**MCPB**
Item No.
Date: 10-11-12

**Forest Glen Passageway, Mandatory Referral, MR 2013004**


Marc Lewis-DeGrace, Planner, marc.lewis-degrace@montgomeryplanning.org, 301-495-4629

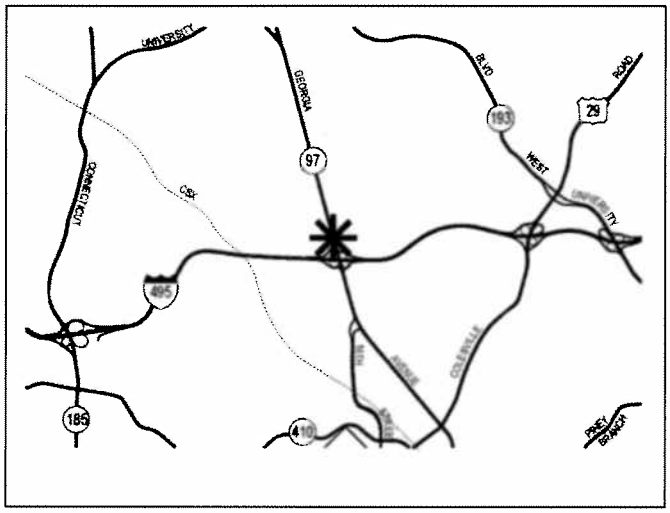
Khalid Afzal, Planner Supervisor, khalid.afzal@montgomeryplanning.org, 301-495-4650

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.

**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 16th 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 16th 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 MDSHA Georgia Avenue Project Planning Study, which will analyze pedestrian safety along the 0.7-mile segment of Georgia Avenue between 16th 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 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.

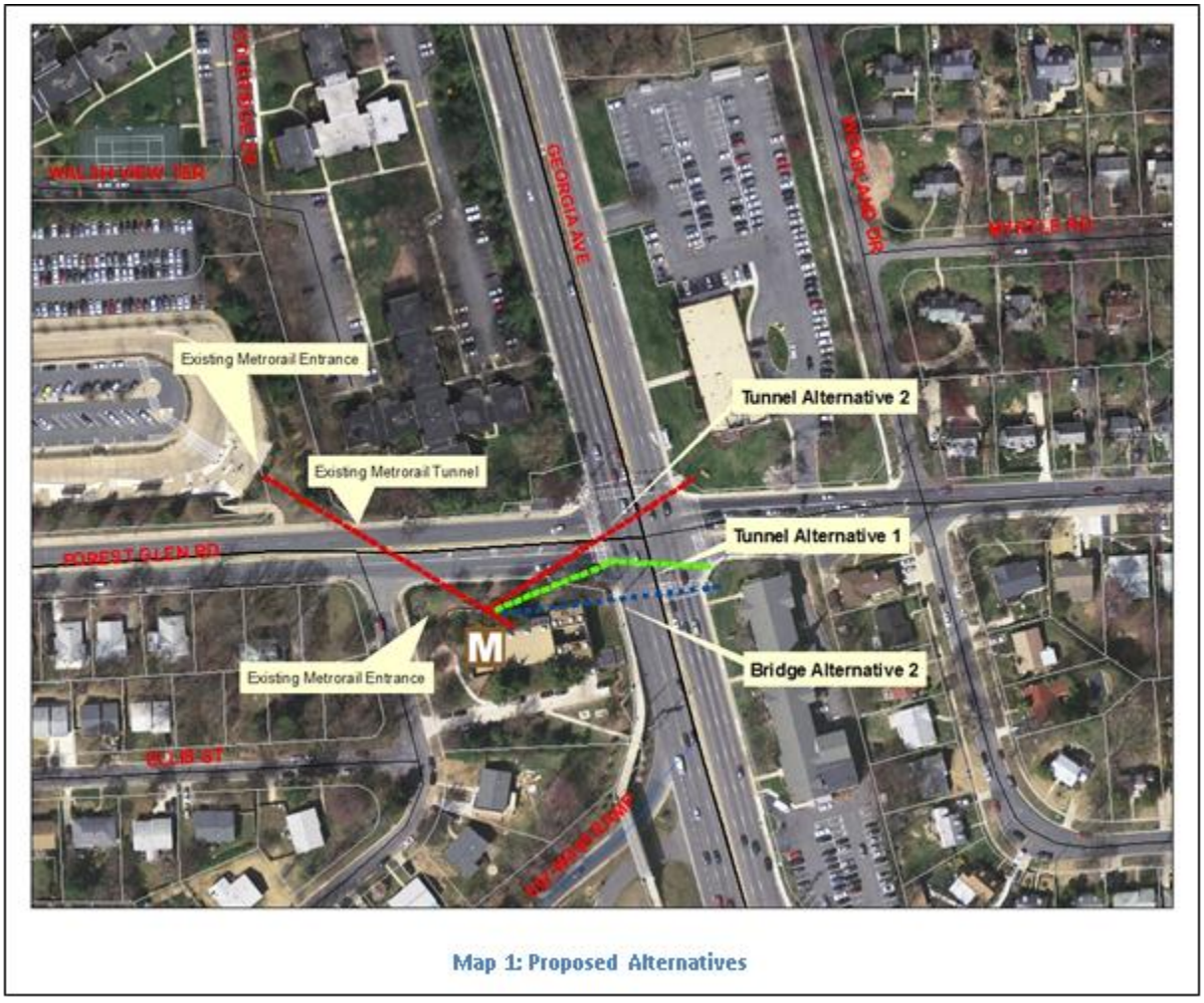
The community has lobbied WMATA and the County for several years for a grade-separated pedestrian crossing of Georgia Avenue. In response to community's requests, WMATA first conducted a study which mainly concluded that, physically, there was room for a tunnel under the intersection that would bring 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).




