

T&E COMMITTEE #4  
February 4, 2013

**MEMORANDUM**

January 31, 2013

TO: Transportation, Infrastructure, Energy and Environment Committee  
FROM: Glenn Orlin, <sup>60</sup>Deputy Council Staff Director  
SUBJECT: Facility planning review—Forest Glen Passageway

The Council programmed \$2,000,000 under the State Transportation Participation project for the Department of Transportation (DOT) to conduct “engineering design of a pedestrian tunnel beneath Georgia Avenue from the Forest Glen Metro Rail Station” (©1-2). DOT has completed the feasibility study stage of planning, during which it examined several alternatives. This worksession is the opportunity for Committee members and other interested Councilmembers to provide informal feedback to DOT as to whether to proceed to the detailed planning stage that would produce the precise project scope and develop reliable estimates of cost and community and environmental impact—and if so, what should be studied.

The alternatives are well described in DOT’s Forest Glen Passageway Feasibility Study (January 2013), the Executive Summary of which is on ©3-11. The Planning Board’s comments, following its review of the project last October 11, are on ©12-13. The Planning staff report for the Board meeting is on ©14-27. Committee members are encouraged to scan this material, as they provide a good summary and analysis of the current conditions, the alternatives, and the pros and cons of each.

After examining many options, DOT reduced them to three final build alternatives. Tunnel Alternative 1 would begin at the existing Forest Glen Metro Station underpass connecting the station entrance (at the southwest corner of Georgia Avenue and Forest Glen Road) to the park-and-ride lot (northwest of the intersection), and connect to the southeast corner of that intersection with a 303’-long underpass, at a cost of \$15.6 million. Tunnel Alternative 2 would connect instead to the northeast corner with a 334’-long underpass, at a cost of \$17.9 million. The cavity of either underpass would be 23’ wide with an 18’-wide clear area, and 9.5’ high. Both feature elevators for persons with disabilities: two in the southwest corner to bring persons from the underpass to the surface, and two serving the same purpose on the east side of Georgia Avenue. A significant difference between the two is that the main

access from the east under Tunnel Alternative 1 would be a staircase down to the underpass level, while Tunnel Alternative 2 would have a ramp with an 8.34% grade.

The third final alternative is Bridge Alternative 1, a 270'-long structure over Georgia Avenue, connecting to the southeast corner, at a cost of \$8.6 million. It would be 12' wide with a 10'-wide clear area, with stair and elevator access at each end.

Of the build alternatives, DOT and the Planning Board (and staff) propose Tunnel Alternative 2. Through formal and informal feedback, the overwhelming majority of the residents in this area support Tunnel Alternative 2 as well.

The Planning Board's review stressed the importance of seeking at-grade improvements to the Georgia Avenue/Forest Glen Road intersection to promote safe crossing by pedestrians and bicyclists. The number of pedestrian crossings is relatively light—about 800 per day—far less than in urban locales where grade-separated crossings are more common. The Forest Glen Sector Plan does not call for significant added density around this station, so the number will not rise significantly over time. The Board points out that the State Highway Administration has recently undertaken a project planning study for Georgia Avenue between 16<sup>th</sup> Street and Forest Glen Road (a \$3 million study also funded by the County under the State Transportation Participation project, see ©1) which, among other things, will develop means to improve the safety of pedestrian crossings there.

Bruce Johnston and Greg Hwang of DOT will brief the Committee on its findings and recommendations. Marc Lewis-DeGrace of the Planning staff will summarize the Planning Board's perspective. Council staff will conclude the presentations. After the Committee has explored the issues with the staffs, it will be asked for its guidance to DOT, which subsequently will be transmitted in a memorandum from the Committee Chair to the DOT Director.

***Council staff comments.*** Council staff believes that Tunnel Alternatives 1 and 2 are both acceptable build options. The tunnel in Alternative 1 is a bit shorter, would serve more Metro patrons, and, as currently configured, would cost \$2.3 million less to build than Alternative 2. There is already an 8'-wide shared use path (hiker-biker trail) connecting the southeast corner east to Holy Cross Hospital. On the other hand, Alternative 2 has a significant advantage in that it would provide stair-free access to the underpass, and it would avoid potential impacts to Montgomery Hills Baptist Church, which sits on the southeast corner.

The Planning Board recommends that if Tunnel Alternative 2 is selected, however, the sidewalk on the north side of Forest Glen Road should be extended about 1,500' east to Dameron Drive, where there is a "protected" (signal controlled) pedestrian crossing to Holy Cross Hospital. This sidewalk will not be inexpensive—much of it will require retaining walls—and it could add \$1 million or more to the cost.

If Alternative 2 is selected, DOT should also revisit with WMATA the need for the four elevators. WMATA's ADA office is requiring it—as this would be a new entrance to the Metro station and would be owned and maintained by WMATA, it has the final say on such matters. But since the new tunnel would connect to the existing tunnel that is ADA accessible, why are the two elevators proposed for the southwest corner necessary? And if the ramp in the northwest corner is also built to

ADA standards, why would the two elevators there be necessary? If the concern is that the open-air portion of the ramp may become slippery if exposed to the elements, then erecting a canopy—such as Metro has done during the last few years over its open-air escalators—would be a more cost-effective and less maintenance-intensive solution.

The bridge option should be discarded. Although it would cost only about half as much and could be built in less than half of the time (15 months versus 39 months), it is likely not to be used much. Pedestrian bridges are usually effective only when they span an impassable feature, such as a river, a ravine, or a freeway. Most pedestrians likely would continue to take their chances crossing Georgia Avenue at grade, as they do today, rather than climbing and descending stairs and ramps.

**Council staff recommendations:**

- **Work with SHA to develop safer at-grade crossings of Georgia Avenue and Forest Glen Road, as part of the (County-funded) project planning study recently undertaken.**
- **Proceed with either Tunnel Alternatives 1 or 2 as the “build” alternative.**
- **Review with WMATA the need for the southwest corner elevators and (for Alternative #2) the northwest corner elevators.**
- **If Alternative 2 is selected, extend the proposed sidewalk on the north side of Forest Glen Road east to Dameron Drive.**

# State Transportation Participation -- No. 500722

Category  
Subcategory  
Administering Agency  
Planning Area

Transportation  
Roads  
Transportation  
Countywide

Date Last Modified  
Required Adequate Public Facility  
Relocation Impact  
Status

January 09, 2012  
Yes  
None.  
On-going

### EXPENDITURE SCHEDULE (\$000)

Cost Element	Total	Thru FY11	Est. FY12	Total 6 Years	FY13	FY14	FY15	FY16	FY17	FY18	Beyond 6 Years
Planning, Design, and Supervision	3,532	2,032	0	1,500	1,000	500	0	0	0	0	0
Land	1	1	0	0	0	0	0	0	0	0	0
Site Improvements and Utilities	0	0	0	0	0	0	0	0	0	0	0
Construction	11,249	11,248	1	0	0	0	0	0	0	0	0
Other	70,693	22,789	20,050	25,431	16,681	6,750	0	0	2,000	0	2,423
<b>Total</b>	<b>85,475</b>	<b>36,070</b>	<b>20,051</b>	<b>26,931</b>	<b>17,681</b>	<b>7,250</b>	<b>0</b>	<b>0</b>	<b>2,000</b>	<b>0</b>	<b>2,423</b>

### FUNDING SCHEDULE (\$000)

G.O. Bonds	3,881	1,000	0	458	0	458	0	0	0	0	2,423
Impact Tax	610	610	0	0	0	0	0	0	0	0	0
Revenue Bonds: Liquor Fund	64,521	19,997	20,051	24,473	17,681	6,792	0	0	0	0	0
State Aid	16,463	14,463	0	2,000	0	0	0	0	2,000	0	0
<b>Total</b>	<b>85,475</b>	<b>36,070</b>	<b>20,051</b>	<b>26,931</b>	<b>17,681</b>	<b>7,250</b>	<b>0</b>	<b>0</b>	<b>2,000</b>	<b>0</b>	<b>2,423</b>

#### DESCRIPTION

This project provides for the County's participation for the funding of State and Washington Metropolitan Area Transit Authority (WMATA) transportation projects that will add transportation capacity to the County's network, reduce traffic congestion in different areas of the County, and provide overall benefits to the public at large. Major projects to be funded will be selected from the most recent Joint Priority letter signed by the County Executive and the President of the County Council and submitted to the County's Delegation in Annapolis, Maryland.

#### JUSTIFICATION

Montgomery County, as part of the Washington Region, has the second highest level of traffic congestion in the Nation. State roads carry the heaviest traffic volumes in the County; and the State has made it clear that the Transportation Trust Fund has not been growing at a rate that will allow them to complete major projects in the near future. Therefore, in order to directly address the congestion problems in Montgomery County, the County will participate in the construction of State projects; to improve the quality of life for our residents, eliminate or reduce delays at major bottlenecks in our transportation system, improve safety, and improve air quality in the immediate vicinity of the projects.

#### OTHER

Through FY09 the County contributed \$31.225 million to the State for:

- Acceleration of construction of MD 355/Montrose Parkway interchange (\$14.463 million)
- Design of the I-270/Watkins Mill Road interchange (\$2.4 million)
- Design of the MD97/Randolph Road interchange (\$14.362 million).

An additional commitment of \$26.83 million is included in the MOUs with the State for:

- Design of the Watkins Mill Road Bridge over I-270 (\$2.5 million)
- Phase II of the MD355 interchange connecting to Montrose Parkway East (\$9.0 million)
- Preliminary engineering for the Viers Mill Road Bus Rapid Transit (BRT) between Wheaton and Rockville (\$6.0 million)
- Preliminary engineering for improvements to MD97 from Forest Glen through Montgomery Hills (\$3.0 million)
- 50% of the design and construction costs of several intersection improvements (\$6.447 million).

The project also includes:

- Funding for the design and environmental analysis of the MD355 crossing associated with BRAC currently underway (\$880,000)
- Engineering design of a pedestrian tunnel beneath Georgia Avenue from the Forest Glen Metro Rail Station (\$2.0 million).

FY12 MOUs have been completed for:

- Final design and land acquisition of the Brookville Bypass (\$10.0 million)
- Preliminary engineering for the Georgia Avenue busway between Olney and the Glenmont Metro Rail Station (\$5.0 million),
- Design and Right-of-way acquisition and utility relocation for MD124 between Mid-County Highway and Airpark Road (\$5.0 million).

