# Route 28 Station - South Study
# Transportation Analysis Findings and Recap

Presented by:
Fairfax County Department of Transportation

October 25, 2012

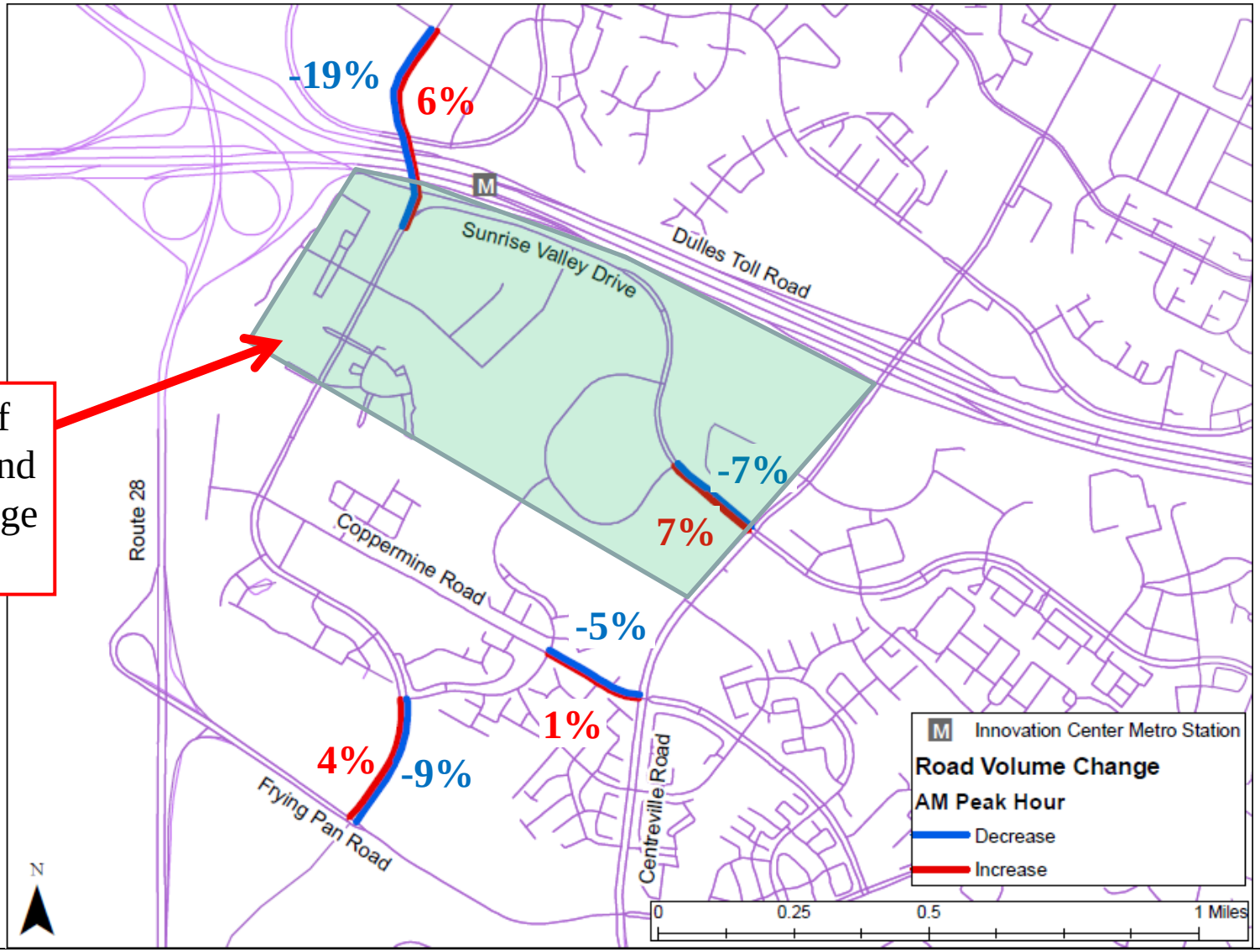
# Outline

- Land Use Change
- Rock Hill Road Bridge
- Draft Bicycle Master Plan
- Station Traffic in the Route 28 Station Area
- Recap of Improvements Considered in Analysis
- Further Mitigation Efforts


2

# Land Use Shift

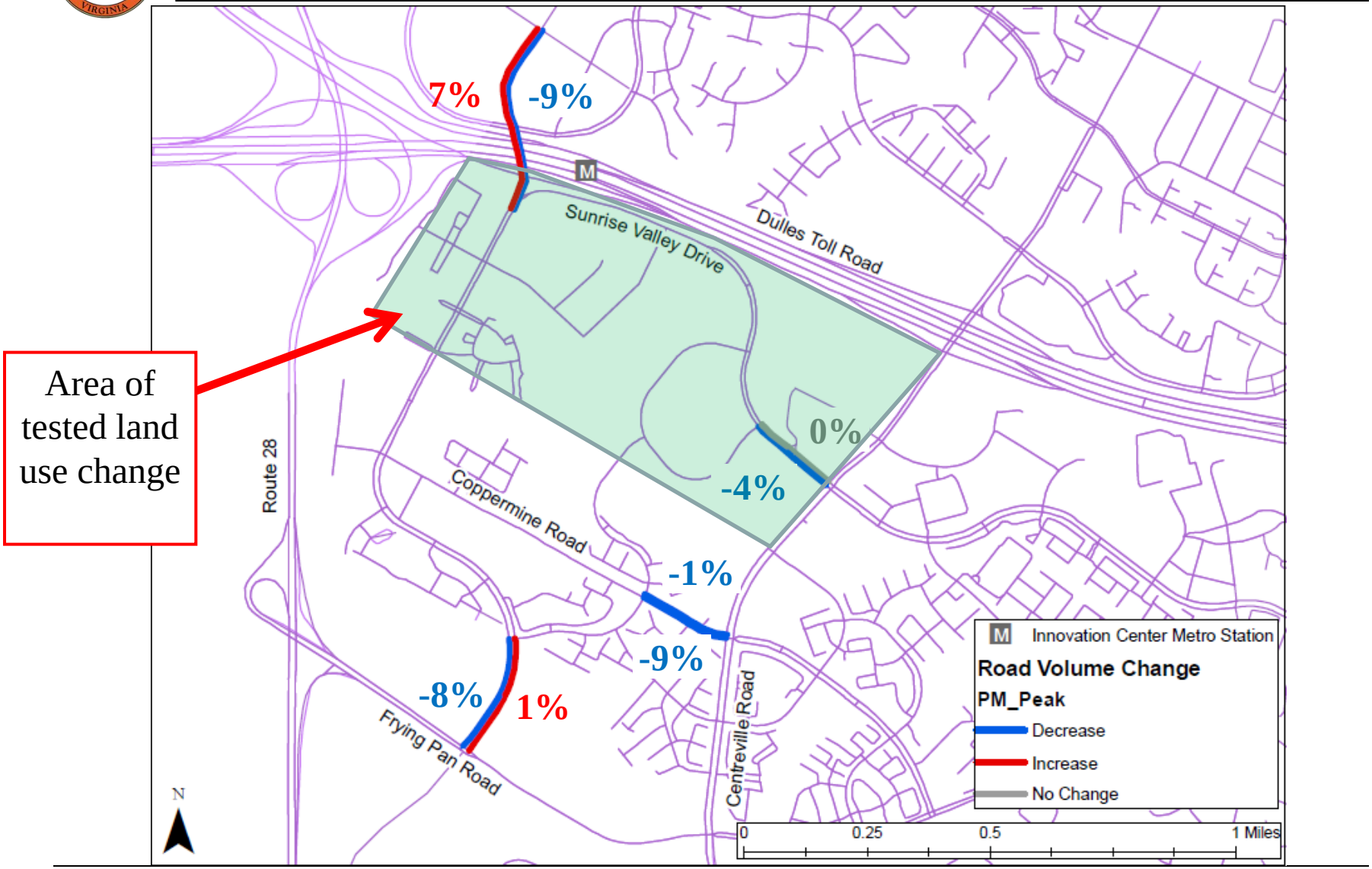
# Land Use Change – AM Peak Hour
# Net Approach Volume Changes




Area of tested land use change


4

# Land Use Change – PM Peak Hour
# Net Approach Volume Changes





5

## Summary of Vehicle Change at Intersections

| | Vehicle Change | |
|---|---|---|
| **Location** | **AM Peak** | **PM Peak** |
| Rock Hill Road Bridge | -67 | -40 |
| Sunrise Valley Dr at Centreville Rd | -65 | -85 |
| Coppermine Rd at Centreville Rd | -26 | -87 |
| Sunrise Valley Dr at Frying Pan Rd | -116 | -124 |
| **Total at All Intersections** | **-274** | **-336** |

## Vehicle Trips In and Out of Area of Land Use Change

| | AMPeakHour | | | PMPeakHour | | | Daily | | |
|---|---|---|---|---|---|---|---|---|---|
| Vehicle Traffic | Out | In | Total | Out | In | Total | Out | In | Total |
| Land Use Change (E2) | 1,830 | 3,109 | 4,939 | 4,459 | 3,250 | 7,709 | 36,009 | 36,059 | 72,068 |
| Original Scenario E | 1,722 | 3,424 | 5,146 | 4,816 | 3,206 | 8,022 | 37,251 | 37,305 | 74,556 |
| Difference | 108 | -315 | -207 | -357 | 44 | -313 | -1,242 | -1,246 | -2,488 |

