



Richmond Highway (U.S. Route 1) Corridor Improvements

Project Briefing

Wednesday, July 26, 2017

Mount Vernon Council of Civic Associations

Mount Vernon District Governmental Center

2511 Parkers Lane, Mt. Vernon, VA 22306

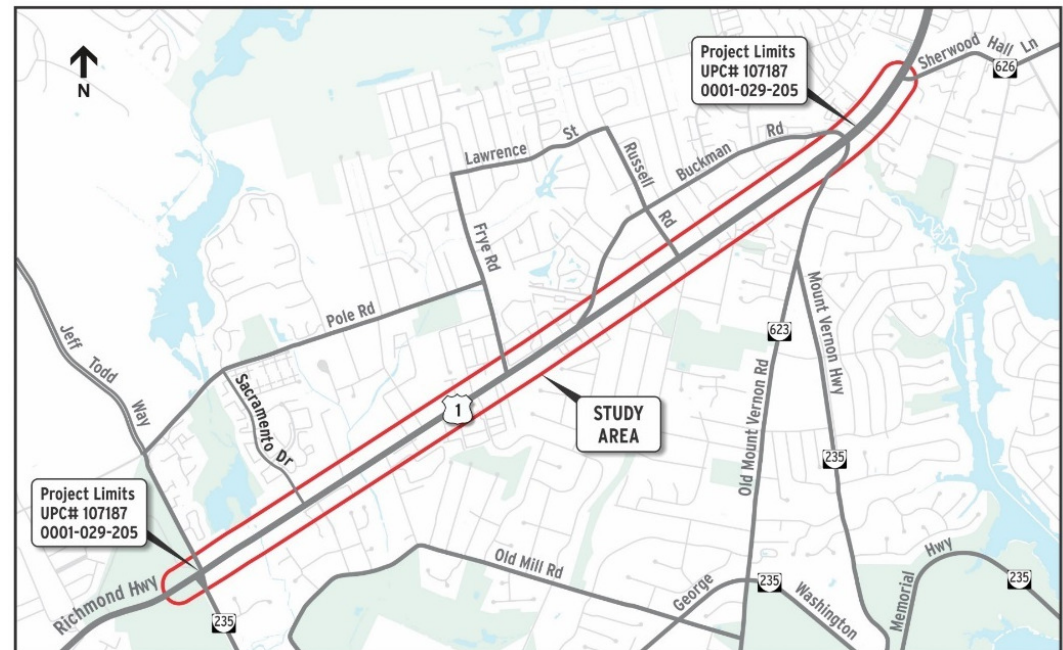
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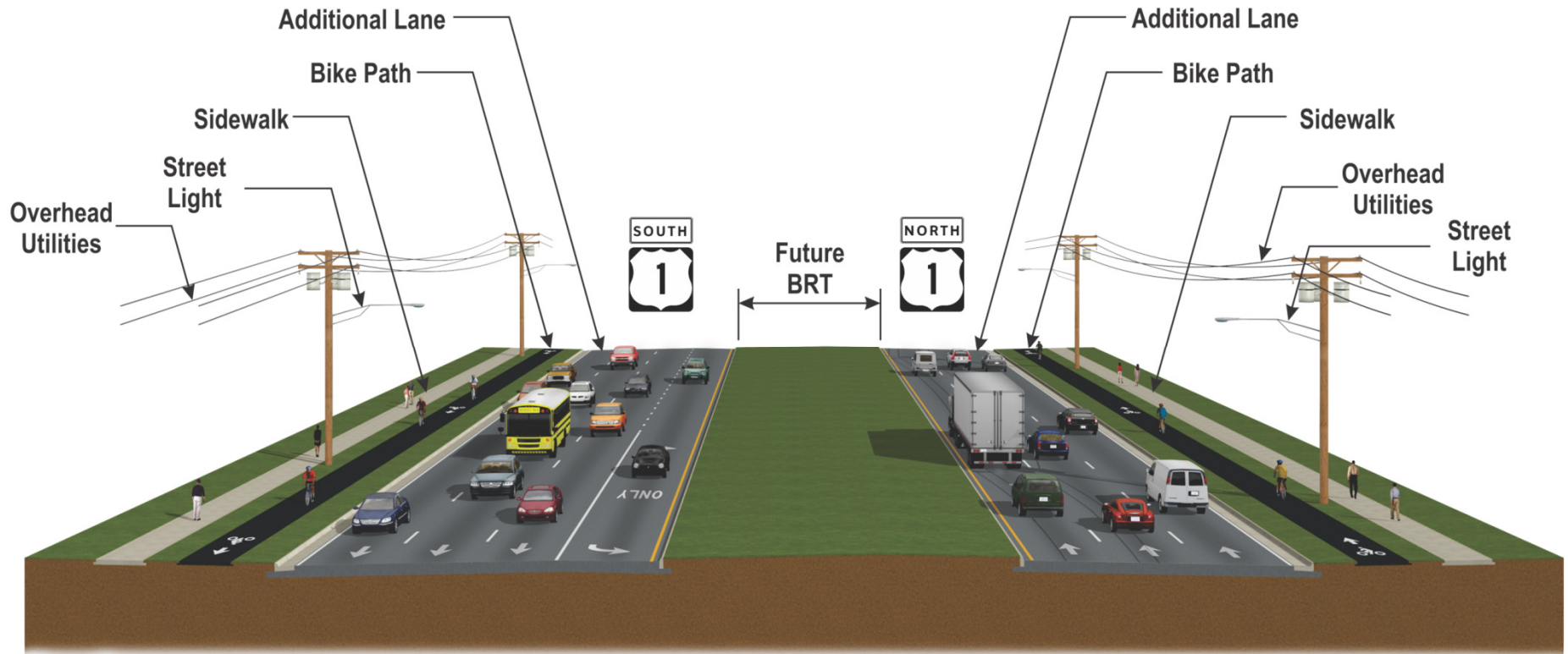