Map 1: Proposed Alternatives

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)<br>• Overnight Lane Closures to 2-3 Lanes on Georgia Ave and Forest Glen Rd | • Partial Night Time Work (18 months)<br>• Overnight Lane Closures to 2-3 Lanes on Georgia Ave and Forest Glen Rd | • Partial Night Time Work (3 months)<br>• Overnight Lane Closures to 2-3 Lanes on Georgia Ave.<br>• 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 16th 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.

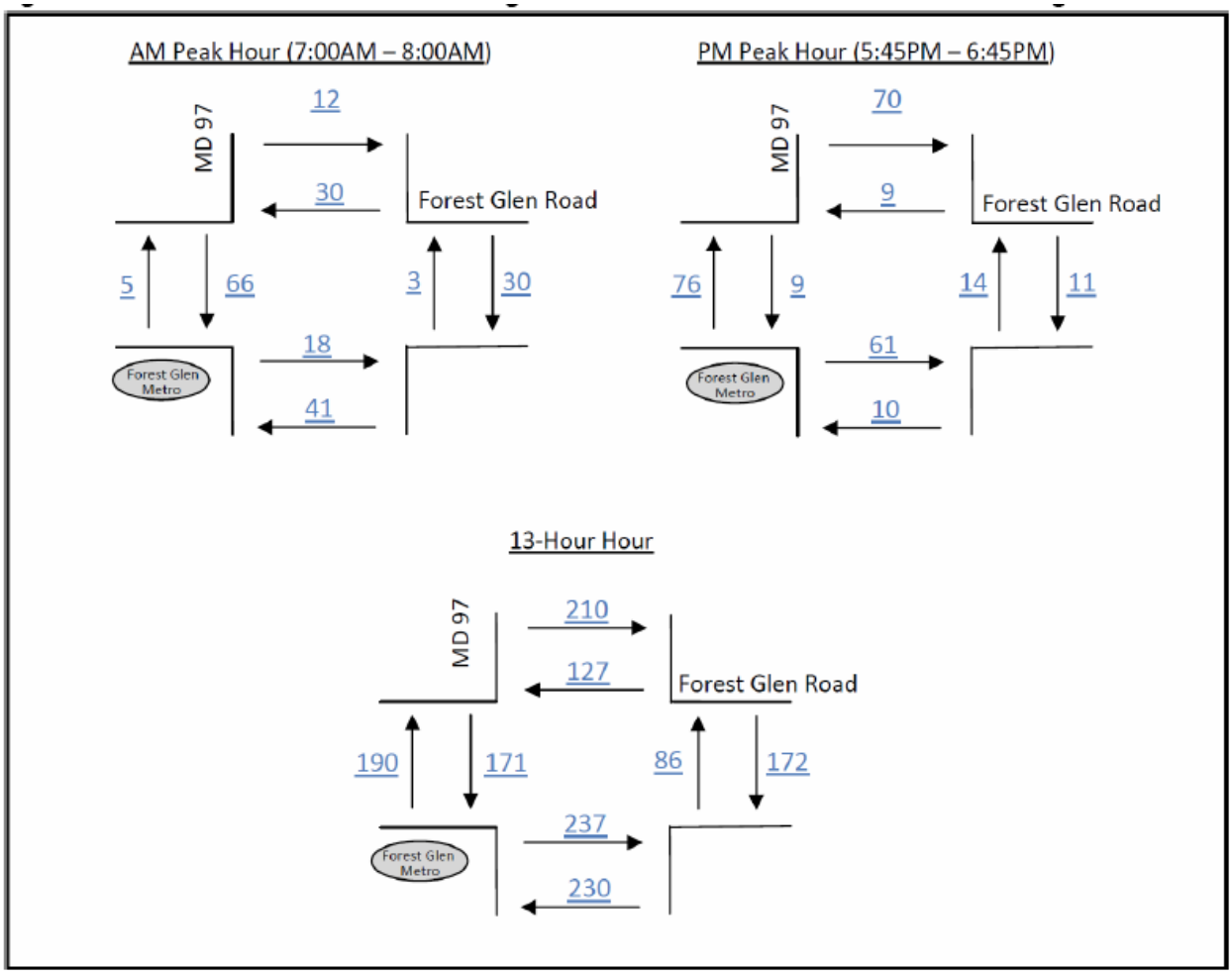
The first set looked at the total number of pedestrians crossing each of the four legs of the intersection during AM and PM peak hours (the top two diagrams in Figure 1 below), and over a 13-hour period (6:00 AM to 7:00 PM) (third diagram in Figure 1 below). These counts showed that the peak-hour (for 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 the 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**