#### FISCAL NOTE

The funding schedule aligns with current MOU agreements with the State.

\$14,463,000 was originally advanced by the County to the State for the MD355/Montrose Parkway interchange. The County received reimbursement from the

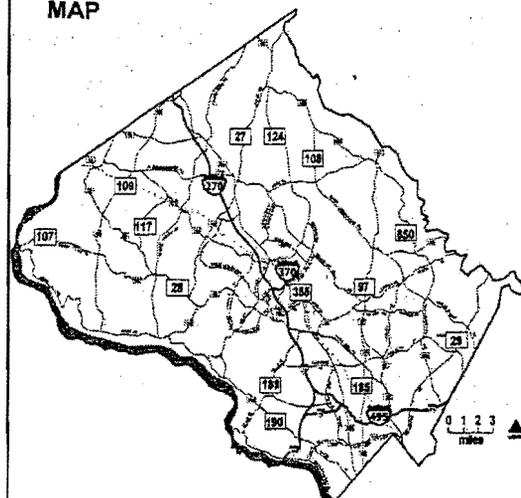
#### APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY07	(\$000)
First Cost Estimate	FY11	85,475
Current Scope		
Last FY's Cost Estimate		85,475
Appropriation Request	FY13	0
Appropriation Request Est.	FY14	0
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		81,052
Expenditures / Encumbrances		36,323
Unencumbered Balance		44,729
Partial Closeout Thru	FY10	0
New Partial Closeout	FY11	0
Total Partial Closeout		0

#### COORDINATION

Maryland State Highway Administration  
Developers  
Maryland-National Capital Park and Planning Commission  
Montgomery County Fire and Rescue Service  
Washington Metropolitan Area Transit Authority

#### MAP



## State Transportation Participation -- No. 500722 (continued)

State in FY10.

\$2,000,000 of State Aid programmed in FY11 has been moved to the Traffic System Signal Modernization project (No. 500704) with repayment to this project in FY17.

### OTHER DISCLOSURES

- The Executive asserts that this project conforms to the requirements of relevant local plans, as required by the Maryland Economic Growth, Resource Protection and Planning Act.

(2)

## Executive Summary

### Introduction

The Montgomery County Department of Transportation (MCDOT) has completed the Forest Glen Passageway Feasibility Study to provide for a safer grade-separated passageway (tunnel or bridge) across Georgia Avenue (MD 97) at Forest Glen Road and enhance pedestrian access to the mezzanine of Forest Glen Metrorail Station. This report concludes the Feasibility Study and will be used by the County's elected officials and decision makers to determine a final alternative to carry forward for design and construction. A project site and vicinity map is presented on the following page.

### Background and Description

The Georgia Avenue/Forest Glen Road intersection is one of the most congested intersections in the Washington Metropolitan area. Over 80,000 vehicles per day travel through the intersection. It currently operates at Level of Service (LOS) F (Oversaturated; Vehicles wait through multiple signal cycles) during the morning peak hour and level of service C (Influence of congestion becomes more noticeable) during the evening peak hour. Significant delays are experienced by vehicular traffic during both of the peak hour periods, particularly vehicles on Forest Glen Road.

The project site is located within the Forest Glen Sector Plan planning area and North and West Silver Spring Master Plan planning area. The area surrounding the intersection is largely built-out and consists mostly of single-family residential units as well as some multi-family residential units. The immediate surroundings of the intersection include the Forest Glen Medical Center in the northeast quadrant, the Montgomery Hills Baptist Church and Sienna School in the southeast quadrant, Forest Glen Metrorail Station in the southwest quadrant and the Americana Finnmark Condominiums in the northwest quadrant. Holy Cross Hospital, one of the county's largest employers and the second largest hospital in Maryland is located on the south side of Forest Glen Road approximately 2,000 feet east of the intersection. This fact makes it necessary for a large number of people to cross Georgia Avenue to get to their destinations from the Metrorail Station. Currently, over 800 pedestrian trips are completed across Georgia Avenue on a daily basis at this intersection. More than 90% of the pedestrian activity at the intersection is related to the Forest Glen Metrorail Station.

Although, all pedestrian signals are timed to provide sufficient time for pedestrians to cross the streets, conflicts between traffic and pedestrian movements are frequent, creating a hazardous situation for pedestrians. For the five year period 2005 to 2009 eighty-four (84) crashes were reported at this intersection. Seventy-six percent (76%) of the crashes resulted in an injury. There were no reported fatalities. Eight (8) pedestrian-related crashes accounted for 10% of the reported crashes. Along the 0.30 mile segment of Georgia Avenue between the I-495 off-ramp and Tilton Drive, the pedestrian-related crash rate was nearly four times greater than the statewide average for similar roadways and eighty percent (80%) happened at the Forest Glen Road intersection. The community has been lobbying for several years for a grade separated crossing that would eliminate conflicts with automobiles and significantly improve access to the nearby Forest Glen Metrorail Station. On December 2, 2008, the County Council approved funding for the design of the new passageway. The construction has not been funded. The MCDOT is seeking Federal Funds to share the construction costs.



PROJECT SITE

Forest Glen Metro Station Parking-Lot

MARYLAND 192

MARYLAND 97

Forest Glen Metro Station

FOREST GLEN ROAD

COLERIDGE DRIVE

WOODLAND DRIVE

CAPITAL BELTWAY

GEORGIA AVENUE

495

WESTVIEW DRIVE

LANSDOWNE WAY

LANSDOWNE WAY

4

### FOREST GLEN PASSAGEWAY VICINITY MAP

Montgomery County Department of Transportation



January 2013

## Alternatives Evaluated

As part of the Feasibility Study, six (6) alignments with nine (9) preliminary alternatives (six (6) tunnels and three (3) bridges) were developed. The study team selected the following three (3) alternatives to be evaluated and presented to the public for input:

1. **Tunnel Alternative 1:** Underground passageway from the southeast quadrant of the intersection to the Forest Glen Metrorail Station in the southwest quadrant.
2. **Tunnel Alternative 2:** Underground passageway from the northeast quadrant of the intersection to the Forest Glen Metrorail Station in the southwest quadrant.
3. **Bridge Alternative 1:** Pedestrian bridge from the southeast quadrant of the intersection to the Forest Glen Metrorail Station in the southwest quadrant.

## Recommended Preferred Alternative

The recommended preferred alternative is **Tunnel Alternative 2**, which is an underground pedestrian passageway that runs from the northeast corner of the intersection, diagonally underneath the intersection, to connect to the existing pedestrian tunnel at the Forest Glen Metrorail Station. This alternative includes a ramp at the northeast quadrant, and elevators at both the northeast and southwest corners to provide ADA access.

The preferred alternative is recommended for the following reasons:

- A larger percentage of tunnel users originate in the northeast quadrant compared to the southeast quadrant.
- The northeast corner access point provides a more direct access to the tunnel for a majority of the tunnel users.
- The northeast corner has more open space available, simplifying construction access and allowing construction of a ramp entrance.
- Tunnel Alternative 2 better accommodates potential future roadway widening on Georgia Avenue by Maryland State Highway Administration.
- The ramp proposed for the northeast entrance of Tunnel Alternative 2 is preferable to the stairway access provided under the other alternatives.
- An underground passageway is preferable compared to a bridge, since it provides a quicker and more direct connection to the existing underground pedestrian tunnel / metro station.
- Tunnel Alternative 2 was strongly preferred by the community.

In association with the recommended preferred alternative, two additional pedestrian facilities are also recommended as follows:

- A new sidewalk along the northern side of Forest Glen Road from the northeast entrance of the recommended underground passageway to Forest Grove Drive; and
- A new crosswalk over Forest Glen Road at Forest Grove Drive.

These additional pedestrian facilities will provide a safer pedestrian access link from the eastern entrance of the recommended underground passageway to the community and Holy Cross Hospital on the southern side of the Forest Glen Road.

Americana Finnmark  
Condo Assn.

Forest Estates  
Community Assn.

Forest Grove  
Citizen Assn.

Holy Cross  
Hospital Medical  
Adult Day Center

Forest Glen  
Metro Station  
Parking Lot

Preferred  
Alternative

Forest Glen  
Medical Center

Proposed Sidewalk

Proposed Crosswalk

FOREST GLEN ROAD

MARYLAND  
192

Existing Tunnel  
From Parking  
Lot To Metro Station

Forest Glen  
Metro Station

Montgomery Hills  
Baptist Church

Northmont  
Citizens Assn.

Forest Glen  
Civic Assn.



COLERIDGE DRIVE

The Siena  
School

WOODLAND DRIVE

HOLY CROSS  
HOSPITAL

GEORGIA AVENUE

SAXONY ROAD  
ADMIRALTY DRIVE

CAPITAL BELTWAY

495

Linden  
Civic Assn.

LANSDOWNE WAY

Woodside Forest  
Citizens Assn.

