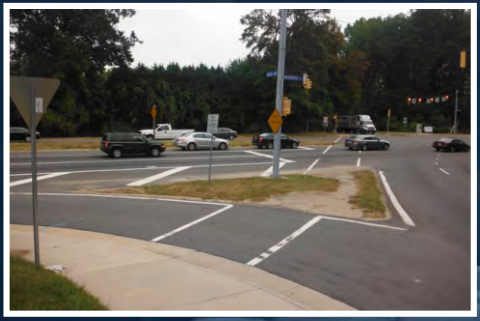
Braddock Road Multimodal Study

County of Fairfax, Virginia

Task Force Meeting Materials



RK&K

Date: March 2, 2016

March 2, 2016
Braddock Road Multimodal Study
Fairfax County, Virginia

Task Force Meeting

I. Introduction ..... Kevin Morse, Chairman

II. Progress Since Last Task Force Meeting (5 minutes)..... Tad Borkowski/John McDowell

   a. Traffic simulation Development

   b. Began preparation for Community Meeting for April 25, 2016

III. Upcoming Meetings (10 minutes)..... Tad Borkwoski/John McDowell

   a. April Task Force Meetings – April 6, 2016

      Purpose: Review of Community Meeting Plans

   b. Possible Mid-April Task Force Meeting – April 20, 2016 (in lieu of May 2016 meeting)

      Purpose: Review of updated Traffic Simulaitons

   c. Community Meeting – April 25, 2016

IV. Discussion Items..... Tad Borkowski/John McDowell

   a. Property Value Research (10 minutes) .....Tad Borkowski

   b. Roadway (20 minutes) .....John McDowell/Neelima Ghanta

      i. Summary of Geometric Updates
         i. Guinea Road
         ii. Grantham Street
         iii. Ravensworth Road
      ii. Traffic Simulations Update

   c. Transit Center Options (30 minutes) ..... John McDowell

      i. Discussion of transit center options
      ii. Parking Garage renderings

   d. Bicycle/Pedestrian Connections, Overhead Crossings (15 minutes)..... John McDowell

   e. Measures of Effectiveness (30 minutes)..... John McDowell

V. Adjourn Meeting ..... Kevin Morse, Chairman

February 3, 2016

Braddock Road Multimodal Study
Fairfax County, Virginia

Task Force Meeting Minutes

Discussion

The meeting began with Tad Borkowski discussing the work completed over the last two months. He noted the following activities since the last meeting:

- Produce Preliminary VISSIM models for the Spot Improvements, the HOV Inside and Outside lane scenarios.
- Held a transit center tour for interested task force members to see potential options.
- He noted that they are still waiting for information related to the requested Property Value research from the last time Braddock Road was widened and he is hoping to present in March.
- Began simulation for the General Purpose widening along Braddock Road.
- He referred the group to the package of information which was supplied to address previous questions. He noted this will be discussed at the end of the meeting.

Michael Guarino noted that the preliminary Spot Improvement and HOV VISSIM results are ready to be presented. He noted that no conclusions should be drawn from these results as additional analysis is needed and that the numbers could change as the analysis is finalized. John McDowell added that the Community Meeting is currently scheduled and confirmed for April 25 at Lake Braddock Secondary School.

John introduced HNTB (Neelima Ghanta) to present the VISSIM results for the Spot Improvements, HOV Inside and HOV Outside options. John noted that these options were analyzed for HOV 2+. The following discussion occurred during this portion of the meeting:

Neelima presented the Spot Improvements option:

- A task force member asked if only the peak hours were analyzed? Neelima noted yes. The member noted that they had gone back and looked at the Sunday traffic volumes provided to the task force and saw that before church services almost 100 additional vehicles would be rerouted as a result of the Spot Improvement. Some concern was echoed by other members about having no thru to Woodland Way, specifically during the off-peak hours.
- A question was asked about whether the option at Port Royal would prohibit U-turns at Queensberry. John noted this was not specifically addressed in these options, but that geometric solutions could be considered to prevent some U-turn movements.
- A question was asked about truck route from 495 Southbound. John presented the concept at the screen of how trucks would traverse.
- A question was asked about how taking time from Port Royal but then adding it back to the HOT lanes makes things better. Neelima responded that the bottleneck, even in existing conditions, is Port Royal Road and therefore improving that condition does improve operations. A concern was noted in relation to Port Royal versus HOT Lane and whether the turns would be in conflicting paths. This related to whether an 18-wheeler can make the move from the ramp to the Port Royal left without impacting the adjacent

lane. John responded that the intersection can be designed geometrically to handle truck turning movements.

- Neelima noted that Ravensworth traffic gets worse in the design year, due to clearing the upstream bottlenecks. She added that during the AM, the bottleneck at Ravensworth is hiding the other benefits of the spot improvements.
- A question was asked about whether Guinea Road still needs improvements due to queuing. Neelima noted that it does. She added that the impact of removing upstream meters is noticed at Guinea in the PM peak hour. A task force member noted that improvements should be considered along NB Guinea Road as the merge condition there creates issues.
- Neelima then presented a video of AM Spot Improvements.
- A questioned was asked about whether fixing Ravensworth would solve the issue at Southampton. John noted that, given the preliminary nature of the models, we can't say that yet. However, it was acknowledged that this is worthy of consideration.
- Neelima then presented the video of PM Spot Improvements.
- Neelima noted that the analysis results indicate the Spot Improvements are effective at shortening the peak period.

Neelima presented the HOV2 concepts:

- A question from the Task Force was asked about whether transit center was included. Neelima noted it was. This spurred a discussion about the Kings Park Shopping Center. It was noted that parking is already short in the triangle and that during rush hour no right turn is possible onto Burke Lake Road.
- A question was asked about whether lengthening storage lengths was considered. Michael responded that this can be considered.
- A question was asked whether widening Guinea Road north of Braddock Road was being considered; Michael noted that it is in the County Comprehensive Plan, but unfunded.
- A question was asked whether a predictive crash rate can be shown to prove safety improvement. Stuart Samberg noted that some factors exist but not typically for an application of this size project.
- Neelima then presented the HOV2 Outside AM video. She noted that there was friction causing congestion due to traffic weaving between lanes to access the HOV2, and increased demand.
- A question was asked about Inverchapel Road being converted to a Right-In / Right-Out (RIRO) and what the travel pattern would be. Michael noted that alternative paths are in the packet.
- Michael noted, that at some point, converting the EB Ravensworth Road approach to two lanes will be evaluated to determine whether this can alleviate the bottleneck and congestion along Braddock Road.
- Next, Neelima presented the HOV2 Outside PM video.
- It was asked whether this model took into account HOV2 violators. It was answered no.
- Neelima then presented the comparative travel time charts for the AM and PM peaks for the HOV2 options.
- It was noted that we might want to consider the weaving and merging caused by the HOV-2 options as part of the Safety MOE.

Craig Taylor (Task Force Member) presented to the larger group, the outcome of the transit center tour. His notes are attached to these minutes. He noted that they visited 5 different sites with the most complex being Dunn Loring, and less complex such as the Shirlington bus transfer site or Marc Center. Kevin Morse (Task Force Chair) noted that he was impressed by the variety of how things fit in; John noted that the context of Kings Park is

important to the community and could be evaluated. A question was asked about whether something different was being considered such as where the buses pull into the deck and Michael noted it could be considered.

John then presented the materials provided in the packet which address previous questions for the Task Force to review. Michael noted he would share an FHWA video of median U-turns with the Task Force. John then distributed the MOE package and Michael asked that the task force members review it and be prepared to discuss at the next task force meeting.

Planned Activities for December 2015/January 2016:

- VISSIM Simulations – General Purpose Lane Widening and refinements to the HOV2 modeling
- Cost Analysis of Options
- Develop Evaluation Parameters for MOE's
- Prepare for April 25th Community Meeting

Other items:

