

III. ALTERNATIVES RETAINED FOR DETAILED STUDY

Five build alternatives and the No-Build Alternative were evaluated in detail in the *Draft EER*, circulated to the public in May 2013.

- Alternative 1 – No-Build
- Alternative 2 – TSM/TDM
- Alternative 4 Modified – Brink-Wightman-Goshen-Snouffer School-Muncaster Mill
- Alternative 5 – MD 355 with Service Roads
- Alternative 8 – Master Plan Alignment Truncated at Watkins Mill Road
- Alternative 9 – Master Plan Alignment

In addition, Alternative 8 and Alternative 9 include three Northern Terminus Options:

- Option A (which coincides with the Master Plan alignment)
- Option B
- Option D

The development of the alternatives recognized that other roadway improvements would be expected to be implemented by the design year (2030), see **Table III-1**. These other projects include those listed in the Metropolitan Washington Council of Governments' (MWCOC's) *Constrained Long Range Plan* (CLRP) (updated 2013); Montgomery County's *Capital Improvement Program Project's* (CIP) (fiscal year 2013-2018); 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 all alternatives, including the No-Build Alternative, assumed that these other projects would be implemented by 2030 and are depicted in red and blue on **Figure III-1**.

Table III-1: 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

ROADWAY IMPROVEMENT	LOCATION	IMPROVEMENT	CLRP/CIP ID NUMBER
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
Observation Drive Extended	Dorsey Mill Road to Clarksburg Road	Construct a four-lane divided roadway	CLRP 906
Dorsey Mill Road Extended	Observation Drive to Crystal Rock Drive	Construct a four-lane roadway across I-270	CLRP 1577
Little Seneca Parkway	Frederick Road to Ridge Road	Construct a four-lane divided roadway	Not in CLRP; A-302 in Clarksburg Master Plan
I-270 HOV Lanes	MD 121 to MD 85	Widen to provide a single HOV lane in each direction.	CLRP 1186

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

*Improvement falls within the limits of Alternative 4. If Alternative 4 were to be constructed, these projects would be built as a four or six-lane divided section.

A. Description of the Alternatives Retained for Detailed Study

1. Alternative 1 – No-Build

The No-Build Alternative is shown in **Figure III-1**. The No-Build Alternative is the baseline condition for comparing the build alternatives and assumes that all the programmed transportation improvements within the study area are completed by horizon year 2030 except for the extension of Midcounty Highway. Significant to note is that the traffic analysis for the No-Build Alternative included the construction of the entire CCT. Even with the assumption that the CCT is operational by 2030, the travel demand model shows that 16 of the 65 intersections that were evaluated within the study area would experience unacceptable congestion by 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 crashes 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 strong need for additional transportation improvements in the study area. MCDOT does not consider the No-Build Alternative to be a viable solution as it does not meet the project need.

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

Alternative 2, shown in **Figure III-2**, would improve the existing transportation system with minimal capital cost. In the design year 2030, 16 study area intersections would exceed the County congestion standard. Low-cost intersection improvements that could be constructed within existing right-of-way (such as additional turning lanes) were evaluated at these locations. With such minor improvements, eight of the intersections could be improved to meet the County congestion standard in 2030. The remaining eight would continue to operate at unacceptable levels of congestion. The improvements would not promote increased transit ridership or decreased automobile travel.