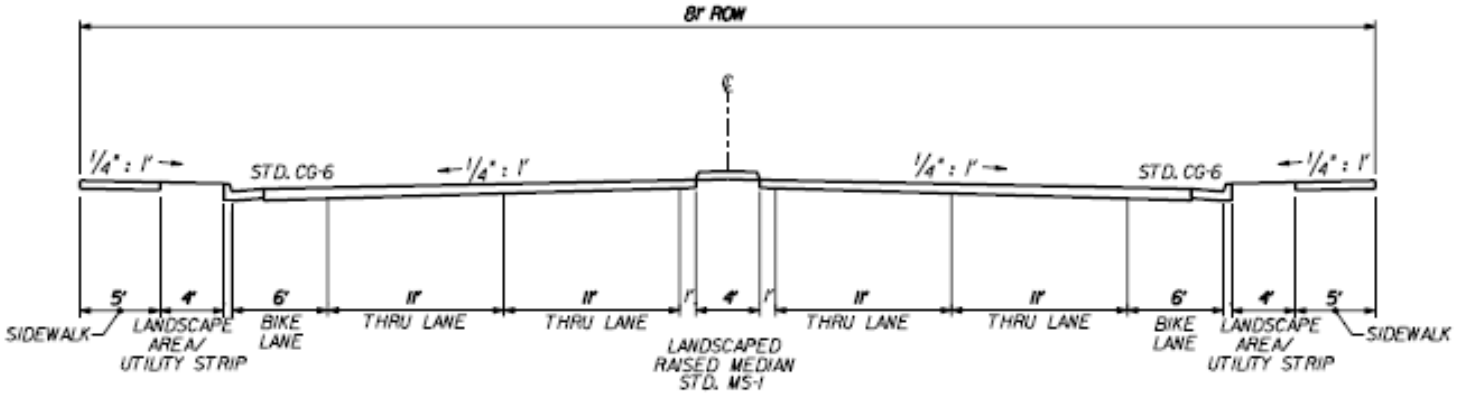
# Intersections Changes from Land Use Change (E2)

| Intersection | AM Peak | | | |
|---|---|---|---|---|
| | Scenario E | Land Use Change (E2) | Difference (E2-Scenario E) | % Change |
| Centreville Road/Sunrise Valley Dr | 60.0 | 57.0 | -3.0 | -5.0 |
| Centreville Road/Frying Pan Rd | 38 | 37 | -1.0 | -2.6 |
| Centreville Road/Coppermine Rd | 21 | 21 | 0.0 | 0.0 |
| Sunrise Valley Drive/Frying Pan Rd | 26 | 26 | 0.0 | 0.0 |

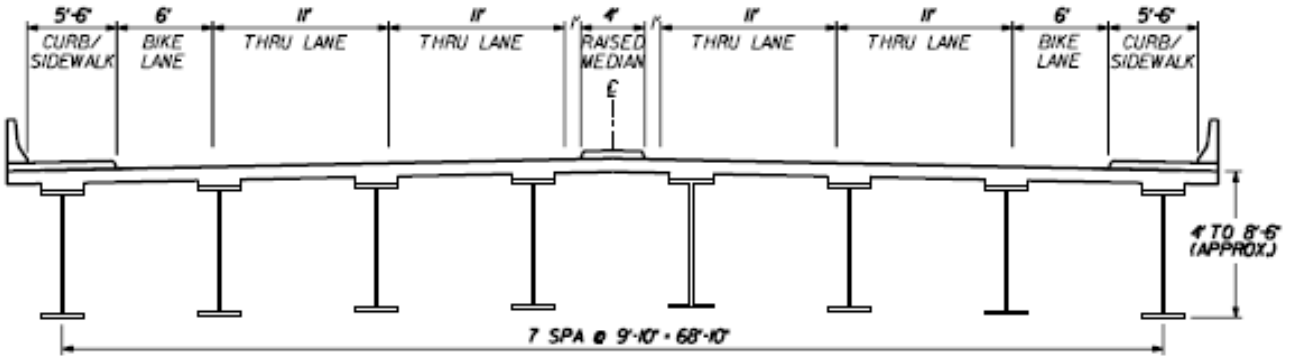
| Intersection | PM Peak | | | |
|---|---|---|---|---|
| | Scenario E | Land Use Change (E2) | Difference (E2-Scenario E) | % Change |
| Centreville Road/Sunrise Valley Dr | 99 | 99 | 0.0 | 0.0 |
| Centreville Road/Frying Pan Rd | 44 | 37 | -7.0 | -15.9 |
| Centreville Road/Coppermine Rd | 29 | 32 | 3.0 | 10.3 |
| Sunrise Valley Drive/Frying Pan Rd | 220 | 206 | -14.0 | -6.4 |

