

## 2. ALTERNATIVES

### 2.1 Alternatives Development

Eleven preliminary alternatives were developed and analyzed. The analysis considered and compared the potential environmental impacts and transportation benefits associated with each of the 11 alternatives. This analysis was presented to the public (Dec 12, 2007 meeting), environmental agencies, and other stakeholders. Based on their input, MCDOT recommended that 6 of the 11 alternatives, and 2 northern terminus options, be retained for detailed study. This recommendation was documented in the June 2010 Draft *Alternatives Retained for Detailed Study* (ARDS) report which included MCDOT's rationale for the recommendation. Based on input from the environmental agencies, a final decision was made to retain 6 alternatives and 3 northern terminus options for detailed study, as documented in MCDOT's November 29, 2010 letter to the USACE, EPA, and MDE. MCDOT received concurrence from the three agencies during January and February, 2011.

### 2.2 Alternatives Eliminated from Detailed Study

Alternatives 3, 4, 6, 7, 10, and 11 and Northern Terminus Option C were eliminated from further study. They are briefly described in this section along with the rationale for their elimination.

#### ***Alternative 3 – Brink-Wightman-Montgomery Village Ave-Midcounty Highway***

Alternative 3 was a 6.7-mile route that upgraded portions of Brink Road, Wightman Road, Montgomery Village Avenue, and Midcounty Highway. The proposed route, one of three that would improve the Brink-Wightman corridor, is identified on **Figure 2-1**. The proposed improvements included:

- Widening Ridge Road between future Snowden Farm Parkway and Brink Road from the existing two-lane undivided roadway to a six-lane divided roadway with sidewalk and shared use path under a separate developer-funded project.
- Widening of Brink and Wightman Roads between Ridge Road and Montgomery Village from the existing two-lane undivided roadway to a four-lane divided roadway with sidewalk and shared use path, with adjustments to the alignment to bring the roadway into compliance with current design criteria.
- Widening of Montgomery Village Avenue from Wightman Road to Midcounty Highway to include on-road bicycle facilities, and replacement of the eastern sidewalk with a shared use path.
- Widening of existing Midcounty Highway between Montgomery Village Avenue and Goshen Road from the existing four-lane divided roadway to a six-lane divided roadway with sidewalk and shared use path.
- Improvements at three major intersections: Midcounty Highway and Montgomery Village Avenue; Montgomery Village Avenue and Wightman Road; Brink Road and Ridge Road.

Alternative 3 would offer moderate improvements to traffic congestion, travel times, safety, efficiency, and pedestrian/bicycle access with relatively low environmental impacts.

Alternative 3 would include transportation improvements similar to Alternative 4, but it was not necessary to retain two alternatives that were similar to one another. Of the two alternatives, Alternative 4 would provide better traffic operations; therefore, Alternative 3 was recommended to be dropped.



Figure 2-1: Alternative 3 – Brink-Wightman-Montgomery Village Ave-Midcounty Highway

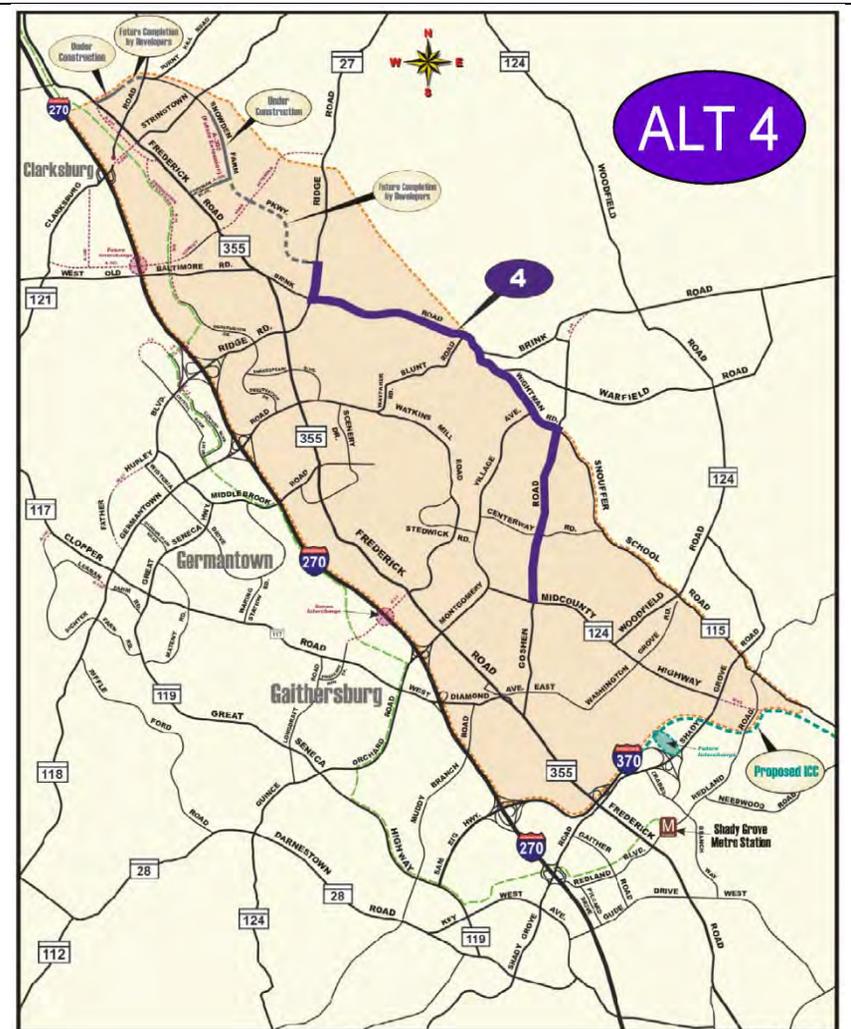


Figure 2-2: Alternative 4 – Brink-Wightman-Goshen

#### ***Alternative 4 – Brink-Wightman-Goshen Roads***

Alternative 4, the second of three alternatives that would improve the Brink-Wightman corridor, was a 6.2-mile route that upgraded portions of Ridge Road, Brink Road, Wightman Road, and Goshen Road (see **Figure 2-2**). The proposed improvements included:

- Widening of Ridge Road between future Snowden Farm Parkway and Brink Road from the existing 2-lane undivided roadway to a six-lane divided roadway with sidewalk and shared use path under a separate developer-funded project.
- Widening of Brink and Wightman Roads between Ridge Road and Goshen Road from the existing two-lane undivided roadway to a four-lane divided roadway with sidewalk and shared use path, with adjustments to the alignment to bring the roadway into compliance with current design criteria.
- Widening of Goshen Road between Wightman Road and existing Midcounty Highway from the existing two-lane undivided roadway to a four-lane divided roadway with sidewalk and shared use path (included in a programmed improvement under a separate County Capital Improvement Project (CIP #501107)).
- Improvements at four major intersections: Ridge Road and Brink Road, Wightman Road and Montgomery Village Avenue, Wightman Road and Goshen Road, and Goshen Road and Midcounty Highway.

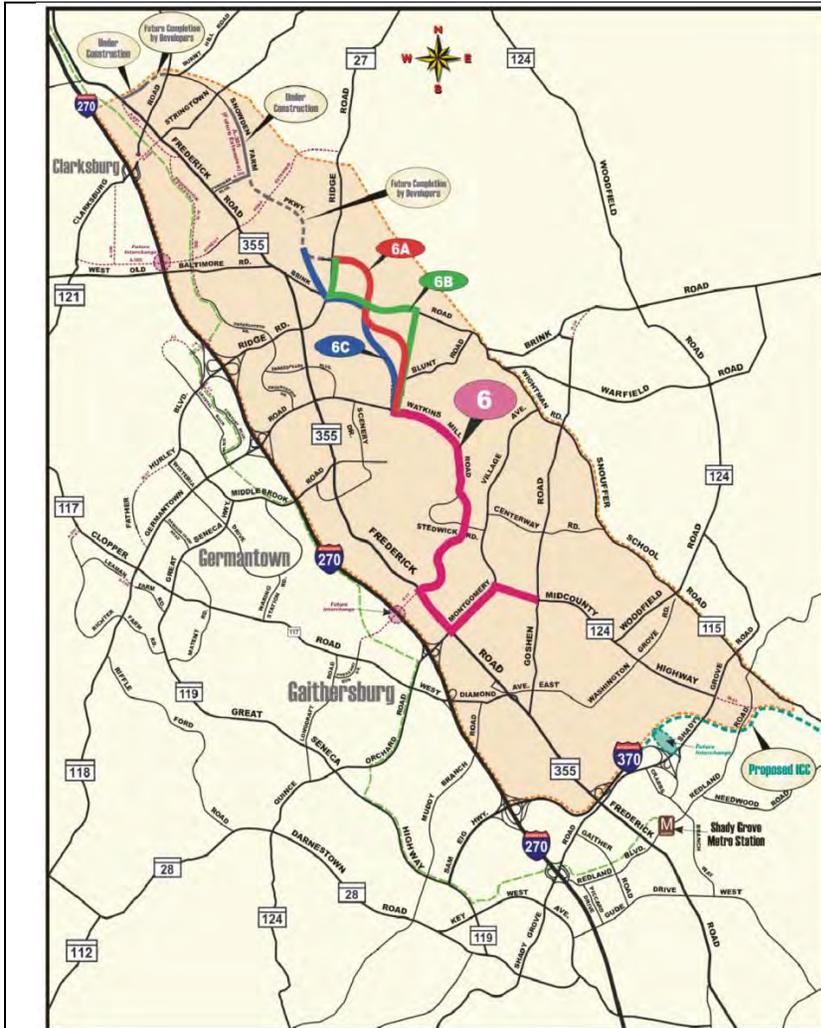
Alternative 4 would offer moderate improvements to traffic congestion, travel times, safety, and pedestrian/bicycle access. The environmental agencies preferred that it be retained due to its relatively low impacts to the natural environment.

Alternative 4 was initially proposed by MCDOT to be retained for detailed study. The disposition of Alternative 4 is explained below under the discussion of Alternative 10.

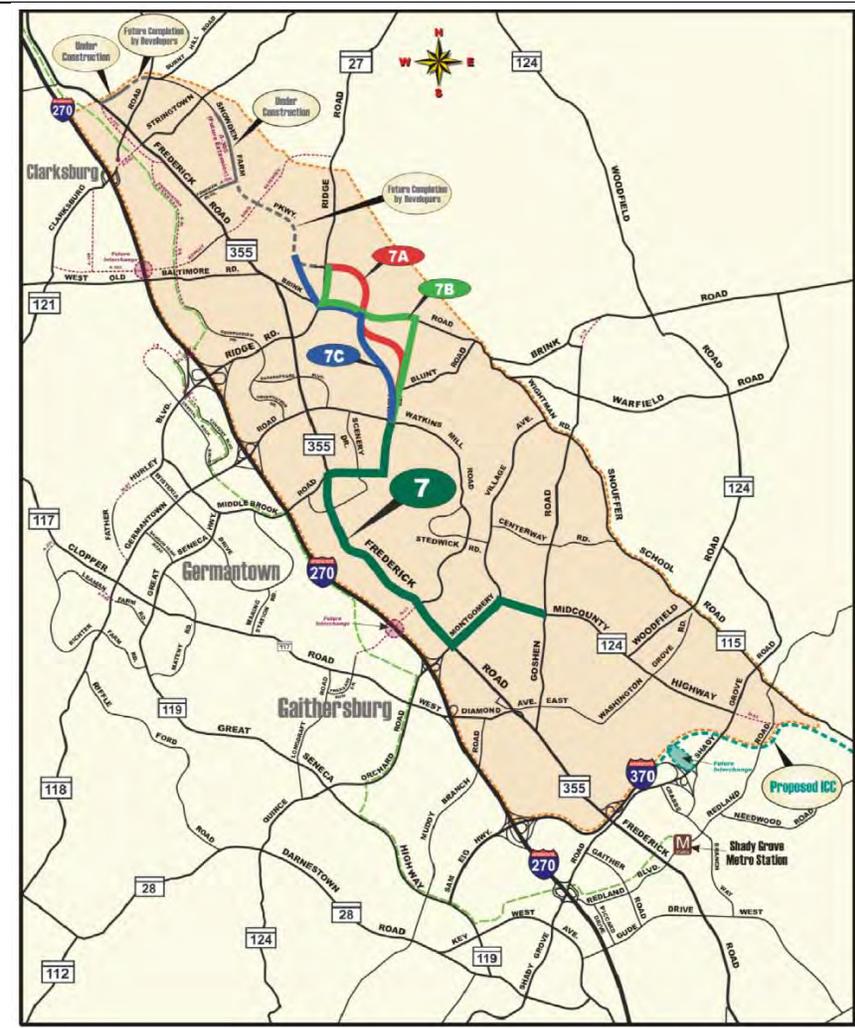
#### ***Alternative 6 – Master Plan Alignment-Watkins Mill Road-MD 355-Montgomery Village Ave- Midcounty Highway***

Alternative 6 was a 7.2-mile route that followed the Master Plan Alignment from future Snowden Farm Parkway to Watkins Mill Road, and upgraded portions of Watkins Mill Road, MD 355, Montgomery Village Avenue, and existing Midcounty Highway. The alternative would include one of the Northern Terminus options. The proposed route is identified on **Figure 2-3**, and the proposed corridor improvements included:

- The Master Plan alignment between future Snowden Farm Parkway and Watkins Mill Road, as follows:
  - The segment between future Snowden Farm Parkway and Blunt Road would be a four-lane divided roadway with sidewalk and shared use path along one of the Northern Terminus Options (described in subsequent sections of this document).
  - The segment between Blunt Road and Watkins Mill Road would be constructed as a four-lane divided roadway with sidewalk and shared use path.
- Widening Watkins Mill Road between the Master Plan alignment and MD 355 to a four-lane divided roadway with sidewalk and shared use path.