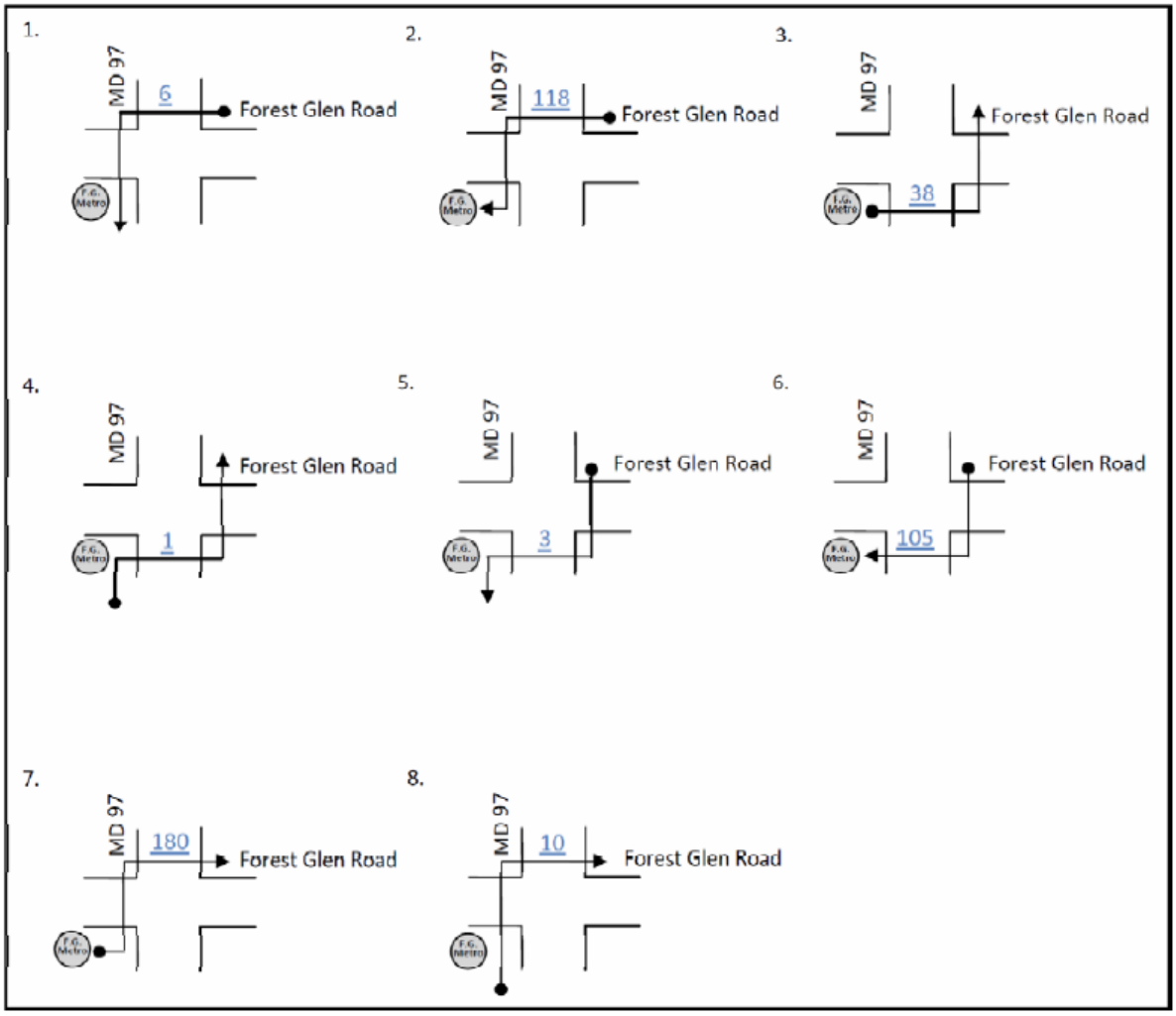
The Study evaluated if at-grade pedestrian crossings, or pedestrian signal phases, could be eliminated, if the passageway were constructed. The study found that it was not possible to eliminate any at-grade crossings. Replacing only one of the crosswalks with a passageway would require the same pedestrian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