Proposed Improvements

- **Widening of Richmond Highway (US Route 1) from four lanes to six lanes**
 - Jeff Todd Way to Napper Road
 - Approximately 3 miles
- **Safety – access management principles incorporated**
- **Congestion relief**
- **Two options**
 - Conventional intersections
 - Superstreet
- **Median reservation for future Bus Rapid Transit (BRT)**
- **Sidewalks and separate bicycle path on both sides of road**
- **Bridge Replacements**
- **Potential noise walls**
- **Utility relocation**



Typical Section



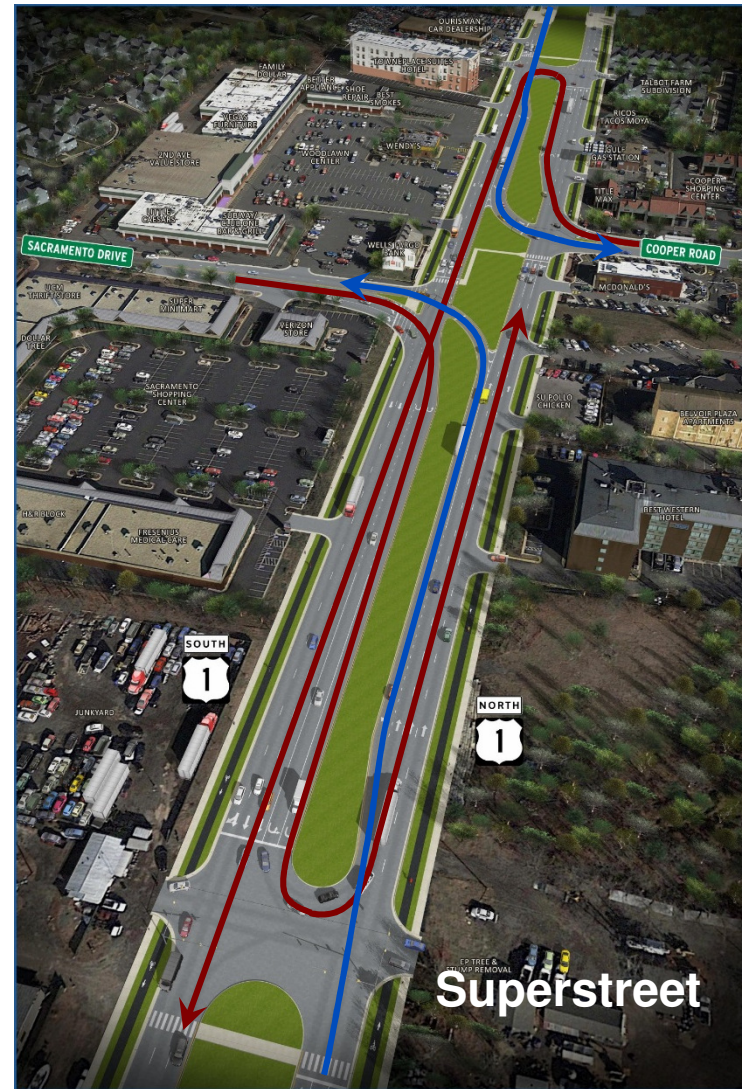
The intent of this exhibit is to depict the configuration of elements within the proposed right-of-way. For clarity, potential landscaping is not depicted.