**Figure 2-3: Alternative 6 – Master Plan Alignment-Watkins Mill-MD 355-Montgomery Village Ave-Midcounty Highway**



**Figure 2-4: Alternative 7 – Master Plan Alignment-Middlebrook-MD 355-Montgomery Village Ave-Midcounty Highway**

- Widening of Frederick Road between Watkins Mill Road and Christopher Avenue to add auxiliary lanes (service roads).
- Widening Montgomery Village Avenue between MD 355 and existing Midcounty Highway to add auxiliary lanes between MD 355 and Russell Avenue, and replacing the existing eastern sidewalk with a shared use path.
- Widening existing Midcounty Highway from Montgomery Village Avenue to Goshen Road from the existing 4-lane divided roadway to a five-lane divided roadway (three lanes in the SB direction, two lanes in the NB direction) with sidewalk and shared use path.
- Improvements at eight intersections: Watkins Mill Road and Apple Ridge Road, Watkins Mill Road and Stedwick Road, Watkins Mill Road and Travis Avenue, Watkins Mill Road and Russell Avenue, MD 355 and Watkins Mill Road, MD 355 and Montgomery Village Avenue, Montgomery Village Avenue and existing Midcounty Highway, and existing Midcounty Highway and Goshen Road.

Alternative 6 would result in a substantial improvement in intersection congestion; however, the effect of Alternative 6 on reducing travel times and improving safety, efficiency, and pedestrian/bicycle access would be relatively low compared to other alternatives.

Alternative 6 was recommended to be dropped from further study because:

- Travel times along the alternative and most other primary travel routes in the study area would be relatively high;
- There would be significant community impacts to four schools along the corridor; school buses would travel with through traffic, increasing potential traffic conflicts, and would make turns into/out of schools and side streets without benefit of signals, increasing safety risk;
- There could be impacts to pedestrian and bicycle safety and potential conflicts between bicyclists and faster moving through traffic as there are a high number of neighborhoods, schools and other community facilities along the corridor;
- Alternative 6 would have the second highest number of property impacts; and
- There would be relatively high resource impacts to natural resources, parklands, and special protection areas accruing from the new alignment that would traverse the North Germantown Greenway Stream Valley Park.

#### ***Alternative 7 – Master Plan Alignment-Middlebrook-MD 355-Montgomery Village Avenue-Midcounty Highway***

Alternative 7 was a 7.5-mile route that would follow the Master Plan alignment from future Snowden Farm Parkway to Middlebrook Road, and upgrade portions of Middlebrook Road, MD 355, Montgomery Village Avenue, and existing Midcounty Highway. The alternative would include one of the Northern Terminus options. The proposed route is identified on **Figure 2-4**, and included:

- The Master Plan alignment between future Snowden Farm Parkway and Middlebrook Road, as follows:

- The segment between future Snowden Farm Parkway and Blunt Road would be a four-lane divided roadway with sidewalk and shared use path along one of the Northern Terminus Options (described in subsequent sections of this document).
- The segment between Blunt Road and Watkins Mill Road would be a six-lane divided roadway with sidewalk and shared use path.
- The segment between Watkins Mill Road and Middlebrook Road would be a four-lane divided roadway with sidewalk and shared use path.
- Widening Middlebrook Road between the Master Plan alignment and MD 355 from the existing three-lane undivided roadway to a seven-lane divided roadway (four lanes in one direction, three lanes in the other direction) with sidewalk and a shared use path.
- Widening MD 355 between Middlebrook Road and Montgomery Village Avenue, as follows:
  - The segment between Middlebrook Road and Plummer Drive would be widened to add auxiliary lanes (service roads).
  - The segment between Game Preserve Road and Montgomery Village Avenue would be widened from the existing six-lane divided roadway to an eight-lane divided roadway.
- Widening Montgomery Village Avenue between MD 355 and existing Midcounty Highway to add auxiliary lanes between MD 355 and Russell Avenue, and replacing the existing eastern sidewalk with a shared use path.
- Widening existing Midcounty Highway between Montgomery Village Avenue and Goshen Road from the existing four-lane divided roadway to a five-lane divided roadway (three lanes in the SB direction, two lanes in the NB direction) with sidewalk and shared use path.
- Major improvements at four intersections: MD 355 and Middlebrook Road, MD 355 and Watkins Mill Road, MD 355 and Montgomery Village Avenue, and Midcounty Highway and Goshen Road.

Alternative 7 would result in a substantial improvement in intersection congestion; however, its effect on reducing travel times and improving safety, efficiency and pedestrian/bicycle access would be relatively low compared to other alternatives. Alternative 7 would avoid new crossings of Great Seneca Creek and Whetstone Run and would result in moderate environmental impacts.

Alternative 7 was recommended to be dropped from further consideration due to the following:

- Alternative 7 would result in the highest travel times of any build alternative.
- The travel distance along Alternative 7 would be longer than the travel distance along Ridge Road and MD 355, with no advantage in travel time. Therefore, Alternative 7 would not induce MD 355 users to divert from MD 355.
- Alternative 7 would add additional traffic to the already-congested MD 355/Middlebrook Road intersection.
- There would be relatively high resource impacts to natural resources, parklands, and special protection areas accruing from the new alignment that would traverse the North

Germantown Greenway Stream Valley Park, with no corresponding increase in transportation service.

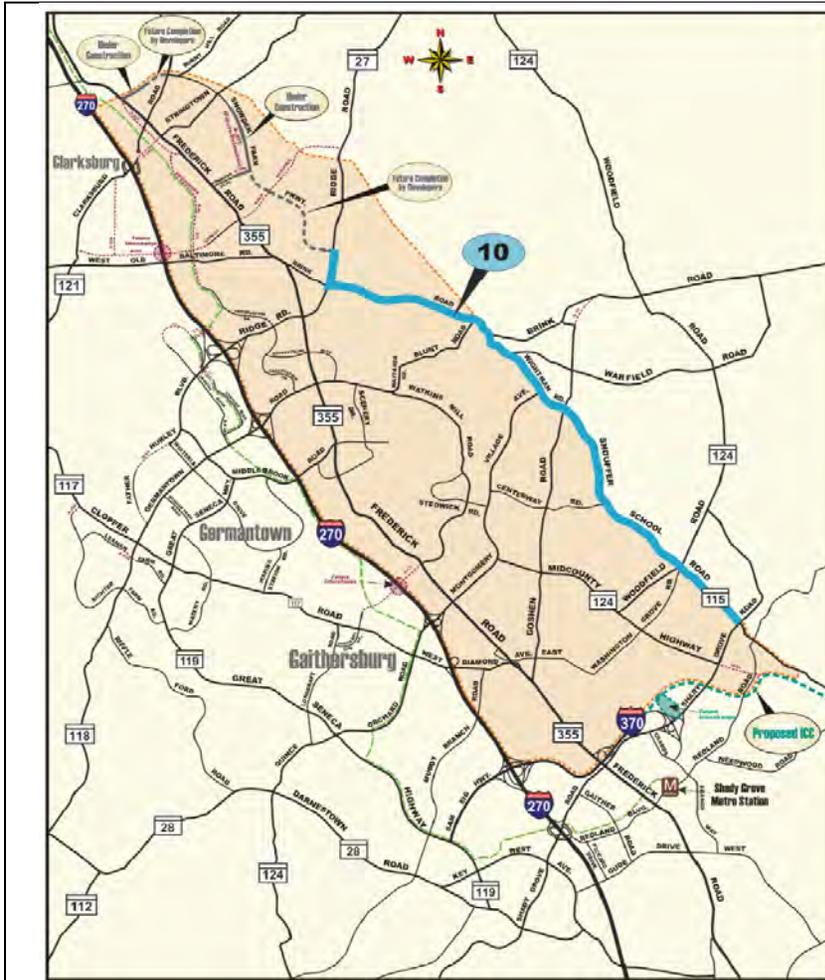
- This alternative would provide a lower level of transportation service than Alternative 5, with significantly greater environmental impacts.

### ***Alternative 10 – Brink-Wightman-Snouffer School-Muncaster Mill***

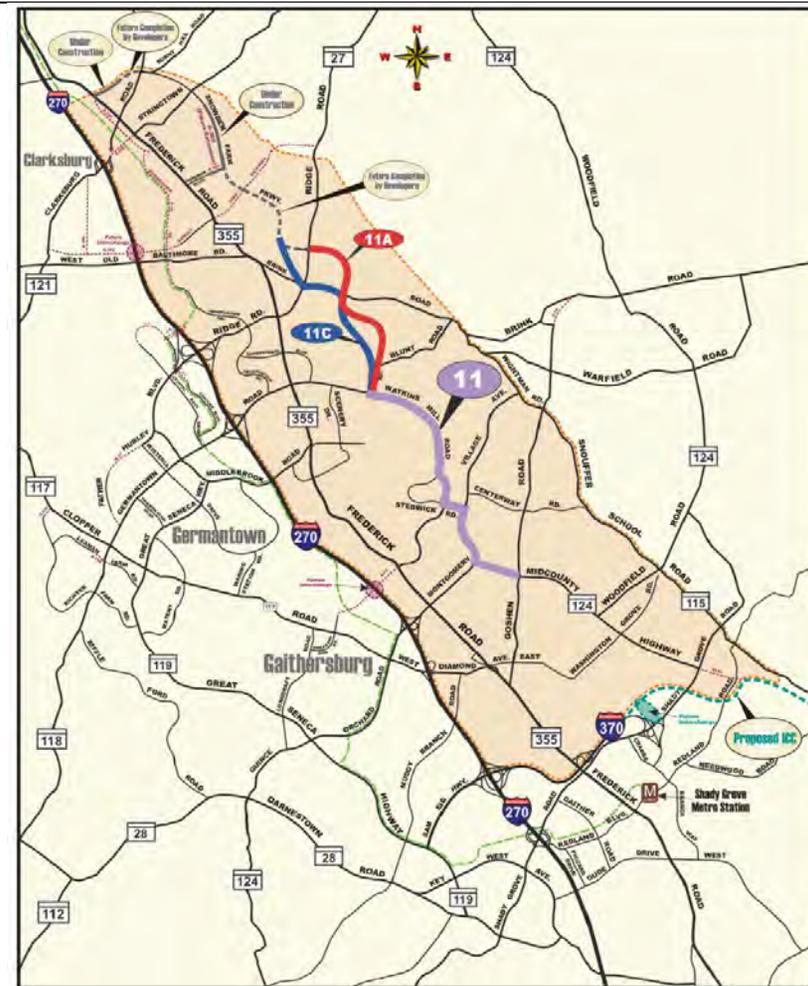
Alternative 10 is a 7.5-mile route that would follow the existing alignments of Ridge Road, Brink Road, Wightman Road, Snouffer School Road, and Muncaster Mill Road. The proposed route was one of three that would use the Brink-Wightman corridor. The proposed route is identified on **Figure 2-5**, and proposed corridor improvements included:

- Widening Ridge Road between future Snowden Farm Parkway and Brink Road from the existing two-lane undivided roadway to a six-lane divided roadway with sidewalk and shared use path under a separate developer-funded project.
- Widening Brink Road and Wightman Road between Ridge Road and Goshen Road from the existing two-lane undivided roadway to a four-lane divided roadway with sidewalk and shared use path. Portions of the roadway not meeting current design criteria would be brought into compliance.
- Widening Snouffer School Road between Goshen Road and Centerway Road from the existing two-lane undivided roadway to either a four-lane divided roadway (Option 10A) or a five-lane undivided roadway with center turn lane (Option 10B), both with sidewalk and a shared use path. A separate County Capital Improvement Project (CIP # 501119) is currently under design to widen this portion of Snouffer School Road to a four-lane divided highway.
- Widening Snouffer School Road between Centerway Road and Woodfield Road (MD 124) from the existing three-lane/five-lane undivided roadway to either a four-lane divided (Option 10A) or five-lane undivided roadway with center turn lane (Option 10B), both with sidewalk and a shared use path. A separate County Capital Improvement Project (CIP #501109) is currently under design to widen this road to a five-lane cross section with on-street bike lanes.
- Widening Muncaster Mill Road between Woodfield Road and Shady Grove Road from the existing two-lane undivided roadway to either a four-lane divided roadway (Option 10A) or a five-lane undivided roadway with center turn lane (Option 10B), both with sidewalk and a shared use path, and improve portions of the roadway to meet current design criteria.
- Improvements at six major intersections: Ridge Road and Brink Road, Wightman Road and Montgomery Village Avenue, Wightman Road and Goshen Road, Snouffer School Road and Centerway Road, Snouffer School Road and Woodfield Road, and Muncaster Mill Road and Shady Grove Road.