Map 2: Half Mile Radius Around Metrorail Station

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 number 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.

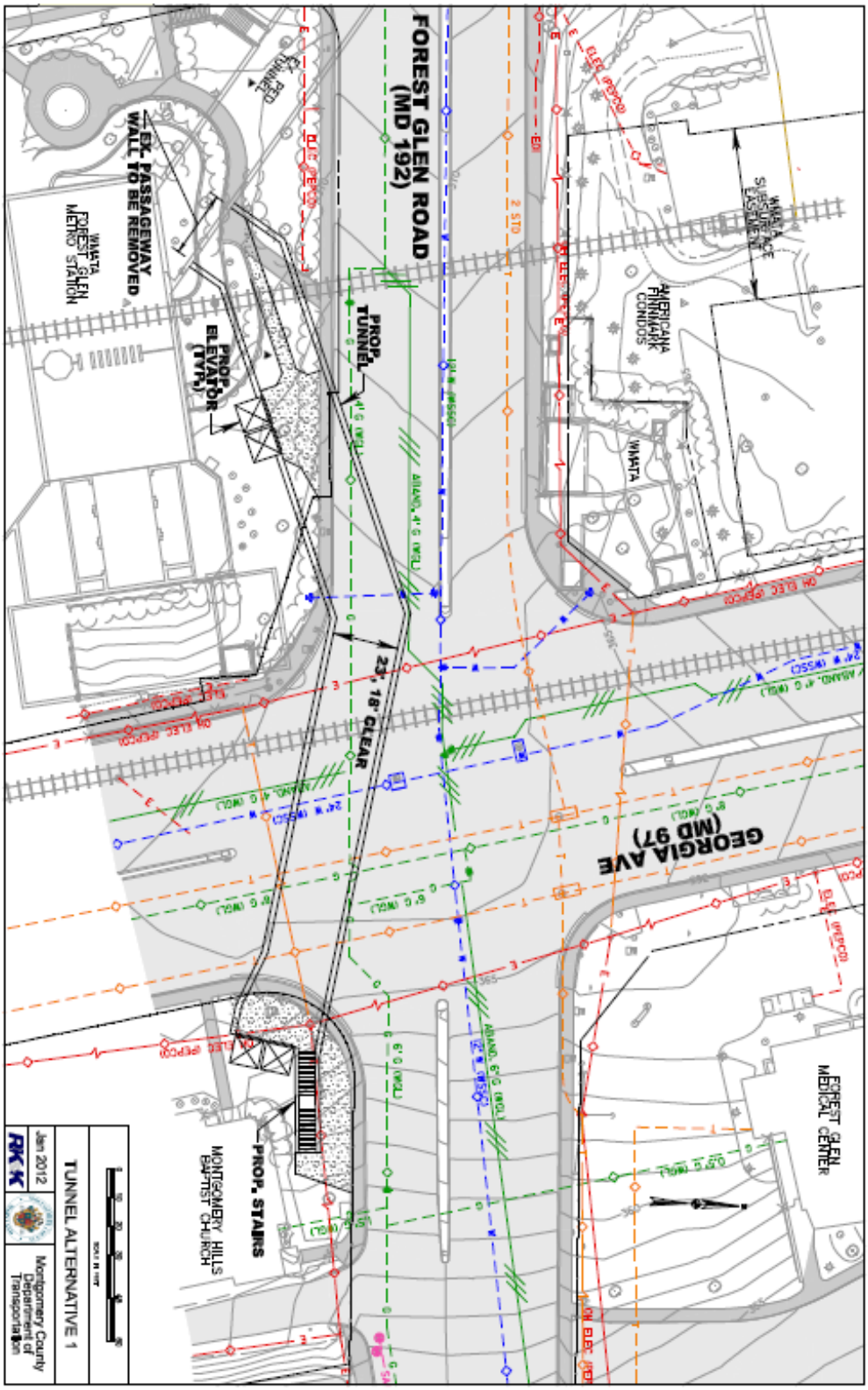
If a grade-separated crossing is to be constructed, Staff believes that Tunnel Alternative 2 (NE-SW) is the best alternative for the following reasons:

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.

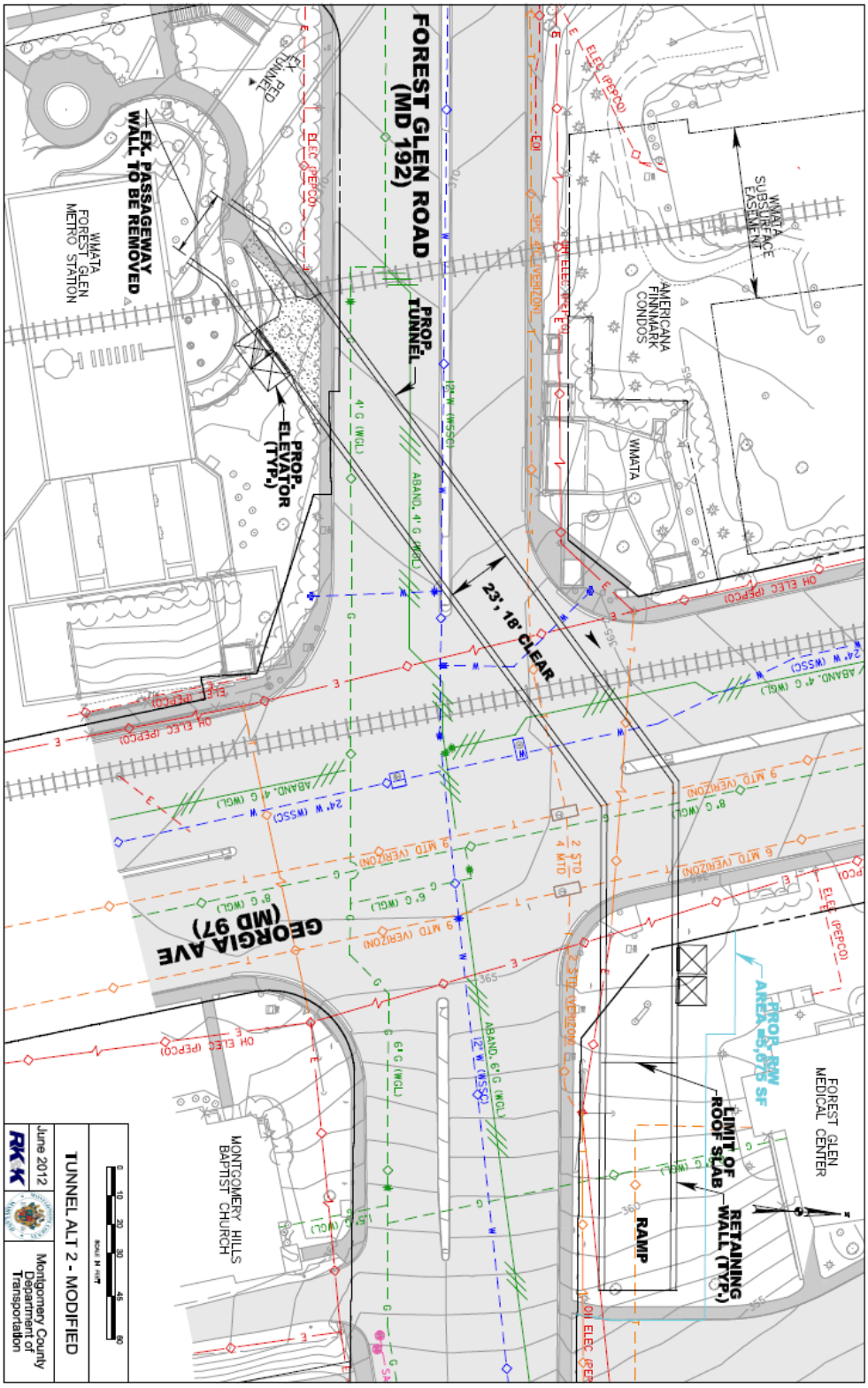
Staff recommends selecting Tunnel Alternative 2 as the preferred alternative with comments listed at the front of this report.