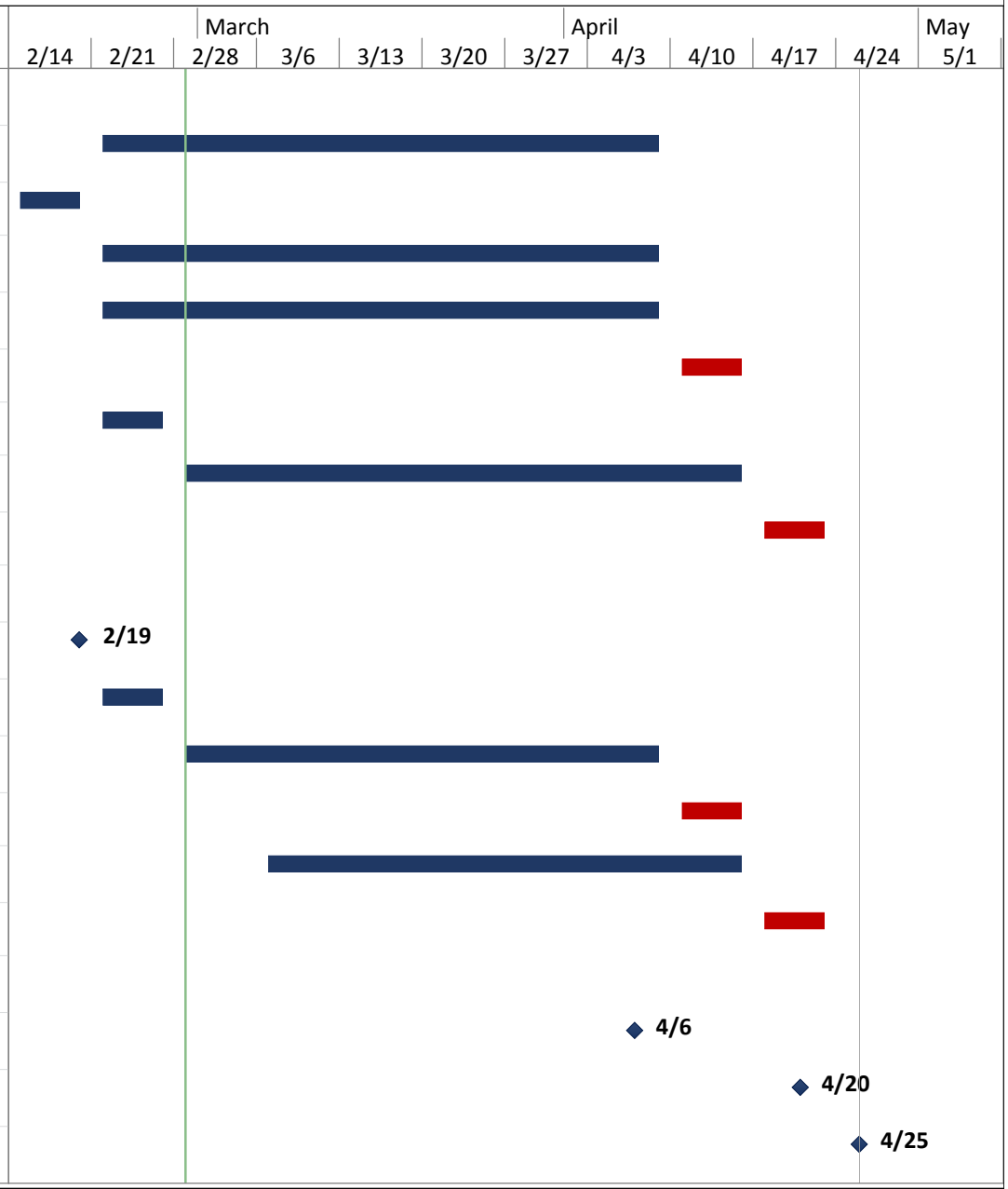
- The next Task Force meeting will be on March 2, 2016.

Should any revisions to these meeting minutes be required, please advise Tad Borkowski at tad.borkowski@fairfaxcounty.gov or John McDowell, PE at jmcdowell@rkk.com.

Braddock Road Multimodal Study

Fairfax County, Virginia

ID	Task Name
1	**Traffic Simulations Using VISSIM**
2	Update Spot Improvements
3	Origin-Destination Update - HOV Options
4	Update HOV2 Inside Improvements
5	Update HOV2 Outside Improvements
6	FCDOT/VDOT Review
7	Origin-Destination Update - GP Lanes
8	Develop General Purpose Lanes Improvements
9	FCDOT/VDOT Review of GP
10	**Preparations for April 25, 2016 Community Meeting**
11	Planning Meeting
12	Develop Preliminary Agenda and Stations
13	Develop Graphics
14	FCDOT Review
15	Develop Presentation
16	FCDOT Review
17	**Meetings**
18	April Task Force Meeting
19	Second April Task Force Meeting
20	Community Meeting



Prepared by Rummel, Klepper & Kahl, LLP

March 2, 2016

Braddock Road – Planning for April 25, 2016 Community Meeting

Meeting Format and Agenda:

- Open House format with multiple stations for participants' review
- Presentation by FCDOT staff and consultant lasting approximately ½ hour
- Questions/answers/comments opportunity at end of presentation

General Items to be discussed/presented

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- Activities since previous Community Meeting
- Development and evaluation of alternatives
    - Roadway Alternatives
    - Traffic simulations
    - Transit Center sites and Options
    - Pedestrian and Bicycle Accommodations
- Next Steps of Project
    - Evaluation of roadway alternatives with input from Task Force Members
    - Evaluation of transit center alternatives with input from Task Force Members
    - Planning for Pedestrian and Bicycle Accommodations
    - Ranking and selection of improvement recommendations
    - Development of conceptual plans for roadway and transit improvements

Station/Items	Responsibility	Status
Sign-In Table – at door • Handout provided • Existing Conditions Boards • Miscellaneous boards from Community Meeting #1	RK&K/RHI Done Done	
Station No. 1: Study Goals and Timeline • Updated Schedule • Refined Study Goals "AS REVISED BY TASK FORCE INPUT" • Regional Projects Board	RK&K RK&K Done	
Station No. 2: What We Have Learned So Far • "WHAT WE HAVE LEARNED SO FAR" – key results from Meeting #1 & TF input	FCDOT/RK&K	
Station No. 3: Roadway Alternatives • Traffic Board • Existing & No-Build/Simulation substation • Spot Improvements/Simulation substation	RK&K RK&K/HNTB RK&K/HNTB	Alignment boards to include static images of VISSIM videos and typical section. HNTB to re-

• HOV2 (inside)/Simulation substation • HOV2 (outside)/Simulation substation • General Purpose Lanes/Simulation substation • Summary Board with MOEs • Arrange for Smart Screens	RK&K/HNTB RK&K/HNTB RK&K/HNTB RK&K RK&K	do videos to focus on intersections, shorter durations, calibrated videos. John to arrange to have video clips "stitched" together.
Station No. 4: Pedestrian/Bicycle Alternatives • Large scale map showing proposed trails and sidewalks, proposed bridge crossings (Stonehaven, Transit Center, Burke Lake Road) • Locate Transit Stops and Shelters • Examples board	RK&K/RHI FCDOT RK&K/RHI	Tad to discuss locations of shelters with Transit Division; boardings by bus stop location
Station No. 5: Transit Center Alternative • Alternatives Boards • Renderings Mounted on boards • Transit Center examples • Sketch Planning of Alternative Routes	RK&K RK&K RK&K RK&K	
Station No. 6: Next Steps • Board listing upcoming activities	FCDOT/RK&K	
Station No. 7: Comments • Same approach as Community Meeting #1	RK&K/RHI	
Other Items • Self-Guided Station List	RK&K/RHI	
PowerPoint Presentation • Develop Draft	RK&K	

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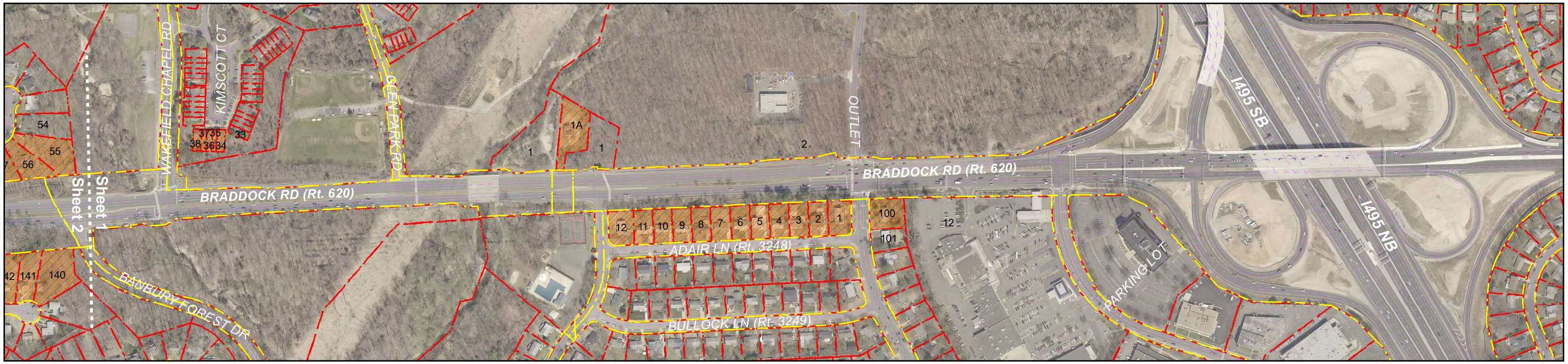
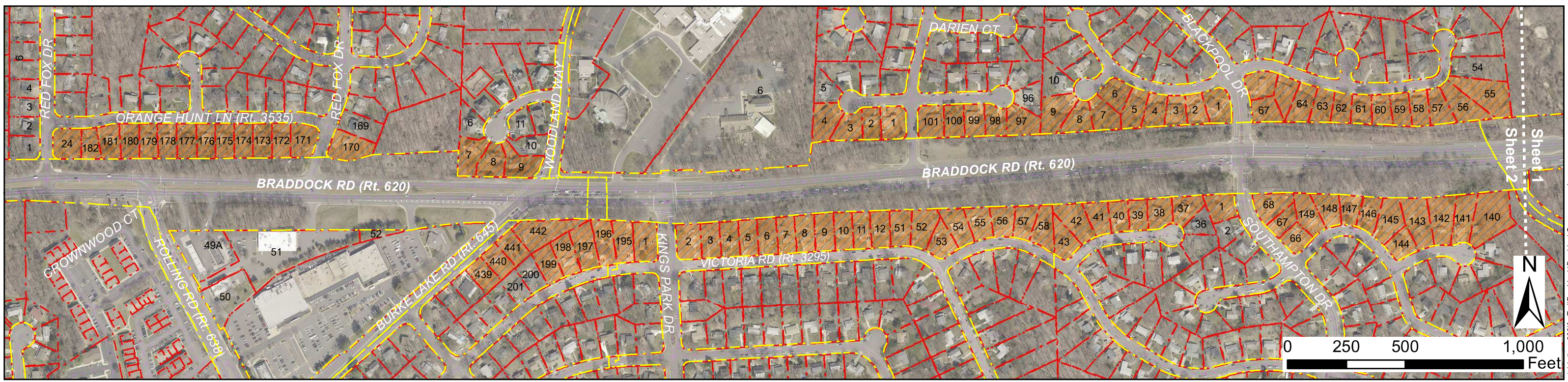
Braddock Road Property Values