Alternative 10 would offer moderate improvements to traffic congestion, but the improvements to travel times, safety, efficiency, and pedestrian/bicycle access are relatively low compared to the other alternatives. A significant disadvantage of Alternative 10 is the



**Figure 2-5: Alternative 10 – Brink-Wightman-Snouffer School-Muncaster Mill**



**Figure 2-6: Alternative 11–Master Plan Alignment-Watkins Mill-Stedwick-Montgomery Village Ave-Midcounty Highway**

significantly high number of access points (139) along this route providing access to residential communities, industrial parks and businesses. The large number of access points represents numerous points of conflict between through traffic and local traffic. On the other hand, impacts to wetlands, streams, forest and parks would be relatively low compared to the other build alternatives.

The ultimate improvements under Alternative 4 and 10 would have been similar to each other because Alternative 10 assumed that Goshen Road would be widened under a Capital Improvement Project, and Alternative 10 assumed that Snouffer School Road would be widened under two Capital Improvement Projects. Therefore, the only substantial difference between the two alternatives was that Alternative 10 also included the widening of a 1-mile portion of Muncaster Mill Road. Because these two alternatives were similar, MCDOT proposed that only one be retained for detailed study. MCDOT proposed retaining Alternative 4 because it resulted in lower environmental impacts in almost every category, it would better satisfy the purpose and need, there would be no conflicts with traffic at Montgomery County Airpark Industrial Park, and it would affect fewer residential properties. After reviewing the initial recommendation, several of the environmental agencies expressed a concern that Alternative 10 should be retained in addition to Alternative 4 because:

- Alternative 10 would result in less impact to streams,
- The additional improvements along Alternative 10 (namely to Muncaster Mill Road) would further improve the transportation benefits of this alternative, and
- Alternative 10 would serve as a backup alternative if Alternative 4 were subsequently determined to have a fatal flaw.

The lead environmental agencies (USACE, MDE, and EPA) subsequently agreed to study one alternative. The agreed-upon alternative was a hybrid of Alternative 10-Option A and Alternative 4, and was renamed Alternative 4 Modified. It was similar to Alternative 10-Option A in that it proposed a four-lane divided highway along Brink-Wightman-Snouffer School-Muncaster Mill Roads, but it also included the widening of existing Midcounty Highway to six lanes, from Montgomery Village Avenue to Goshen Road, which was a component of Alternative 4. The decision to include the widening of Snouffer School and Muncaster Mill Roads in this modified alternative was intended to make the alternative operate as effectively as possible. (Extending the widening all the way to Shady Grove Road was intended to accommodate the portion of the traffic stream that desired to access the ICC.) The agencies accepted this proposed hybrid alternative with the understanding that portions of this alternative could be eliminated if fatal flaws were subsequently identified along the alternative. To date, no fatal flaws have been identified.

#### ***Alternative 11-Master Plan Alignment-Watkins Mill-Stedwick-MontgomeryVillage-Midcounty Highway***

Alternative 11 was a proposed 5.7-mile route that would construct a portion of the Master Plan Alignment from future Snowden Farm Parkway to Watkins Mill Road, incorporating one of the Northern Terminus Options. It would then widen Watkins Mill Road, Stedwick Road, Montgomery Village Avenue, and a portion of the existing Midcounty Highway. The

proposed route, shown with Northern Terminus Options A and C, is identified on Figure 2-6. The proposed corridor improvements included:

- The Master Plan alignment between future Snowden Farm Parkway and Watkins Mill Road, as follows:
  - The segment between future Snowden Farm Parkway and Blunt Road would be a four-lane divided roadway with sidewalk and shared use path along one of the Northern Terminus Options (described in subsequent sections of this document).
  - The segment between Blunt Road and Watkins Mill Road would be constructed as a four-lane divided roadway with sidewalk and shared use path.
- Widening Watkins Mill Road (upper) between Wayfarer Road and Stedwick Road from the existing two-lane to three-lane undivided roadway to a four-lane divided roadway with sidewalk and shared use path, with adjustments to the alignment to bring the roadway into compliance with current design criteria.
- Widening Stedwick Road between Watkins Mill Road (upper) and Montgomery Village Avenue from the existing two-lane undivided roadway to a six-lane divided roadway with sidewalk and shared use path.
- Improving existing Montgomery Village Avenue between Stedwick Road and existing Midcounty Highway with intersection improvements at Midcounty Highway, Lake Shore Drive, and Stedwick Road, replacing the existing eastern sidewalk with a shared use path.
- Widening Midcounty Highway from Montgomery Village Avenue to Goshen Road from the existing four-lane divided roadway to a five-lane divided roadway (three lanes in the SB direction, two lanes in the NB direction) with sidewalk and shared use path.
- Improving five major intersections at Watkins Mill Road and Apple Ridge Road, Watkins Mill Road and Stedwick Road, Montgomery Village Avenue and Stedwick Road, Montgomery Village Avenue and Midcounty Highway, and Midcounty Highway and Goshen Road.

Alternative 11 would follow the same alignment as Alternative 6 from the Watkins Mill Road/Stedwick Road intersection, and incorporates a more direct route between Goshen Road/Midcounty Highway and the Watkins Mill Road/Stedwick Road intersections. Consequently, Alternative 11 would have a more positive impact on travel time than Alternative 6. Alternative also would have fewer intersections/access points and reduced potential impacts to adjacent properties and natural resources.

Alternative 11 was recommended to be dropped from further study because

- Future travel times would be relatively high along the primary travel corridors when compared to Alternatives 4, 5, 8 or 9.
- The corridor has a high potential for significant pedestrian and bicycle traffic due to the high number of neighborhoods, schools and other community facilities located along the Watkins Mill Road corridor; and the high volume of local traffic combined with through traffic would increase the potential for conflicts.

- The Alternative would have significant community impacts on three schools located on the corridor that would create potential conflicts between through traffic and school buses and local/school traffic.
- There would be relatively high resource impacts to natural resources, parklands, and special protection areas accruing from the new alignment that would traverse the North Germantown Greenway Stream Valley Park.

### *Northern Terminus Option C*

Northern terminus Option C was originally proposed for the purpose of reducing the acreage of impact to North Germantown Greenway Stream Valley Park by shifting the alignment to the western edge of the Park. Option C would maintain the typical four-lane divided roadway section with sidewalk and shared use path. Option C would extend in a similar alignment to Option A between Brink Road and Germantown Road but on a more gentle curve. At its intersection with Brink Road, the alignment would follow Brink Road west to Ridge Road, then take a northerly path on new alignment to intersect with Snowden Farm Parkway between Brink and Ridge Roads. Option C is shown on **Figure 2-7** with the original alignments of Options A and B.



**Figure 2-7: Original Northern Terminus Options**

Option C was recommended to be dropped from further consideration because the alignment's crossing of North Germantown Greenway Stream Valley Park would result in the greatest impact to high quality park resources, including plant species which are uncommon in Montgomery County, rock outcrops, habitat for forest interior dwelling species, and Dayspring Creek, and would potentially impact the operations of the Dayspring Church Silent Retreat Center due to proximity.

### 2.3 Alternatives Retained for Detailed Study (ARDS)

The following six alternatives and three options for the northern terminus were retained for detailed study and are further evaluated in this document:

- Alternative 1 – No-Build;
- Alternative 2 – TSM/TDM;
- Alternative 4 Modified – Brink-Wightman-Goshen-Snouffer School-Muncaster Mill;
- Alternative 5 Modified – MD 355 with Service Roads;
- Alternative 8 Modified – Master Plan Alignment Truncated at Watkins Mill Road;
- Alternative 9 – Master Plan Alignment; and
- Northern Terminus Options A (Master Plan), B, and D.

The development of each alternative recognizes that other roadway improvements would be expected to be implemented by the design year (2030). These other projects include those listed in the Metropolitan Washington Council of Governments' (MWCOCG's) Constrained Long Range Plan (CLRP); Montgomery County's Capital Improvement Program (CIP); planned transit system improvements and the Corridor Cities Transitway (CCT); and travel demand management (TDM) measures applying to the entire Metropolitan Washington region. The traffic analysis for each alternative assumes that these other projects would be in place by year 2030. **Table 2-1** lists the programmed improvements within the study area.

#### *Alternative 1 – No-Build*

The No-Build Alternative is shown in **Figure 2-8**. The No-Build Alternative is the baseline condition which assumes that all the programmed transportation improvements within the study area are completed by horizon year 2030 except for the extension of Midcounty Highway. The No Build Alternative is included in the study only for the purpose of providing a baseline for comparing the build alternatives. It would not address the project needs; therefore, MCDOT does not consider the No Build Alternative to be a viable solution.

It is significant to note that the traffic analysis for the No-Build Alternative included the construction of the CCT. Even with the assumption that the CCT is operational by year 2030, the travel demand model shows that 16 of the 65 intersections that were evaluated within the study area would experience unacceptable congestion by year 2030, traffic volumes on I-270 would increase by 46%, traffic volumes on MD 355 would increase 40%, travel times along MD 355 would increase 28% in the p.m. peak hour and 35% in the a.m. peak hour, and accidents on MD 355 would be expected to continue to exceed the statewide average for similar type highways. Therefore, even with the CCT and the programmed highway improvements, there is still a need for other transportation improvements in the study area.

Table 2-1: Year 2030 Programmed Roadway Improvements in the Study Area

Roadway Improvement	Location	Improvement	CLRP/CIP ID Number
Goshen Road South	South of Girard Street to 1,000 feet north of Warfield Road	Widen to a four-lane divided roadway with sidewalk and shared use path	CLRP 1226 CIP 501107
Snouffer School Road	Sweet Autumn Drive to Centerway Road	Widen to a five-lane (four through lanes and one center turn lane) undivided roadway with sidewalk and shared use path	CIP 501109 CLRP 1236 TIP MC34
Snouffer School Road	Centerway Road to Ridge Heights Drive	Widen to four-lane divided based on the traffic needs of the adjacent Webb Tract development which will include new facilities for several Montgomery County government agencies.	CIP 501119 CLRP TIP MC34
Ridge Road (MD 27)	Brink Road to proposed Snowden Farm Parkway (A-305)	Widen from four lanes to a six-lane divided roadway with sidewalk and shared use path. (developer funded)	CLRP 2620 TIP MS33
Snowden Farm Parkway (A-305)	Clarksburg Town Center to Ridge Road (MD 27)	Construct a new four-lane divided roadway with sidewalk and shared use path. (developer funded)	CLRP 1244 TIP MC11c
Watkins Mill Road Extended	I-270 to Frederick Road (MD 355)	Construct a new six-lane divided roadway with sidewalk and shared use path. Includes intersection improvements at MD 355.	CLRP TIP MC23a CIP 500724
I-270/Watkins Mill Road Interchange	I-270 at (new) Watkins Mill Road Extended	Construct a new interchange (SHA project)	CLRP TIP MI2q
Middlebrook Road Extended	Frederick Road (MD 355) to (new) Midcounty Highway (M-83)	Widen from three lanes to a four-lane divided roadway with sidewalk and shared use path	CLRP 1229 TIP MC14g
Woodfield Road (MD 124)	Midcounty Highway (MD 124) to Warfield Road	Widen to a six-lane divided roadway with sidewalk and shared use path. (SHA project)	CLRP 1206
Corridor Cities Transitway (CCT)	Shady Grove Metro Station to Comsat property	Construct a bus way with dedicated right-of-way	CLRP 1649

Sources: (1) Major Highway Improvements in the 2012 CLRP and FY2011-2016 TIP Air Quality Conformity Inputs, MWCOG Website [www.mwco.org/clrp](http://www.mwco.org/clrp); and (2) Montgomery County MD Master List of CIP Projects (FY11-16), Montgomery County Website [www.montgomerycountymd.gov/omb](http://www.montgomerycountymd.gov/omb).