FLORALANE

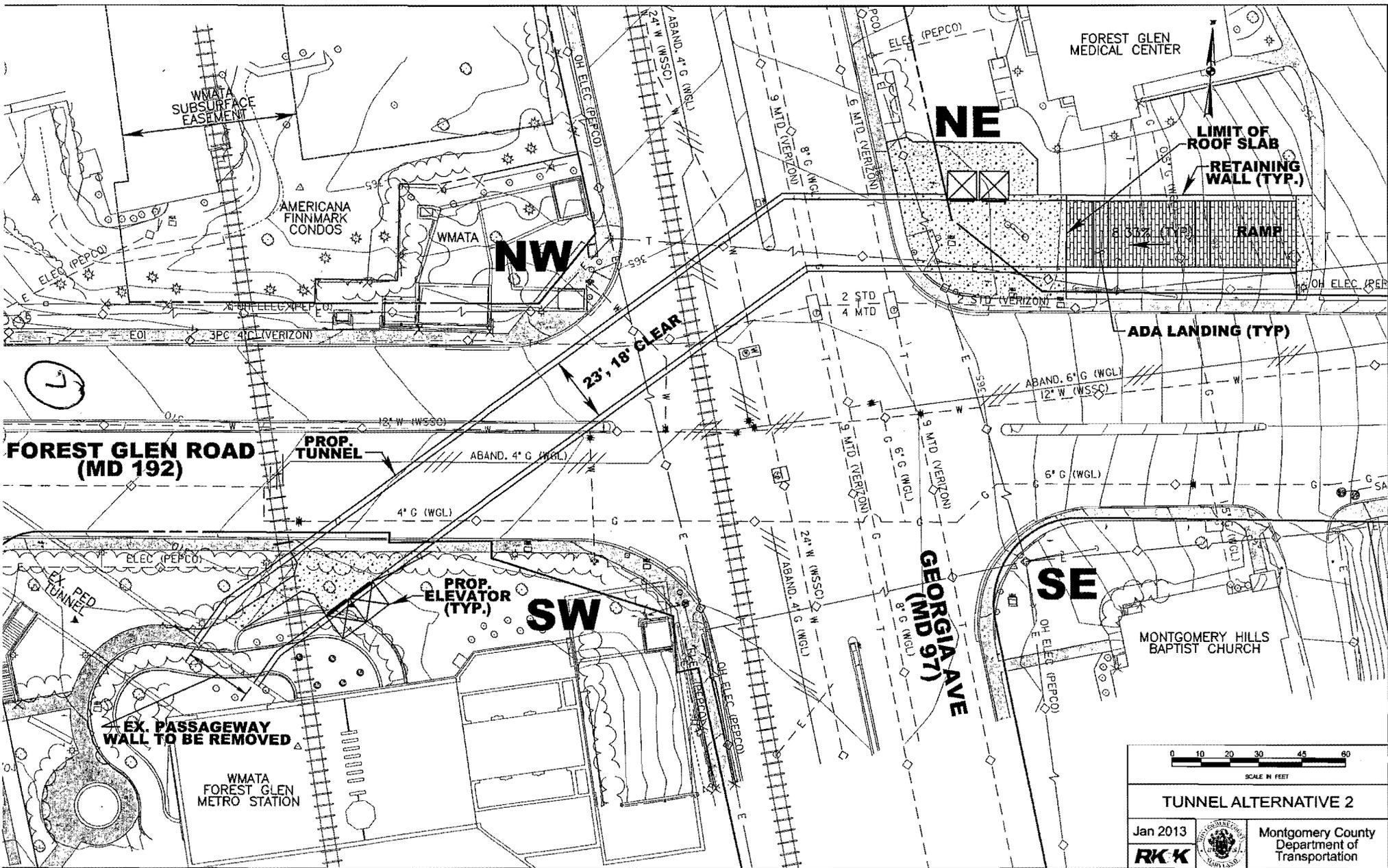
0 200 400  
SCALE IN FEET

FOREST GLEN METRO ACCESS  
VICINITY MAP

Montgomery County  
Department of  
Transportation



Jan 2013



FOREST GLEN MEDICAL CENTER

WMATA SUBSURFACE EASEMENT

AMERICANA FINNMARK CONDOS

WMATA

**NW**

**NE**

LIMIT OF ROOF SLAB  
RETAINING WALL (TYP.)

RAMP

ADA LANDING (TYP.)

**FOREST GLEN ROAD (MD 192)**

PROP. TUNNEL

PROP. ELEVATOR (TYP.)

**SW**

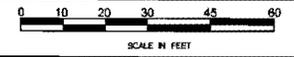
**GEORGIA AVE (MD 97)**

**SE**

MONTGOMERY HILLS BAPTIST CHURCH

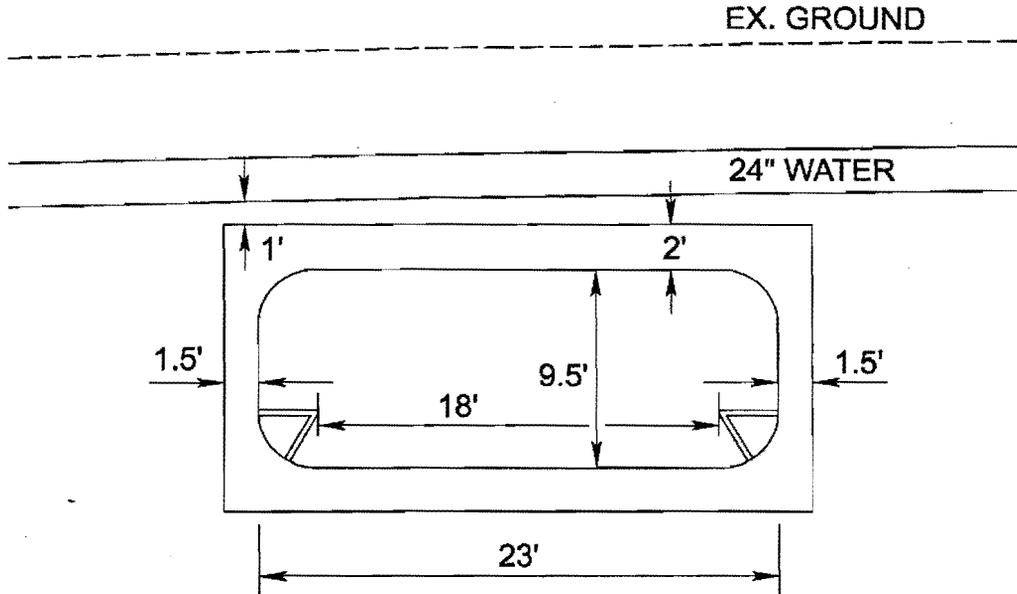
EX. PASSAGEWAY WALL TO BE REMOVED

WMATA FOREST GLEN METRO STATION

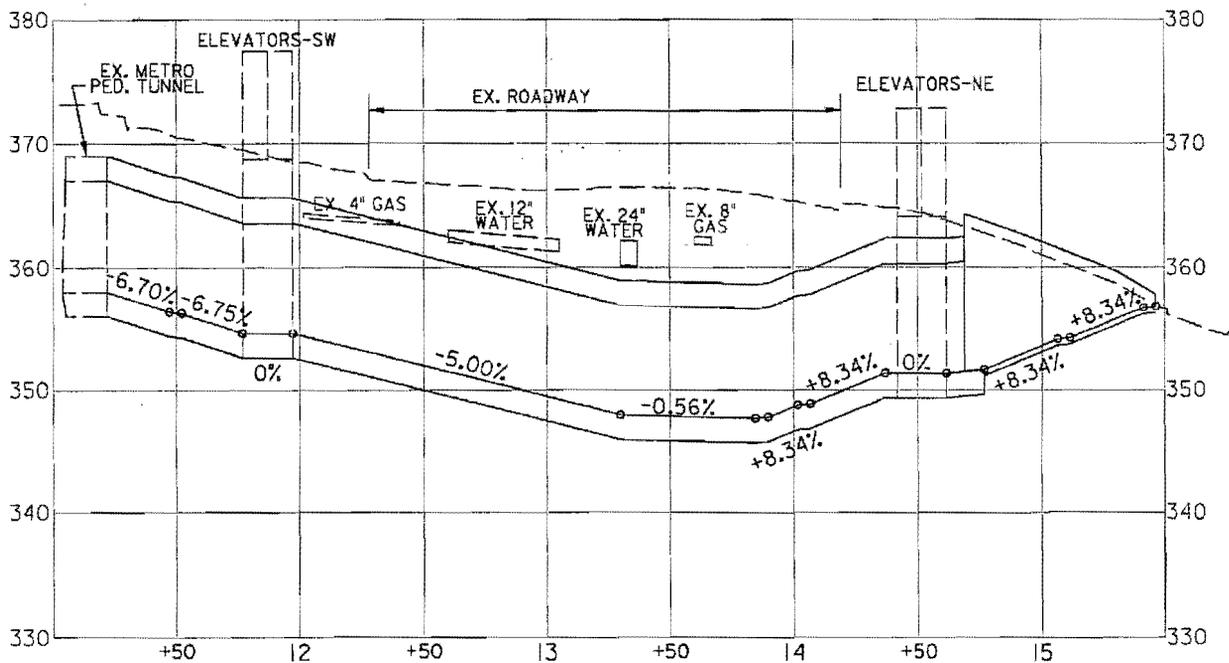


<b>TUNNEL ALTERNATIVE 2</b>		
Jan 2013		Montgomery County Department of Transportation
<b>RK K</b>		

Tunnel Typical Section



Tunnel Alternative 2 Profile



The alternatives evaluation considered operational performance, estimated pedestrian usage, construction requirements, traffic impacts, environmental impacts, and cost. The evaluations of the Preferred Alternative are summarized in Table ES.1 below.

**Table ES.1: Evaluations Summary of Preferred Alternative**

Preferred Alternative	Tunnel Alternative 2 (NE Quadrant to Metrorail Station)
Length	334 Ft
Width	23 Ft (18 Ft Clear)
Estimated Pedestrian Usage (Crossing MD 97 / Day)	799
Average Travel Time Savings (Sec/Pedestrian)	95
Americans and Disability Act (ADA) Compliance	Yes (Elevators/Ramp)
Construction Duration	39 months
Maintenance of Traffic	<ul style="list-style-type: none"> <li>• Partial Night Time Work (18 months)</li> <li>• Overnight Lane Closures to 2-3 Lanes on Georgia Ave and Forest Glen Rd</li> </ul>
Properties Impacted	1 Property (5,700 Square Feet)
Natural Resource Impacts	Low
Cultural Impacts	None
Utility Impacts	High – Underground, overhead, and traffic signal
Construction Cost	\$12.1M
Total Cost*	\$17.9M

\* Total Cost includes Construction, Planning, Engineering, Land Acquisition, Passageway, and Bike Share Stations.