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FCDOT
Serving Fairfax County for 25 Years and More

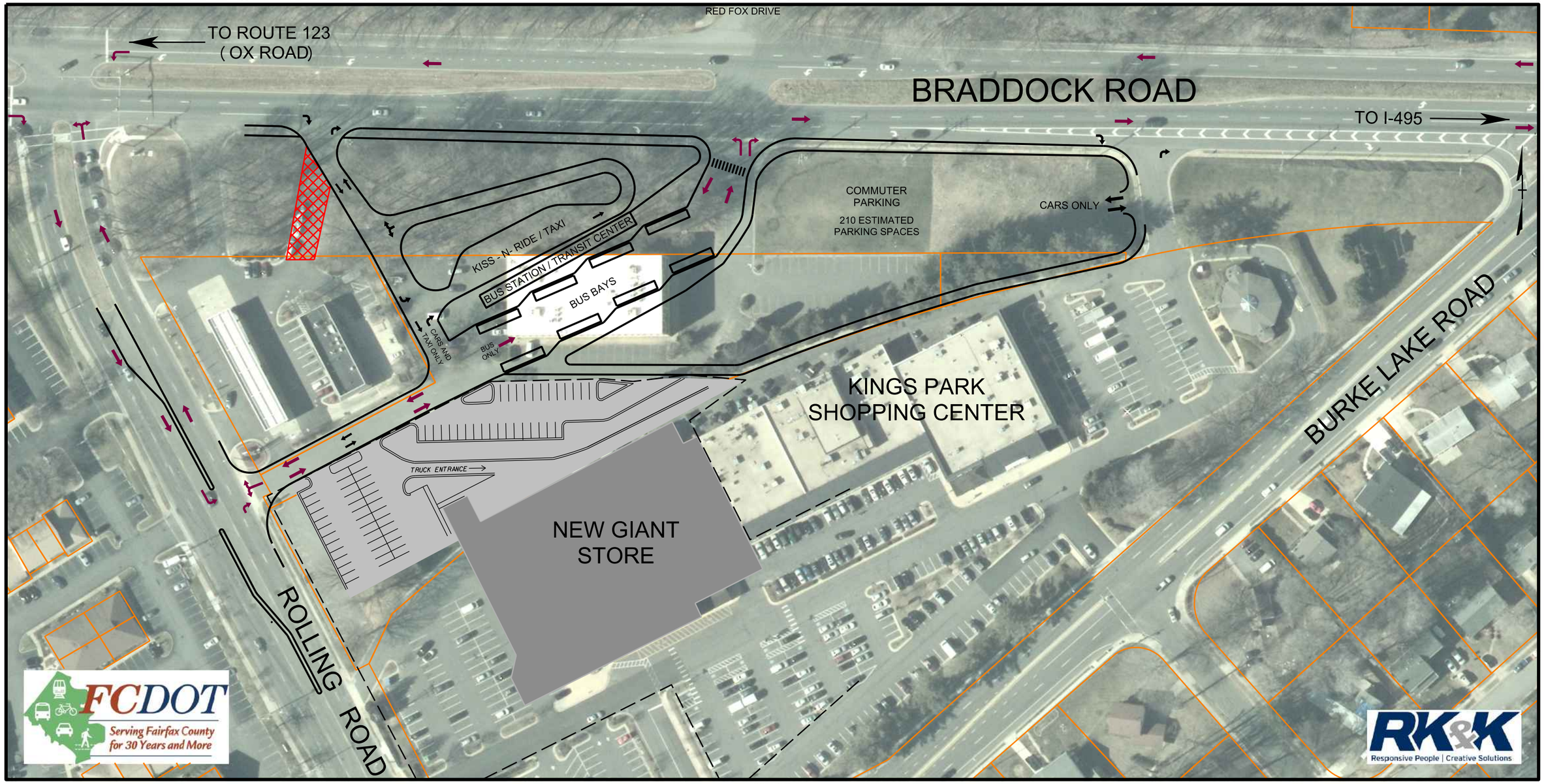
1. Individual property values adjacent to Braddock Road increased between 3-17% between 1982 and 1986.
2. Individual property values adjacent to Braddock Road ranged from $86,000 to $117,000 in 1982 and from $91,000 to $131,000 in 1986.
3. Total value of all homes adjacent to Braddock Road Study area increased from $10.56 million to $11.99 million between 1982 and 1986 (13.5% increase).

Legend

- Right of Way
- Parcel
- Considered Property

TRANSIT CENTER LAYOUT - LOCATION 3C [SURFACE] DRAFT

BRADDOCK ROAD - FAIRFAX COUNTY, VA



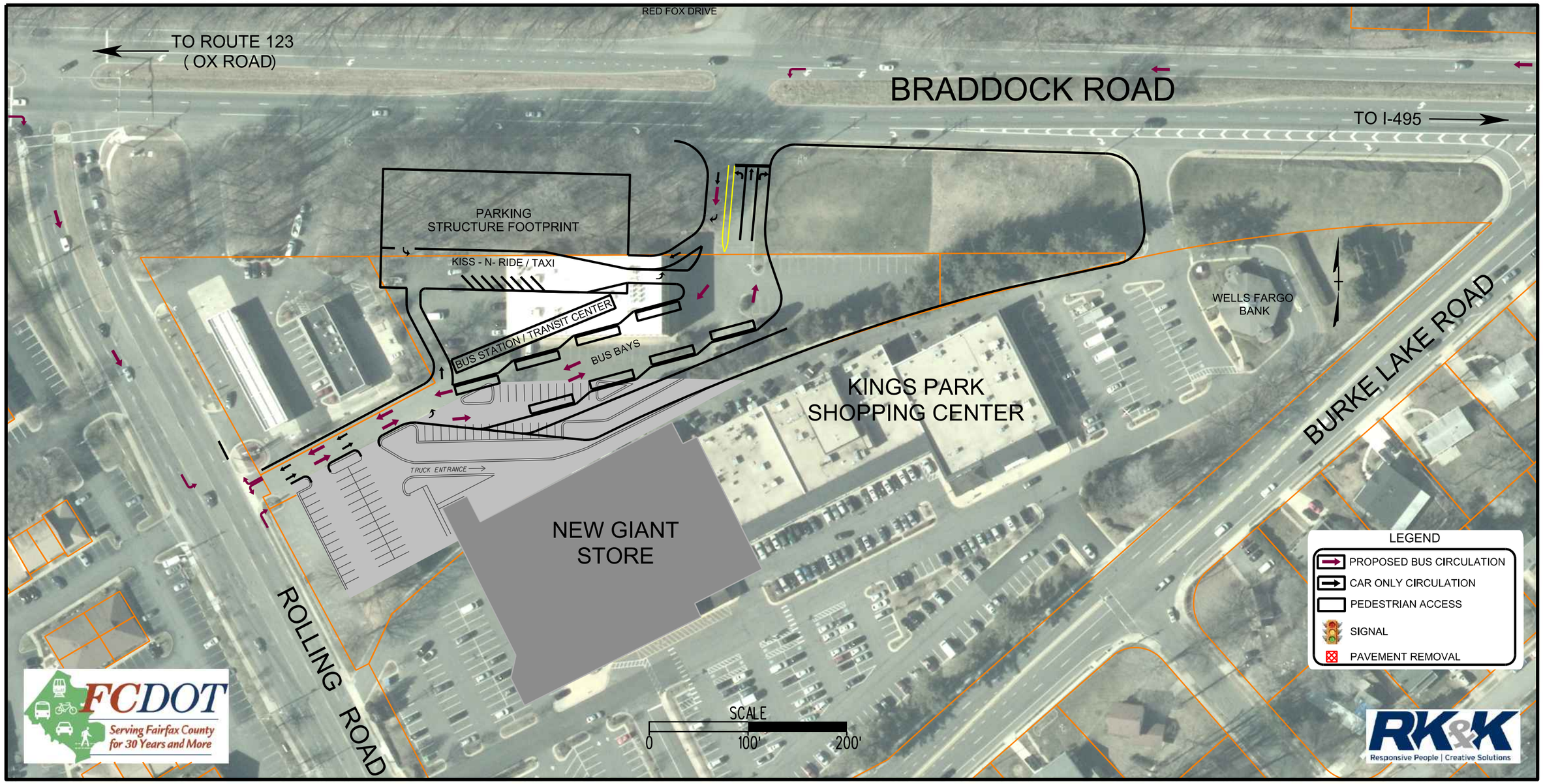
SCALE

0 100' 200'