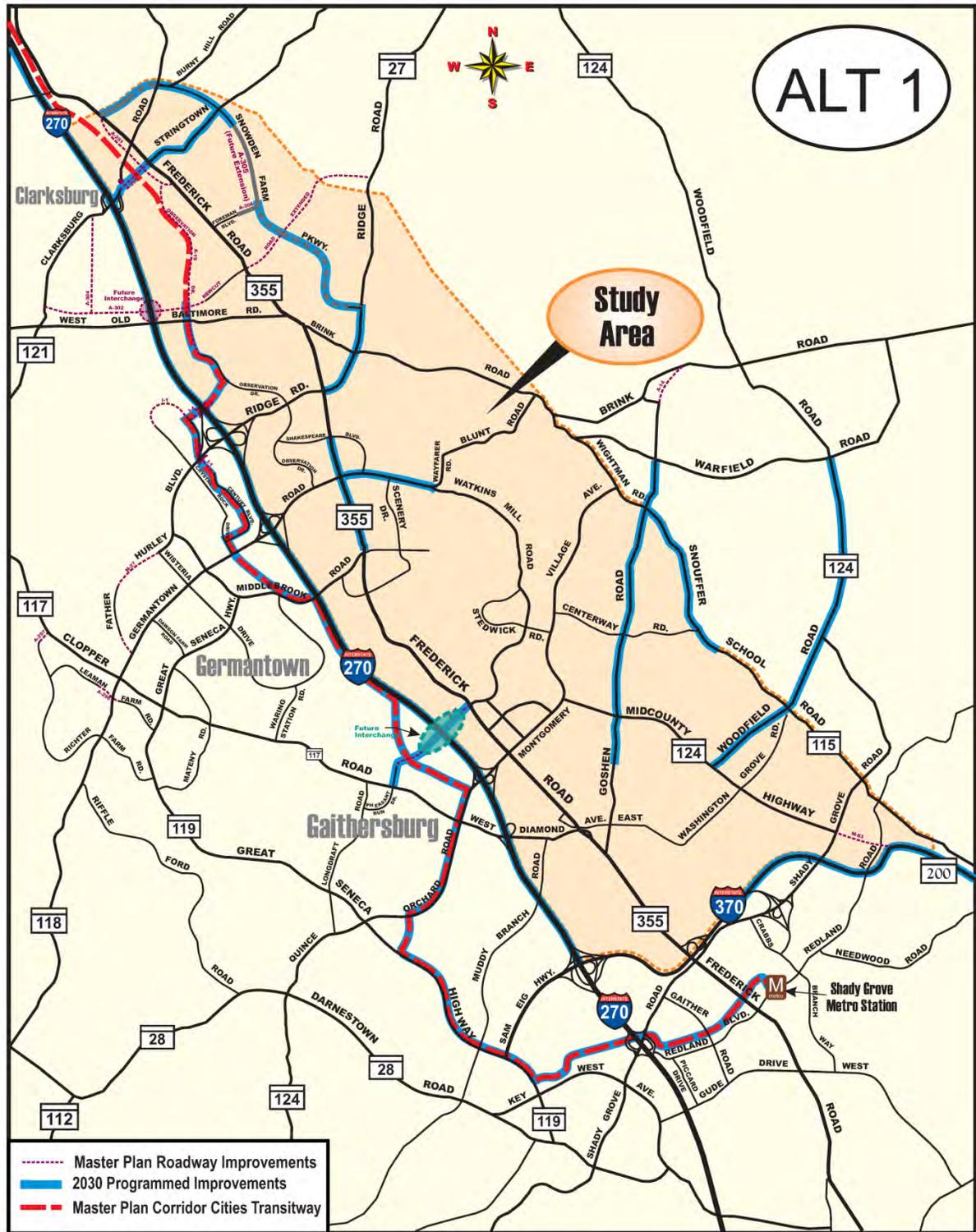


Figure 2-8: Alternative 1 – No Build

Table 2-2: Proposed Improvements Evaluated under Alternative 2

Type of Improvement	Locations
Intersection Improvements	Midcounty Highway /Montgomery Village Avenue Midcounty Highway/Goshen Road Midcounty Highway/Woodfield Road Midcounty Highway/Washington Grove Road Midcounty Highway/Miller Fall Road Midcounty Highway/Shady Grove Road MD 355/Shady Grove Road MD 355/Montgomery Village Avenue MD 355/Watkins Mill Road MD 355/Professional Drive MD 355/Gunners Branch Road MD 355/Middlebrook Road MD 355/Germantown Road MD 355/Shakespeare Boulevard Watkins Mill Road/Stedwick Road MD 115/Shady Grove Road/Airpark Road

***Alternative 2 – Transportation System Management / Travel Demand Management***

Alternative 2, shown in **Figure 2-9**, was proposed to improve the existing transportation system with minimal capital improvements while reducing the demand for single-occupant vehicle travel on roadways. In the design year 2030, the 16 study area intersections listed in **Table 2-2** will exceed Critical Lane Volumes (CLVs) of 1425, which is the County’s congestion standard for the policy areas that comprise the study area, as defined in the 2009-2011 Growth Policy. Low-cost intersection improvements that could be constructed within the existing rights-of-way (such as additional turning lanes) were evaluated at these 16 intersections.

In deciding whether to retain this alternative for detailed study, the following factors were considered. The proposed intersection improvements would improve intersection operation and improve travel time. However, such improvements would not substantially improve vehicular traffic safety or mobility, would not provide a new highway or additional lane capacity to enhance the efficiency of the roadway network or accommodate planned land use and future growth, and would not provide additional bicycle and pedestrian connections. Nevertheless, Alternative 2 was retained for detailed study because it would have the least impact to natural resources, parks, and property; would provide moderate relief to over-congested intersections in the design year; and represents a minimal investment utilizing the existing infrastructure.

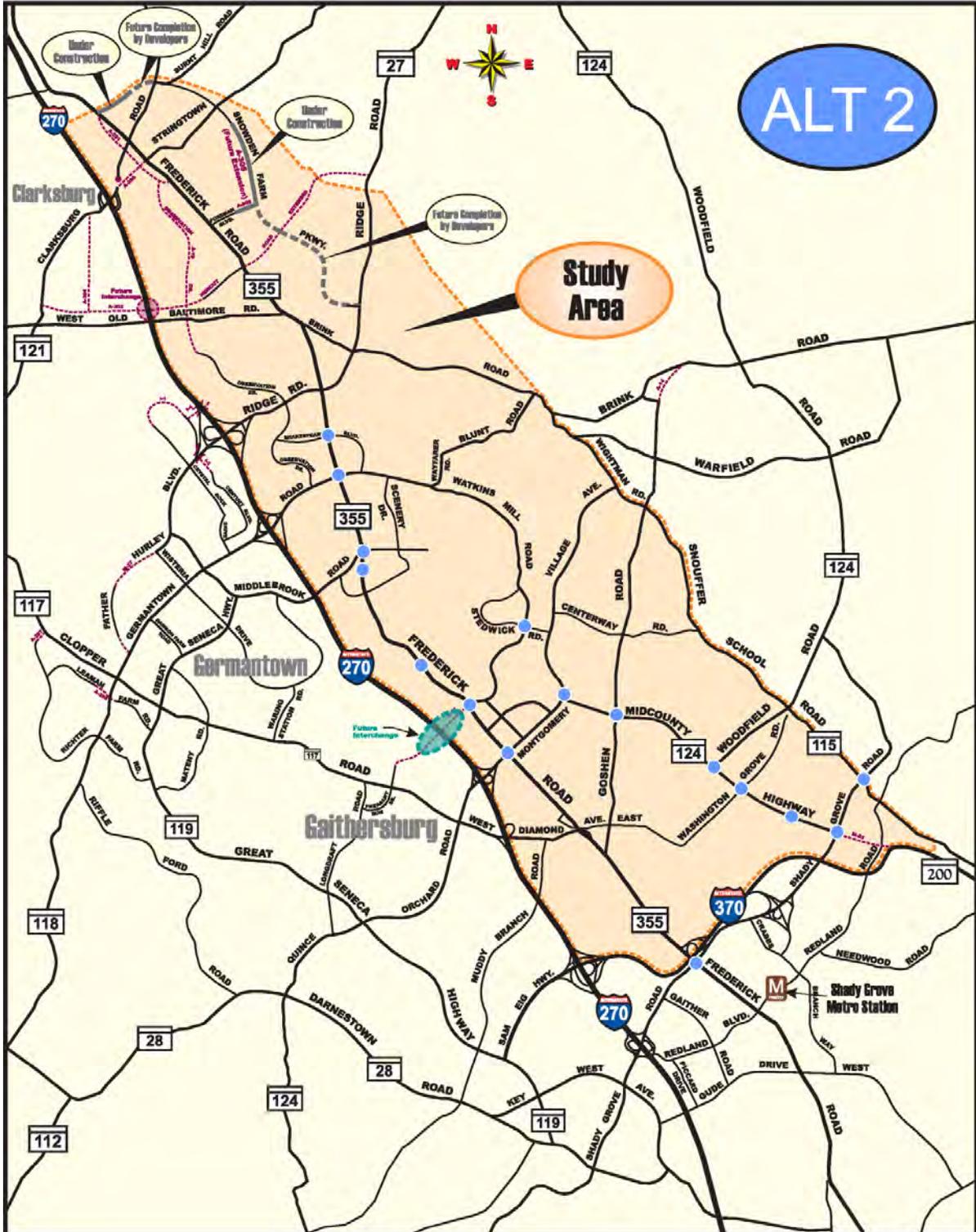


Figure 2-9: Alternative 2–Transportation Systems Management/Travel Demand Management

All of the remaining Build Alternatives considered improvements along a north-south corridor. All remaining alternatives included the following:

- A design speed of 40 miles per hour;
- A minimum of four through lanes;
- A divided highway to enhance safety;
- A five-foot wide sidewalk and a ten-foot shared use path to accommodate pedestrians and bicyclists; and
- On-road bicycle facilities as recommended in the Countywide Bikeways Functional Master Plan.

***Alternative 4 Modified – Brink-Wightman-Snouffer School-Muncaster Mill***

Alternative 4 Modified is a combination of two preliminary alternatives, Alternative 4 and Alternative 10A. (The evolution of this alternative is discussed in the section on Alternative 10, above.) Alternative 4 Modified, from future Snowden Farm Parkway to Shady Grove Road, would be a 7.5-mile route that proposes widening Ridge Road, Brink Road, Wightman Road, Snouffer School Road, and Muncaster Mill Road to four or six lanes. Existing Midcounty Highway would also be widened to six lanes, from Goshen Road to Montgomery Village Avenue. Goshen Road will be widened to four lanes under a separate Montgomery County Capital Improvement Program project (CIP #501107), and is planned to be constructed long before a Preferred Alternative for this study. Therefore, the Goshen Road improvements are not part of Alternative 4 Modified; however, the traffic projections for all the build alternatives assumed that Goshen Road would be four lanes in the design year 2030.

Alternative 4 Modified is identified on **Figure 2-10**, and the four-lane and six-lane typical sections are shown on **Figure 2-11**. The proposed corridor improvements include:

- Ridge Road (MD 27) between Snowden Farm Parkway and Brink Road would be widened from the existing two-lane undivided roadway to a six-lane divided roadway with sidewalk and shared use path under a separate developer-funded project.
- Between Ridge Road and Shady Grove Road, the existing highway corridor of Brink, Wightman, Snouffer School, and Muncaster Mill Roads would become a four to six-lane divided highway with two on-street bicycle lanes, a sidewalk, and shared use path.
- Existing Midcounty Highway from Goshen Road to Montgomery Village Avenue would be widened from the existing four-lane divided highway to a six-lane divided highway with sidewalk and shared use path.

Many factors were considered in evaluating whether to retain Alternative 4 Modified for detailed study. While it was recognized that Alternative 4 Modified would exceed the scope of improvements proposed in the Master Plan along this corridor, have more intersections and driveways than any other alternative, impact more properties than any other alternative, and potentially alter the semi-rural character of the Goshen area, the alternative was retained for detailed study because it had potential to reduce impacts to the natural environment, including parkland, forests, and wetlands, compared to the Master Plan alignment.

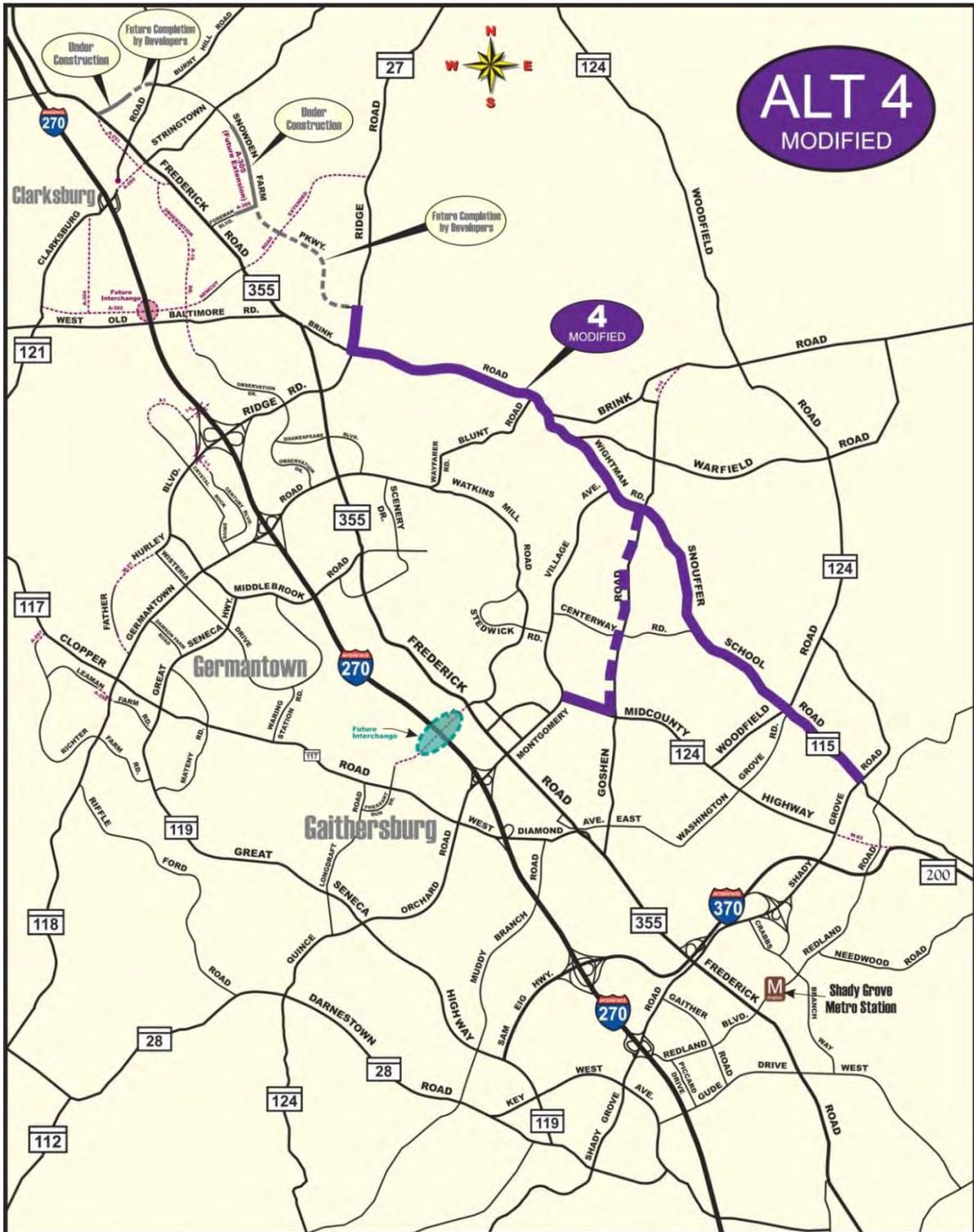


Figure 2-10: Alternative 4 Modified – Brink-Wightman-Snouffer School-Muncaster Mill Roads