# Rock Hill Road Bridge

# Bridge Cross Section

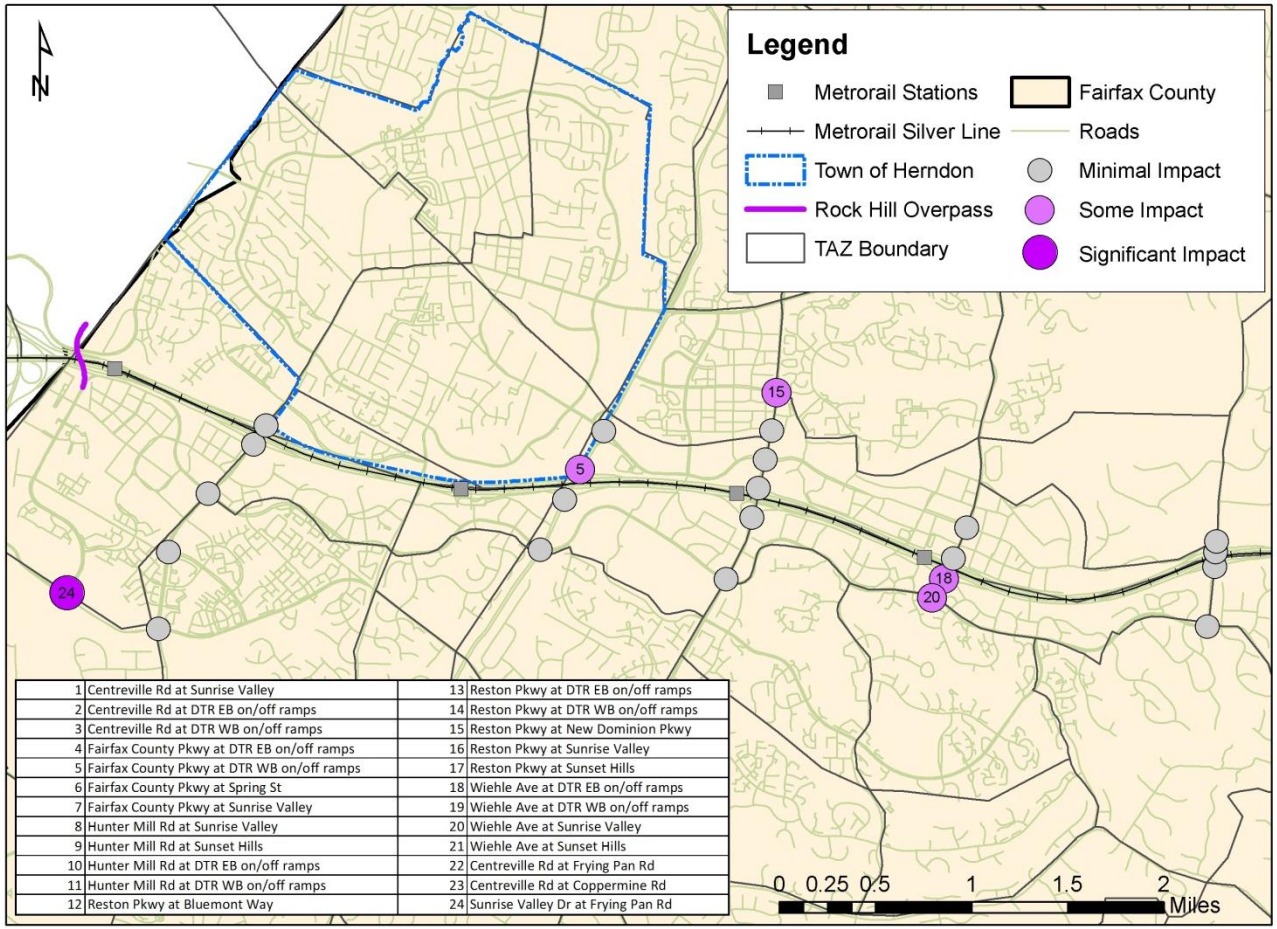



Proposed Roadway Typical Section



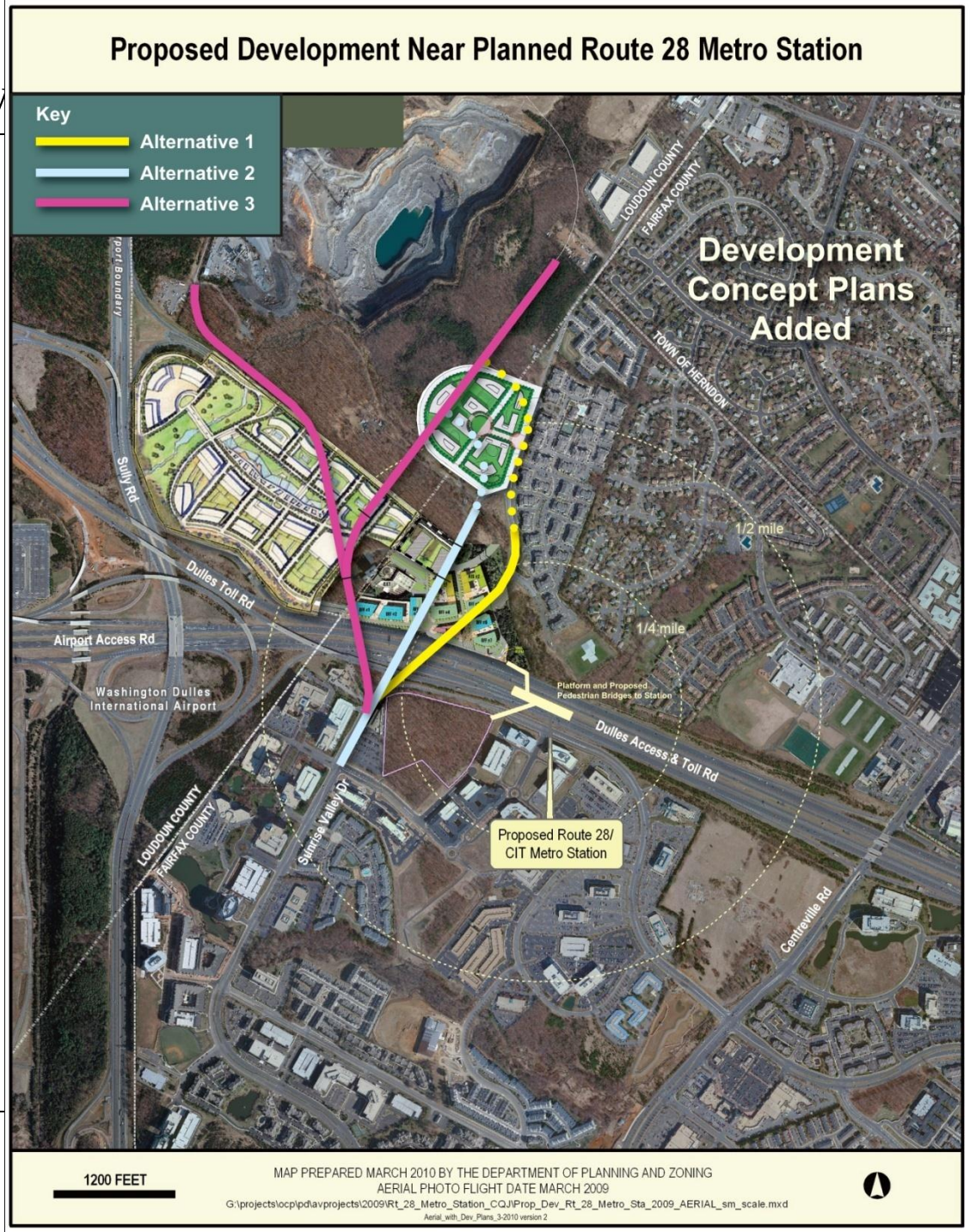

Proposed Bridge Typical Section

# LOS Impacts of Rock Hill Overpass




| | | | |
|---|---|---|---|
| 1 | Centreville Rd at Sunrise Valley | 13 | Reston Pkwy at DTR EB on/off ramps |
| 2 | Centreville Rd at DTR EB on/off ramps | 14 | Reston Pkwy at DTR WB on/off ramps |
| 3 | Centreville Rd at DTR WB on/off ramps | 15 | Reston Pkwy at New Dominion Pkwy |
| 4 | Fairfax County Pkwy at DTR EB on/off ramps | 16 | Reston Pkwy at Sunrise Valley |
| 5 | Fairfax County Pkwy at DTR WB on/off ramps | 17 | Reston Pkwy at Sunset Hills |
| 6 | Fairfax County Pkwy at Spring St | 18 | Wiehle Ave at DTR EB on/off ramps |
| 7 | Fairfax County Pkwy at Sunrise Valley | 19 | Wiehle Ave at DTR WB on/off ramps |
| 8 | Hunter Mill Rd at Sunrise Valley | 20 | Wiehle Ave at Sunrise Valley |
| 9 | Hunter Mill Rd at Sunset Hills | 21 | Wiehle Ave at Sunset Hills |
| 10 | Hunter Mill Rd at DTR EB on/off ramps | 22 | Centreville Rd at Frying Pan Rd |
| 11 | Hunter Mill Rd at DTR WB on/off ramps | 23 | Centreville Rd at Coppermine Rd |
| 12 | Reston Pkwy at Bluemont Way | 24 | Sunrise Valley Dr at Frying Pan Rd |

The Rock Hill Overpass is forecast to have mostly moderate improvements on intersections throughout the study area, but may have greater impacts to the west and along VA 28.


Proposed Development Near Planned Route 28 Metro Station
Key
Alternative 1
Alternative 2
Alternative 3
Development Concept Plans Added
Sully Rd
Dulles Toll Rd
Airport Access Rd
Washington Dulles International Airport
LOUDOUN COUNTY
FAIRFAX COUNTY
TOWN OF HERNDON
1/2 mile
1/4 mile
Platform and Proposed Pedestrian Bridges to Station
Dulles Access & Toll Rd
Sunrise Valley Dr
Proposed Route 28/ CIT Metro Station
Centreville Rd
1200 FEET
MAP PREPARED MARCH 2010 BY THE DEPARTMENT OF PLANNING AND ZONING
AERIAL PHOTO FLIGHT DATE MARCH 2009
G:\projects\ocp\pd\avprojects\2009\Rt_28_Metro_Station_CQJ\Prop_Dev_Rt_28_Metro_Sta_2009_AERIAL_sm_scale.mxd
Aerial_with_Dev_Plans_3-2010 version 2



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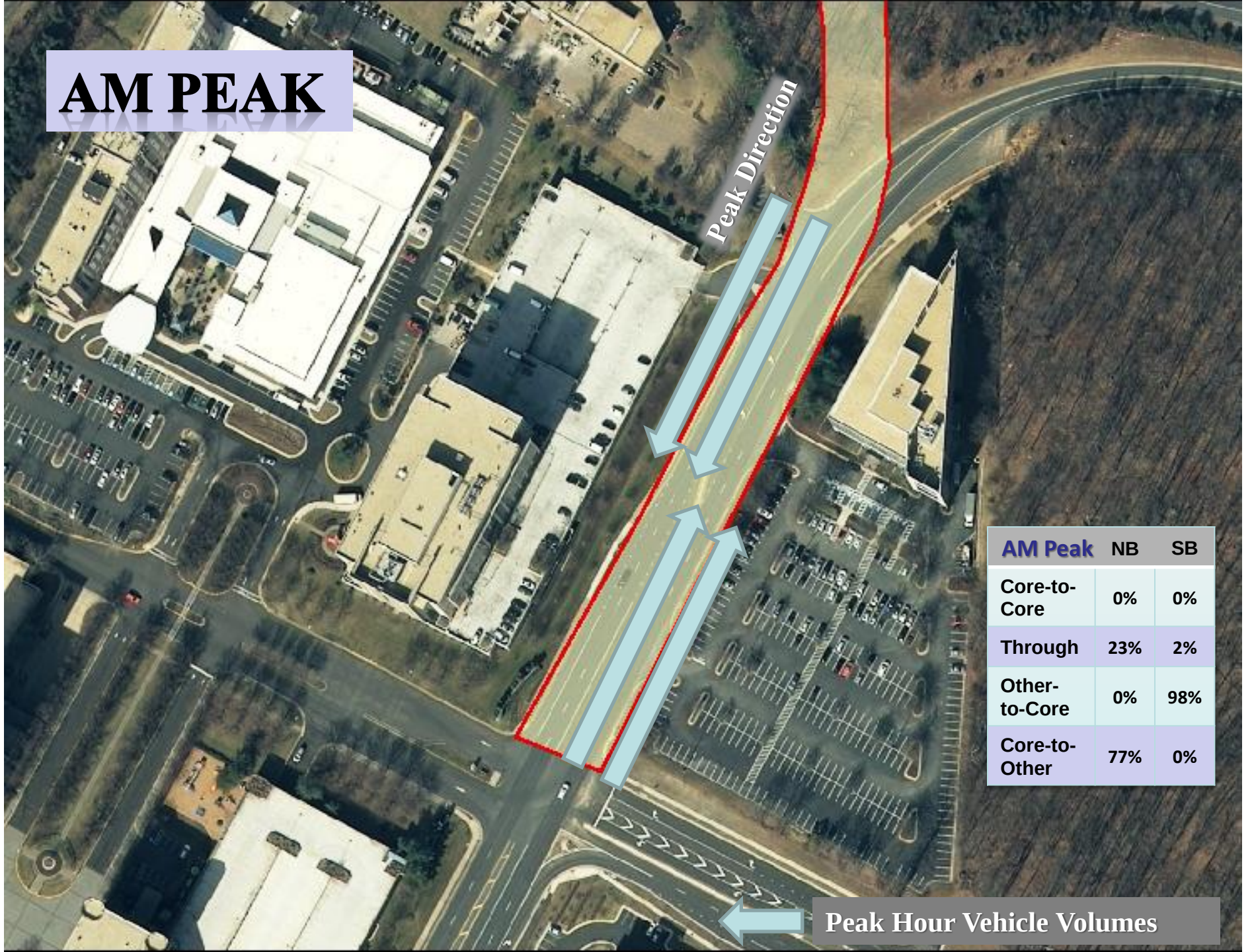
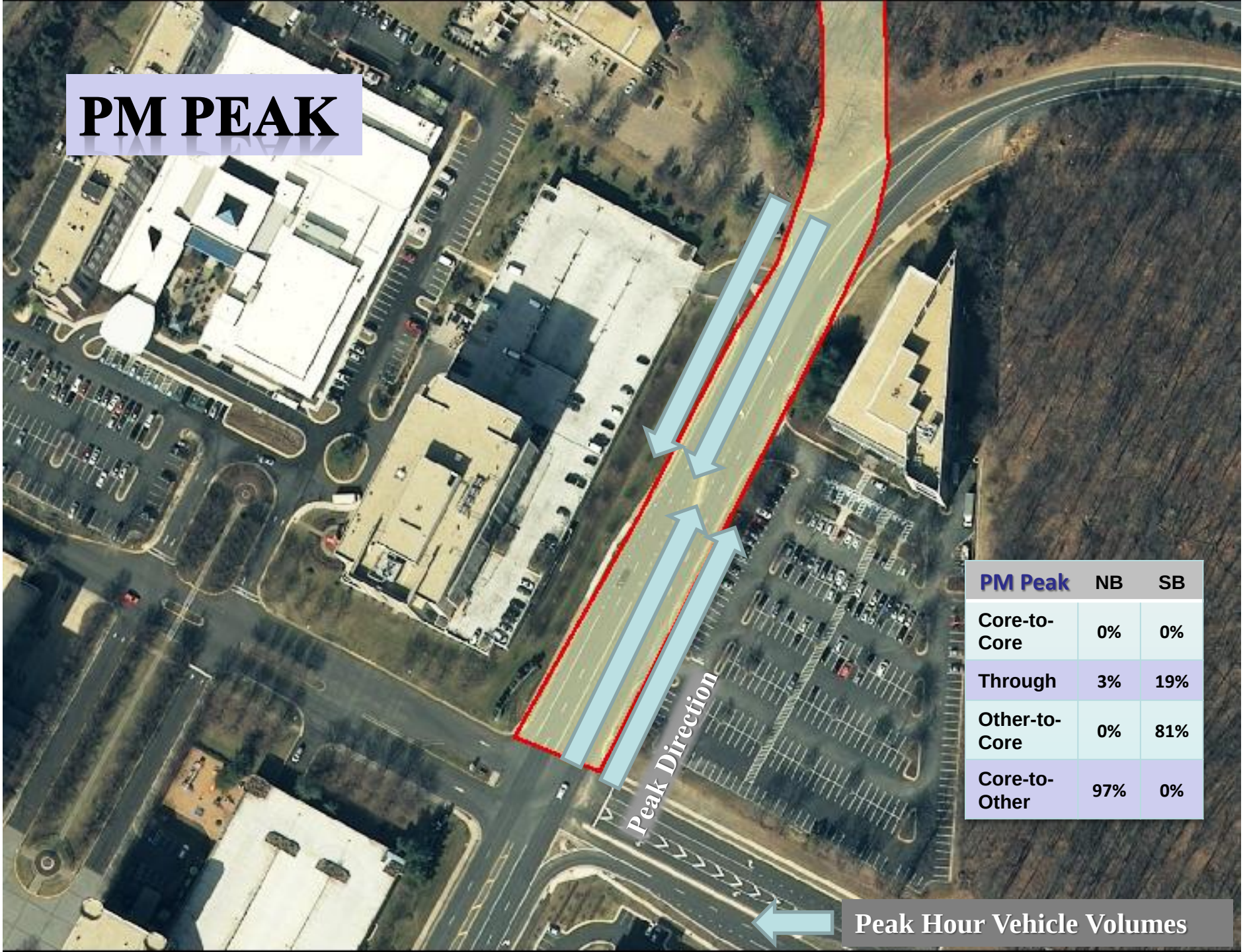
# AM PEAK