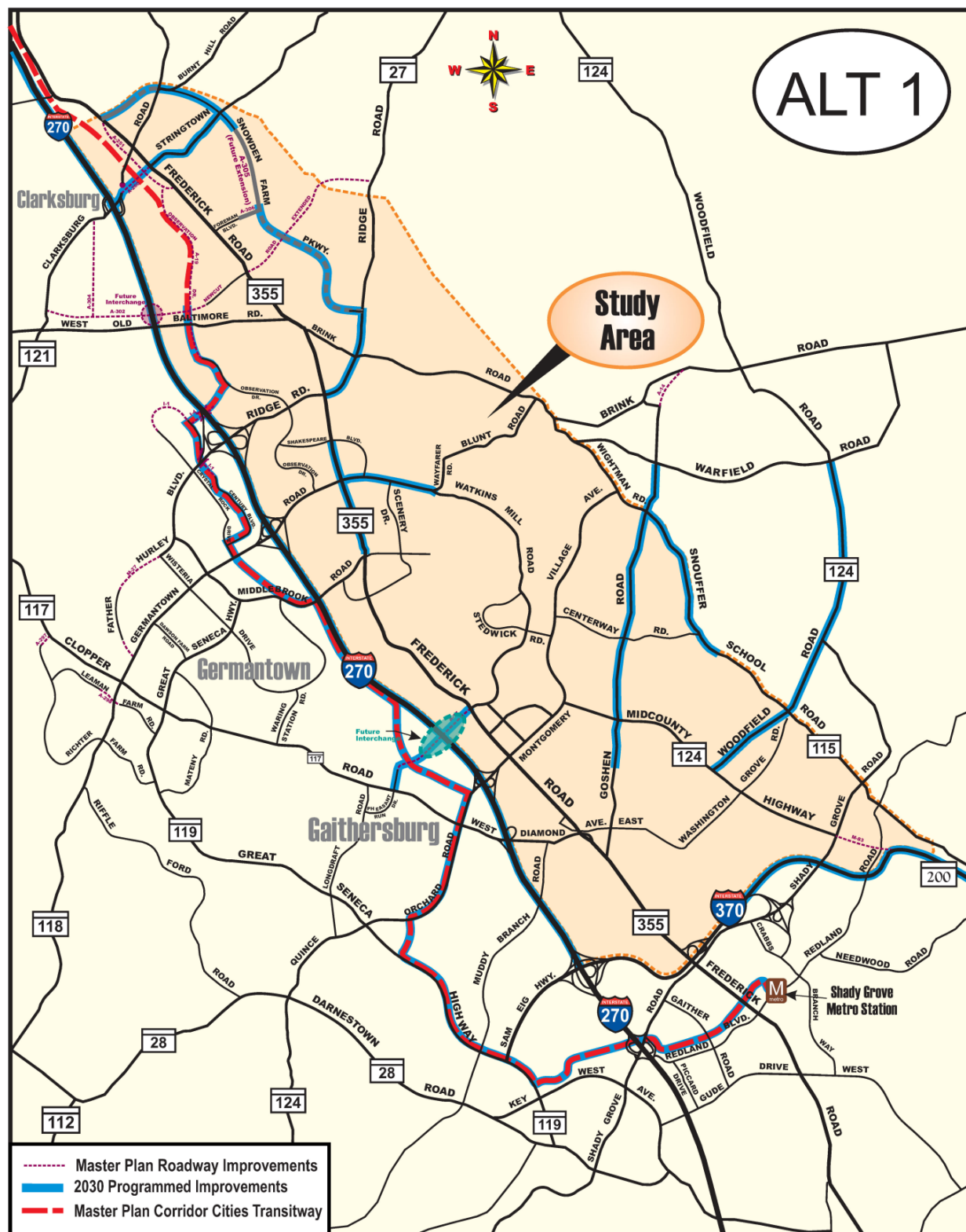


Figure III-1: Alternative 1 - the No-Build Alternative

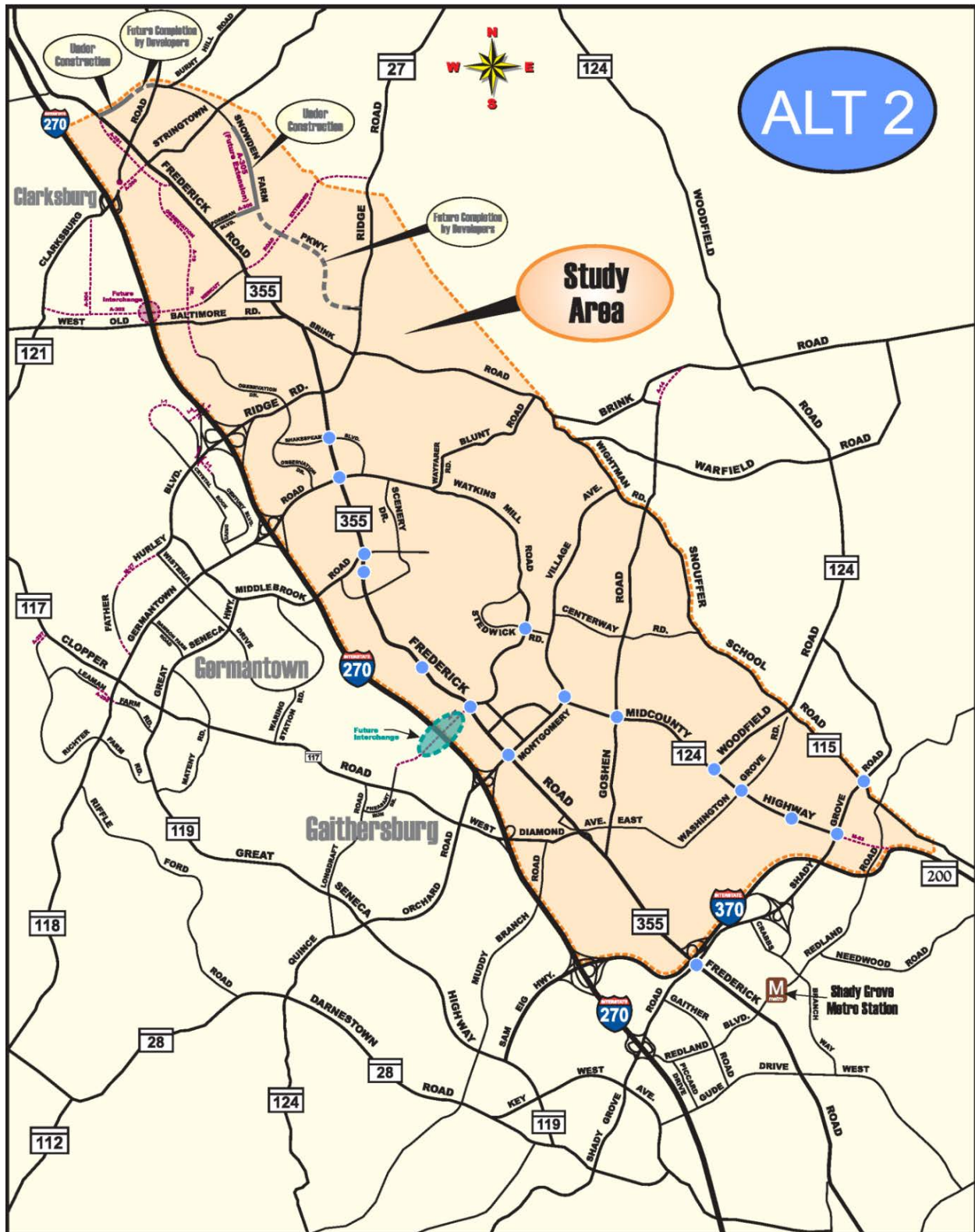


Figure III-2: Alternative 2 - TSM/TDM

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

Alternative 4 Modified, a 7.5-mile route from future Snowden Farm Parkway to Shady Grove Road, proposes to widen Ridge Road, Brink Road, Wightman Road, Snouffer School Road, and Muncaster Mill Road to four lanes, and in some locations, six lanes. Existing Midcounty Highway would also be widened to six lanes, from Goshen Road to Montgomery Village Avenue. Goshen Road is proposed to be widened to four lanes under a separate Montgomery County Capital Improvement Program project (CIP #501107). However, it is highlighted on **Figure III-3**, Alternative 4 Modified (see dashed line) to indicate that traffic coming from the north would split at the Goshen Road/Snouffer School Road intersection. Under Alternative 4 Modified, all intersections along the two purple paths would operate at an acceptable level of service (LOS).