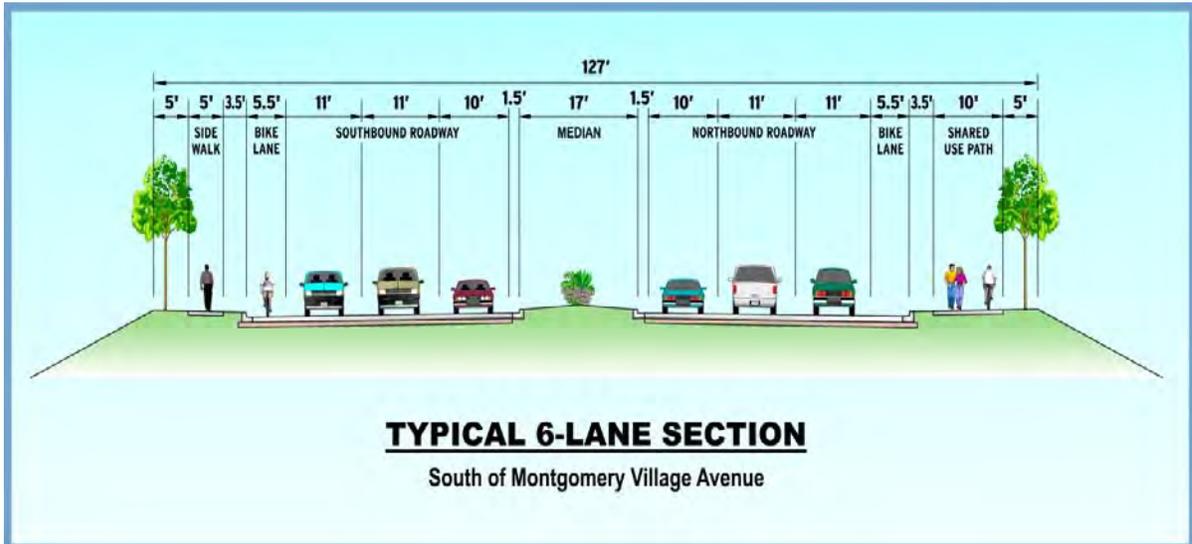
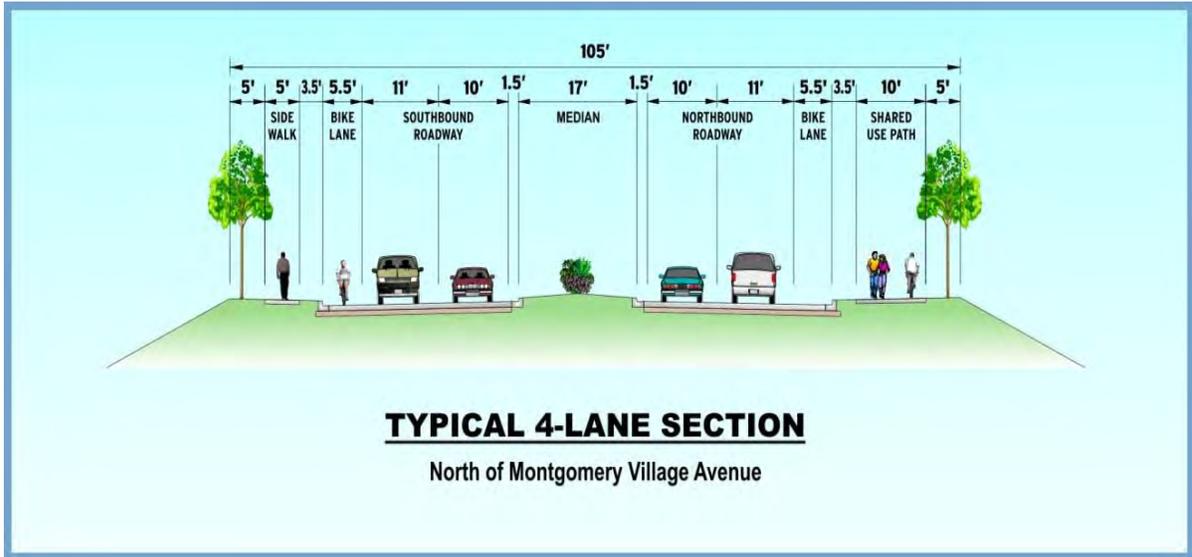


Figure 2-11: Alternative 4 Modified, 4-lane and 6-lane Typical Sections

*Alternative 5 – MD 355 with Service Roads*

Alternative 5 is a 6.6-mile route that incorporates the following existing roads: Ridge Road (MD 27), Frederick Road (MD 355), Montgomery Village Avenue (MD 124), and existing Midcounty Highway. The proposed route is identified on **Figure 2-12**, and the typical section is shown on **Figure 2-13**. The proposed corridor improvements include:

- Ridge Road would be widened to a six-lane divided highway with a sidewalk and shared use path from future Snowden Farm Parkway to Brink Road under a separate developer-funded project. (From Brink Road to MD 355, Ridge Road is already six lanes.)
- From Ridge Road to Middlebrook Road, MD 355 would be widened from a four-lane divided highway that contains auxiliary turning lanes at various locations to a six-lane divided highway with auxiliary turning lanes, service roads at select locations, and a sidewalk and shared use path.
- From Middlebrook Road to Montgomery Village Avenue, MD 355 is already a six-lane divided highway. Service roads would be added at select locations.
- Montgomery Village Avenue between MD 355 and Midcounty Highway is already a six-lane divided highway, but would be modified by replacing the existing eastern sidewalk with a shared use path.
- Existing Midcounty Highway from Montgomery Village Avenue to Goshen Road would be widened from the existing four-lane divided highway to a six-lane divided highway with a sidewalk and shared use path.

The existing MD 355 corridor has crash rates that exceed the statewide average for similar type highways, mostly as a result of the large number of intersections, driveways, and other access points along the corridor. Because each driveway represents a potential conflict point where through-traffic could potentially collide with turning vehicles, service roads were evaluated to reduce the number of driveways along the corridor. Service roads were evaluated at the request of one of the agencies on the study team (which is consistent with the role of the agencies involved in the project), to determine whether Alternative 5 could better satisfy the purpose and need for the project.

Many factors were evaluated in deciding whether to retain this alternative for detailed study. Although Alternative 5 would provide only minor additional lane capacity (since much of the alternative is already six lanes), Alternative 5 was retained for detailed study because, with the addition of service roads, it could substantially reduce the number of over-congested intersections in the study area; could improve travel time along the MD 355 corridor; could improve safety by reducing the number of driveways along the corridor; and would result in low natural resource, park, and property impacts.

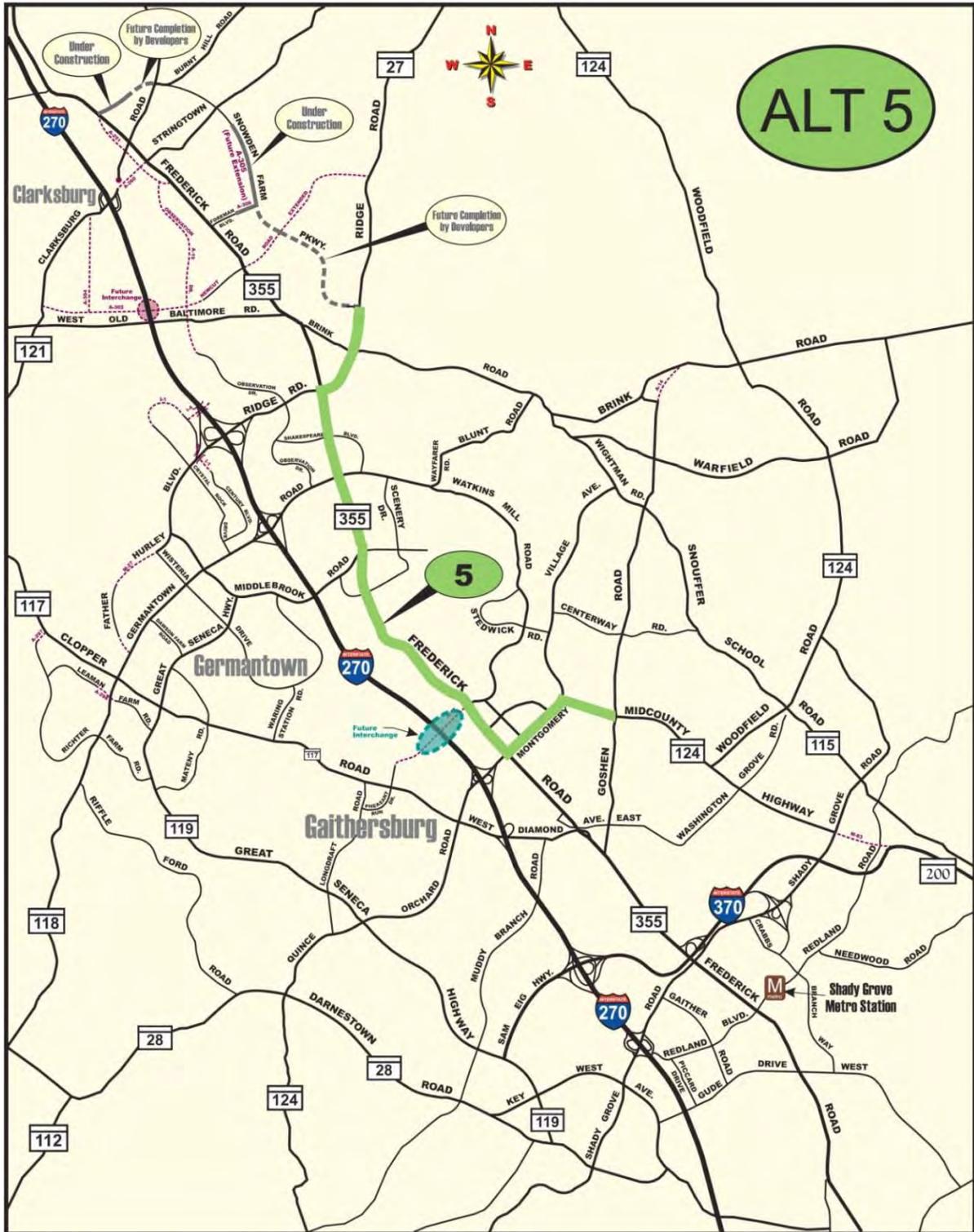


Figure 2-12: Alternative 5 – MD 355 with Service Roads

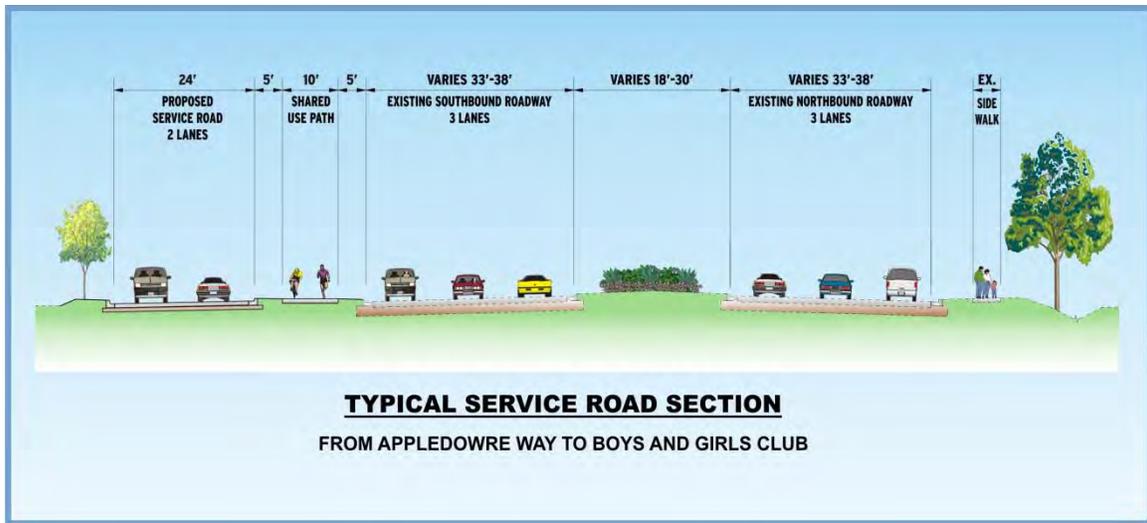
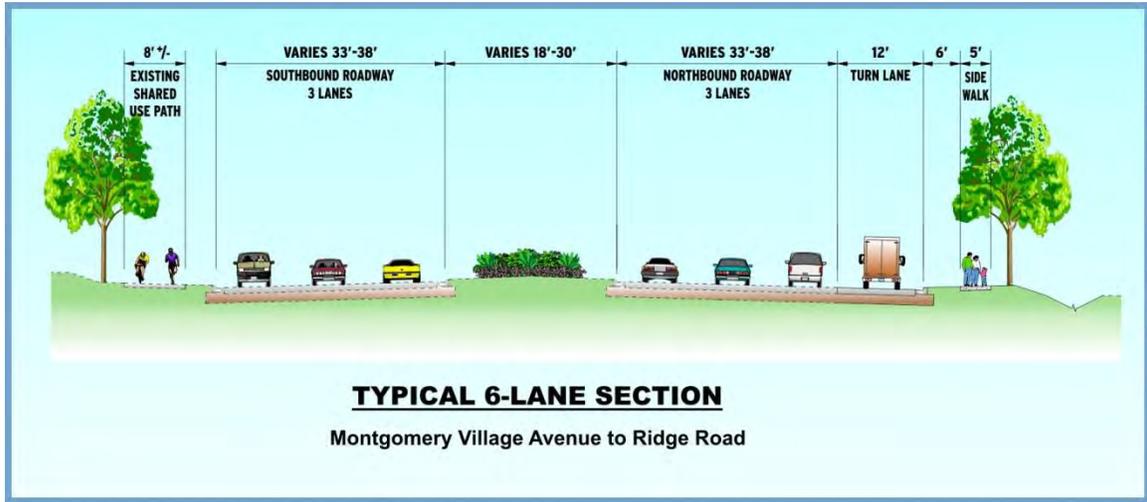