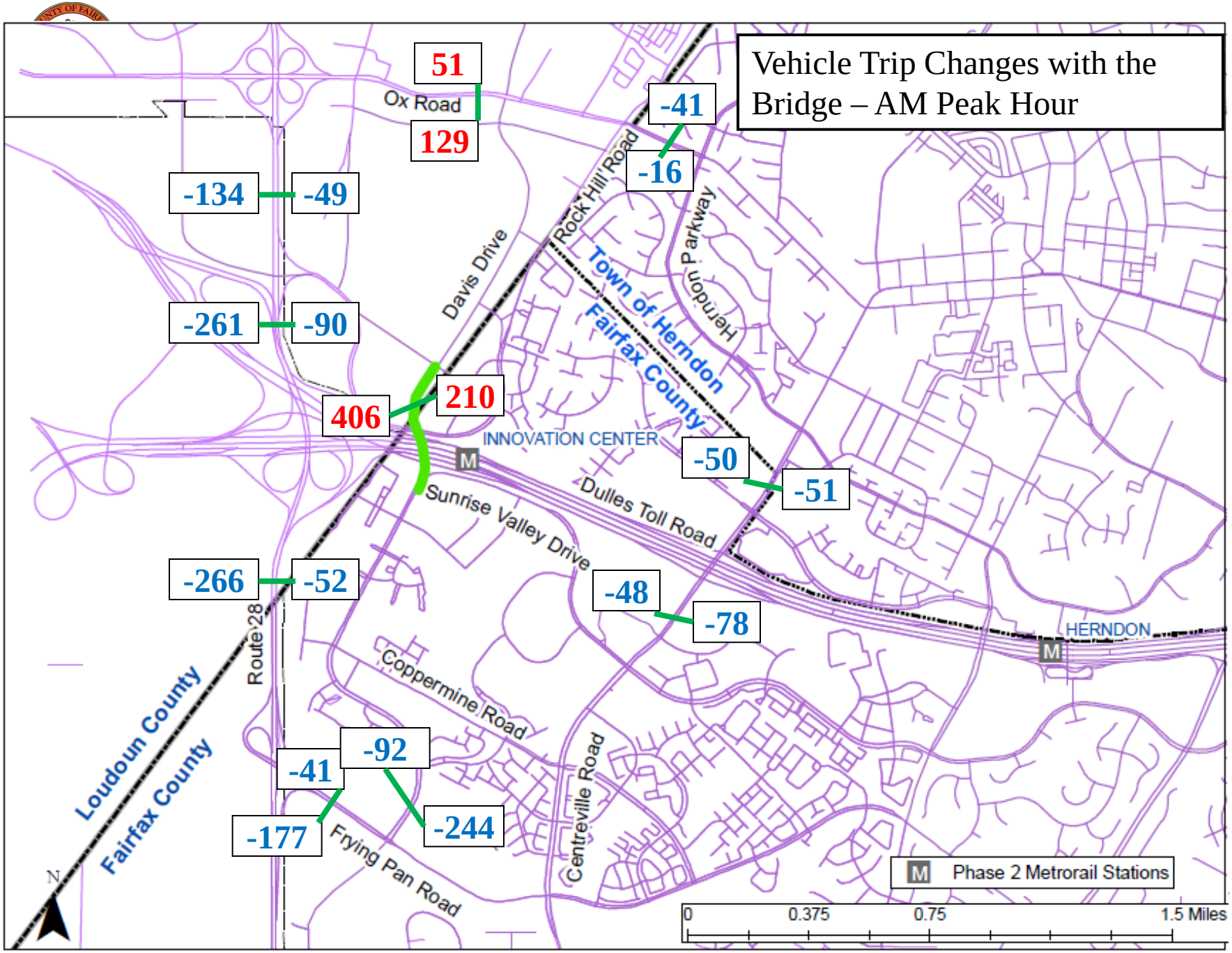


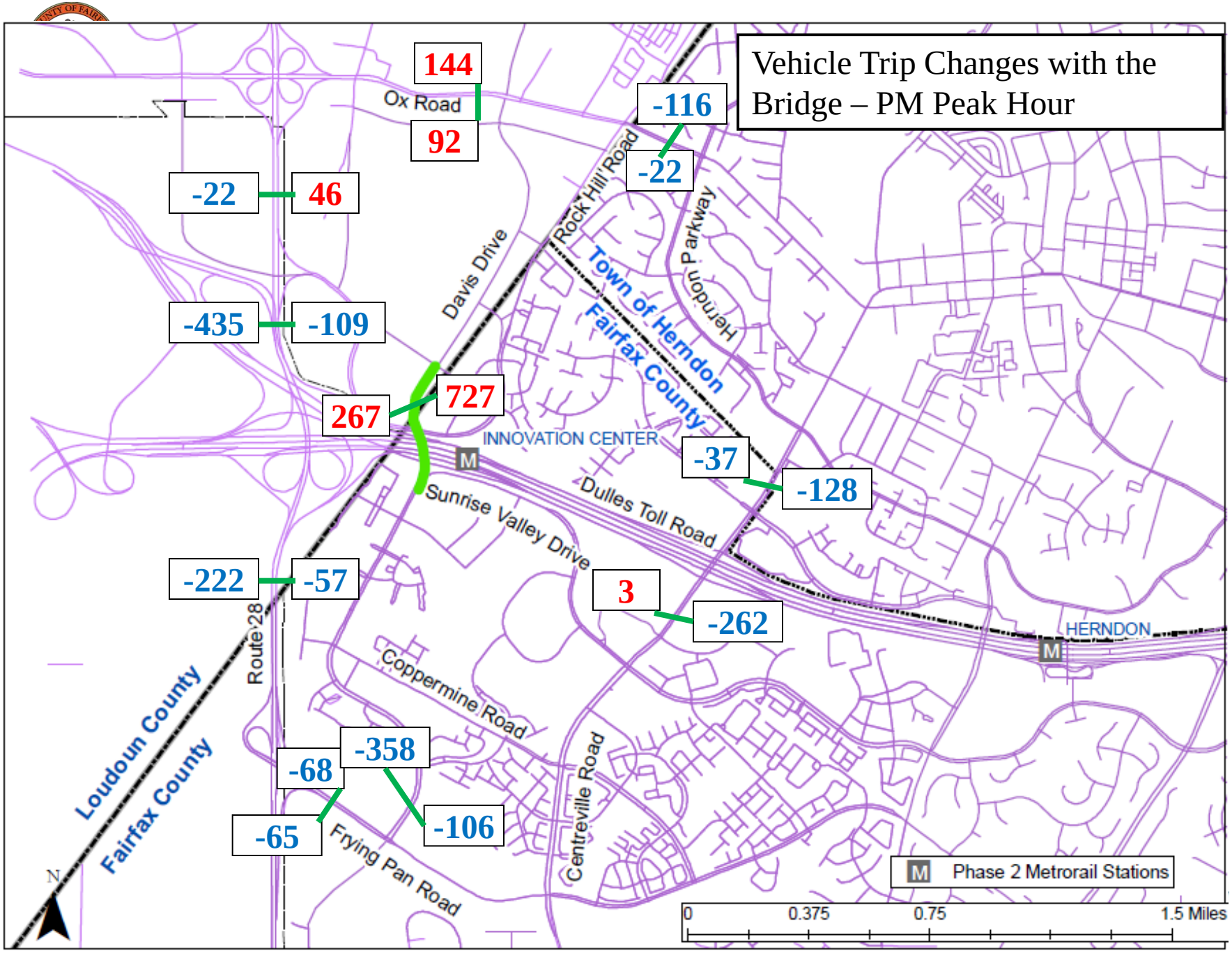

| AM Peak | NB | SB |
|---|---|---|
| Core-to-Core | 0% | 0% |
| Through | 23% | 2% |
| Other-to-Core | 0% | 98% |
| Core-to-Other | 77% | 0% |