RICHMOND HIGHWAY CORRIDOR IMPROVEMENTS

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Traditional vs Superstreet



RICHMOND HIGHWAY (U.S. ROUTE 1)
CORRIDOR IMPROVEMENTS

Traditional vs Superstreet Concept

Traditional Street

- Consistent with Driver expectations
- Level of Service **F**
- Public acceptance
- Higher Side street delays
- Better Emergency vehicle access

Superstreet

- Simplified Signal Phasing
- May confuse drivers
- Level of Service **C**
- Fewer conflict points
- Crash reduction expected *
- Higher vehicle throughput
- Safer for pedestrians

Level of Service	Average delay per vehicle (sec/veh)
A	<= 10
B	> 10 - 20
C	> 20 - 35
D	> 35 - 55
E	> 55 - 80
F	> 80

* Per FHWA Crash Modification factors

Travel Time

Direction	Peak Hour	Year	No Build		Traditional			Superstreet		
			Travel Time (minutes)	Average Speed (mph)	Travel Time (minutes)	% Change in TT from NB	Average Speed (mph)	Travel Time (minutes)	% Change in TT from NB	Average Speed (mph)
Northbound	AM Peak Hour	2016	5.6	32.1	-	-	-	-	-	-
		2025	5.8	31.0	5.6	-3.45%	32.1	5.4	-6.90%	33.3
		2045	7.9	22.8	6.0	-24.05%	30.0	5.8	-26.58%	31.0
	PM Peak Hour	2016	7.8	23.1	-	-	-	-	-	-
		2025	8.8	20.5	6.2	-29.55%	29.0	5.9	-32.95%	30.5
		2045	22.7	7.9	7.9	-65.20%	22.8	7.5	-66.96%	24.0
					<p style="text-align: center;">Max difference is 24 sec</p>					
Southbound	AM Peak Hour	2016	6.8	26.5	-	-	-	-	-	-
		2025	7.6	23.7	6.7	-11.84%	26.9	6.8	-10.53%	26.5
		2045	9.2	19.6	7.7	-16.30%	23.4	7.5	-18.48%	24.0
	PM Peak Hour	2016	5.6	32.1	-	-	-	-	-	-
		2025	5.8	31.0	6.7	15.52%	26.9	7.1	22.41%	25.4
		2045	6.2	29.0	7.8	25.81%	23.1	8.1	30.65%	22.2
					<p style="text-align: center;">Max difference is 24 sec</p>					

Note: In the southbound PM Peak, under the No Build configuration the congestion at the north end of the corridor (north of Buckman / Mt. Vernon) meters traffic southbound leading to



