd.)

Preferred Scenario: Dual SB Lefts, Single WB Left, Signalized WB Dual-Rights, Unsignalized WB Right-in / Right-out

Approach		AM Peak Hour			PM Peak Hour		
		Queue 95th (ft)	Delay (s)	Delay/LOS	Queue 95th (ft)	Delay (s)	Delay/LOS
NB US 29	NBL	-	-	101.5 (F)	-	-	21.1 (C)
	NBT	1919	125.0		656	28.3	
	NBR	52	8.4		37	12.4	
SB US 29	SBL	245	152.0		239	45.5	
	SBT	196	5.3		507	6.5	
	SBR	0	3.5		0	2.0	
WB Rte. 215	WBL	679	231.1		147	57.0	
	WBT	-	-		-	-	
	WBR	53	67.8		43	37.6	
EB Rte. 215	EBL	-	-		-	-	
	EBT	-	-		-	-	
	EBR	0	53.3		0	48.0	

Route 29 - 600 Existing Conditions Analysis

US 29 & Rte. 600 (Beverleys Mill Rd.)

Existing Conditons

Approach		AM Peak Hour			PM Peak Hour		
		Queue 95th (ft)	Delay (s)	Delay/LOS	Queue 95th (ft)	Delay (s)	Delay/LOS
US 29 NB	NBL	115	101.5	78.1 (E)	94	76.5	79.4 (E)
	NBT	1458	116.5		581	21.1	
	NBR	32	14.8		9	12.2	
US 29 SB	SBL	28	67.7		61	86.2	
	SBT	724	30.9		1726	107.9	
	SBR	0	14.8		0	14.5	
Rte. 600 WB	WBL	197	68.2		376	131.8	
	WBT	197	68.2		376	131.8	
	WBR	0	49.7		0	62.9	
Rte. 600 EB	EBL	57	54.6		150	77.1	
	EBT	57	54.6		150	77.1	
	EBR	0	47.9		489	111.6	

Route 29 – 600 Preferred Scenario Analysis

Preferred Scenario: Dual WB Left, thru-left and right turn lane, Channelized EB Right-Turn Lane

US 29 & Rte. 600 (Beverleys Mill Rd.)

Approach		AM Peak Hour			PM Peak Hour		
		Queue 95th (ft)	Delay (s)	Delay/LOS	Queue 95th (ft)	Delay (s)	Delay/LOS
US 29 NB	NBL	52	82.4	73.5 (E)	119	140.7	52.5 (D)
	NBT	1339	109.3		580	21.0	
	NBR	32	14.5		9	12.2	
US 29 SB	SBL	29	69.1		62	86.6	
	SBT	739	31.3		1687	75.0	
	SBR	0	15.0		0	11.9	
Rte. 600 WB	WBL	115	60.2		173	81.1	
	WBT	118	60.1		177	81.3	
	WBR	0	50.9		0	63.2	
Rte. 600 EB	EBT&L	58	55.9		154	77.6	
	EBR	0	0.0		503	0.3	

Signal Timing & Optimization

- **Traffic Engineering**
  - Intersections on Route 29 corridor in New Baltimore currently use In Sync adaptive traffic signal technology
    - Signals connected with high-speed communication
    - Phases are variable within fixed cycle length
    - Signals prioritize flow of traffic on mainline (Route 29) based on traffic detection
    - System uses proprietary algorithms to manage signal performance, very little data is available to VDOT
  - Route 29 corridor in Albemarle County uses Advanced Traffic Signal Performance Metrics (ATSPM) system
    - Performance data is available to traffic engineers in near real time to monitor performance
    - Cycles can be adjusted remotely to respond to changes in traffic patterns as well as unforeseen circumstances (emergency incidents, heavy traffic from events, etc.)
    - Since installation of ATSPM system and associated roadway improvements, travel times have decreased

VDOT

Virginia Department of Transportation