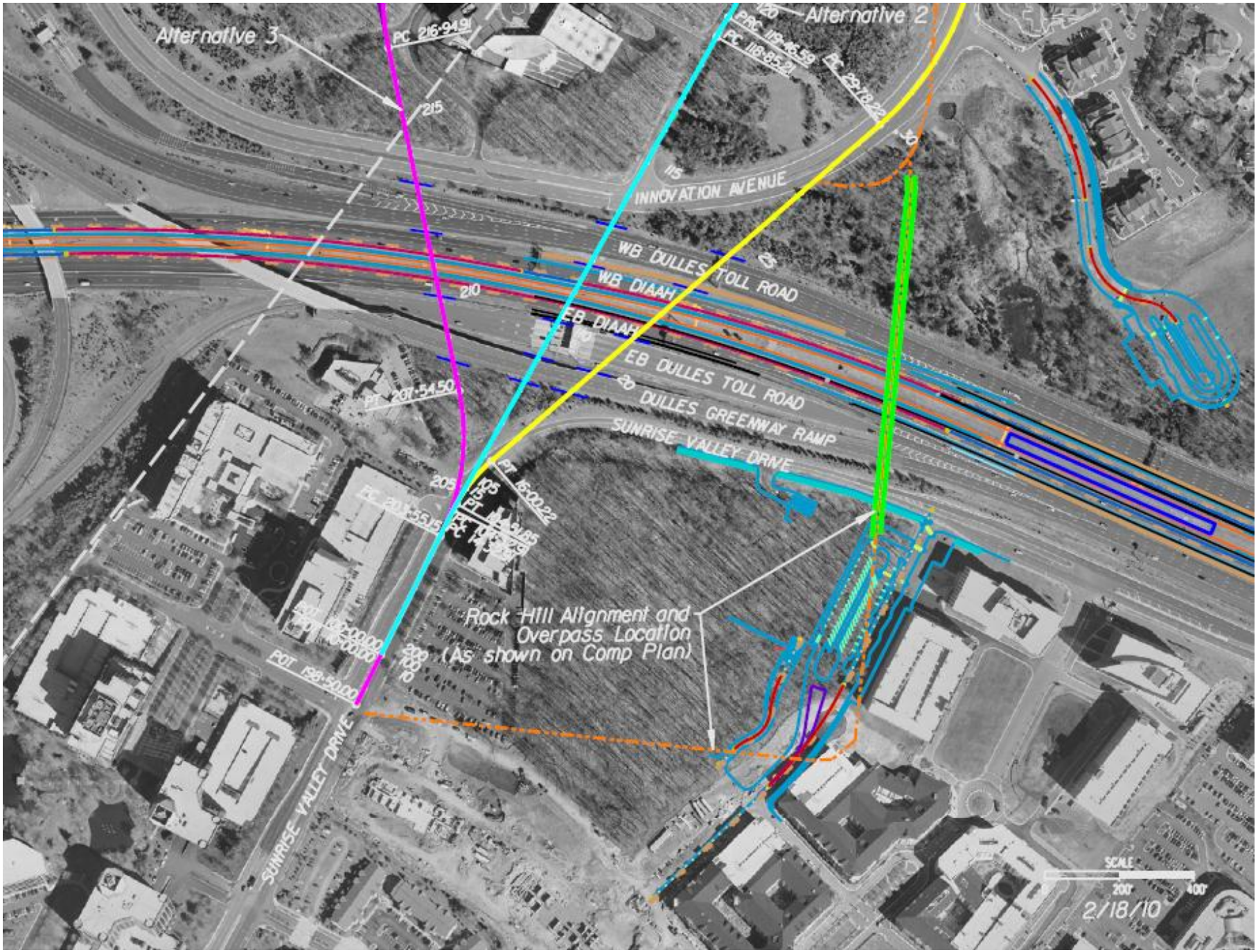
Peak Hour Vehicle Volumes

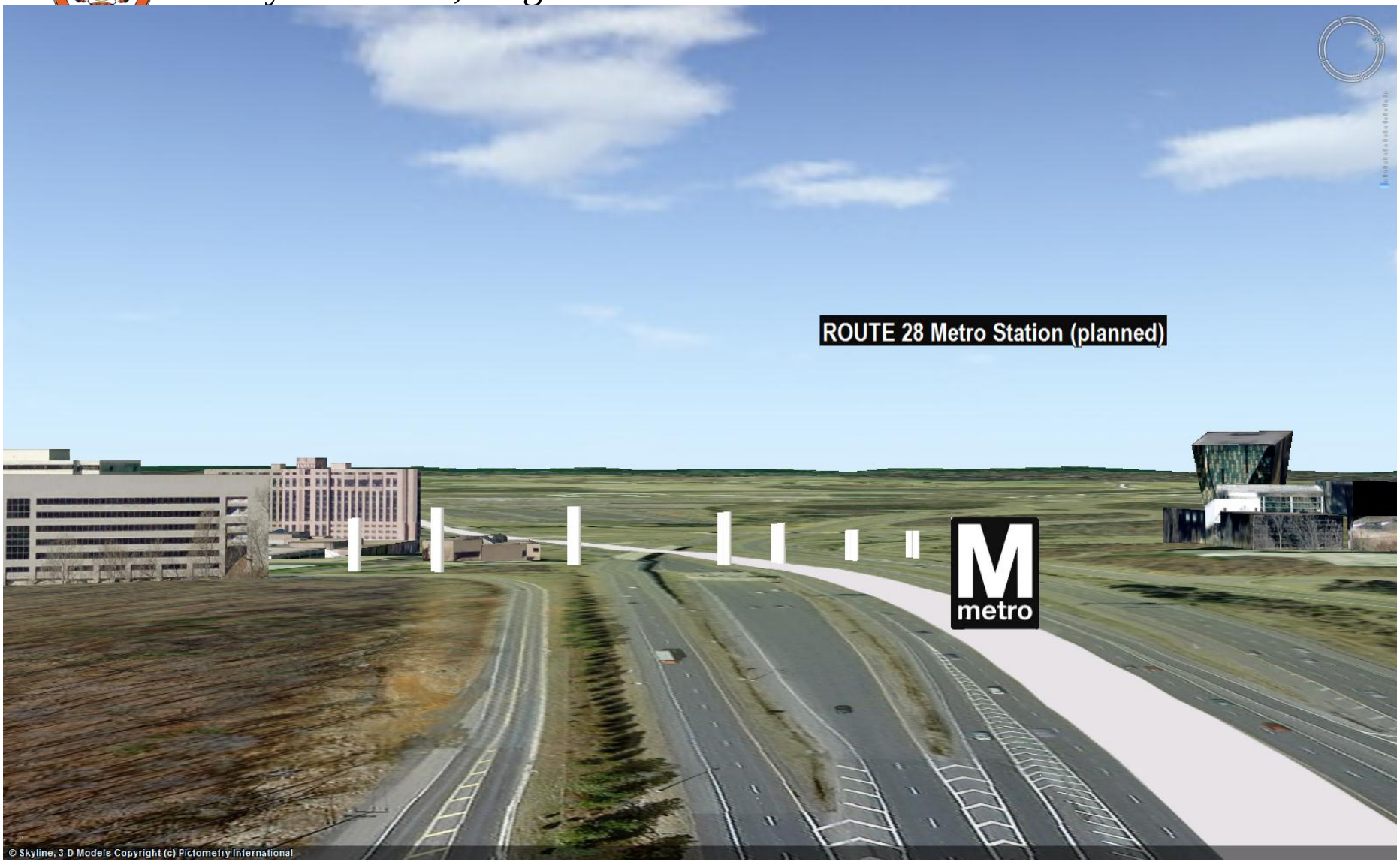


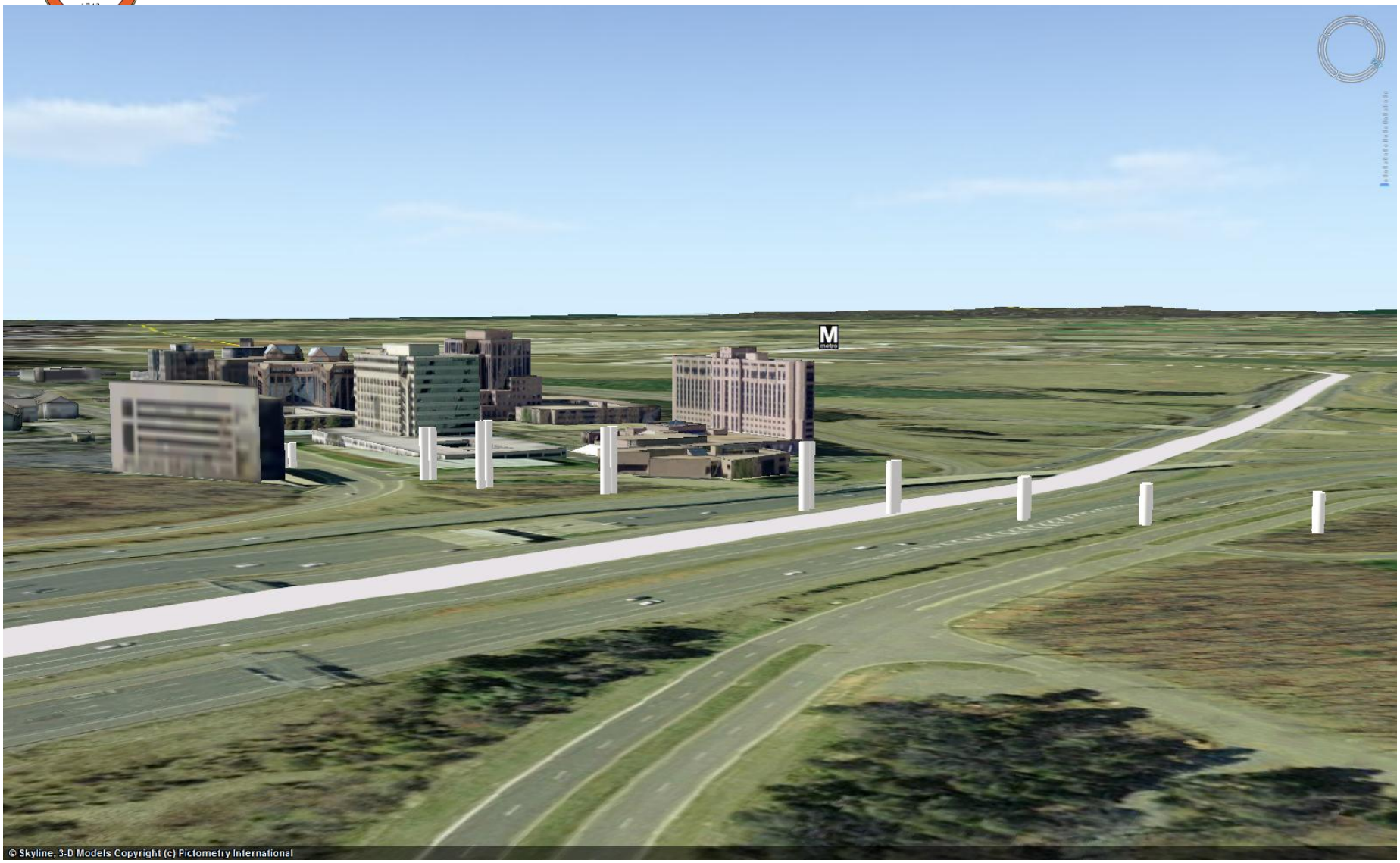

| PM Peak | NB | SB |
|---|---|---|
| Core-to-Core | 0% | 0% |
| Through | 3% | 19% |
| Other-to-Core | 0% | 81% |
| Core-to-Other | 97% | 0% |