Figure 2-13: Alternative 5, Typical Sections

***Alternative 8 – Master Plan Alignment Truncated at Watkins Mill Road***

Alternative 8 would follow the Master Plan alignment from Snowden Farm Parkway south to Watkins Mill Road, leaving a 0.8-mile gap between Watkins Mill Road and Montgomery Village Avenue. The proposed corridor improvements include:

- Construct the Midcounty Highway Master Plan alignment as a four-lane divided highway with two six-foot shoulders, a sidewalk, and a shared use path from future Snowden Farm Parkway to Watkins Mill Road, using one of three Northern Terminus Options: A, B, or D (described in further detail below).
- Construct intersection improvements along Watkins Mill Road and MD 355.
- Widen existing Midcounty Highway to six-lane divided highway between Goshen Road and Montgomery Village Avenue.
- Widen Middlebrook Rd to a four-lane divided highway from Midcounty Highway to MD 355.

Alternative 8 is displayed on **Figure 2-14**. The orange dots indicate the locations of proposed intersection improvements that were included with this alternative to facilitate a connection from the Midcounty Highway terminus at Watkins Mill Road to the Midcounty Highway terminus at Montgomery Village Avenue. The typical sections are shown on **Figure 2-15**.

North of Middlebrook Road, where the highway right-of-way is not constrained by development, Alternative 8 would have an open typical section. Rainfall would run off the outside shoulder into a bioswale that would be constructed parallel to the highway. The bioswale would be designed to filter and infiltrate much of the runoff. South of Middlebrook Road, where the highway reservation is limited by adjacent development, streams, or Pepco transmission towers, Alternative 8 would have a closed typical section. The runoff would be collected in a storm drain system and discharged to a stormwater management facility either outside the right-of-way or beneath the pavement (locations to be determined during final design).

Recognizing that this Alternative would leave a gap in the Midcounty Highway, Alternative 8 was nevertheless retained for detailed study as a means to avoid the aquatic impacts along Whetstone Run that would occur with the Master Plan alignment south of Watkins Mill Road.

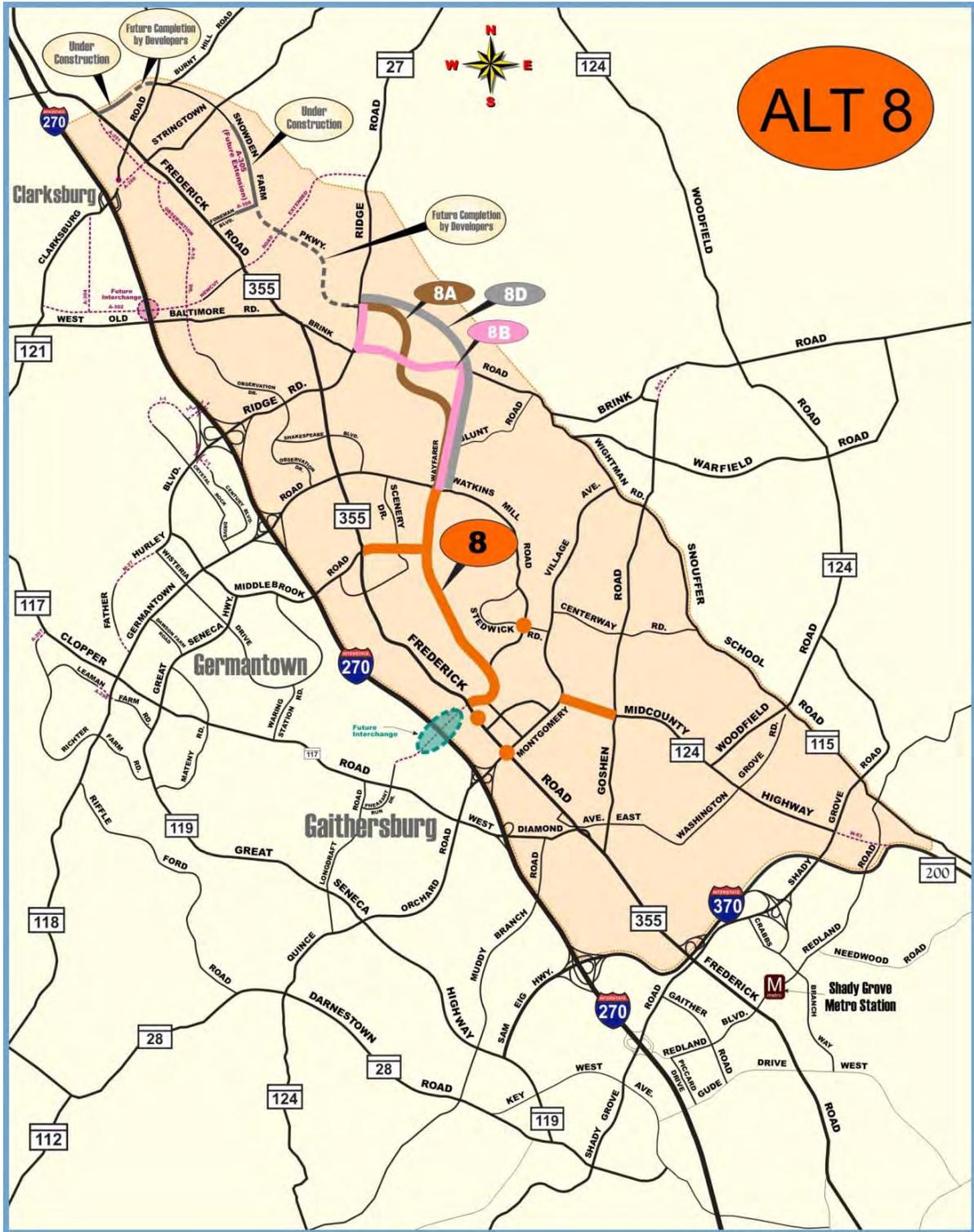


Figure 2-14: Master Plan Alignment Truncated at Watkins Mill Road

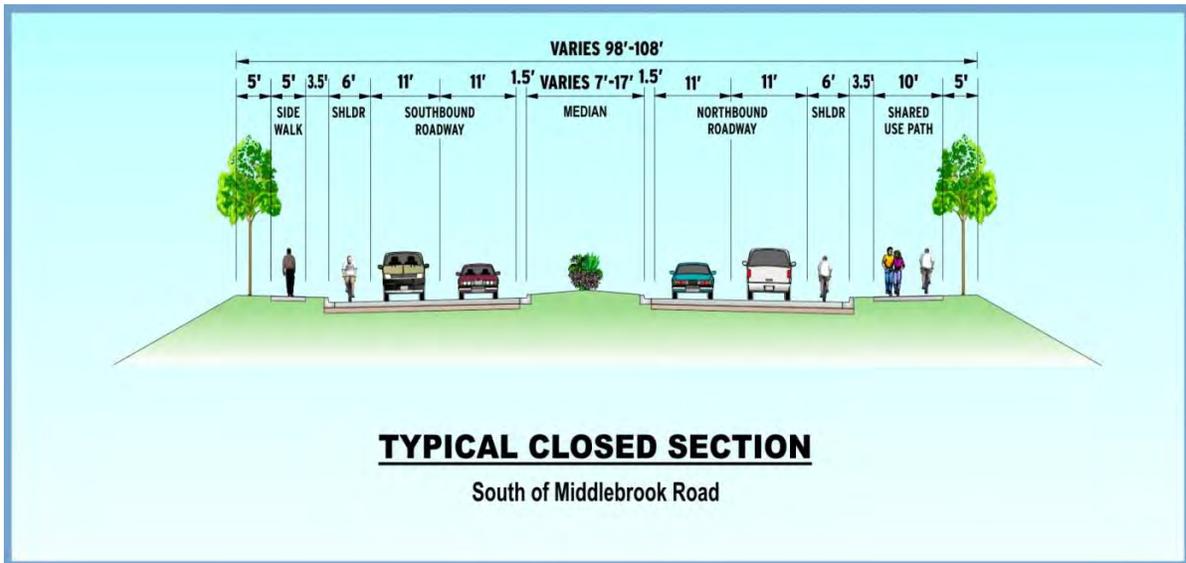
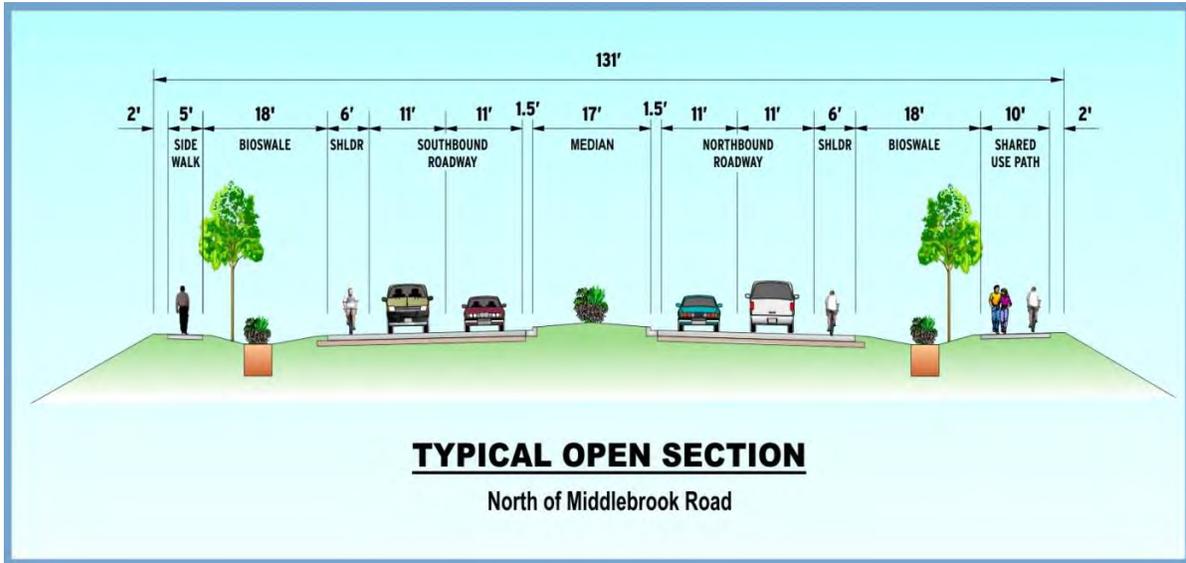


Figure 2-15: Alternatives 8 & 9, Open and Closed Typical Sections

### ***Alternative 9 – Master Plan Alignment***

Alternative 9 is a 5.7-mile route that follows the Midcounty Highway Master Plan alignment from Snowden Farm Parkway to Montgomery Village Avenue. The proposed route is identified on **Figure 2-16**. The typical sections would be as proposed for Alternative 8 (see **Figure 2-15**). The proposed corridor improvements include:

- Construct the Midcounty Highway Master Plan alignment as a four-lane divided highway with two six-foot shoulders, a sidewalk, and a shared use path from future Snowden Farm Parkway to Montgomery Village Avenue, using one of three Northern Terminus Options: A, B, or D.
- Widen existing Midcounty Highway to six-lane divided highway between Goshen Road and Montgomery Village Avenue.
- Widen Middlebrook Road to a four-lane divided highway from Midcounty Highway to MD 355.

Alternative 9 was retained for detailed study because it is on the County's Master Plan, and it would complete the 12 mile partial access controlled major arterial between Clarksburg and Gaithersburg as envisioned in the County Master Plan. As such, public and private investments in the region have been made on the assumption that the Midcounty Highway would be constructed along this alignment. In addition, M-NCPPC has established the zoning in the Gaithersburg, Germantown, and Clarksburg planning areas based on the assumption that the Midcounty Highway would be constructed to provide four lanes of new highway capacity connecting Snowden Farm Parkway to the north with the existing Midcounty Highway to the south.