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**FOREST GLEN PASSAGEWAY – SUMMARY TABLE**

**PROJECT STUDY INFORMATION**

Name of Project and CIP #	Forest Glen Passageway, CIP #0500722
Study Phase	Feasibility Study
Transportation Category	Pedestrian Facilities
Study Performed by	Montgomery County Department of Transportation (MCDOT) Division of Transportation Engineering
Project Manager	Greg Hwang, (240)777-7279
Consultant	Rummel, Klepper & Kahl, LLP (RK&K) Rick Adams, (410)462-9247
Road Name	Georgia Avenue (MD 97)
Project Limits	Intersection of Forest Glen Road (MD 192)
Project Length	• 270 - 330 Foot Long Pedestrian Tunnel
Functional Classification of Roadway	Georgia Avenue: Major Highway MD 97 Forest Glen Road west of MD 97: Arterial Road MD 192 Forest Glen Road east of MD 97: Arterial Road

**EXISTING CONDITIONS**

# of Lanes	Georgia Avenue: 8 Forest Glen Road: 5
Average Daily Traffic (ADT)	71,090
# of Bus Stops	4
Signalized Intersections	1 (Georgia Ave (MD 97) / Forest Glen Rd (MD 192))
Posted Speed	Georgia Ave - 35 mph Forest Glen Road - 30 mph
Adjacent Communities	Forest Estates Forest Grove Northmont Forest Glen Americana Finnmark Condos
Schools	The Siena School
Places of Worship	Montgomery Hills Baptist Church
Parks	N/A
Other Places of Interest	Holy Cross Hospital, Forest Glen Metro Station, Forest Glen Medical Center

**CRASH HISTORY**

2005 to 2009	84 crashes, includes 8 pedestrian and 3 bicycle involved, no fatalities
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**FEASIBILITY REPORT SUMMARY**

Transportation Category	Pedestrian Facilities
Referenced Master Plans	N/A
Annual Growth Policy Area	Kensington/Wheaton
Purpose and Need	<ul style="list-style-type: none"> <li>• Improve pedestrian safety</li> <li>• Improve pedestrian access across Georgia Avenue</li> </ul>

Project Start Date	April 2011
Feasibility Study Report Completion Date	January 2013
Alternatives Evaluated	Tunnel Alternative 1 - Southwest-Southeast Tunnel Alternative 2 - Southwest-Northeast Bridge Alternative 1 - Southwest-Southeast
<b>PUBLIC OUTREACH</b>	
Public Meeting	April 10, 2012
Newsletter	March 2012 January 2013
<b>PERMITS</b>	
Required Permits	<ul style="list-style-type: none"> <li>• Access Permit – Maryland State Highway Administration</li> <li>• Roadside Tree Permit – Maryland Department of Natural Resources (DNR)</li> <li>• NRI/FSD, Forest Conservation Plan – M-NCPPC</li> <li>• Erosion and Sediment Control and Stormwater Management – Montgomery County Department of Permitting Services</li> <li>• NEPA Permit (estimated completion date: April 2013)</li> <li>• WMATA Adjacent Construction Permit</li> </ul>
Agencies Requiring Coordination	<ul style="list-style-type: none"> <li>• Montgomery County Department of Transportation (MCDOT)</li> <li>• Montgomery County Department of Permitting Services (MCDPS)</li> <li>• Montgomery County Department of Environmental Protection (MCDEP)</li> <li>• Maryland-National Capital Park &amp; Planning Commission (M-NCPPC)</li> <li>• Maryland Department of the Environment (MDE)</li> <li>• Maryland Department of Natural Resources (MDNR)</li> <li>• Maryland Historical Trust (MHT)</li> <li>• Maryland State Highway Administration (MDSHA)</li> <li>• US Fish and Wildlife Service (USFWS)</li> <li>• Washington Metropolitan Area Transit Authority (WMATA)</li> </ul>
<b>UTILITIES</b>	
Required Utility Company Coordination	<ul style="list-style-type: none"> <li>• Pepco</li> <li>• WSSC</li> <li>• Washington Gas</li> <li>• Comcast</li> <li>• Verizon</li> </ul>
<b>OTHER</b>	
Basis for Stormwater Management (SWM) Design	<ul style="list-style-type: none"> <li>• Incorporate the latest Maryland Stormwater Design Manual including the requirements of the Stormwater Management Act of 2007.</li> <li>• Use low impact development (LID) techniques.</li> </ul>





**MONTGOMERY COUNTY PLANNING BOARD**  
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

OFFICE OF THE CHAIR

October 22, 2012

Mr. Arthur Holmes, Director  
Montgomery County Department of Transportation  
Executive Office Building  
101 Monroe Street, 10<sup>th</sup> Floor  
Rockville, Maryland 20850

SUBJECT: Mandatory Referral #2013004  
Forest Glen Passageway Site Selection

Dear Mr. Holmes:

At its regularly scheduled meeting on October 11, 2012, the Planning Board reviewed the Forest Glen Passageway Alternatives Mandatory Referral. The proposed project will provide a grade-separated pedestrian crossing of Georgia Avenue at its intersection with Forest Glen Road. After reviewing presentations from the Planning staff, clarifications from the MCDOT staff, and testimony from area residents, the Board approved the staff recommendation to select Underground Passageway Alternative 2 (called Tunnel Alternative 2 in the Feasibility Study and the Mandatory Referral application) as the preferred alternative with the following comments:

1. Under any Alternative, MCDOT should provide a better at-grade pedestrian crossing of Georgia Avenue and Forest Glen Road, including improved crosswalks with wider medians and adequate signal time for pedestrians.
2. MCDOT should explore potential at-grade improvements, separately or in conjunction with the Maryland State Highway Administration's (MDSHA) Georgia Avenue Project Planning Study, for the stretch of Georgia Avenue between 16<sup>th</sup> Street and Forest Glen Road.
3. In addition to at-grade improvements, the Underground Passageway Alternative 2 (NE-SW) should be selected.
4. A sidewalk on the north side of Forest Glen Road should be constructed from the terminus of the Underground Passageway Alternative 2 to Dameron Drive and Holy Cross Hospital.
5. This Mandatory Referral review covers the alternative selection only. A separate Mandatory Referral for the project design of the selected alternative must be submitted for the Planning Board's review during the facility planning stage.

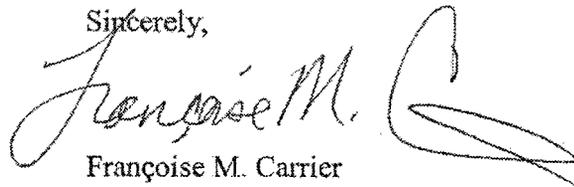
(12)

Mr. Arthur Holmes  
October 22, 2012  
Page 2

The Planning Board stressed the need for improved at-grade pedestrian crossing of Georgia Avenue at this critical location. The Board was concerned that the MCDOT's feasibility study did not look at potential at-grade improvements, and that implementation of any of the grade-separated alternatives under consideration may cause a delay in exploring and implementing at-grade improvements. The Board strongly felt that both sets of improvements are needed at this intersection because they serve two different groups of users.

Thank you for the opportunity to review and comment on this project. If you have any questions or comments concerning our review, please call Marc Lewis-DeGrace at 301-495-4629.

Sincerely,



Françoise M. Carrier  
Chair

FMC:mldg:ha

Enclosure: Staff Report dated October 4, 2012

cc: Greg Hwang, MCDOT  
Bruce Johnston, MCDOT  
Glenn Kreger, MNCPPC  
Marc Lewis-DeGrace, MNCPPC  
Mr. Jeremy Beck, MD SHA

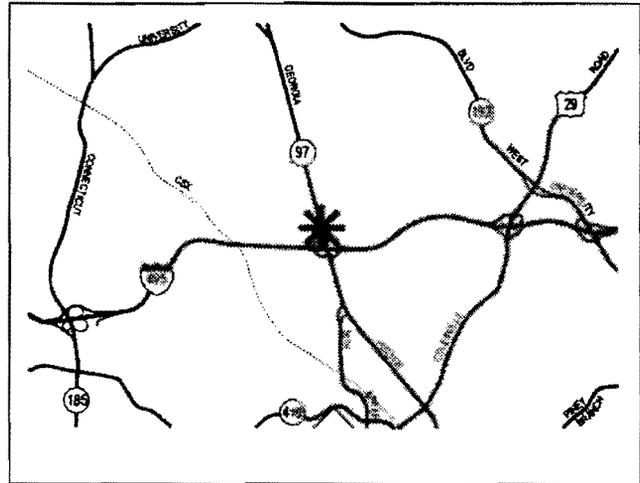


- Marc Lewis-DeGrace, Planner, marc.lewis-degrace@montgomeryplanning.org, 301-495-4629
- Khalid Afzal, Planner Supervisor, khalid.afzal@montgomeryplanning.org, 301-495-4650
- Glenn Kreger, Chief, glenn.kreger@montgomeryplanning.org, 301-495-4653

Completed: 10/4/12

**Description**

- 9730 Georgia Avenue
- An approximately 300-foot long grade-separated, pedestrian connection between the Forest Glen Metrorail Station and east side of Georgia Avenue
- 1996 Approved and Adopted *Forest Glen Sector Plan*, also the 2000 *North and West Silver Spring Master Plan*
- Applicant: Montgomery County Department of Transportation (MCDOT)
- Submitted: August 1, 2012



**Issues**

1. MCDOT's Feasibility Study does not provide a clear picture of the purpose of the project, and the pedestrian origin and destination analysis in the study needs further work to better define the main users of the proposed grade-separated passageway at the intersection of Georgia Avenue and Forest Glen Road.
2. Staff does not agree with the Montgomery County Department of Transportation's (MCDOT) conclusion that a tunnel across the SE-SW leg of the intersection is a better alternative than a diagonal, NE-SW tunnel alternative. Staff recommends approval of Tunnel Alternative 2 as the Selected Alternative and transmittal of comments to MCDOT.

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## Comments

1. Under any Alternatives, MCDOT should provide better at-grade pedestrian crossing of Georgia Avenue and Forest Glen Road, including improved crosswalks with wider medians and adequate signal time for pedestrians.
2. MCDOT should explore potential at-grade improvements, separately or in conjunction with the Maryland State Highway Administration's (MDSHA) Georgia Avenue Project Planning Study for the stretch of Georgia Avenue between 16<sup>th</sup> Street and Forest Glen Road.
3. If at-grade upgrades are not possible, the Tunnel Alternative 2 (NE-SW) should be selected.
4. Per the Sector Plan, a sidewalk on the north side of Forest Glen Road should be constructed from the terminus of the Tunnel Alternative 2 to Dameron Drive and Holy Cross Hospital.
5. This Mandatory Referral review covers the alternative selection only. A separate Mandatory Referral for the project design of the selected alternative must be submitted for the Planning Board review during the facility planning stage.

## EXECUTIVE SUMMARY

The MCDOT is proposing a pedestrian tunnel crossing of Georgia Avenue at Forest Glen Road (MD 192). Out of an initial group of six grade-separated alternatives, the MCDOT selected three alternatives and conducted a Feasibility Study to select a final alternative, Tunnel Alternative 1, across Georgia Avenue at the southern leg of the intersection.