Vehicle Trip Changes with the Bridge – AM Peak Hour
51
Ox Road
129
-41
-16
-134
-49
Rock Hill Road
Herndon Parkway
Davis Drive
Town of Herndon
Fairfax County
-261
-90
406
210
INNOVATION CENTER
-50
-51
Dulles Toll Road
Sunrise Valley Drive
-266
-52
-48
-78
HERNDON
Route 28
Coppermine Road
Loudoun County
Fairfax County
-92
-41
-177
-244
Centreville Road
Frying Pan Road
N
Phase 2 Metrorail Stations
0
0.375
0.75
1.5 Miles


Vehicle Trip Changes with the Bridge – PM Peak Hour
144
Ox Road
92
-116
-22
-22
46
Rock Hill Road
Herndon Parkway
Davis Drive
Town of Herndon
Fairfax County
-435
-109
727
267
INNOVATION CENTER
-37
-128
Dulles Toll Road
Sunrise Valley Drive
-222
-57
3
-262
HERNDON
Route 28
Coppermine Road
Loudoun County
Fairfax County
-358
-68
-106
-65
Centreville Road
Frying Pan Road
N
Phase 2 Metrorail Stations
0
0.375
0.75
1.5 Miles

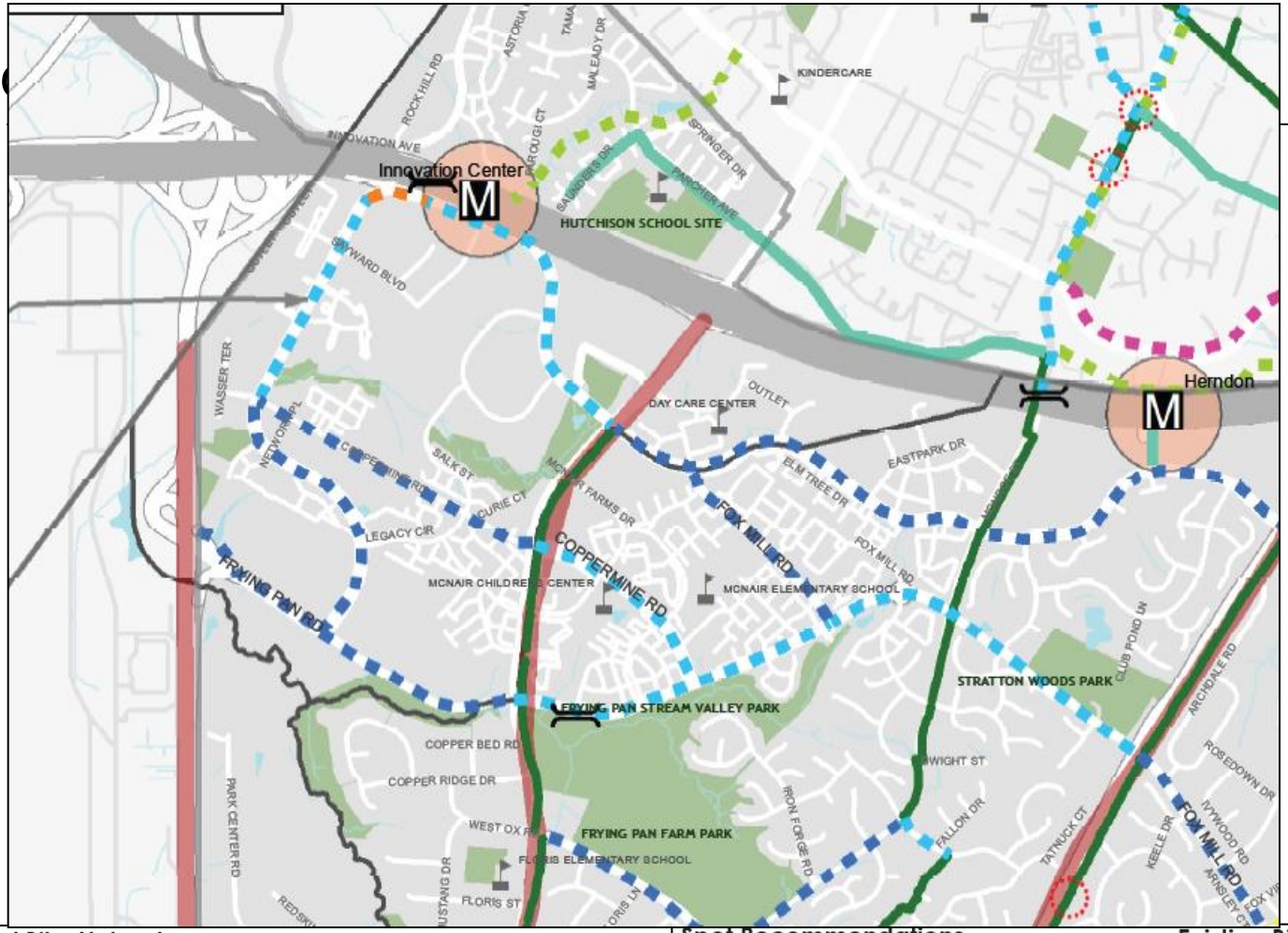

Alternative 3
Alternative 2
INNOVATION AVENUE
WB DULLES TOLL ROAD
WB DIAAH
EB DIAAH
EB DULLES TOLL ROAD
DULLES GREENWAY RAMP
SUNRISE VALLEY DRIVE
Rock Hill Alignment and
Overpass Location
(As shown on Comp Plan)
SUNRISE VALLEY DRIVE
SCALE
200'
400'
2/18/10


ROUTE 28 Metro Station (planned)
M
metro
© Skyline, 3-D Models Copyright (c) Pictometry International


M
© Skyline, 3-D Models Copyright (c) Pictometry International

# Road Network Around the Bridge

# Draft Bicycle Master Plan




## Recommended Bike Network

### ON - ROAD BIKEWAYS

- Bike Lane
- Buffered Bike Lane
- Shared Lane Marking (Sharrow)
- Climbing Lane
- Striped Shoulder
- Shared Roadway
- Shared Roadway with Safety Treatment

### OFF - ROAD BIKEWAYS

**TRANSPORTATION TRAILS**

- Shared Use Path (New)
- Shared Use Path (Upgrade Existing)
- Sidewalk with Bikes Permitted (New and Existing)

**CYCLE TRACKS**

- Cycle Track

**CORRIDOR RECOMMENDATIONS**

- Policy Road
- Study Further

## Spot Recommendations

- Bicycle Access Links and Crossings
- Transit Station Improvement
- Bridge
- Tunnel

## Existing Bikeway Network

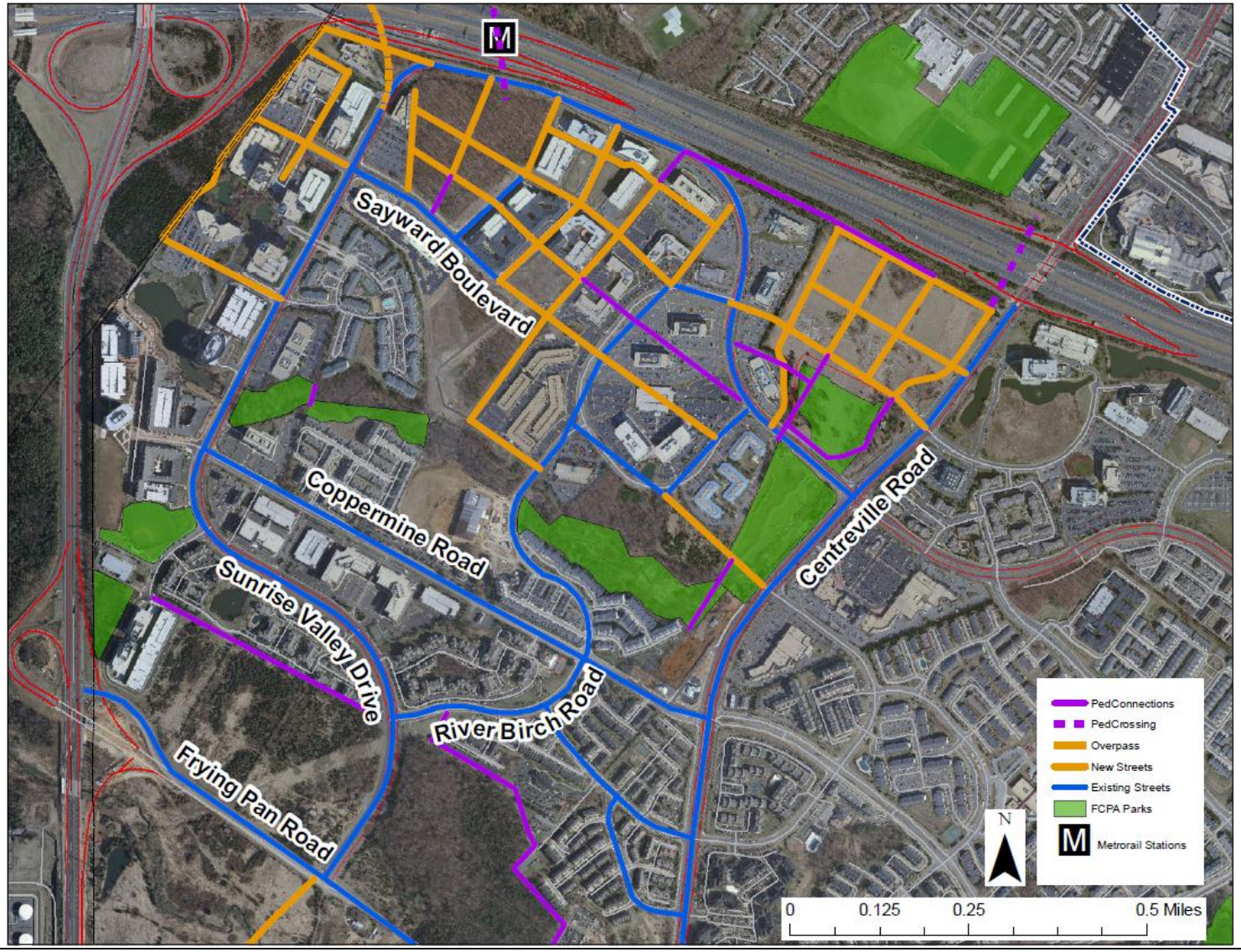
- Bike Lane
- Transportation Trail (Paved and Unpaved)