MARCH 2, 2016

TRANSIT CENTER LAYOUT - LOCATION 3De [GARAGE] DRAFT

BRADDOCK ROAD - FAIRFAX COUNTY, VA



MARCH 2, 2016

TRANSIT CENTER LAYOUT - LOCATION 2 [EAST]

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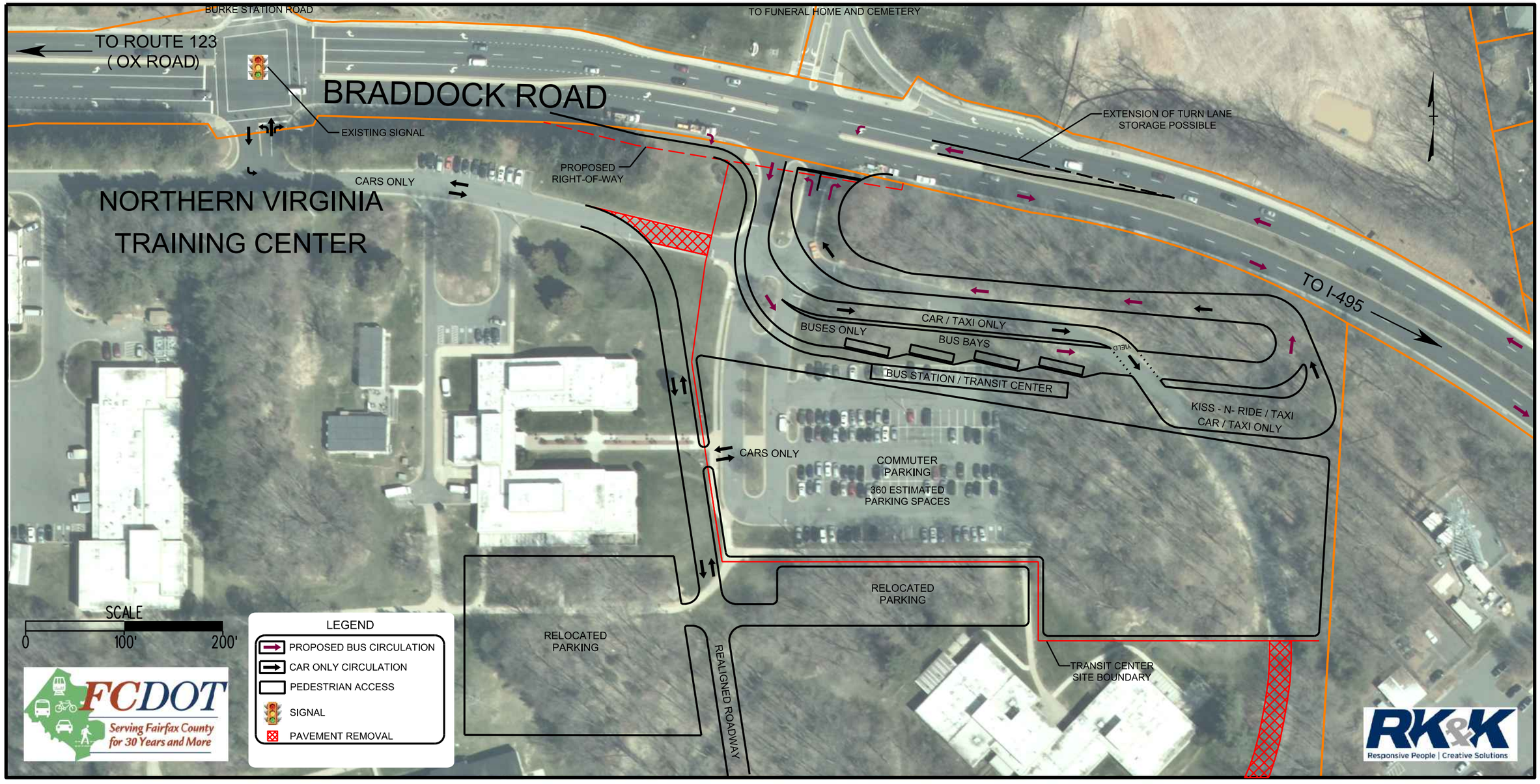
BRADDOCK ROAD - FAIRFAX COUNTY, VA



MARCH 2, 2016

TRANSIT CENTER LAYOUT - LOCATION 1 [WEST]

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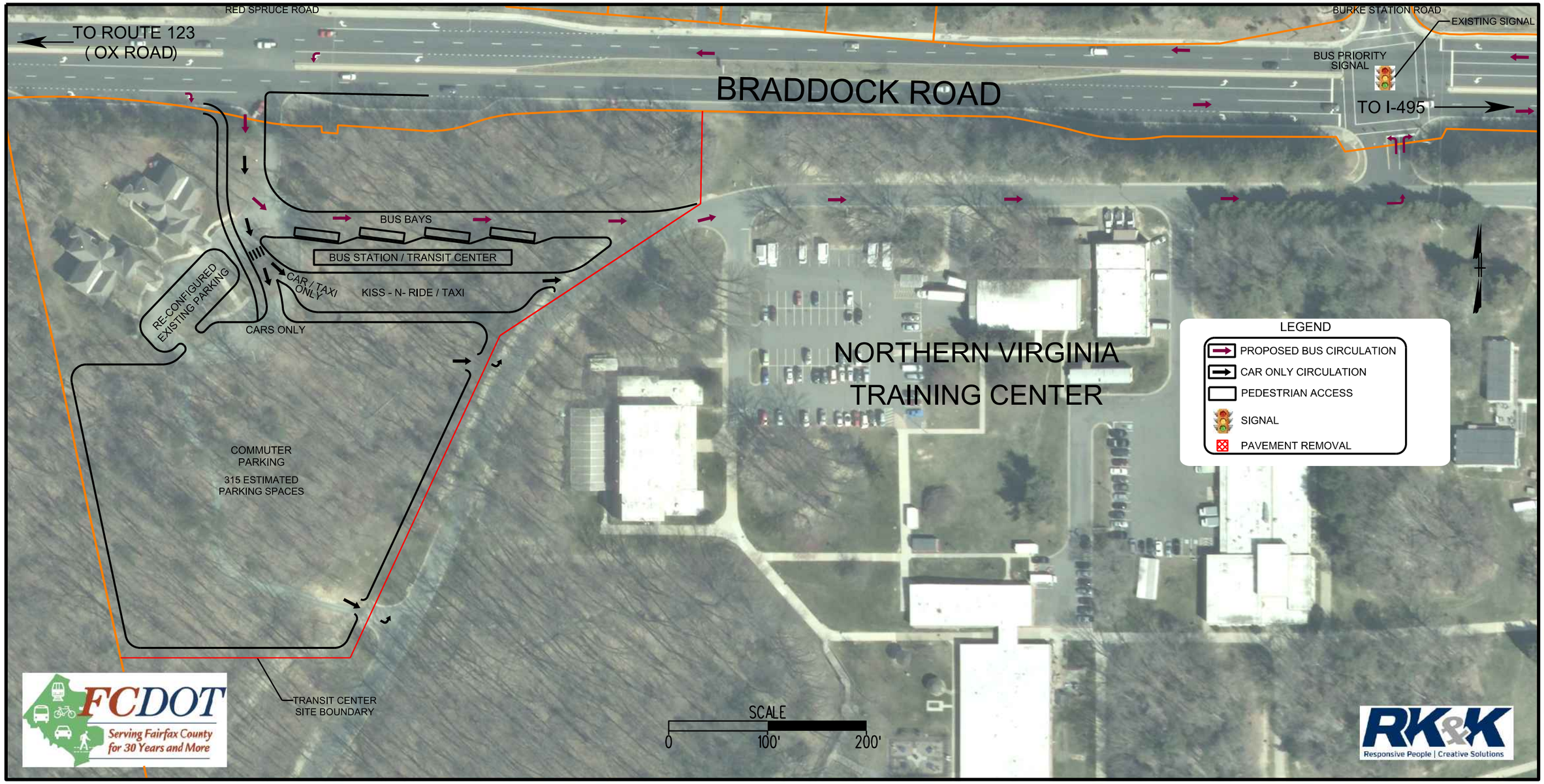
BRADDOCK ROAD - FAIRFAX COUNTY, VA