The segment of Georgia Avenue between 16<sup>th</sup> Street and Forest Glen Road presents many pedestrian challenges. According to the Feasibility Study, this segment of Georgia Avenue between the I-495 off-ramp to the south and Tilton Drive to the north (which includes the Forest Glen Road intersection) had nearly four times as many pedestrian related accidents as the statewide average for similar roadways. The total crash rate (all types combined) was 468 per 100-million vehicle-miles traveled, which is more than twice the statewide average.

Planning Staff's main concern is that the Study provided neither a clear rationale for a grade-separated crossing of the intersection, nor a full description of pedestrian activity at the intersection. Although the Study conducted four separate pedestrian surveys/counts at the intersection, it still did not provide a comprehensive picture of the issue of pedestrian safety and crossing of the intersection to access the Metro Station. Specifically, the study failed to define who the main users of the grade-separated interchange were going to be (community or the hospital users), and therefore which alternative would best serve their need for safely accessing the Forest Glen Metrorail Station. Without this information it is difficult to determine which at-grade, or grade-separated crossing would best improve pedestrian safety at this location.

The submitted material also presented conflicting information regarding the purpose of the proposed project. MCDOT applied for two TIGER Grants through the United States Department of Transportation (USDOT) for funding for the Tunnel Alternative 1 (SE-SW). In both of these applications, MCDOT stated that the rationale for constructing the Passageway was to "create a safer linkage from the Forest Glen Metrorail station to Holy Cross Hospital, particularly for users of mobility devices." This rationale was not included in the Feasibility Study, making it unclear what the objective of the Passageway is, and what measures should be used to improve pedestrian safety and how they should be evaluated.

Planning Staff's review of the proposed project and the submitted material indicates that the Feasibility Study did not address the full range of options to improve pedestrian safety for those crossing both Georgia Avenue and Forest Glen Road. MCDOT considered six grade-separated crossings of Georgia Avenue at Forest Glen Road, but did not evaluate at-grade improvements and what impact they would have on pedestrian safety. And the Study did not establish a set of standards on which to evaluate how best to improve pedestrian safety.

Although Planning Staff is recommending Alternative 2 (NE-SW) based on the submitted Mandatory Referral, Staff believes that the project needs further evaluation before committing significant resources to this initiative. One option is to explore at-grade improvements as part of the ongoing MDSA Georgia Avenue Project Planning Study, which will analyze pedestrian safety along the 0.7-mile segment of Georgia Avenue between 16<sup>th</sup> Street and Forest Glen Road. This will also allow a more in depth evaluation of alternatives in terms of their consistency with the Forest Glen Sector Plan, which recommended at-grade pedestrian improvements at this location instead of a grade-separated pedestrian crossing.

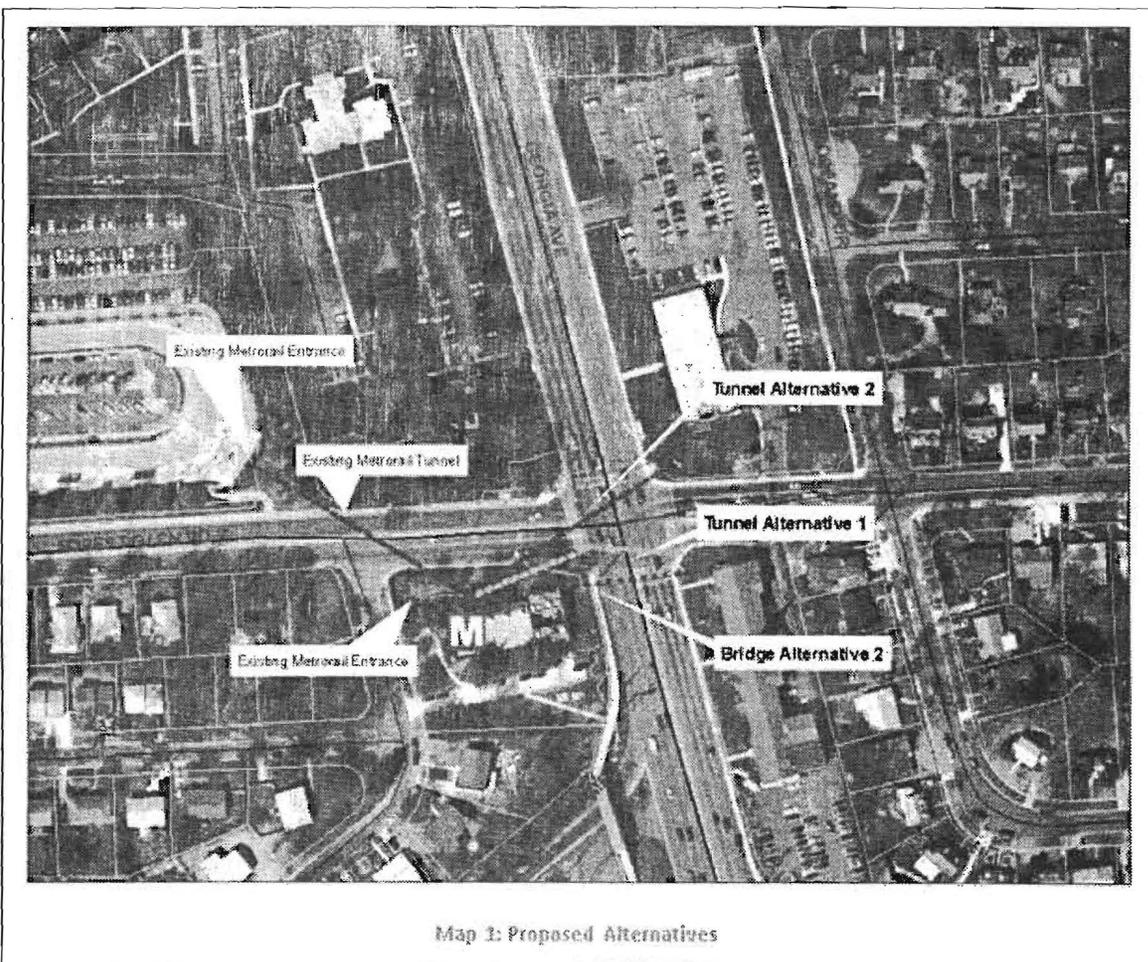
### **Project Description**

According to the material submitted with this application, the Georgia Avenue/Forest Glen Road intersection is one of the most congested intersections in the County. Over 80,000 vehicles travel through the intersection daily, with a combined total of approximately 6,000 vehicles in the morning and evening peak hours. The intersection operates at a level of service F during the morning peak hour and level of service C during the evening peak hour. Currently, over 800 pedestrian trips per day occur across Georgia Avenue at this location, and over 90% of these crossings are related to the Forest Glen Metro Station. During the morning and evening peak hours, the portion of pedestrian crossings related to the Metro station is 97% and 99%, respectively.

The community has lobbied WMATA and the County for several years for a grade-separated pedestrian crossing of Georgia Avenue. In response to community's requests, WMATA first conducted a study which mainly concluded that, physically, there was room for a tunnel under the intersection that would bring Metro users from the existing underground passage on the southwest to the northeast corner of the intersection. Due to the drop in topography on the northeast corner, Metro users would emerge and continue to a new sidewalk on the north side of Forest Glen Road without taking stairs up to the ground level. This would require acquisition of some rights-of-way (ROW) to accommodate an entrance at the NE corner (the NE corner is currently occupied by a medical office building setback from Forest Glen Road).

Following the WMATA study, MCDOT conducted a more detailed study, the primary purpose of which was to explore safer, grade-separated pedestrian crossing of Georgia Avenue. The Study looked at existing accident data and conducted pedestrian counts, traffic analysis, preliminary engineering and cost/impact assessment, and surveys to determine the origins and destinations of pedestrians. It also looked at and found that changes could be made to the existing traffic signal and pedestrian crossing times to better accommodate safer pedestrian and traffic operations. The Study analyzed a total of six tunnel and bridge alternatives, and from these six (6) alternatives, MCDOT has selected the following three alternatives for further evaluation and selection of a preferred alternative:

- 1) Tunnel Alternative 1, across the south leg of the intersection, which would connect the Metrorail Station on the southwest to the southeast corner of Georgia Avenue and Forest Glen Road (Attachment 1);
- 2) Tunnel Alternative 2, diagonally across the intersection, which would connect the Metrorail Station on the southwest to the northeast corner of Georgia Avenue and Forest Glen Road (Attachment 2); and
- 3) Bridge Alternative 2, across the south leg of the intersection, which would connect the Metrorail Station on the southwest to the southeast corner of Georgia Avenue and Forest Glen Road (Attachment 3).



Detailed information about all three Alternatives, their costs, estimated construction times, potential users and impacts are listed in Table 1 below:

Table 1: Summary of the Three Alternatives

	Tunnel Alternative 1 (SE Quadrant to Metro)	Tunnel Alternative 2 (NE Quadrant to Metro)	Bridge Alternative 2 (SE Quadrant to Metro)
Length (Ft.)	• 303	• 334	• 270
Width (Ft.)	• 23 (18 Ft Clear)	• 23 (18 Ft Clear)	• 12 (10 Ft Clear)
Estimated Pedestrian Usage (Crossing MD 97/Day)*	• 834	• 799	• 683
Average Travel Time Savings (Sec/Pedestrian)	• 119	• 95	• 57
Construction Duration	• 39 months	• 39 months	• 15 months
Maintenance of Traffic	• Partial Night Time Work (18 months) • Overnight Lane Closures to 2-3 Lanes on Georgia Ave and Forest Glen Rd	• Partial Night Time Work (18 months) • Overnight Lane Closures to 2-3 Lanes on Georgia Ave and Forest Glen Rd	• Partial Night Time Work (3 months) • Overnight Lane Closures to 2-3 Lanes on Georgia Ave. • Single overnight complete closure of Georgia Ave
Properties Impacted	• 1 Property, 2200 Square Feet	• 1 Property, 5700 Square Feet	• 1 Property, 1500 Square Feet
Natural Resource Impacts	• Low	• Low	• Low
Cultural Impacts	• Potential Impacts to Montgomery Hills Baptist Church	• None	• Potential Impacts to Montgomery Hills Baptist Church
Utility Impacts	• High - Underground, overhead and traffic signal	• High - Underground, overhead and traffic signal	• Moderate - Overhead and traffic signal
Construction Cost	• \$11.5 M	• \$12.7 M	• \$5.8 M
Total Cost**	• \$15.6 M	• \$17.9 M	• \$8.6 M
* These numbers are revised, and different from the Feasibility Study Data			
** Total Cost includes Planning, Engineering, Land Acquisition, Tunnel/Bridge, and Bike Share Stations			

**Master Plan Consistency**

This intersection is subject to the 1996 *Forest Glen Sector Plan* and the 2000 *North and West Silver Spring Master Plan*. The 1996 *Forest Glen Sector Plan* considered a pedestrian bridge or tunnel crossing of Georgia Avenue at Forest Glen, but favored at-grade pedestrian crossing improvements for the following reasons (page 53):

- The cost of constructing a tunnel or bridge at this location would be prohibitively high, especially when compared to the potential usage.
- A potential conflict with Metrorail underground construction would exist.
- The ramps for a pedestrian bridge would adversely affect the properties on the corners of the intersection.
- Experience indicates that these structures are not used by all pedestrians and, therefore, the need would remain for a signalized at-grade crossing.
- The need for a bicycle crossing is not adequately met by building a tunnel or bridge.
- Perceived and real safety concerns with a tunnel require extensive lighting and other security measures.
- The recommendation to provide at-grade pedestrian and bicycle access across Georgia Avenue on the north side of the intersection, and the construction of wider medians, provide the best, most usable and lowest cost alternative.