Level of Service

No.	Intersection	Superstreet				Traditional	
		2045 No-Build Results		2045 Build Results - Concept 1		2045 Build Results - Concept 2	
		AM Peak Delay (sec/veh)	PM Peak Delay (sec/veh)	AM Peak Delay (sec/veh)	PM Peak Delay (sec/veh)	AM Peak Delay (sec/veh)	PM Peak Delay (sec/veh)
1	Route 921 (Ladson Ln)	49.3	84.5	16.7	29.9	10.3	29.1
3	Route 836/Route 235 (Buckman Rd/ Mt. Vernon Hwy)	149.9	161.0	23.2	25.6	51.5	68.7
A	Route 836 Southern U-Turn	-	-	18.2	15.2	-	-
4	Route 1202 (Janna Lee Ave)	62.0	87.9	19.4	22.8	20.1	16.0
7	Route 3111/ Route 1097 (Russell Rd/ Reddick Ave)	43.3	76.7	42.9	56.3	33.8	57.4
B	Route 924 (Mohawk Ln) Northern U-Turn	-	-	5.2	9.6	-	-
10	Route 924 (Mohawk Ln)	23.1	104.5	11.7	8.9	26.8	18.0
11	Route 836/ Route 888 (Buckman Rd / Radford Ave)	9.9	133.0	3.5	6.5	15.0	17.4
C	Route 836 (Buckman Rd) Southern U-Turn	-	-	6.3	7.7	-	-
12	Route 3191 (Frye Rd)	22.4	227.8	31.2	45.3	25.6	31.6
16	Route 624 (Lukens Ln)	21.4	182.3	23.3	13.7	20.3	31.1