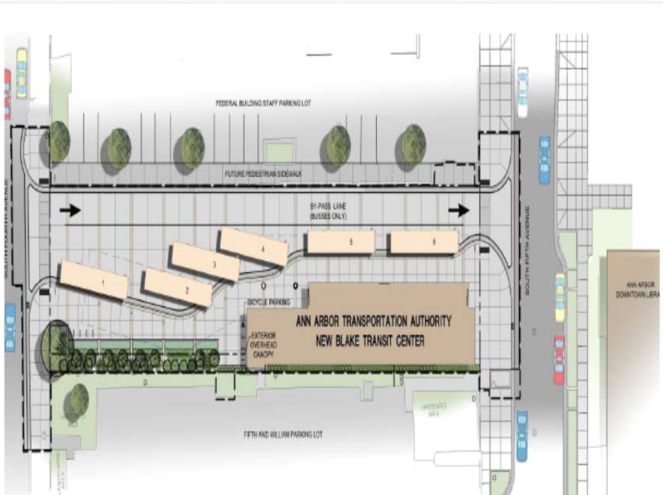
MARCH 2, 2016

ROLLING ROAD
BRADDOCK ROAD
RED FOX DRIVE

Transit Center Examples

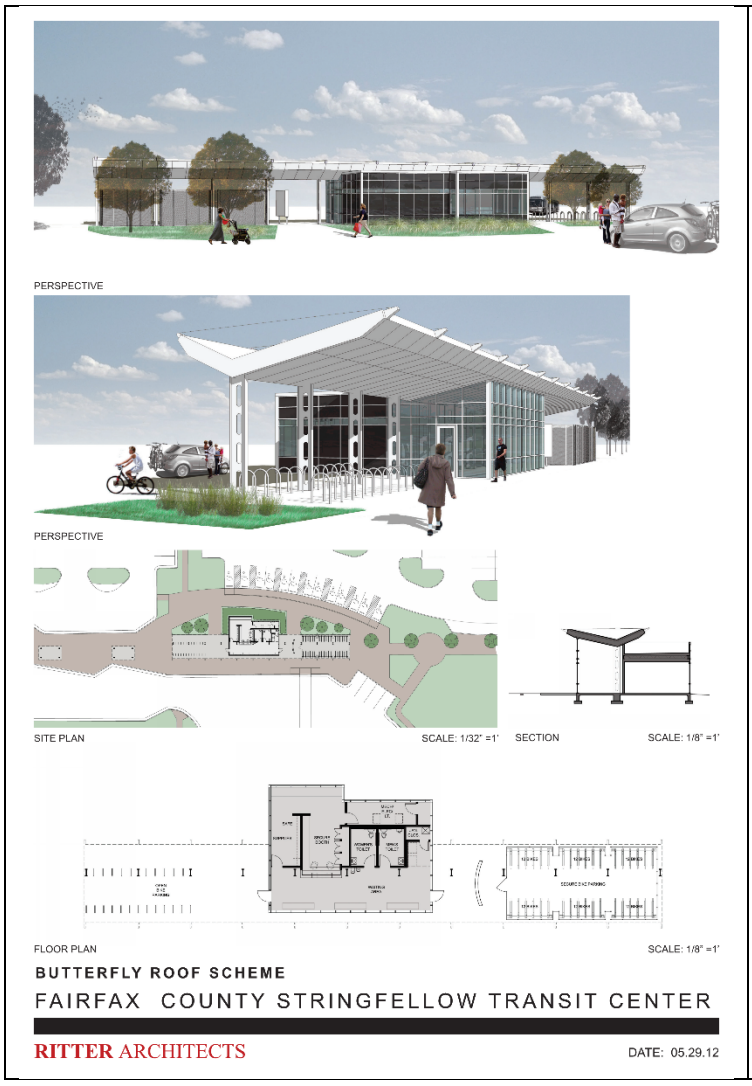
	Brooklyn Center Transit Center – Minneapolis, MN • Serves 11 bus routes • Indoor waiting area and amenities • Parking available
	Issaquah Transit Center – Issaquah, WA • Serves 5 bus routes • Indoor waiting area and amenities • Parking available • Bike Parking provided
	San Bernardino Transit Center – San Bernardino, CA • 22 bus bays • 12 bus routes • Lobby and indoor waiting area • Parking available

Transit Center Examples

	Ingram Transit Center-San Antonio, TX • Serves 11 bus routes • Parking available • Sheltered waiting area
	Stephanie Tubbs Jones Transit Center-Cleveland, OH • Serves 8 bus routes • Indoor waiting area and amenities • Parking available • Public Art Usage
	**New Blake Transit Center – Ann Arbor, MI** • Serves 4 bus routes • Indoor waiting area and amenities • Parking available • Bike Parking Available • Upgraded Sidewalks

	Balboa Avenue Station – San Diego, CA • Serves 14 bus routes • 6 bus bays • Sheltered waiting area • Parking available • Bike Parking
	Paul S. Sarbanes Sliver Spring Transit Center – Silver Spring, MD • Serves multiple bus routes • Sheltered waiting area • Multi-story facility for bus stops • Parking available • Indoor Amenities
	Downtown Transit Center – Indianapolis, IN • Serves 6 bus routes • Indoor waiting area and amenities • Small retail space • Parking Available • Bike Parking

	Rosa Parks Transit Center – Detroit, MI • Serves 23 bus routes • 15 bus bays • Indoor waiting area and amenities • Retail space • Parking available • Multi-story facility with parking
	Richmond Highway Transit Center-Alexandria, VA • 12 Bus Bays • Sheltered waiting area • Parking available



Stringfellow Transit Center – Chantilly, VA

- 6 Bus Bays
- Sheltered waiting area
- Concession space
- Rest rooms
- Bicycle racks
- 700 parking spaces available

Braddock Rd Task Force Transit Tour Notes:

On Saturday, 16 Jan, six members of the Task Force joined John McDowell, Tad Borkowski, Michael Guarino, and several other Fairfax/VDOT officials to visit five transit centers in Arlington & Fairfax.

We visited, not in this order, Dunn Loring-Merrifield Metro, Tysons West Park Transit Station, VRE Burke Center Station, Mark Center Transit Station, and Shirlington Bus Transfer Station. Each displayed differences in approach to addressing the coming together of cars, pedestrians, buses, and trains (Metro, VRE, and AMTRAK).

- Dunn Loring-Merrifield Station:
  — Combines Metro station, Bus transfer point, retail business and residential
  — Provides 8 sheltered bus stops with benches for waiting for a 5 MetroBus & 3 Fairfax Connector lines & the Tysons Circulator
  — Indoor waiting and seating area
  — Easy access from bus/parking garage (1,326 spaces) to/from the Metro
  — Kiss 'n Ride drop-off point
  — Walking distance from a number of apartment/condo complexes
  — Bike racks and lockers (monthly charge) available, and used
  — Bus service runs 7 days a week from early morning (at least 0600) til late at night

- Tysons West*Park Transit Station:
  — Primarily a mode transition point
  — 10 bus bays with bench seats for waiting
  — Served by 4 Fairfax Connector routes
  — Indoor waiting and seating area
  — Accessible restrooms
  — Very limited, I believe metered, parking - not 'all-day' parking
  — Bus service runs 7 days a week from early morning (at least 0600) til late at night
  — Station houses Commuter Store (M-F)
  — 1 mile from SpringHill Metro Station

- Burke Centre VRE Station:
  — Transfer point between auto (1100 spaces, mostly under cover) and 1 Fairfax Connector (serving Tysons & Spring Hill Metro stations), 2 MetroBus (Braddock Rd-Pentagon), and the Manassas VRE line, as well as the AMTRAK's Cardinal & Crescent lines
  — Walking distance from a number of apartment complexes
  — Three bus bays with bench seating
  — Bus service runs 7 days a week from early morning (at least 0600) til late at night

- Mark Center Transit Center:
  — No parking, except for government/contractor permit parking
  — Covered outdoor plaza adjacent to bus bays
  — 5 bus bays - servicing 1 Fairfax Connector, 6 MetroBus, and 3 DASH routes
  — Bus service runs 7 days a week - station is open M-Sat, closed Sun & Holidays

- Shirlington Bus Transfer Station:
  — Covered outdoor plaza
  — Indoor waiting & seating area
  — 5 bus bays with bench seating - servicing 8 MetroBus and 3 ART routes
  — Bus service runs 7 days a week from early morning (at least 0600) til late at night
  — Station houses a Commuter Store (open M-F)
  — Accessible restrooms
  — Limited public parking at station, but more within walking distance

CORRIDOR-WIDE PEDESTRIAN/BICYCLE ANALYSIS

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BRADDOCK ROAD FAIRFAX COUNTY, VA

FEBRUARY 25, 2016

LEGEND

- Proposed Shared Use Path or Extension
- Proposed Road Alignment
- Vegetated Buffer or Median
- Proposed Street Trees
- Existing Trail to Remain
- Existing Sidewalk to Remain
- Existing Road to be Removed
- Proposed Signalized Intersection
- Existing Park and Ride Location to Remain
- Existing Shopping Center
- Other Existing Destination (park, greenway, school, recreation center, church)
- Existing Metrobus and Fairfax Connector Stop
- Existing Metrobus Only Stop
- Existing Right-of-Way
- Proposed Right-of-Way

RECOMMENDED CROSSING TYPE

- A High-Visibility Crosswalk
- B Pedestrian Refuge Island
- C Pedestrian Bridge
- D Improved Underpass

BRADDOCK ROAD FAIRFAX COUNTY, VA

FEBRUARY 25, 2016

LEGEND

- Proposed Shared Use Path or Extension
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- Vegetated Buffer or Median
- Proposed Street Trees
- Existing Trail to Remain
- Existing Sidewalk to Remain
- Existing Road to be Removed
- Proposed Signalized Intersection
- Existing Park and Ride Location to Remain
- Existing Shopping Center
- Other Existing Destination (park, greenway, school, recreation center, church)
- Existing Metrobus and Fairfax Connector Stop
- Existing Metrobus Only Stop
- Existing Right-of-Way
- Proposed Right-of-Way