However, the Sector Plan does state that the transportation system must provide for safe and efficient movements for all modes of travel, including bicyclists and pedestrians. The Sector Plan also recommends constructing a sidewalk on the north side of Forest Glen Road between Sligo Creek and Woodland Drive (page 51). Staff concurs with these recommendations and believes that the Sector Plan's guidance is still relevant and valid with respect to the construction of the Passageway.

The 2000 *North and West Silver Spring Master Plan* states that MDSHA should study Georgia Avenue from 16<sup>th</sup> Street to Dennis Avenue with the goal of "making Montgomery Hills more pedestrian and vehicular friendly." (page 52) The Master Plan also states that the MDSHA study should include the Forest Glen Road intersection. As noted above, MDSHA has recently initiated this study, which should be completed before funding is committed for a grade-separated passageway. If the difficulties and complexity of creating a better, at-grade crossing of Georgia Avenue (lack of a median, ROW constraints, impacts on traffic) prove insurmountable, staff believes that providing a grade-separated passageway at this location would be consistent with the overall goals of the Sector Plan of providing safe and convenient circulation options for pedestrians, bicyclists and other non-motorized traffic in Forest Glen (page 31).

#### **SUMMARY OF THE STUDY**

The study analyzed accident data from 2005-2009 and found that there were eighty-four (84) reported crashes at this intersection with no fatalities. Of the 84 crashes, eleven (11) were pedestrian involved, the highest number in one year was five (5) reported in 2006.

The Study conducted four (4) separate sets of pedestrian counts and surveys.

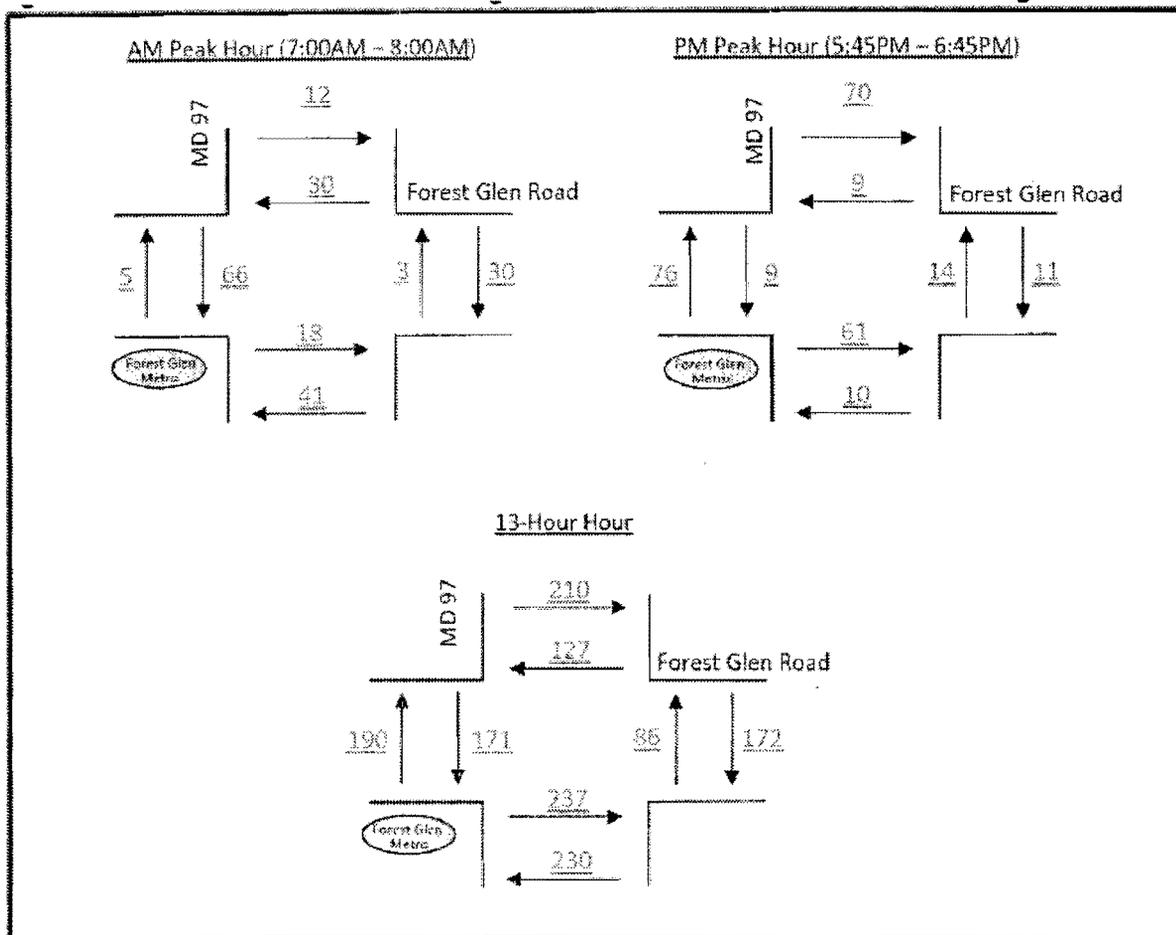
The first set looked at the total number of pedestrians crossing each of the four legs of the intersection during AM and PM peak hours (the top two diagrams in Figure 1 below), and over a 13-hour period (6:00 AM to 7:00 PM) (third diagram in Figure 1 below). These counts showed that the peak-hour (for pedestrians) was 7:00-8:00 AM and 5:45 PM to 6:45 PM, and that during the 13-hour period the highest counts occurred across the south leg of Georgia Avenue (237 eastbound and 230 westbound, Figure 1).

The second set found that over a 13-hour period a total of 223 pedestrians (118+105) crossed from northeast to the Metro Station on the southwest corner of the intersection (Figure 2).

The third set was a survey of pedestrians walking along Forest Glen Road from the southwest corner to the Metrorail Station entrance to the west. This survey found that during the AM peak-hour, 97% of the pedestrians crossing Georgia Avenue were traveling to the Metrorail Station (the remaining 3% presumably continued west along Forest Glen Road). During the PM peak hour, 99% of pedestrians leaving the Metro Station crossed Georgia Avenue to reach the southeast corner.

The fourth set of counts was an origin-destination (O-D) survey, during peak periods, whose primary "...objective was to determine whether a Southeast-to-Southwest passageway alignment would serve significantly more pedestrians than a Northeast-to-Southwest alignment." The survey found that pedestrians who arrived at the southeast corner, and were travelling to the southwest corner, 11 out of 52 (21%) in the morning had already crossed Forest Glen Road from the north side to the south side, and 1 out of 13 (8%) in the afternoon were going to cross Forest Glen Road from the south side to the north further east of the intersection. The study found that a larger share of pedestrians originated from the northeast quadrant (52 out of 75).

Figure 1: AM and PM Peak Hour Pedestrian Crossing Volumes and total 13-hour Pedestrian Crossing Volumes



### Traffic Signal Operations

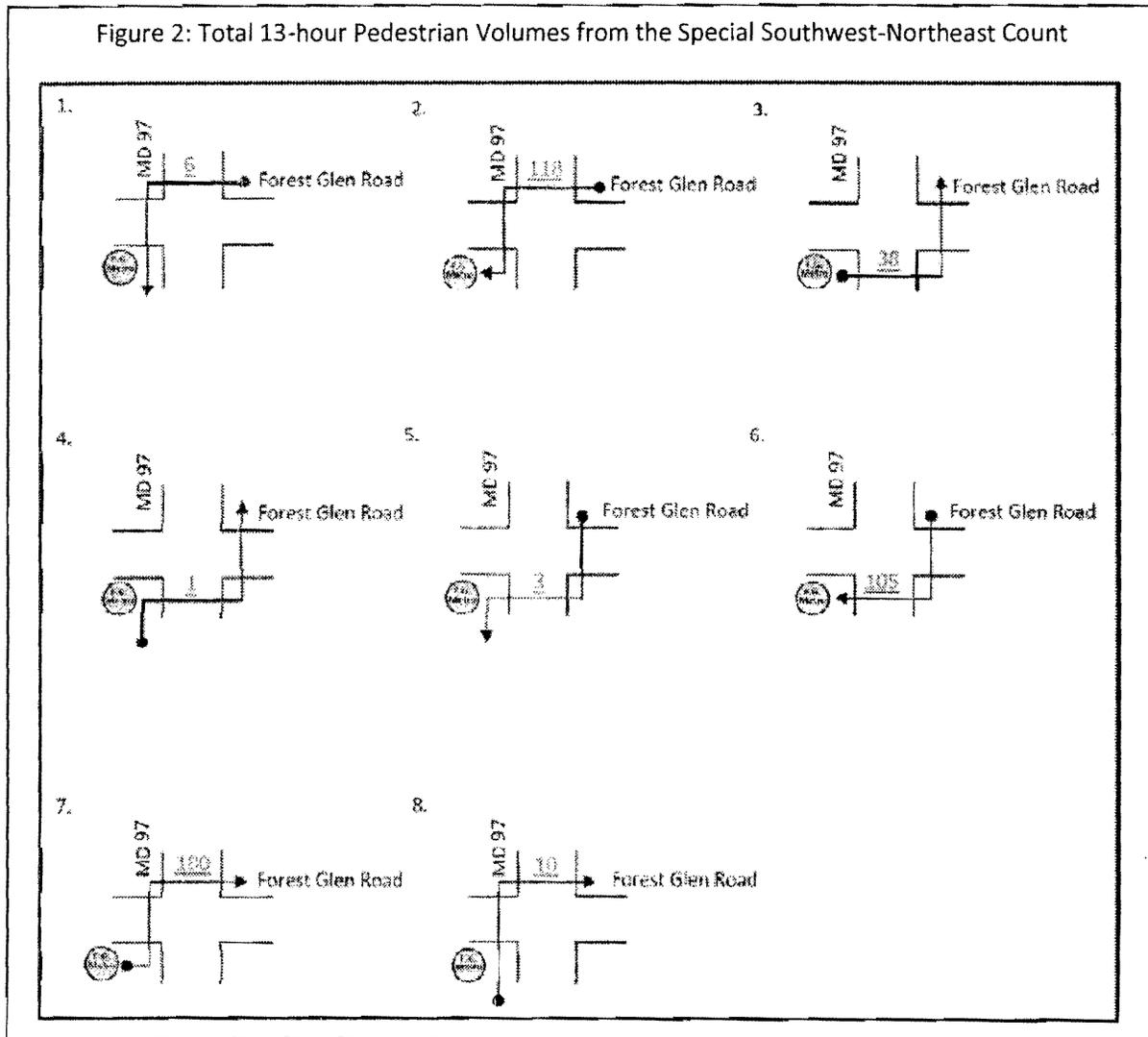
The Study evaluated if at-grade pedestrian crossings, or pedestrian signal phases, could be eliminated, if the passageway were constructed. The study found that it was not possible to eliminate any at-grade crossings. Replacing only one of the crosswalks with a passageway would require the same pedestrian signal phasing as if the crosswalk was still there, because the remaining crosswalk would still require a pedestrian phase.