D	Route 3105 (Cooper Rd) Northern U-Turn	-	-	9.8	13.7	-	-
18	Route 3105 (Cooper Rd)	27.1	76.0	14.7	13.1	49.6	56.2
19	Route 5282 (Sacramento Dr)	47.1	183.1	14.8	16.3	-	-
E	Route 5282 (Sacramento Dr) Southern U-Turn	-	-	9.8	13.2	-	-
20	Route 924 / Route 235 (Buckman Rd / Mt. Vernon Memorial Hwy)	82.2	275.0	66.9	63.5	65.8	64.8

* Intersection ID's A through E represent the newly created U-Turn signals of proposed Super Street Designs in Concept 1

Green: No delay - LOS A, B, C
Yellow: Some delay - LOS D
Orange: Moderate delay, approaching failing conditions - LOS E
Red: Intersection fails - LOS F

Neglecting Superstreet U-turns. . .

- Compare PM Peak
 Superstreet: 7G, 1Y, 2O
 Traditional: 6G, 0Y, 4O
- Compare AM Peak
 Superstreet: 8G, 1Y, 1O
 Traditional: 7G, 2Y, 1O

Number of Signals

- Present: 11
- Superstreet: 16
- Traditional: 10





RICHMOND HIGHWAY
CORRIDOR IMPROVEMENTS
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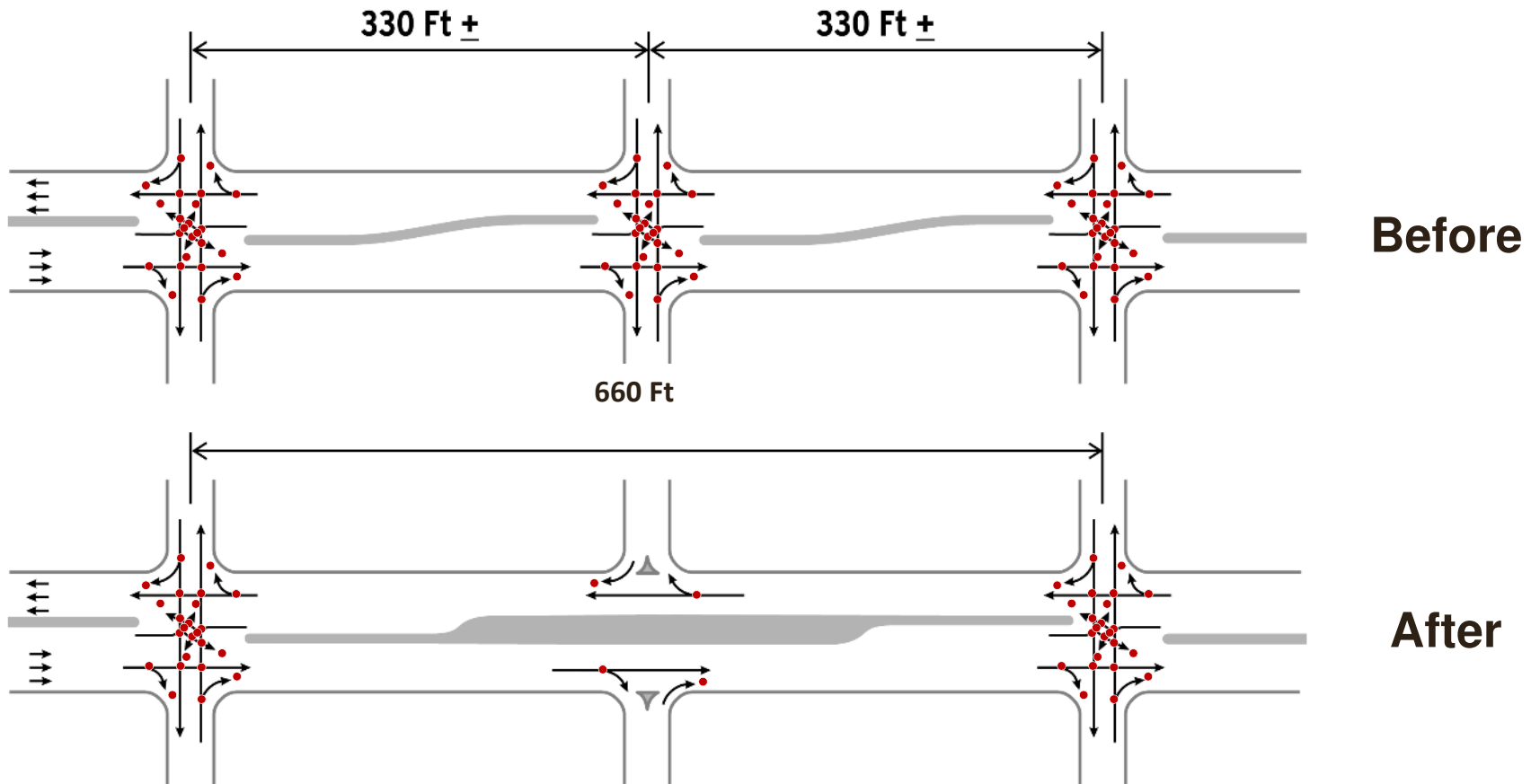
Traditional vs Superstreet BRT?