MLDG:ha: n:\area 2 division\lewis-degrace\forest glen\forest glen passageway mr2013004 final

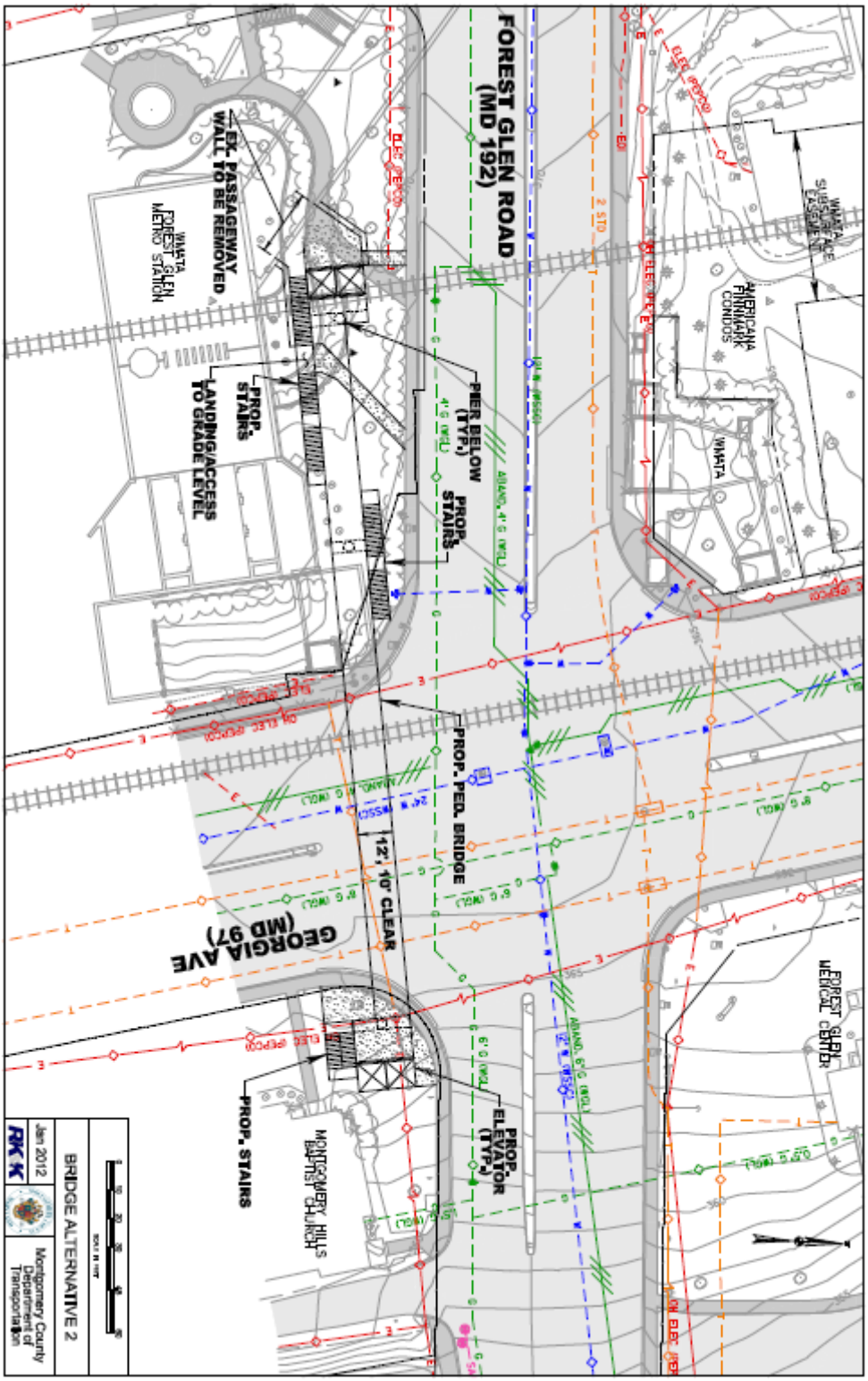
Attachments:
1. Tunnel Alternative 1
2. Tunnel Alternative 2 – Modified
3. Bridge Alternative 2




**Attachment 1**




**Attachment 2**




**Attachment 3**