# Recap of Improvements

# Recap of Improvements in Analysis

- Metro Station
- Grid of Streets
- Intersection improvements
- River Birch Extension
- Rock Hill Road Bridge
- Transit Increases in the Constrained Long Range Plan
- Transportation Demand Management

# Innovation Center Station – New Streets



# Intersection Mitigations

- 24 major intersections analyzed in transportation study (6 are in the Route 28 Study Area)
  - Mitigation added at 17 intersections (5 are in the Route 28 Study Area)
  - Includes improvements at Dulles Toll Road ramps as proposed by the Metropolitan Washington Airport Authority
- Evaluated intersection improvements considering pedestrian and bicycle access issues

# Results of 1st Mitigation with Working Group Scenario

## Sunrise Valley Drive at Frying Pan Road

2030 Traffic Conditions (unmitigated):

- Morning LOS/Delay: **F/320 seconds**
- Evening LOS/Delay: **F/300 seconds**

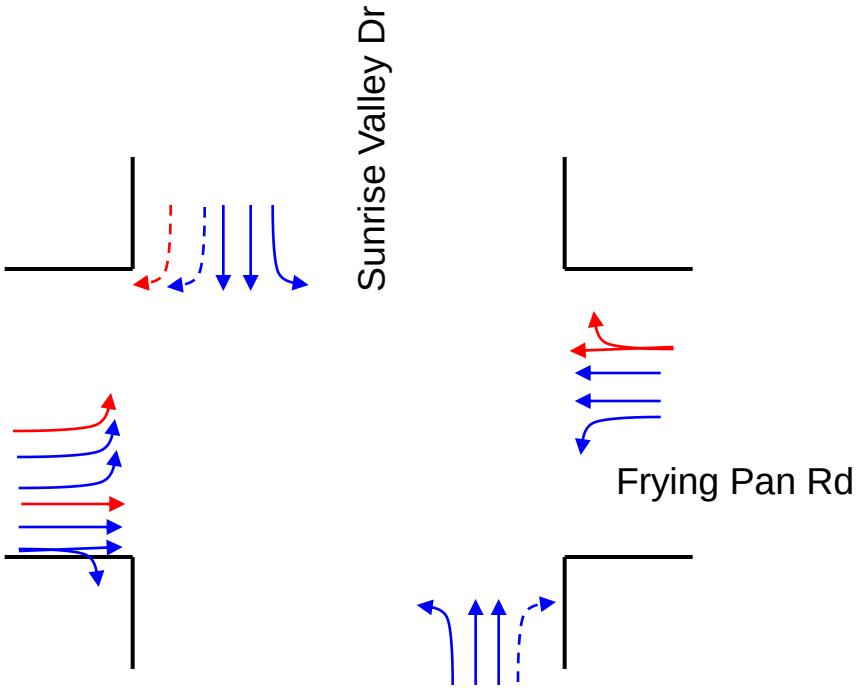
1st Mitigation Added:

- Add 2nd SB left turn lane
- Add a WB thru/right lane
- Add a 3rd EB left turn lane
- Add a 3rd EB thru lane

1st Result - 2030 Traffic Conditions with Scenario E:

- Morning LOS/Delay: **B/15 seconds**
- Evening LOS/Delay: **F/450 seconds**

Mitigations Added




Note 1: Red Arrow – Improvement Added

Note 2: Dashed line indicates a free right turn

# Results of 2nd Mitigation with Working Group Scenario

Mitigations Added

## Sunrise Valley Drive at Frying Pan Road

2030 Traffic Conditions (unmitigated):

- Morning LOS/Delay: **F/320 seconds**
- Evening LOS/Delay: **F/300 seconds**

1st Result - 2030 Traffic Conditions with Scenario E:

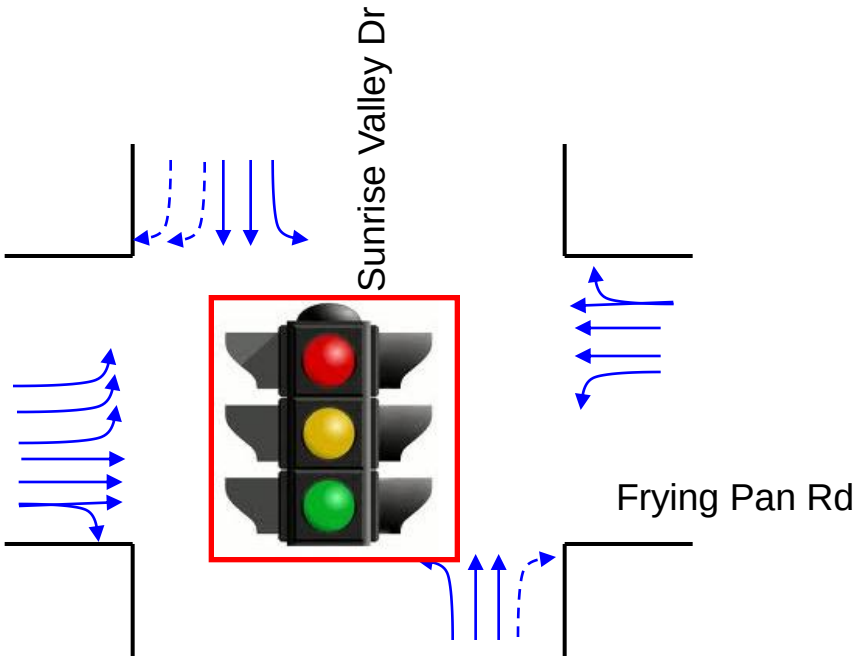
- Morning LOS/Delay: **B/15 seconds**
- Evening LOS/Delay: **F/450 seconds**

2nd Mitigation Added:

- Optimize Signal Timing

2nd Result - 2030 Traffic Conditions with Scenario E:

- Morning LOS/Delay: **B/15 seconds**
- Evening LOS/Delay: **F/310 seconds**




Note 1: Red Improvement Added

Note 2: Lane Configuration

# Results of 3rd Mitigation with Working Group Scenario

## Sunrise Valley Drive at Frying Pan Road

2030 Traffic Conditions (unmitigated):

- Morning LOS/Delay: **F/320 seconds**
- Evening LOS/Delay: **F/300 seconds**

1st Result - 2030 Traffic Conditions with Scenario E:

- Morning LOS/Delay: **B/15 seconds**
- Evening LOS/Delay: **F/450 seconds**

2nd Result - 2030 Traffic Conditions with Scenario E:

- Morning LOS/Delay: **B/15 seconds**
- Evening LOS/Delay: **F/310 seconds**

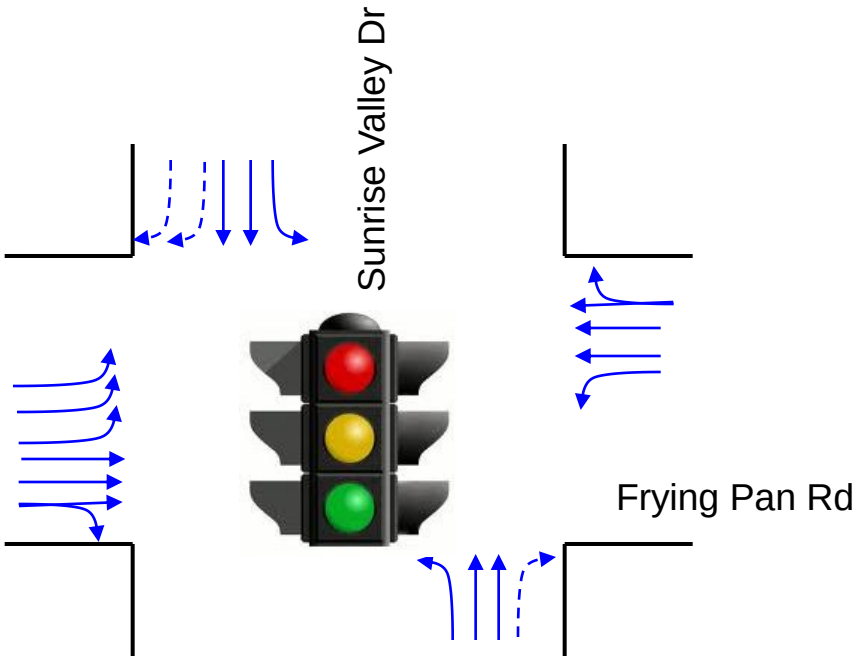
3rd Mitigation Added:

- River Birch Extension

2nd Result - 2030 Traffic Conditions with Scenario E:

- Morning LOS/Delay: **n/a**
- Evening LOS/Delay: **E/63 seconds**

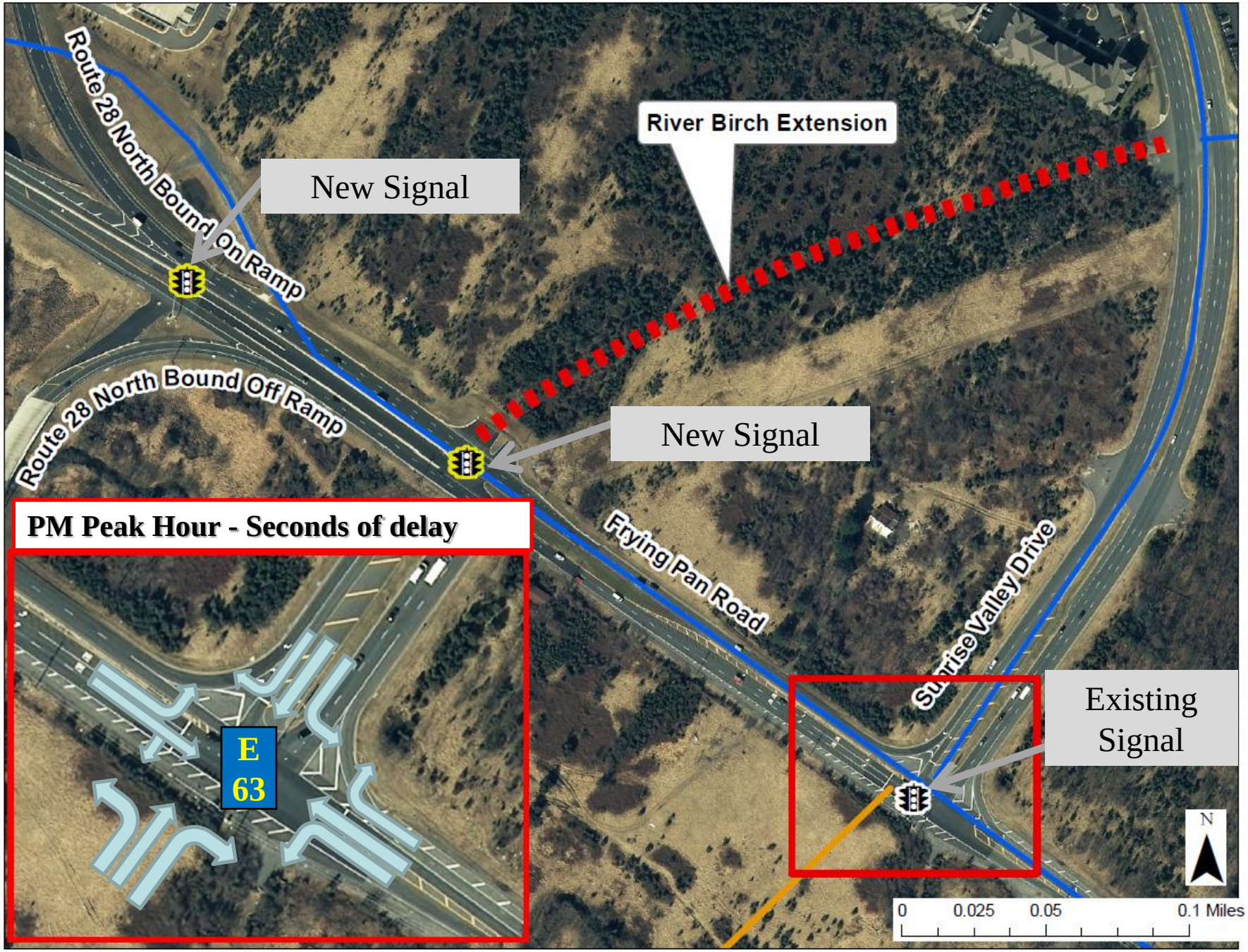
Mitigations Added

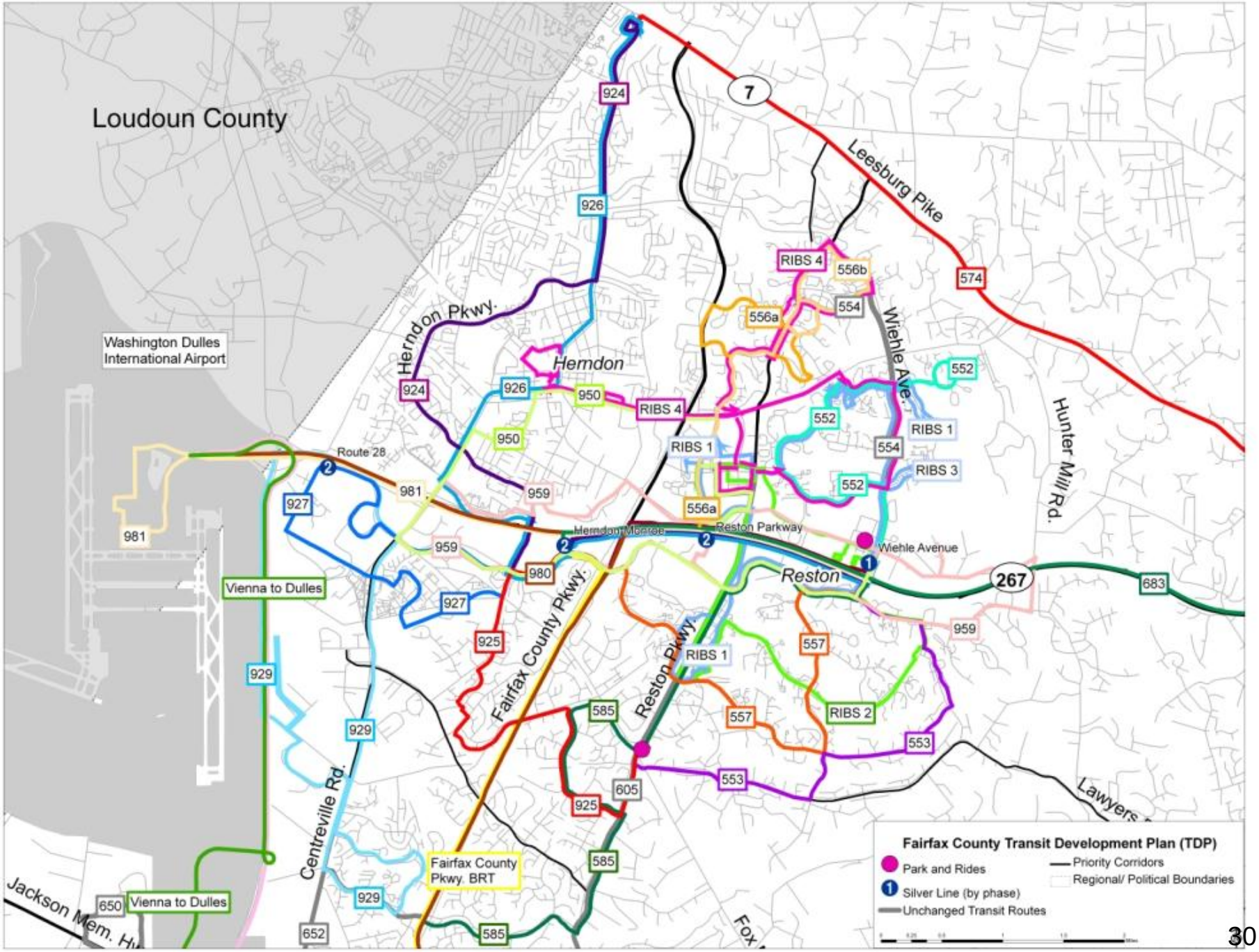



Note 1: Red Arrow – Improvement Added

Note 2: Dashed line indicates a free right turn

# River Birch Extension to Frying Pan Road







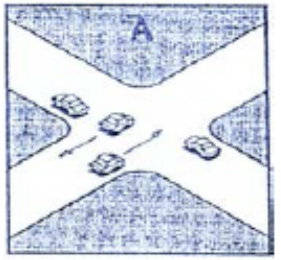
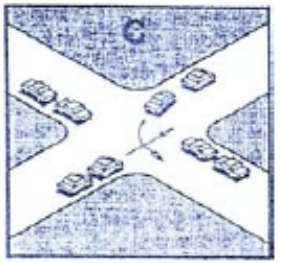
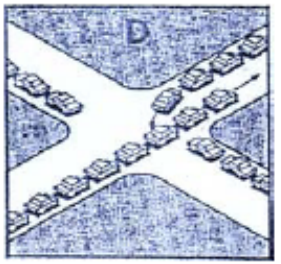
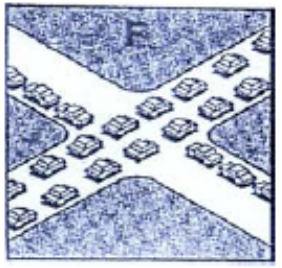

for 30 Years and More

# Additional Mitigation

# Additional Mitigation

- Increase transit frequency (buses)
- Transportation Demand Management
- Minor adjustments in road improvements if needed
- Others to be determined based on results of final scenario

# Questions/Comments?


33

| L.O.S. | Roadway Segments or Controlled Access Highways | Intersections |
|---|---|---|
| A | Free flow, low traffic density. | No vehicle waits longer than one signal indication. |
| B | Delay is not unreasonable, stable traffic flow. | On a rare occasion motorists wait through more than one signal indication. |
| C | Stable condition, movements somewhat restricted due to higher volumes, but not objectionable for motorists. | Intermittently drivers wait through more than one signal indication, and occasionally backups may develop behind left turning vehicles, traffic flow still stable and acceptable. |
| D | Movements more restricted, queues and delays may occur during short peaks, but lower demands occur often enough to permit clearing, thus preventing excessive backups. | **Delays at intersections may become extensive with some, especially left-turning vehicles waiting two or more signal indications, but enough cycles with lower demand occur to permit periodic clearance, thus preventing excessive back-ups.** |
| E | Actual capacity of the roadway involves delay to all motorists due to congestion. | Very long queues may create lengthy delays, especially for left turning vehicles. |
| F | Forced flow with demand volumes greater than capacity resulting in complete congestion. Volumes drop to zero in extreme cases. | Backups from locations downstream restrict or prevent movement of vehicles out of approach creating a storage area during part or all of an hour. |