Which works better for future BRT?



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CORRIDOR IMPROVEMENTS

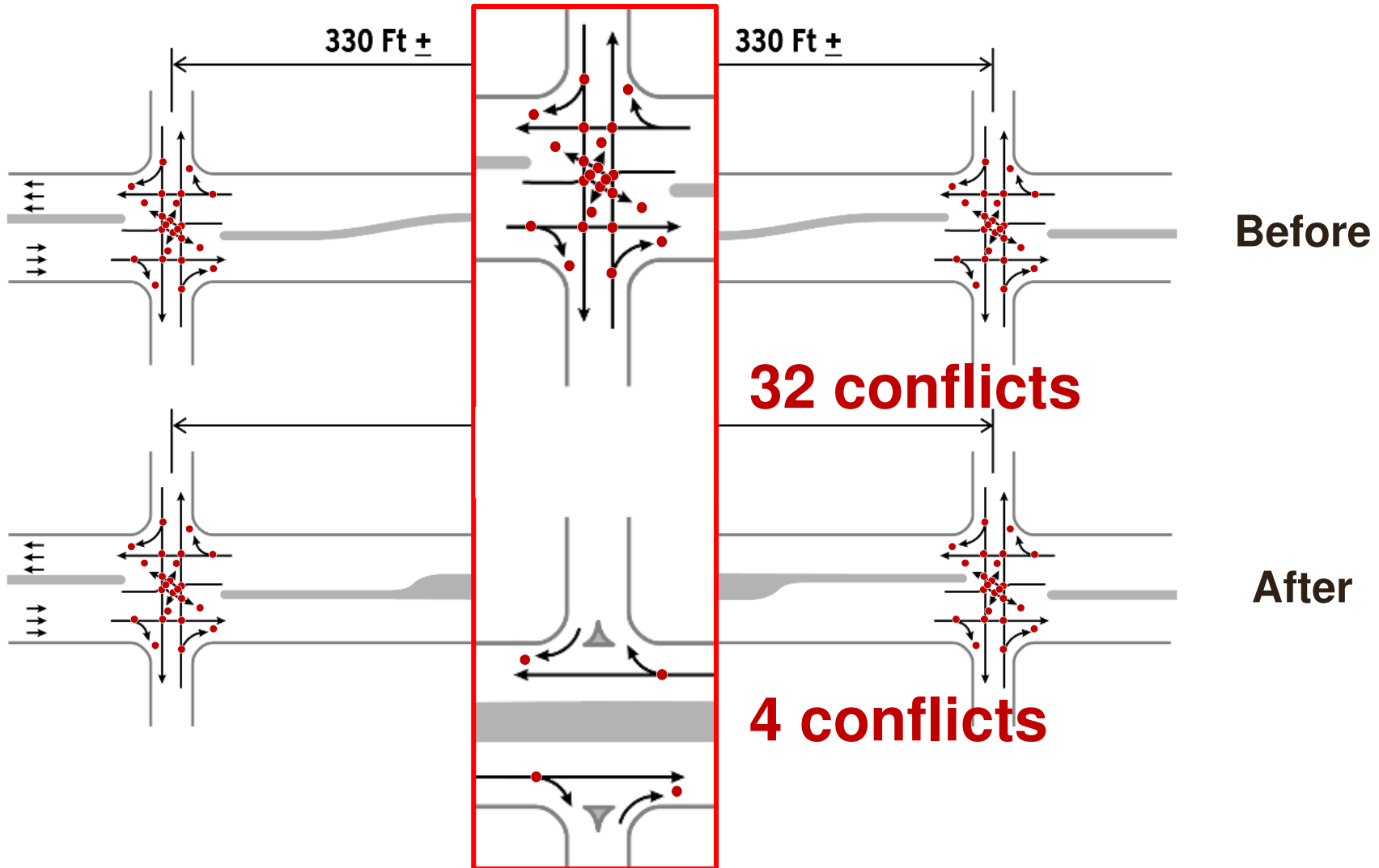
Access Management



Movements to/from side streets are restricted to improve traffic flow and reduce conflicting movements