RECOMMENDED CROSSING TYPE

- A High-Visibility Crosswalk
- B Pedestrian Refuge Island
- C Pedestrian Bridge
- D Improved Underpass

POTENTIAL SHARED USE PATH & SIDEWALK APPLICATIONS

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BRADDOCK ROAD FAIRFAX COUNTY, VA

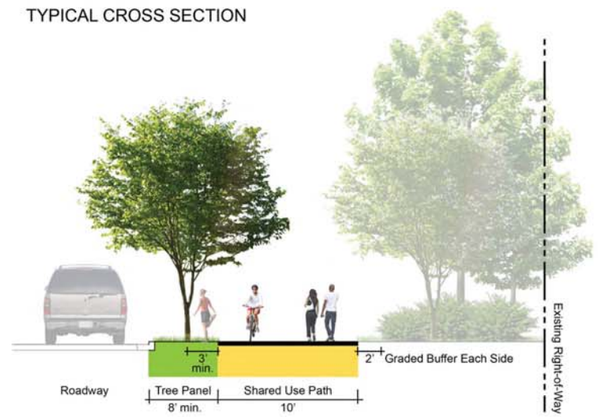
FEBRUARY 25, 2016

Southamton Drive to Inverchapel Road

LEGEND

- Proposed Shared Use Path or Extension
- Proposed Road Alignment
- Proposed Vegetated Buffer or Median
- Proposed Street Trees
- Existing Trail to Remain
- Existing Sidewalk to Remain
- Existing Road to be Removed
- Proposed Signalized Intersection
- Existing Park and Ride Location
- Existing Bus Stop: Metrobus and Fairfax Connector
- Existing Bus Stop: Metrobus Only
- Existing Right-of-Way
- Proposed Right-of-Way

TYPICAL CROSS SECTION



SHARED USE PATH EXAMPLE

Potomac Yard Trail, Alexandria VA

PEDESTRIAN/BICYCLE CROSSING TYPES

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BRADDOCK ROAD FAIRFAX COUNTY, VA

MARCH 2, 2016

A HIGH-VISIBILITY CROSSWALKS

High-visibility painted crosswalk markings can act as a wayfinding element while also increasing pedestrian safety

B PEDESTRIAN REFUGE ISLANDS

Median refuge provides waiting space if needed at wide road crossings

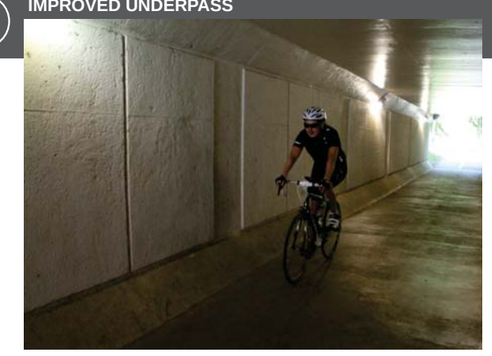
C PEDESTRIAN BRIDGES

Bridge over Wards Road, Lynchburg, VA

Lancer Park Bridge over Route 460, Farmville,VA

Ohio to Erie Trail Bridge over Country Line Road, Westerville, OH

D IMPROVED UNDERPASS



Existing underpass trail can be improved with lighting and better access

March 2, 2016

Braddock Road Multimodal Study
Fairfax County, Virginia

IN PROGRESS

Roadway MOE Measurements

What you care about/MOE	Description of MOE	Performance Measures - Metrics	No-Build	Spot Improvements	HOV2 Inside	HOV2 Outside	General Use Lane Addition
Environment	Availability for screening or landscaping enhancements	Area available for tree planting minus area of tree removal (square feet)	0	-24,500	-489,000	-489,000	-489,000
	Will alternative provide additional opportunities for bike/ pedestrian travel?	Linear feet of additional paths and number of crosswalks, crosswalk signals or pedestrian overpasses (length in feet)	0	2,344 feet 6-8 Crossings	23,680 feet 6-8 Crossings	23,680 feet 6-8 Crossings	23,680 feet 6-8 Crossings
	Park Land Impacts	Amount of land taken from parks for road (acres)	0	0.73	2.71	2.71	2.71
	Does the alternative improve or degrade the noise levels experienced by those adjacent to the corridor?	Noise levels as measured by traffic models (decibels average)					
	Does the alternative improve or degrade the air quality experienced by those adjacent to the corridor?	Air quality levels as measured by traffic models (NOx particles average)					
Mobility	Does the alternative facilitate community access to Braddock Road?	Overall travel time for vehicles in the system to and from the neighborhoods (hours)					
	Does the alternative facilitate traffic through the corridor?	Total travel time in network. (hours)					
	Will the alternative provide better access and circulation for pedestrians and bicycles?	Number of new access points to neighborhoods and total length of bike/pedestrian paths along corridor (number)	0	1 new access point	24,500 feet 1 new access point	24,500 feet 1 new access point	24,500 feet 1 new access point
Safety	Is it likely that existing conflict areas improved?	Number of corridor-wide conflict points (number)	597	510	480	480	480
	Is it likely that the suggested improvements will lower or increase potential crashes?	Highway Safety Manual Computed Expected Crash Rate (crashes/year)					
	Are safe movements provided to pedestrians and bicycles?	Number of signal-protected crossings and number of grade separated crossings					
Travel Time	Option that creates the least aggregate travel time	Vehicular travel time (minutes)					
	Travel time represented by critical movements	Transit Travel time (minutes)					
	Pedestrian/Bicycle travel time	Pedestrian/bicycle Travel time (minutes)					
Right-of-Way Impacts	Total area of right-of-way taken	Area of right-of-way taken (square feet or acres)	0	0.73 Acres	2.98 Acres	2.98 Acres	2.98 Acres
	Number of parcels impacted	Number of impacted parcels (each)	0	2	22	22	22

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RK&K

March 2, 2016

IN PROGRESS

Braddock Road Multimodal Study
Fairfax County, Virginia

Alternative: No-Build

Roadway Measures of Effectiveness (MOE)

What you care about/MOE	Description of MOE	Performance Measures - Metrics	Measurement	Element Score	Average		Weight *	MOE Score
Environment	Availability for screening or landscaping enhancements	Area available for tree planting minus area of tree removal (square feet)	0			X	4.5	
	Will alternative provide additional opportunities for bike/ pedestrian travel?	Linear feet of additional paths and number of crosswalks, crosswalk signals or pedestrian overpasses (length in feet)	0					
	Park Land Impacts	Amount of land taken from parks for road (acres)	0					
	Does the alternative improve or degrade the noise levels experienced by those adjacent to the corridor?	Noise levels as measured by traffic models (decibels average)						
	Does the alternative improve or degrade the air quality experienced by those adjacent to the corridor?	Air quality levels as measured by traffic models (NOx particles average)						
Mobility	Does the alternative facilitate community access to Braddock Road?	Overall travel time for vehicles in the system to and from the neighborhoods (hours)				X	4.7	
	Does the alternative facilitate traffic through the corridor?	Total travel time in network. (hours)						
	Will the alternative provide better access and circulation for pedestrians and bicycles?	Number of new access points to neighborhoods and total length of bike/pedestrian paths along corridor (number)	0					
Safety	Is it likely that existing conflict areas improved?	Number of corridor-wide conflict points (number)	597			X	4.7	
	Is it likely that the suggested improvements will lower or increase potential crashes?	Highway Safety Manual Computed Expected Crash Rate (crashes/year)						
	Are safe movements provided to pedestrians and bicycles?	Number of signal-protected crossings and number of grade separated crossings						
Travel Time	Option that creates the least aggregate travel time	Vehicular travel time (minutes)				X	2.6	
	Travel time represented by critical movements	Transit Travel time (minutes)						
	Pedestrian/Bicycle travel time	Pedestrian/bicycle Travel time (minutes)						
Right-of-Way Impacts	Total area of right-of-way taken	Area of right-of-way taken (square feet or acres)	0			X	3	
	Number of parcels impacted	Number of impacted parcels (each)	0					

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Braddock Road Multimodal Study
Fairfax County, Virginia

Alternative: Spot Improvements

Roadway Measures of Effectiveness (MOE)