The study also looked at:

- 1) Whether the signal timing could be optimized to increase the overall operations of the intersection; and;
- 2) What impact would increasing the pedestrian crossing time at Georgia Avenue and Forest Glen Road have on the intersection operation.

The Study found that the current signal is timed to provide better performance for Georgia Avenue traffic at the expense of increased delay on Forest Glen Road. It also concluded that the pedestrian signal does not provide adequate pedestrian crossing time (based on industry standards set by the Manual on Uniform Traffic Control Devices (MUTCD)). Providing adequate pedestrian crossing time would increase the delay per vehicle for the whole intersection from an average of 45.5 seconds per vehicle to 54.8 seconds per vehicle during the AM peak hour, and from 30.8 seconds per vehicle to 33.0 seconds per vehicle during the PM peak hour.

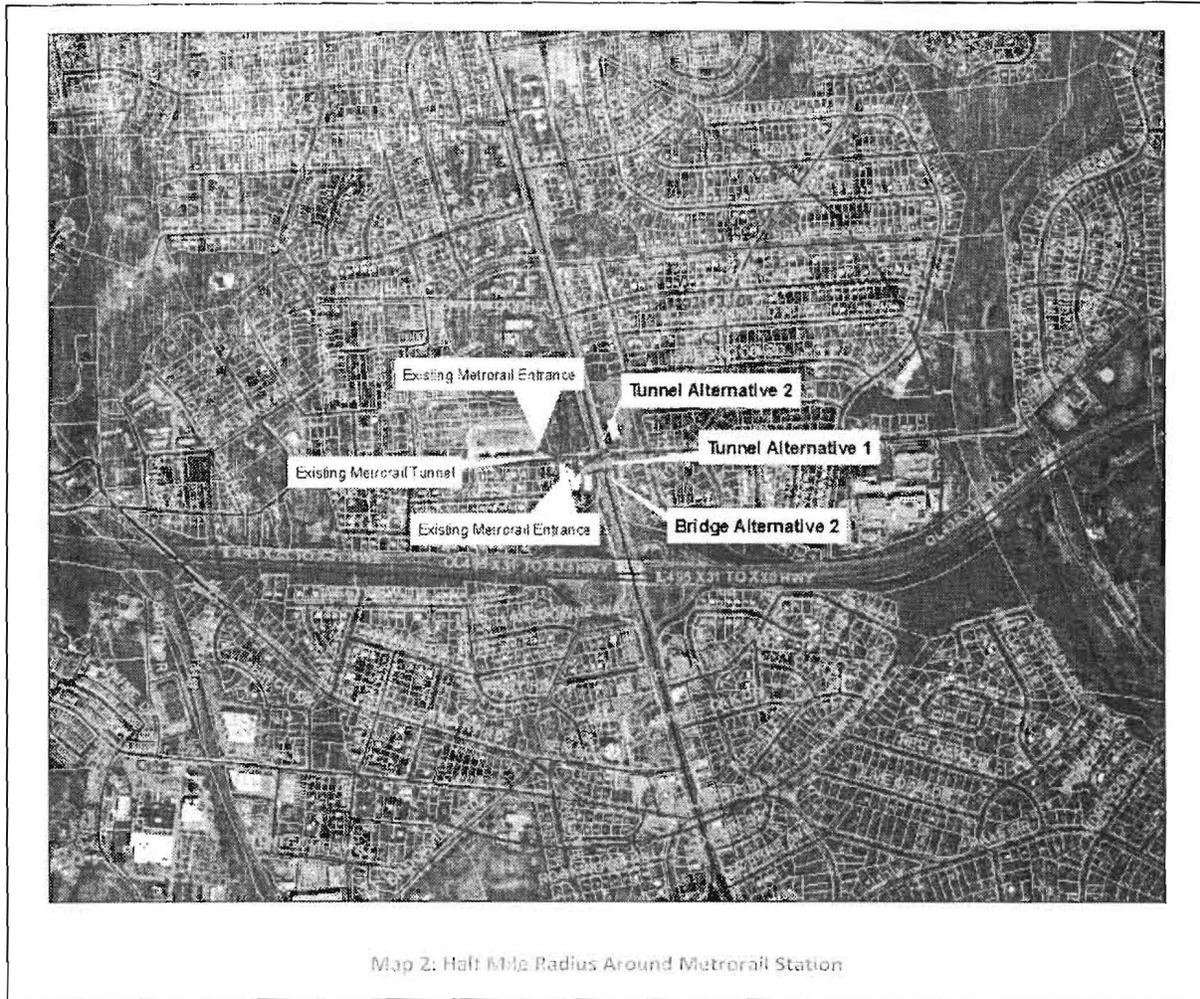
Figure 2: Total 13-hour Pedestrian Volumes from the Special Southwest-Northeast Count



## ANALYSIS

Although the Study took four different counts of pedestrians at this location, it still lacks a clear picture of pedestrians' behavior and their origin-destination pattern. Although the Study recognizes that the highest number of pedestrians comes from the northeast quadrant, it projects a higher number for potential Metro users for the Tunnel Alternative 1 (SE-SW): approximately 834 users for Tunnel Alternative 1 (SE-SW), 799 for Tunnel Alternative 2 (NE-SW), and 683 for Bridge Alternative (Table 1 on page 4). Staff questions these projections because the existing counts show that more Metro users

originate in the Northeast Quadrant. And, the existing and future land use scenarios clearly show that there are far fewer houses in the SE quadrant than the northeast quadrant. The southeast quadrant bounded by the Beltway, the Holy Cross Hospital and the Forest Glen Road) is much smaller than the northeast quadrant, and therefore generates far fewer Metro users than the northeast quadrant (Map 2).



The study's pedestrian counts and O-D surveys have demonstrated that some of the users arriving at the southeast corner actually were from the northeast quadrant, but crossed Forest Glen Road from the north side to the south side further east, which means that some of the users projected to be from the southeast quadrant actually live in the northeast quadrant, and therefore would prefer to stay on the north side of Forest Glen Road if the tunnel entrance was in the northeast corner. More specifically, the study found that 52 out of 75 pedestrians travelling from the Metro Station across Georgia Avenue to the east side were headed to the northeast quadrant while only 23 were from the southeast quadrant.

Staff understands the study's assumption that more of the NE quadrant residents will be willing to cross Forest Glen Road to use the entrance of Tunnel Alternative 1 (SE-SW) than the number of southeast quadrant residents willing to cross Forest Glen Road to go north to access the tunnel entrance at the northeast corner for Tunnel Alternative 2 (NE-SW), since the northeast residents will have no option but to cross Forest Glen Road at-grade if the tunnel entrance was at the southeast corner. However, it is also

likely that some of the users would continue to cross Georgia Avenue instead of crossing Forest Glen Road at-grade, especially if they arrive at the northeast corner when the pedestrian signal is on to cross Georgia Avenue at-grade across the north leg of the intersection.

Staff believes that Tunnel Alternative 1 (SE-SW) fails to meet the basic goal of the project—to provide a grade-separated access to the Metro Station, requested mostly by the northeast quadrant residents—by requiring the largest number of Metro users to continue to cross Forest Glen Road at-grade to access the tunnel at the southeast corner. Staff believes that the tunnel should be built for the convenience of the maximum users, i.e., those from the northeast quadrant, and not force them to cross Forest Glen Road to access the entrance at the southeast corner for the Tunnel Alternative 1 (SE-SW tunnel).

Staff agrees with the MCDOT's conclusion that a bridge is not a viable alternative. Metro users are already below grade using the existing Metro tunnel, and they are more likely to continue travelling below grade to cross Georgia Avenue at that level. The bridge option would require a majority of pedestrians coming to the station from the northeast to cross Forest Glen Road at-grade, take an elevator or stairs to the bridge level to access the bridge, cross Georgia Avenue, and go down two levels to access the station. A bridge would also create more challenges of safety and visual impacts of such a large structure at this location. Given all these constraints, staff believes that the estimated number of bridge users projected in the study is too high.

#### **COMMUNITY OUTREACH**

On April 10, 2012, MCDOT held a public meeting to present the Alternatives for the Passageway at the Sligo Middle School. Approximately 70 citizens attended the meeting. There were several concerns expressed at the public meeting. First, citizens believed that the projected usage numbers for the three alternatives did not seem realistic (these numbers have since been revised by the MCDOT's consultant). Second, citizens stressed that traffic along Georgia Avenue was perceived as dangerous and made crossing Georgia Avenue to access the Metrorail Station seem dangerous. Third, the construction of a grade-separated passageway entrance on the east side of Georgia Avenue would cause additional traffic (and potentially traffic conflicts) along Forest Glen Road on the east side of Georgia Avenue as vehicles would stop to discharge and pick up Metrorail riders. MCDOT response was that they will monitor the traffic conditions once the passageway is constructed and take appropriate measures to address such concerns.