Access Management

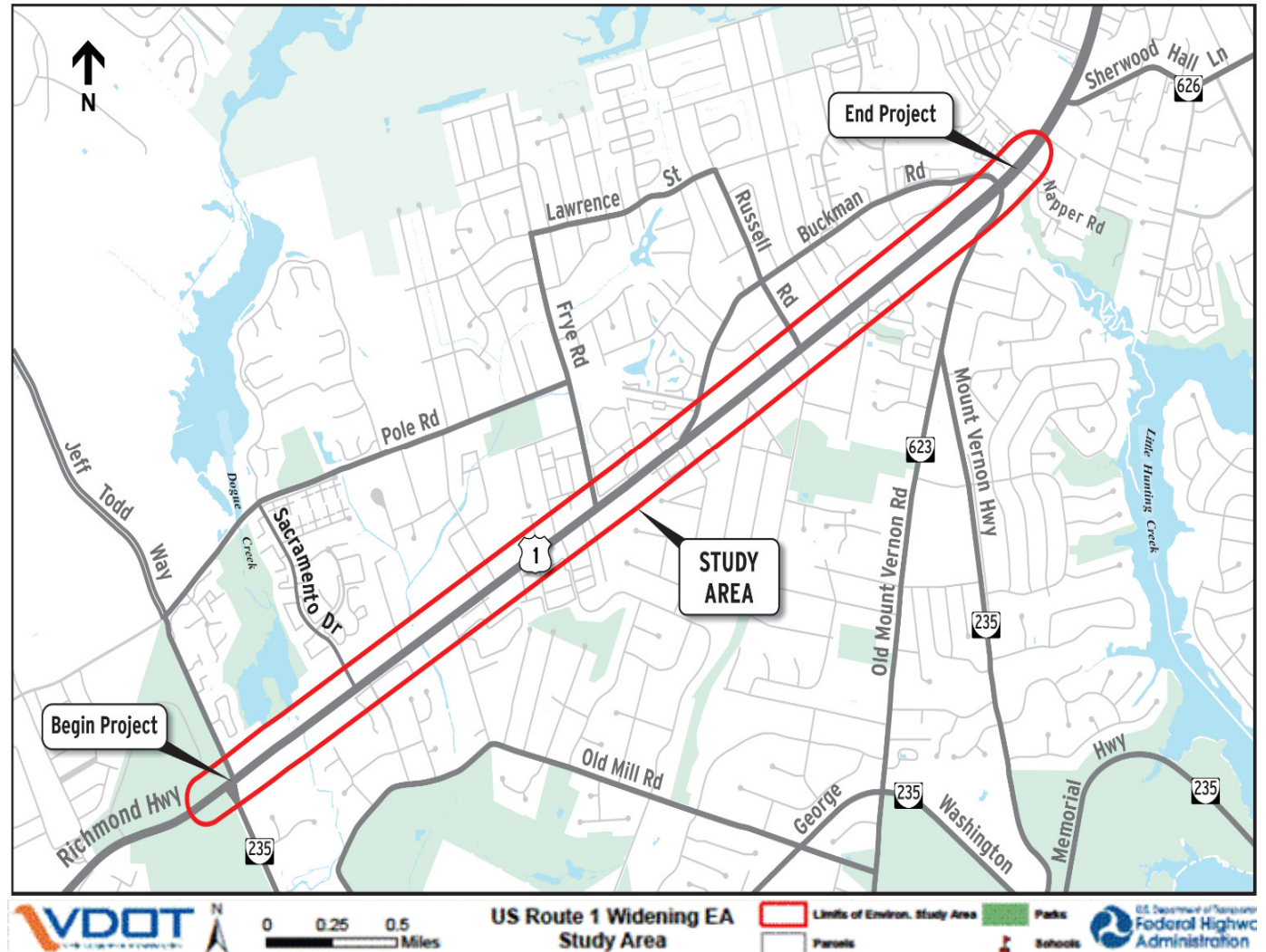


Environmental Assessment Study Area

NEPA Reports & Studies

Underway:

- ⇒ Noise Analysis
- ⇒ Air Quality Analysis
- ⇒ Natural Resources
 - Endangered Species
 - Wetlands
- ⇒ Historic Properties
- ⇒ Park and Recreation Areas
- ⇒ Socioeconomic
 - Environmental Justice



- **Type I Federal-Aid Projects**
 - Required to perform a Noise Analysis
 - Richmond Highway is a Type I project since we are adding through lanes
- **State Noise Abatement Policy**
- **Noise Analysis**
 - Broken into Preliminary and Final Noise Analysis
 - Uses proposed design
 - Based on design year traffic volumes (2045)
 - Loudest hour

Noise Analysis

- **Preliminary**
 - Identifies noise impacted properties
 - Evaluates sound barriers
- **Final**
 - Update preliminary noise analysis
 - Changes to design, etc.
 - Voting of the benefited receptors
 - Partial mitigation