What you care about/MOE	Description of MOE	Performance Measures - Metrics	Measurement	Element Score	Average		Weight *	MOE Score
Environment	Availability for screening or landscaping enhancements	Area available for tree planting minus area of tree removal (square feet)	-24,500			X	4.5	
	Will alternative provide additional opportunities for bike/ pedestrian travel?	Linear feet of additional paths and number of crosswalks, crosswalk signals or pedestrian overpasses (length in feet)	2,344 feet 6-8 Crossings					
	Park Land Impacts	Amount of land taken from parks for road (acres)	0.73					
	Does the alternative improve or degrade the noise levels experienced by those adjacent to the corridor?	Noise levels as measured by traffic models (decibels average)						
	Does the alternative improve or degrade the air quality experienced by those adjacent to the corridor?	Air quality levels as measured by traffic models (NOx particles average)						
Mobility	Does the alternative facilitate community access to Braddock Road?	Overall travel time for vehicles in the system to and from the neighborhoods (hours)				X	4.7	
	Does the alternative facilitate traffic through the corridor?	Total travel time in network. (hours)						
	Will the alternative provide better access and circulation for pedestrians and bicycles?	Number of new access points to neighborhoods and total length of bike/pedestrian paths along corridor (number)	1 new access point					
Safety	Is it likely that existing conflict areas improved?	Number of corridor-wide conflict points (number)	510			X	4.7	
	Is it likely that the suggested improvements will lower or increase potential crashes?	Highway Safety Manual Computed Expected Crash Rate (crashes/year)						
	Are safe movements provided to pedestrians and bicycles?	Number of signal-protected crossings and number of grade separated crossings						
Travel Time	Option that creates the least aggregate travel time	Vehicular travel time (minutes)				X	2.6	
	Travel time represented by critical movements	Transit Travel time (minutes)						
	Pedestrian/Bicycle travel time	Pedestrian/bicycle Travel time (minutes)						
Right-of-Way Impacts	Total area of right-of-way taken	Area of right-of-way taken (square feet or acres)	0.73 Acres			X	3	
	Number of parcels impacted	Number of impacted parcels (each)	2					

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March 2, 2016

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Braddock Road Multimodal Study
Fairfax County, Virginia

Alternative: HOV2 - Inside

Roadway Measures of Effectiveness (MOE)

What you care about/MOE	Description of MOE	Performance Measures - Metrics	Measurement	Element Score	Average		Weight *	MOE Score
Environment	Availability for screening or landscaping enhancements	Area available for tree planting minus area of tree removal (square feet)	-489,000			X	4.5	
	Will alternative provide additional opportunities for bike/ pedestrian travel?	Linear feet of additional paths and number of crosswalks, crosswalk signals or pedestrian overpasses (length in feet)	23,680 feet 6-8 Crossings					
	Park Land Impacts	Amount of land taken from parks for road (acres)	2.71					
	Does the alternative improve or degrade the noise levels experienced by those adjacent to the corridor?	Noise levels as measured by traffic models (decibels average)						
	Does the alternative improve or degrade the air quality experienced by those adjacent to the corridor?	Air quality levels as measured by traffic models (NOx particles average)						
Mobility	Does the alternative facilitate community access to Braddock Road?	Overall travel time for vehicles in the system to and from the neighborhoods (hours)				X	4.7	
	Does the alternative facilitate traffic through the corridor?	Total travel time in network. (hours)						
	Will the alternative provide better access and circulation for pedestrians and bicycles?	Number of new access points to neighborhoods and total length of bike/pedestrian paths along corridor (number)	24,500 feet 1 new access point					
Safety	Is it likely that existing conflict areas improved?	Number of corridor-wide conflict points (number)	480			X	4.7	
	Is it likely that the suggested improvements will lower or increase potential crashes?	Highway Safety Manual Computed Expected Crash Rate (crashes/year)						
	Are safe movements provided to pedestrians and bicycles?	Number of signal-protected crossings and number of grade separated crossings						
Travel Time	Option that creates the least aggregate travel time	Vehicular travel time (minutes)				X	2.6	
	Travel time represented by critical movements	Transit Travel time (minutes)						
	Pedestrian/Bicycle travel time	Pedestrian/bicycle Travel time (minutes)						
Right-of-Way Impacts	Total area of right-of-way taken	Area of right-of-way taken (square feet or acres)	2.98 Acres			X	3	
	Number of parcels impacted	Number of impacted parcels (each)	22					

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March 2, 2016

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Braddock Road Multimodal Study
Fairfax County, Virginia

Alternative: HOV2 - Outside

Roadway Measures of Effectiveness (MOE)

What you care about/MOE	Description of MOE	Performance Measures - Metrics	Measurement	Element Score	Average		Weight *	MOE Score
Environment	Availability for screening or landscaping enhancements	Area available for tree planting minus area of tree removal (square feet)	-489,000			X	4.5	
	Will alternative provide additional opportunities for bike/ pedestrian travel?	Linear feet of additional paths and number of crosswalks, crosswalk signals or pedestrian overpasses (length in feet)	23,680 feet 6-8 Crossings					
	Park Land Impacts	Amount of land taken from parks for road (acres)	2.71					
	Does the alternative improve or degrade the noise levels experienced by those adjacent to the corridor?	Noise levels as measured by traffic models (decibels average)						
	Does the alternative improve or degrade the air quality experienced by those adjacent to the corridor?	Air quality levels as measured by traffic models (NOx particles average)						
Mobility	Does the alternative facilitate community access to Braddock Road?	Overall travel time for vehicles in the system to and from the neighborhoods (hours)				X	4.7	
	Does the alternative facilitate traffic through the corridor?	Total travel time in network. (hours)						
	Will the alternative provide better access and circulation for pedestrians and bicycles?	Number of new access points to neighborhoods and total length of bike/pedestrian paths along corridor (number)	24,500 feet 1 new access point					
Safety	Is it likely that existing conflict areas improved?	Number of corridor-wide conflict points (number)	480			X	4.7	
	Is it likely that the suggested improvements will lower or increase potential crashes?	Highway Safety Manual Computed Expected Crash Rate (crashes/year)						
	Are safe movements provided to pedestrians and bicycles?	Number of signal-protected crossings and number of grade separated crossings						
Travel Time	Option that creates the least aggregate travel time	Vehicular travel time (minutes)				X	2.6	
	Travel time represented by critical movements	Transit Travel time (minutes)						
	Pedestrian/Bicycle travel time	Pedestrian/bicycle Travel time (minutes)						
Right-of-Way Impacts	Total area of right-of-way taken	Area of right-of-way taken (square feet or acres)	2.98 Acres			X	3	
	Number of parcels impacted	Number of impacted parcels (each)	22					

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March 2, 2016

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Braddock Road Multimodal Study
Fairfax County, Virginia

Alternative: General Use Lane Addition

Roadway Measures of Effectiveness (MOE)

What you care about/MOE	Description of MOE	Performance Measures - Metrics	Measurement	Element Score	Average		Weight *	MOE Score
Environment	Availability for screening or landscaping enhancements	Area available for tree planting minus area of tree removal (square feet)	-489,000			X	4.5	
	Will alternative provide additional opportunities for bike/ pedestrian travel?	Linear feet of additional paths and number of crosswalks, crosswalk signals or pedestrian overpasses (length in feet)	23,680 feet 6-8 Crossings					
	Park Land Impacts	Amount of land taken from parks for road (acres)	2.71					
	Does the alternative improve or degrade the noise levels experienced by those adjacent to the corridor?	Noise levels as measured by traffic models (decibels average)						
	Does the alternative improve or degrade the air quality experienced by those adjacent to the corridor?	Air quality levels as measured by traffic models (NOx particles average)						
Mobility	Does the alternative facilitate community access to Braddock Road?	Overall travel time for vehicles in the system to and from the neighborhoods (hours)				X	4.7	
	Does the alternative facilitate traffic through the corridor?	Total travel time in network. (hours)						
	Will the alternative provide better access and circulation for pedestrians and bicycles?	Number of new access points to neighborhoods and total length of bike/pedestrian paths along corridor (number)	24,500 feet 1 new access point					
Safety	Is it likely that existing conflict areas improved?	Number of corridor-wide conflict points (number)	480			X	4.7	
	Is it likely that the suggested improvements will lower or increase potential crashes?	Highway Safety Manual Computed Expected Crash Rate (crashes/year)						
	Are safe movements provided to pedestrians and bicycles?	Number of signal-protected crossings and number of grade separated crossings						
Travel Time	Option that creates the least aggregate travel time	Vehicular travel time (minutes)				X	2.6	
	Travel time represented by critical movements	Transit Travel time (minutes)						
	Pedestrian/Bicycle travel time	Pedestrian/bicycle Travel time (minutes)						
Right-of-Way Impacts	Total area of right-of-way taken	Area of right-of-way taken (square feet or acres)	2.98 Acres			X	3	
	Number of parcels impacted	Number of impacted parcels (each)	22					

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March 2, 2016

Braddock Road Multimodal Study
Fairfax County, Virginia

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Transit Center MOE Measurements

What you care about/MOE	Description of MOE	Performance Measures - Metrics	Kings Park Shopping Center Garage	Kings Park Shopping Center Surface	NOVA Training Center East	NOVA Training Center West
Environment	Does the proposed site complement the adjacent land uses?	Conformity to community aesthetics (subjective)				
	Is the proposed site compliant with zoning codes	Will rezoning be required? (Yes or No)	Yes	Yes	Yes	Yes
	Does the alternative increase noise levels?	Aggregate Noise Levels (decibels)				
	Does the alternative increase air pollution?	Aggregate Air Quality levels (NOx levels)				
	Will site lighting impact adjacent lands in a negative way?	Degree separation/screening between transit site and adjacent single-family properties (linear feet separation to closest residence)	235	235	290	165
Mobility	Ease of access in/out for commuter and transit vehicles	Number of entrances (number)	2	2	1	2
	Ease and convenience of access for pedestrians & bicycles	Number of signalized pedestrian crossings or grade separations to site (number)	1	1	0	0
	Ease of access for transit routes	Number of drive entrances and signals for left-turn movements (number)	2 Entrances 0 Signals	2 Entrances 0 Signals	2 Entrances 1 existing signal for cars only	2 Entrances 1 existing signal for exiting traffic only
Safety	Will vehicular access in/out of facility be safe?	Number of conflict points at entrances (number)	78	78	31 Cars Only Entr/Exit	52
	Are safe movements provided to pedestrians and bicycles?	Number of pedestrian/bicycle conflict points (number)				
Roadway Travel Time	Braddock Road vehicle travel time	Travel time accounting for movements into and out of transit center (hours)				
	Pedestrian/Bicycle Travel time	Travel time over longest path (minutes)				
Trip Diversions	Number of Braddock Road trips converted to transit	Number of bus trips (number)	29 (AM Peak Hour)	29 (AM Peak Hour)	15 (AM Peak Hour)	15 (Peak Hour)
	Number of potential carpool/slugging trips	Number of trips generated by ride sharing (number)				
	Reduction in SOV trips along corridor	Reduction in number of trips along Braddock Road (number)	87 (AM Peak hour)	87 (AM Peak hour)	75 (AM Peak hour)	75 (AM Peak hour)