#### **TIGER GRANT APPLICATIONS**

While MCDOT has not chosen a Selected Alternative, MCDOT has submitted two applications to the USDOT with Tunnel Alternative 1 as their preferred alignment (SE-SW connection).

On October 31, 2011, the Metropolitan Washington Council of Governments (MWCOG), on behalf of MCDOT, submitted an application for funding for the Tunnel Alternative 1 to the US Department of Transportation (USDOT) from the FY 2011 TIGER Grant 3. Grant winners were announced in December of 2011, and the Forest Glen Passageway was not selected.

On March 16, 2012 MWCOG submitted another application for the Tunnel Alternative 1 for TIGER Grant 4. Grant winners were announced in June of this year, and the Forest Glen Passageway was not selected. Currently, there are no funding sources identified for the project.

## CONCLUSION

Based on information provided by the Applicant and the analysis contained in this report, Staff finds that the most desirable alternative is for MCDOT to improve at-grade crossing of Georgia Avenue. Staff believes that although allowing adequate time for pedestrian crossing of Georgia Avenue will create significant delays on Georgia Avenue (southbound AM), MCDOT should explore increasing the pedestrian crossing time to at least meet the industry standards (MUTCD suggested standard). In addition, MCDOT should provide a sidewalk along the north side of Forest Glen Road between Georgia Avenue and the Holy Cross Hospital. This sidewalk was suggested in the 1996 *Forest Glen Sector Plan* and would improve pedestrian safety in this area.

If a grade-separated crossing is to be constructed, Staff believes that Tunnel Alternative 2 (NE-SW) is the best alternative for the following reasons:

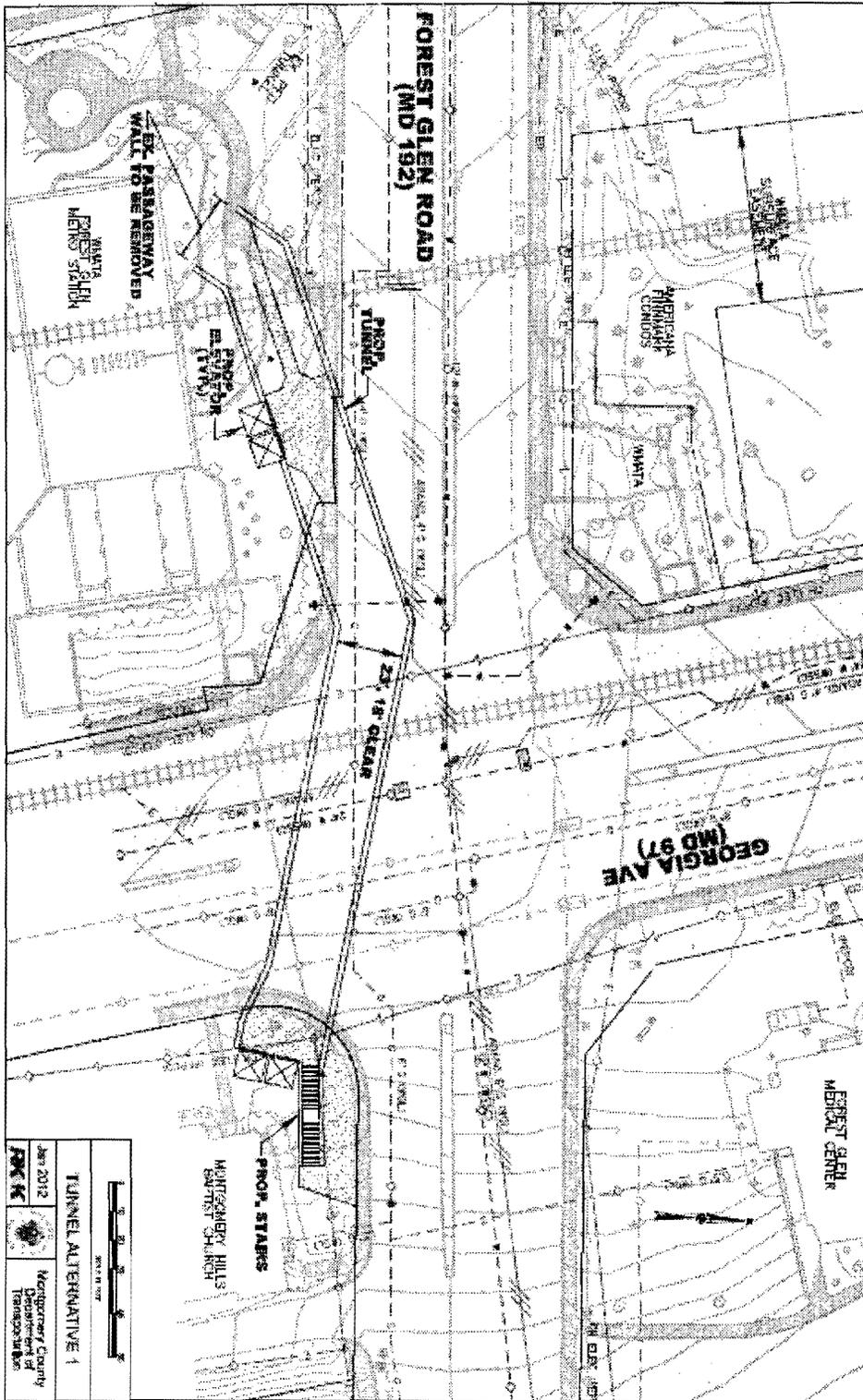
1. It would provide the most direct, grade-separated passage for the highest number of Metro users, mainly those from the northeast quadrant.
2. Due to a significant drop in topography at the northeast corner, it would eliminate the need for stairs at the eastern terminus of the tunnel.
3. Unlike the Tunnel Alternative 1 (SE-SW), it would not require a majority of the potential users to continue to cross Forest Glen Road at Georgia Avenue to access the tunnel entrance.

Staff recommends selecting Tunnel Alternative 2 as the preferred alternative with comments listed at the front of this report.

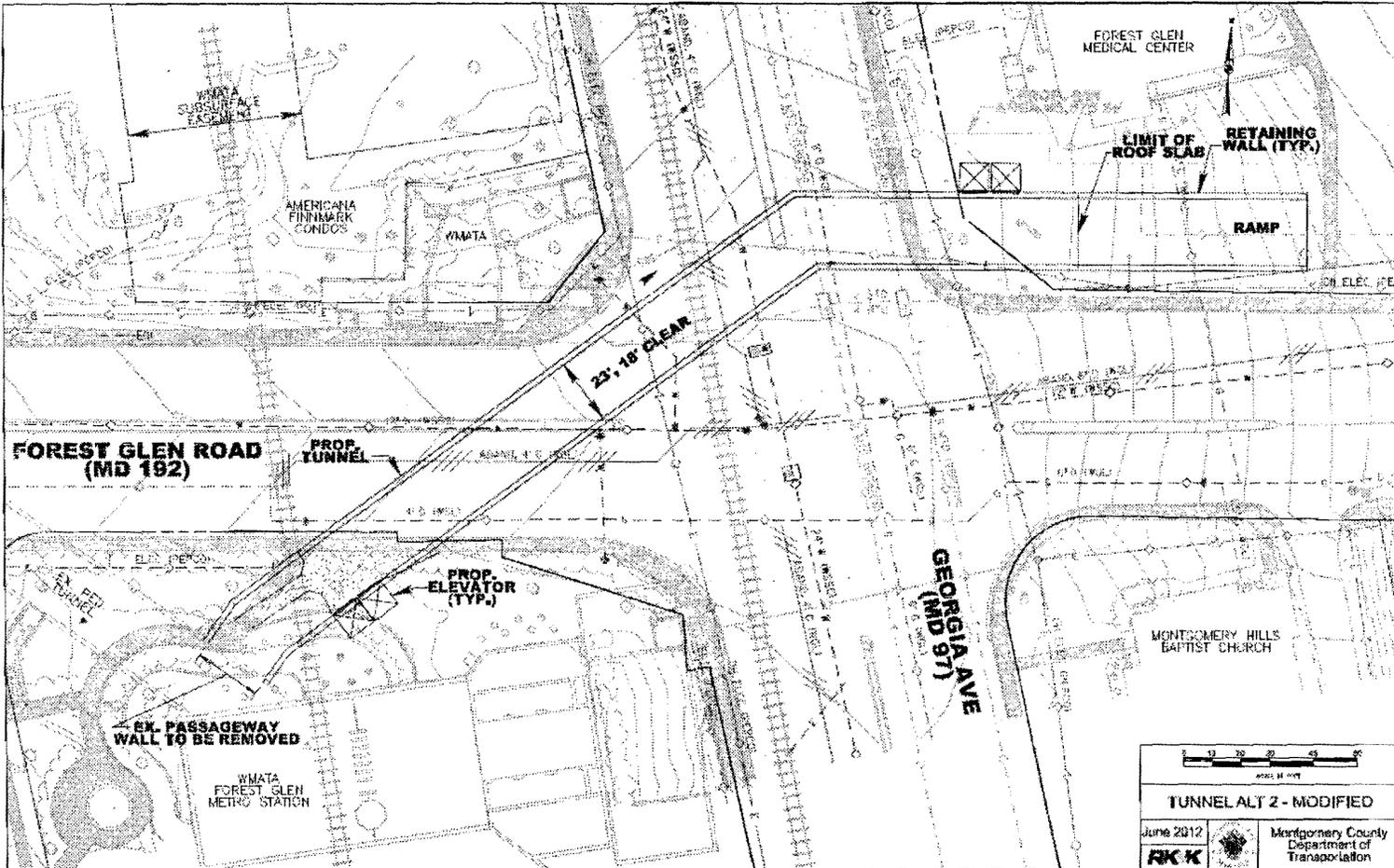
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### Attachments:

1. Tunnel Alternative 1
2. Tunnel Alternative 2 – Modified
3. Bridge Alternative 2



Attachment 1



Attachment 2

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