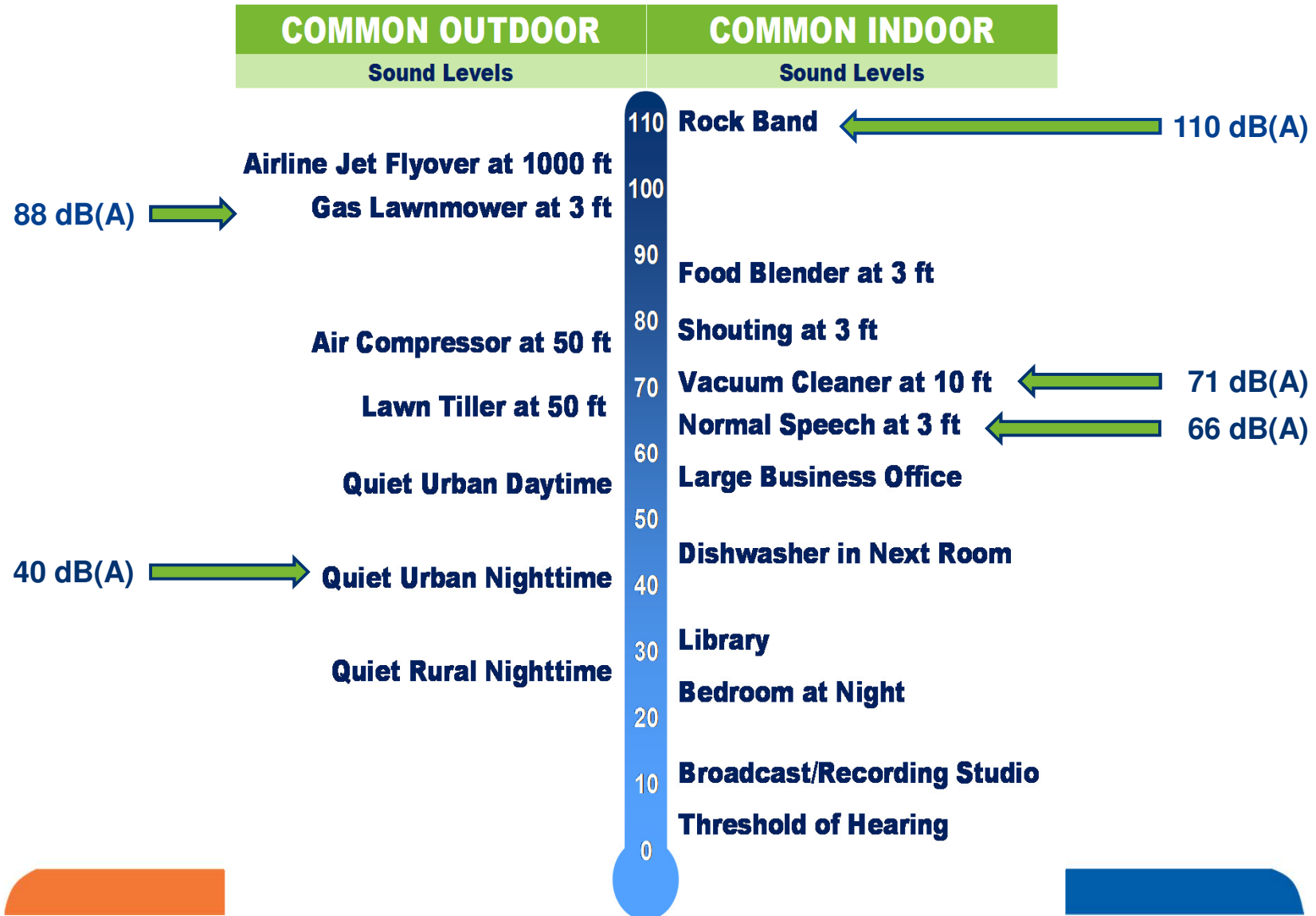


Noise Analysis

- **Receptor**
 - **Representative location of noise sensitive area**
 - Residential yards, parks, school yards, etc.
- **Impacted**
 - **For a residential area – 66 dB(A) or greater**
- **Benefited**
 - **Receive at least a 5 dB(A) reduction in noise due to a sound barrier**



Noise Level dB(A)



Is the Sound Barrier Feasible?

- **Feasible**

- **Does it work acoustically?**
 - VDOT requires that 50% or more of the impacted receptors experience 5 dB(A) or more of insertion loss to be feasible;

AND

- **Can it be constructed?**
 - Factors related to design and construction include: safety, barrier height, topography, drainage, utilities, and maintenance of the abatement measure, maintenance access to adjacent properties, and general access to adjacent properties

Is the Sound Barrier Reasonable?

- **Reasonable**
 - **Cost-effectiveness**
 - **Maximum 1,600 sq ft or less per benefited residence**
 - **Design goal**
 - **7 decibels of noise reduction at 1 impacted receptor**
 - **Viewpoints of the benefited receptors**
 - **Democratic vote**
 - **50% of the benefited respondents must favor construction**
 - **Partial mitigation may occur as a result of the vote**

Project Schedule

Activities	Dates
Public Information Meeting #1	April 18, 2017
Release Environmental Assessment	Late 2017
Public Information Meeting #2	Late 2017
Public Hearing	Mid 2018
Federal Highway Administration Finding of No Significant Impact and Design Approval	Late 2018
Final Design	Late 2018
Right of Way Acquisition and Utility Relocations	Mid 2019
Begin Construction	Early 2023
Project Open to Traffic	2026

Phase	Estimated Cost
Preliminary Engineering	\$ 12.5 million
Right of Way	\$ 142.3 million
Construction	\$ 60.0 million
Total	\$ 214.8 million

- Fully Funded
- Partially Funded
- Not Funded

Public Outreach Plan

- **Multiple opportunities for public involvement**
- **Coordination with key stakeholder groups including:**
 - Localities (Fairfax County)
 - Homeowner and Business Owners Associations
 - *May 9, 2017 – Gum Spring HOA*
 - Fort Belvoir
 - Transit Providers
- **Second Public Information Meeting** late 2017
- **Design Public Hearing** in mid-2018
- **Regular email updates to stakeholder database and frequent outreach** before meetings and key project milestones
- Proactive media outreach
- Coordination with elected officials



Project website: <http://www.virginiadot.org/richmondhighway>



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THANK YOU

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