### ***Northern Terminus Options***

Three options were retained for the northern terminus of Alternatives 8 and 9 between Blunt Road and Snowden Farm Parkway. Option A is on the Montgomery County Master Plan. Options B and D were developed to minimize potential impacts to North Germantown Stream Valley Park, Dayspring Creek, Wildcat Branch, Dayspring Church Silent Retreat Center, and All-Souls Cemetery. All three Options would maintain the typical four-lane divided roadway section with sidewalk and shared use path. The alignments of Options A, B, and D, are shown on **Figure 2-14** and **Figure 2-16**.

#### ***Northern Terminus Option A***

Northern Terminus Option A would construct a four-lane divided highway with controls of access along the Master Plan alignment. Option A would wind through North Germantown Greenway Stream Valley Park and the Seneca Crossing Local Park along a series of S-shaped curves. New bridges would be constructed to carry Option A over Dayspring Creek and Wildcat Branch. Option A would intersect with Brink Road and then traverse the All Souls Cemetery before intersecting Ridge Road at the future intersection with Snowden Farm Parkway. Option A was retained for detailed study because it is currently shown on the Master Plan, and unlike Options B and D, Option A would not result in any residential displacements.

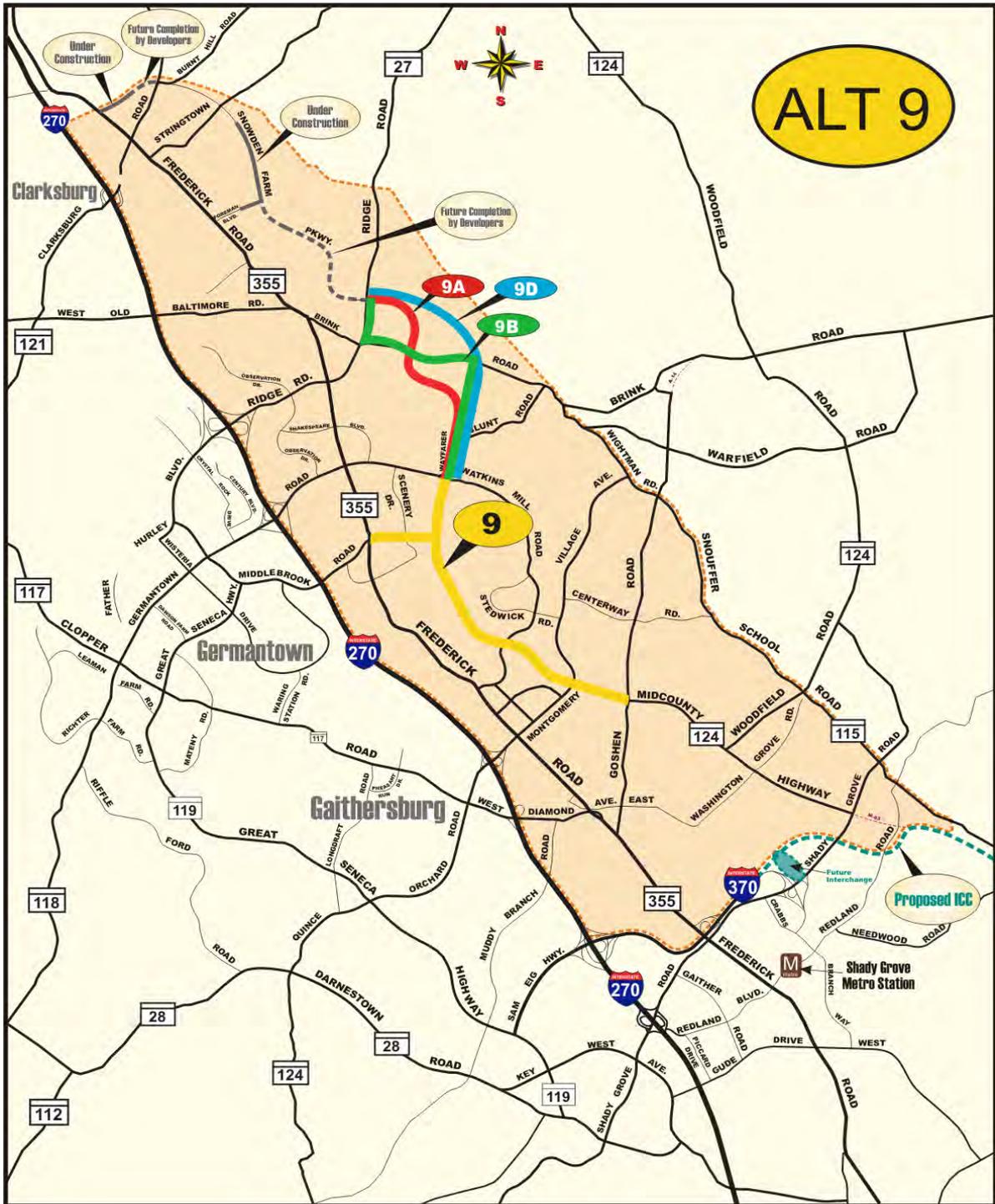


Figure 2-16: Alternative 9 – Master Plan Alignment

Northern Terminus Option B

Northern Terminus Option B would provide a shorter, straighter, and more direct crossing of the North Germantown Greenway Stream Valley Park, along an alignment that would avoid the Park's higher quality natural resources. Upon reaching Brink Road, the alignment would follow Brink Road westward to Ridge Road, and follow Ridge Road northward to the future intersection with Snowden Farm Parkway. Brink Road would be widened to a four-lane divided highway with no controls of access. (Ridge Road is planned to be widened to a six-lane divided highway by a developer).

While Option B lacks access controls, creates operational challenges at Ridge Road, and requires a residential displacement, Option B was retained for detailed study because it would reduce impacts to the high quality resources within the North Germantown Greenway Stream Valley Park and would minimize the amount of new impervious surface in the watershed of Wildcat Branch, a high quality stream.

Northern Terminus Option D

Northern Terminus Option D would follow the same alignment as Option B across North Germantown Greenway Stream Valley Park. It would intersect Brink Road and continue north and west as an access-controlled four-lane divided highway. Option D would bisect the former Benson-Sibley Farm which is currently owned by Bethel Church, and the Woodfield Farm property. Option D would intersect Wildcat Road at the location where Wildcat Road currently crosses Wildcat Branch. The pipe culvert that currently carries Wildcat Branch under Wildcat Road would be replaced with a larger culvert. Option D would continue westward across the All Souls Cemetery and intersect Ridge Road at the future intersection with Snowden Farm Parkway.

While Option D would impact additional property, forest and streams north of Brink Road and would potentially result in one or more residential displacements along Brink Road, Option D was retained for detailed study because it would avoid the higher quality natural resources in North Germantown Greenway Stream Valley Park.

## **2.4. Transit-Only Alternative**

At the June 6, 2012 public workshop, the "Coalition for Transit Alternatives to Mid-County Highway Extended (TAME)" recommended allowing the Purple Line, Corridor Cities Transitway, MARC Train, and Bus Rapid Transit to serve as a substitute for the Midcounty Highway.

Both transit and highways are part of the overall transportation network envisioned for Montgomery County. The following transit projects are currently under study:

- **Purple Line:** The Purple Line is funded through the Preliminary Engineering phase. The plan is to have the Purple Line fully operational by the end of year 2020. The Purple Line was not included in the traffic analysis for the Midcounty Corridor Study because it is too far from the study area to have an impact on traffic volumes within the study area.

- **CCT:** The proposed 14-mile CCT would run from the Shady Grove Metro Station to the Comsat site in Clarksburg. As indicated in the June, 2010 *Great Seneca Science Corridor Master Plan*, the CCT will provide a transit option among the Corridor Cities, improve mobility within the corridor, reduce congestion on I-270, and extend transit service west and north of the Shady Grove Metro Station. Transit-oriented development is planned at the CCT stations and at the Shady Grove Metrorail Station. An application for federal funding of Preliminary Engineering will be submitted for the Corridor Cities Transitway (CCT) in June, 2013. The state matching funds have already been committed. In addition to the existing stations at Metropolitan Grove MARC Station and Shady Grove Metro Station, fourteen new stations are planned, with limited parking at five of the new stations. (No new parking is proposed to supplement the existing parking at Shady Grove Metro Station or Metropolitan Grove MARC Station.) The first phase of the CCT would extend from Shady Grove Metro Station to the Metropolitan Grove MARC Station (**Figure 2-17**). Phase I is in the Planning Phase, but is expected to enter the Final Design Phase in 2015, and be constructed in 2018-2020. At this time, there is no schedule or funding for the remainder of the transitway. The 14-mile CCT was assumed in the traffic model for the No-Build and all build alternatives.

The CCT would primarily serve those who live or are employed within walking distance of the stations, since automobile parking would be available at only a few stations. It would not have appeal for commuters from outlying areas such as Clarksburg or Frederick County who desire to access the Metro because the circuitous route of the CCT would be slower than driving directly to the Metro Station (see **Figure 2-17**). Therefore, construction of any of the Midcounty Highway alternatives would not be expected to diminish ridership on the CCT.

- **BRT:** A feasibility study of Bus Rapid Transit (BRT) was completed in July 2011, and 16 routes comprising a 150-mile network were determined viable, including BRT along MD 355. In May 2012, the Montgomery County Transit Task Force released a report recommending a 160-mile Rapid Transit Vehicle (RTV) network on dedicated rights-of-way to be implemented over a 9-20 year span, which would include the Purple Line and CCT transit systems. The report proposed a special tax district to fund the improvements. The M-NCPPC is developing a Countywide Transit Corridors Functional Master Plan which is expected to be considered by the County Council in Fall 2013.

The only rapid transit improvements in the County transit network that are within the study area of the Midcounty Corridor Study and are proposed to be implemented by 2030 are the CCT and MD 355 BRT. BRT is not currently identified in the County Master Plans, the CLRP, or the Montgomery County Capital Improvement Program; therefore, it was not included in the traffic model for the Midcounty Corridor Study.

**Figure 2-17: CCT**



## **2.5. Refinement of Alternatives during the Current Preliminary Engineering Phase**

Upon receipt of agency concurrence in the Alternatives Retained for Detailed Study (ARDS), a new traffic study was completed, and the build alternatives were further refined to ensure that:

- Each intersection along the build alternatives would function at an acceptable level of congestion (i.e., a CLV of 1425 vehicles);
- Each alternative has geometry satisfying the 40 MPH design speed; and
- Environmental and community impacts are minimized.

Following is a brief summary of the refinements of the ARDS.

### ***Alternative 4 Modified – Brink-Wightman-Snouffer School-Muncaster Mill***

Based on the new traffic analysis that was conducted during 2011 and 2012, it became apparent that Auxiliary Through Lanes (ATL's) were needed for many of the signalized intersections south of Montgomery Village Avenue in order to make the intersections function at an acceptable level of congestion. An ATL is an additional lane, both approaching and departing an intersection, for the purpose of increasing the number of vehicles that can pass through the intersection during the green signal phase. The ATL's resulted in the need for a six-lane cross section in the vicinity of several major intersections along the alternative. In addition, the traffic volumes along some portions of the southern half of Alternative 4 Modified also warranted six lanes. Based on these two criteria, a six-lane cross section is proposed at the following locations: from just north of Montgomery Village Avenue to just south of Centerway Road, from just north of Mooney Drive to south of Woodfield Road, and from Miller Fall Road to just south of Redland Road. In the immediate vicinity of the Shady Grove Road intersection, Alternative 4 Modified would require seven lanes (three northbound and four southbound) in order for this intersection to operate at an acceptable level-of-service. The improvements were originally proposed to terminate at Shady Grove Road, but it became necessary to extend the improvements to south of Redland Road in order to transition the widened roadway section back down to the existing three-lane cross section.

Substantial efforts were devoted to minimizing the impacts to environmental resources and communities. In order to minimize impacts to residential properties, the center line of the proposed improvements was shifted away from residential areas, encroaching further onto Kaufman Park, Goshen Oaks Shopping Center, the County's proposed Multi-Agency Service Park, Muncaster Recreational Park, Covenant Life Church, and Laytonia Recreational Park. None of these shifts impacted active recreational facilities or significantly impacted the commercial, industrial, or church properties. Impacts were further reduced by a reduction in the median width from 17 feet to 7 feet between Aspenwood Lane and Goshen Road, and along the Muncaster Recreational Park. Retaining walls were proposed in numerous areas to reduce impacts to residential properties. Two residences would be displaced with Alternative 4 Modified. In order to minimize impacts to wetlands, the centerline of the proposed improvements was shifted, and a retaining wall was added to avoid the large wetland on the

east side of Wightman Road, just north of Seneca Creek. The alignment was also shifted in the vicinity of Station 217 to avoid impacting the wetland on the west side of the alternative.

Efforts were undertaken to identify impacts to wells and septic systems on properties along Brink Road, and along the portion of Wightman Road north of Aspenwood Lane. Through coordination with the Montgomery County Department of Environmental Protection, impacts to wells and septic systems were identified. There are two methods of mitigating such impacts: relocation of the well and/or septic tank to another location on the property, or the extension of public water and/or sewer to the affected property. With the availability of these potential mitigation methods, MCDOT is confident that none of the impacted properties would require a displacement of the residence. If Alternative 4 Modified should subsequently be identified as the Preferred Alternative, additional investigation into these impacts would be conducted.