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March 2, 2016

Braddock Road Multimodal Study
Fairfax County, Virginia

Alternative: **Kings Park Shopping Center Garage**

Transit Measures of Effectiveness (MOE)

What you care about/MOE	Description of MOE	Performance Measures - Metrics	Measurement	Element Score	Average		Weight *	MOE Score
Environment	Does the proposed site complement the adjacent land uses?	Conformity to community aesthetics (subjective)				**X**	**4.5**	
	Is the proposed site compliant with zoning codes	Will rezoning be required? (Yes or No)	Yes					
	Does the alternative increase noise levels?	Aggregate Noise Levels (decibels)						
	Does the alternative increase air pollution?	Aggregate Air Quality levels (NOx levels)						
	Will site lighting impact adjacent lands in a negative way?	Degree separation/screening between transit site and adjacent single-family properties (linear feet separation to closest residence)	235					
Mobility	Ease of access in/out for commuter and transit vehicles	Number of entrances (number)	2			**X**	**4.7**	
	Ease and convenience of access for pedestrians & bicycles	Number of signalized pedestrian crossings or grade separations to site (number)	1					
	Ease of access for transit routes	Number of drive entrances and signals for left-turn movements (number)	2 Entrances 0 Signals					
Safety	Will vehicular access in/out of facility be safe?	Number of conflict points at entrances (number)	78			**X**	**4.7**	
	Are safe movements provided to pedestrians and bicycles?	Number of pedestrian/bicycle conflict points (number)						
Roadway Travel Time	Braddock Road vehicle travel time	Travel time accounting for movements into and out of transit center (hours)				**X**	**2.6**	
	Pedestrian/Bicycle Travel time	Travel time over longest path (minutes)						
Trip Diversions	Number of Braddock Road trips converted to transit	Number of bus trips (number)	29 (AM Peak Hour)			**X**	**1.9**	
	Number of potential carpool/slugging trips	Number of trips generated by ride sharing (number)						
	Reduction in SOV trips along corridor	Reduction in number of trips along Braddock Road (number)	87 (AM Peak hour)					

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March 2, 2016

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Braddock Road Multimodal Study
Fairfax County, Virginia

Alternative: Kings Park Shopping Center Surface

Transit Measures of Effectiveness (MOE)

What you care about/MOE	Description of MOE	Performance Measures - Metrics	Measurement	Element Score	Average		Weight *	MOE Score
Environment	Does the proposed site complement the adjacent land uses?	Conformity to community aesthetics (subjective)				**X**	**4.5**	
	Is the proposed site compliant with zoning codes	Will rezoning be required? (Yes or No)	Yes					
	Does the alternative increase noise levels?	Aggregate Noise Levels (decibels)						
	Does the alternative increase air pollution?	Aggregate Air Quality levels (NOx levels)						
	Will site lighting impact adjacent lands in a negative way?	Degree separation/screening between transit site and adjacent single-family properties (linear feet separation to closest residence)	235					
Mobility	Ease of access in/out for commuter and transit vehicles	Number of entrances (number)	2			**X**	**4.7**	
	Ease and convenience of access for pedestrians & bicycles	Number of signalized pedestrian crossings or grade separations to site (number)	1					
	Ease of access for transit routes	Number of drive entrances and signals for left-turn movements (number)	2 Entrances 0 Signals					
Safety	Will vehicular access in/out of facility be safe?	Number of conflict points at entrances (number)	78			**X**	**4.7**	
	Are safe movements provided to pedestrians and bicycles?	Number of pedestrian/bicycle conflict points (number)						
Roadway Travel Time	Braddock Road vehicle travel time	Travel time accounting for movements into and out of transit center (hours)				**X**	**2.6**	
	Pedestrian/Bicycle Travel time	Travel time over longest path (minutes)						
Trip Diversions	Number of Braddock Road trips converted to transit	Number of bus trips (number)	29 (AM Peak Hour)			**X**	**1.9**	
	Number of potential carpool/slugging trips	Number of bus trips generated by ride sharing(number)						
	Reduction in SOV trips along corridor	Reduction in number of trips along Braddock Road (number)	87 (AM Peak hour)					

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March 2, 2016

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Braddock Road Multimodal Study
Fairfax County, Virginia

Alternative: NOVA Training Center East

Transit Measures of Effectiveness (MOE)

What you care about/MOE	Description of MOE	Performance Measures - Metrics	Measurement	Element Score	Average		Weight *	MOE Score
Environment	Does the proposed site complement the adjacent land uses?	Conformity to community aesthetics (subjective)				**X**	**4.5**	
	Is the proposed site compliant with zoning codes	Will rezoning be required? (Yes or No)	Yes					
	Does the alternative increase noise levels?	Aggregate Noise Levels (decibels)						
	Does the alternative increase air pollution?	Aggregate Air Quality levels (NOx levels)						
	Will site lighting impact adjacent lands in a negative way?	Degree separation/screening between transit site and adjacent single-family properties (linear feet separation to closest residence)	290					
Mobility	Ease of access in/out for commuter and transit vehicles	Number of entrances (number)	1			**X**	**4.7**	
	Ease and convenience of access for pedestrians & bicycles	Number of signalized pedestrian crossings or grade separations to site (number)	0					
	Ease of access for transit routes	Number of drive entrances and signals for left-turn movements (number)	2 Entrances 1 existing signal for cars only					
Safety	Will vehicular access in/out of facility be safe?	Number of conflict points at entrances (number)	31 Cars Only Entr/Exit			**X**	**4.7**	
	Are safe movements provided to pedestrians and bicycles?	Number of pedestrian/bicycle conflict points (number)						
Roadway Travel Time	Braddock Road vehicle travel time	Travel time accounting for movements into and out of transit center (hours)				**X**	**2.6**	
	Pedestrian/Bicycle Travel time	Travel time over longest path (minutes)						
Trip Diversions	Number of Braddock Road trips converted to transit	Number of bus trips (number)	15 (AM Peak Hour)			**X**	**1.9**	
	Number of potential carpool/slugging trips	Number of trips generated by ride sharing (number)						
	Reduction in SOV trips along corridor	Reduction in number of trips along Braddock Road (number)	75 (AM Peak hour)					

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March 2, 2016

IN PROGRESS

Braddock Road Multimodal Study
Fairfax County, Virginia

Alternative: **NOVA Training Center West**

Transit Measures of Effectiveness (MOE)

What you care about/MOE	Description of MOE	Performance Measures - Metrics	Measurement	Element Score	Average		Weight *	MOE Score
Environment	Does the proposed site complement the adjacent land uses?	Conformity to community aesthetics (subjective)				**X**	**4.5**	
	Is the proposed site compliant with zoning codes	Will rezoning be required? (Yes or No)	Yes					
	Does the alternative increase noise levels?	Aggregate Noise Levels (decibels)						
	Does the alternative increase air pollution?	Aggregate Air Quality levels (NOx levels)						
	Will site lighting impact adjacent lands in a negative way?	Degree separation/screening between transit site and adjacent single-family properties (linear feet separation to closest residence)	165					
Mobility	Ease of access in/out for commuter and transit vehicles	Number of entrances (number)	2			**X**	**4.7**	
	Ease and convenience of access for pedestrians & bicycles	Number of signalized pedestrian crossings or grade separations to site (number)	0					
	Ease of access for transit routes	Number of drive entrances and signals for left-turn movements (number)	2 Entrances 1 existing signal for exiting traffic only					
Safety	Will vehicular access in/out of facility be safe?	Number of conflict points at entrances (number)	52			**X**	**4.7**	
	Are safe movements provided to pedestrians and bicycles?	Number of pedestrian/bicycle conflict points (number)						
Roadway Travel Time	Braddock Road vehicle travel time	Travel time accounting for movements into and out of transit center (hours)				**X**	**2.6**	
	Pedestrian/Bicycle Travel time	Travel time over longest path (minutes)						
Trip Diversions	Number of Braddock Road trips converted to transit	Number of bus trips (number)	15 (AM Peak Hour)			**X**	**1.9**	
	Number of potential carpool/slugging trips	Number of trips generated by ride sharing (number)						
	Reduction in SOV trips along corridor	Reduction in number of trips along Braddock Road (number)	75 (AM Peak hour)					

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