#### ***Alternative 5 – MD 355 with Service Roads***

In order to reduce the number of potential conflict points along Alternative 5, driveways were consolidated through the development of service roads. The proposed combination of service roads would reduce the number of driveways from 62 to 17, in the portion of MD 355 between MD 27 and MD 124. No properties would be displaced by the service roads, but some business properties would lose direct access from MD 355 and would be accessible only from the service road or a local side street. Only three commercial properties would be displaced; all three would be impacted as a result of the proposed widening of MD 355, not the service roads.

#### ***Alternative 8 – Master Plan Alignment Truncated at Watkins Mill Road***

Three intersection concepts were evaluated for the terminus of Alternative 8 at Watkins Mill Road:

- Round-about;
- T-intersection with Midcounty Highway Teeing into Watkins Mill Road at a signalized intersection;
- T-intersection with Watkins Mill Road North Teeing into Midcounty Highway at a signalized intersection, and Watkins Mill Road South becoming an extension of Midcounty Highway.

The first two options were eliminated due to concerns regarding traffic operations. The third concept was selected because it would allow traffic destined for MD 355 and I-270 to continue south on Midcounty Highway without having to make a turn, thereby enabling the intersection to operate at an acceptable level-of-service.

Because Alternative 8 would increase the volume of traffic using Stedwick, Russell, and Christopher Avenues to bridge the gap in the Midcounty Highway, intersection improvements were evaluated along these local roads to ensure that the intersections would meet the County congestion standard. Unlike Alternative 5, service roads were not evaluated along the 300-foot portion of MD 355 that is included in Alternative 8 (i.e., from Watkins

Mill Road to Montgomery Village Avenue) because service roads along such a short segment of MD 355 would be inconsistent with the access controls along the remainder of the MD 355 corridor. However, service roads could be included along this segment of MD 355 if Alternative 8 should subsequently be identified as the Preferred Alternative and it is determined that the service roads provide an improvement in safety that outweighs the impacts to the affected businesses.

### ***Alternative 9 – Master Plan Alignment***

In addition to performing traffic analyses, designing the intersections, refining the horizontal and vertical alignment, and establishing the grading limits, preliminary engineering for Alternative 9 focused on reducing environmental impacts. (The portion of Alternative 8 that follows the Midcounty Highway master plan alignment would benefit from these same impact reductions.)

- Wetlands and streams would be completely avoided at the crossings of Dayspring Creek and Brandermill Tributary through the use of long bridges. The alignment was shifted to cross Dayspring Creek further downstream where the wetlands are not as extensive.
- At Seneca Creek, the highway alignment was modified to cross Seneca Creek perpendicularly. This avoided the need to relocate the stream. The bridge over Seneca Creek was lengthened to span both the primary and secondary channels, completely avoiding stream impacts. All armoring of the stream was eliminated. Retaining walls were proposed along the approaches to the bridge to reduce wetland and floodplain impacts.
- At the crossing of Whetstone Run north of Watkins Mill Road, filling of wetlands would be minimized with a proposed 230-foot long bridge.
- South of Watkins Mill Road, impacts to wetlands and floodplains would be minimized through the use of retaining walls on both sides of the highway, and a 225-foot long pedestrian bridge.
- To limit the stream impact of a proposed culvert in Walkers Run to 150 feet, high headwalls were proposed.
- The horizontal alignment was shifted in the vicinity of the Montgomery Village Avenue intersection to reduce impacts to existing parking spaces in the housing developments in all four quadrants of the intersection.
- Bioswales would be incorporated into the portion of the alternative located north of Middlebrook Road in order to accomplish state-of-the-art stormwater management within the highway right-of-way.

- A connection to the Seneca Creek Greenway Trail from the proposed shared use path would be created just north of Middlebrook Road, and the integrity of the Trail would be maintained by relocating a small section of the Trail at the crossing of Brandermill Tributary.

### ***Northern Terminus Options***

As with all the build alternatives, a new traffic analysis was prepared for the three Northern Terminus Options to ensure they would operate effectively and satisfy the County Congestion Standard. Options A, B, and D were also further evaluated during this phase to reduce impacts. These studies included analyses of environmental impact, historic properties, well and septic systems, wetland impact minimization, and adjustments in horizontal and vertical alignment to reduce park impacts.

#### ***Option A***

During preliminary engineering, the alignment of Option A was further modified, resulting in tighter curvature; however, it would continue to meet the 40 MPH design speed. This modification was proposed to shift the alignment through the North Germantown Greenway Stream Valley Park toward the top of the plateau overlooking Dayspring Creek, in order to avoid the steeper valley slopes and rock outcrops and to maintain a wider riparian buffer along the stream valley. The alignment was also shifted through the All Souls Cemetery to reduce impacts to wetlands and mature forest.

#### ***Option B***

Option B was proposed as a means of reducing impacts to the high quality resources in the North Germantown Greenway Stream Valley Park. Compared to Option A, Option B would reduce impacts to the North Germantown Greenway Stream Valley Park by reducing the acreage of park acquisition (15.6 fewer acres) and by avoiding the more sensitive portion of the Park which contains rock outcrops, plant species that are uncommon in Montgomery County, high quality forest, and the high quality and picturesque Dayspring Creek.

However, the traffic analyses revealed that Option B would result in the following safety and operations concerns that would not occur with Option A or Option D:

- Because access would not be controlled, Option B would include 14 driveways and 5 unsignalized intersections where vehicles would be permitted to make left turns in front of through traffic without the benefit of a traffic signal. This would make the facility less safe than Options A and D which would be access controlled with no driveways and only one unsignalized intersection (Wildcat Road).
- Option B would require north-south Midcounty Highway traffic to make three turns at successive intersections. Traffic analyses indicate that these turns would result in long queues and weaving at the intersection of Brink and Ridge Roads, making the intersection operate at an unacceptable level of congestion.

- The route of Option B, which would require north-south Midcounty Highway traffic to make three turns, is highly unusual especially on a new highway. This dog-leg orientation would violate driver expectancy and create confusion as to the route of the Midcounty Highway. Signage would be necessary to direct motorists to the appropriate turn lane sufficiently in advance of the intersections. However, because of the short distance between the intersections, maneuvering to the appropriate turn lane would prove difficult due to the heavy traffic volumes, long queues and weaving.
- Option B would also violate driver expectancy by introducing a 1.5-mile segment of uncontrolled-access highway (along Brink and Ridge Roads) within a highway alternative that would otherwise be access-controlled both to the north and to the south. This would result in increased potential for accidents, particularly since the sudden change in access control would not be expected by motorists that are unfamiliar with the area.
- With Option B, regional Midcounty Highway traffic would be routed along an existing local road (Brink Road). Adjacent residents would lose a portion of their property, would be subjected to higher traffic volumes in front of their homes, would experience more difficulty accessing their property, and would have to contend with higher speed regional traffic. Brink Road also has an 8% grade, which is undesirable for a regional highway facility.
- Merging two highways (Brink Road and Midcounty Highway) into a single corridor would make it difficult to add future capacity to either highway, since the Brink Road corridor would essentially be at capacity under Option B.

In view of the above findings, MCDOT does not consider Option B to be a viable option. However, because the environmental agencies have not concurred in dropping this option, it was retained in this Environmental Effects Report for comparison purposes only.

#### ***Option D***

Option D was also proposed as a means of reducing impacts to high quality resources within the North Germantown Greenway Stream Valley Park. Option D would provide the same advantages as Option B in reducing impacts to North Germantown Greenway Stream Valley Park by 15.6 acres, but unlike Option B, would not compromise safety and operations. Option D would be comparable to Option A in terms of access controls, number of intersections, and intersection operation. During preliminary engineering, the profile of Option D was modified to increase the grades from 5% to 6% through the Park, to reduce the amount of parkland that would be required.

Option D would result in one residential displacement where the alignment intersects Brink Road. Many locations were evaluated for the intersection of Brink Road and Option D, but all of them would have resulted in greater residential impacts than the currently proposed intersection location west of Lawland Court.

***Transit Features***

The Midcounty Highway could enhance transit service in the study area by facilitating express bus service between Clarksburg and the Shady Grove Metro Station. Express bus service is quicker than conventional bus service because it makes a limited number of stops to pick-up and discharge passengers along the route, and is oriented to a limited number of destinations. For example, an express bus route that would incorporate the Midcounty Highway (along whichever alternative is subsequently selected) could have a destination of Shady Grove Metro Station, and potentially the Rockville Metro Station where transit riders could transfer to the proposed Veirs Mill Bus Rapid Transit (BRT) line to Wheaton Metro Station. Another consideration would be to allow the express bus to utilize the Veirs Mill Road dedicated bus lanes, thereby providing express bus service all the way to Wheaton Metro Station, eliminating the need to transfer. As part of this study, express bus park-and-ride lot locations will be identified that would best serve whichever alternative is subsequently identified as the Preferred Alternative. Any impacts of that additional construction will be discussed in the Final Environmental Effects Report. Other features which could increase the diversion of automobile drivers to express bus transit will be evaluated, such as queue jumpers and signal pre-emption, which would give buses a travel time advantage over automobile traffic.

**2.6 Cost Estimates**

A preliminary cost has been estimated for each of the build alternatives. The construction costs for each alternative are based on estimates of earthwork, drainage, paving, bridges, retaining walls, noise walls, landscaping, traffic signals and signage, utility relocations, and mitigation for forest, park, wetland, and stream impacts. The other factors included in the total project cost include planning and design costs, right-of-way costs, and construction supervision and inspection.

Table 2-3: Estimated Cost

Alternative	No-Build	2	4 Mod	5	8A	8B	8D	9A	9B	9D
Costs (mil \$)	0	41	251	120	274 <sup>1</sup>	255 <sup>1</sup>	267 <sup>1</sup>	357 <sup>1</sup>	338 <sup>1</sup>	350 <sup>1</sup>

<sup>1</sup>Cost excludes \$14 million for Middlebrook Road construction.

Extensive amounts of bridging have been proposed to reduce wetland and stream impacts. With Alternatives 8 and 9, bridges are proposed over Wildcat Branch, Dayspring Creek, Brandermill Tributary, Great Seneca Creek, and Whetstone Run. The widening alternatives (Alternative 4 Modified and Alternative 5) provide fewer opportunities for bridging since all the existing stream crossings, with the exception of Great Seneca Creek and Cabin Branch, have been constructed with pipe culverts or box culverts which would be extended in-kind to accommodate the highway widening. With Alternative 4 Modified, the only new bridge would be a replacement of the two-lane bridge carrying Brink Road over Great Seneca Creek, which would be four lanes wide, and have a bigger hydraulic opening to pass the 100-year storm event. The existing bridge over Cabin Branch would be widened to accommodate

the proposed six-lane cross section. Under Alternative 5, the bridge over Great Seneca Creek would not be modified because MD 355 is already 6 lanes wide at this location.

## **2.7. Future Decision on a Preferred Alternative**

This Draft Environmental Effects Report will be made available for public review and comment. MCDOT will submit a joint permit application to the Maryland Department of the Environment (MDE) and the U.S. Army Corps of Engineers (USACE). A joint MDE/USACE public hearing will be conducted to solicit comments on the various alternatives described in this report, and their impact to waters of the U.S. Following the public hearing, MCDOT will consider all comments that are received prior to the close of the public hearing comment period, and make a recommendation on a Preferred Alternative. A *Preferred Alternative / Conceptual Mitigation (PA/CM) Report* will be prepared to document the rationale for the recommendation of a Preferred Alternative and to document the mitigation concepts proposed to offset the impacts of the recommended Preferred Alternative. This report will be coordinated with the environmental agencies and formal concurrence will be sought from EPA, MDE, and the USACE. When agency concurrence has been obtained, the recommendation will be forwarded to the County Council for their consideration. During the post-public hearing phase, the recommended Preferred Alternative may undergo further refinement to address comments received during the public hearing comment period and/or the County Council deliberations, or to further reduce impacts, improve operations, or reduce project costs. A Final Environmental Effects Report will be circulated to the public which will discuss the Preferred Alternative, reasons for its selection, its benefits and detriments, and the proposed mitigation. In addition, the conceptual mitigation plan for wetland and stream impacts will be finalized and submitted to MDE and USACE. Approval of permits will be requested of MDE and USACE.

It should be noted that the Preferred Alternative could be:

- one of the alternatives addressed in detail in the Draft Environmental Effects Report,
- a portion of one of the alternatives, provided its construction would have independent utility and constitute a single and complete project,
- a combination of entire alternatives or portions of the alternatives, or
- a decision to construct one of the alternatives in phases, identifying any temporary improvements that would be required to make the initial phase operate independently until such time as the remaining portion is constructed.

In addition, the selection of a Preferred Alternative will attempt to satisfy many objectives, including the following:

- maximizing the project benefits,
- maximizing the project's economic stimulus,
- minimizing social and historic impacts, and
- minimizing impacts to natural resources,
- within the fiscal constraints of Montgomery County.

These objectives frequently conflict with one another such that the alternative which would be preferred in terms of one objective would not be preferred in terms of some other objective. Therefore, the decision on a Preferred Alternative will be the result of a balancing of the various objectives to determine the alternative with the optimum combination of advantages, in consideration of the cost, impacts, proposed mitigation measures, and stakeholder preferences.