The proposed widening and typical section for the corridor would exceed the recommendations of the area master plans. The existing profile, master planned profile, and proposed profile for each of the roads improved under Alternative 4 Modified are summarized in **Table III-2**.

Table III-2: Comparison of Master Planned Improvements and Alternative 4 Modified

ROADWAY	LIMITS	EXISTING PROFILE	GUIDING MASTER PLAN	MASTER PLANNED IMPROVEMENT	ALT 4 MOD IMPROVEMENT
Ridge Road	Midcounty Highway to Brink Road	Six-lanes	<i>Clarksburg Master Plan & Hyattstown Special Study Area (1994)</i>	Six-lanes divided	Six-lanes divided
Brink Road	Ridge Road to Midcounty Highway	Four-lanes divided		Four-lanes divided	Four-lanes divided
Brink Road	Midcounty Highway to Wightman Road	Two-lanes undivided	<i>Master Plan of Highways (2010)</i>	Two-lanes undivided	Four-lanes divided
Wightman Road	Brink Road to Goshen Road	Two-lanes undivided	<i>Gaithersburg Vicinity Master Plan (1985)</i>	Four-lanes undivided	Four to six-lanes divided
Snouffer School Road	Goshen Road to Woodfield	Two to five-lanes undivided		Four to six-lanes undivided	Four-lanes divided
Goshen Road	Snouffer School Road to Midcounty Highway	Two-lanes undivided		Four-lanes divided	Four to six-lanes divided
Muncaster Mill Road	Woodfield Road to Airpark	Two-lanes undivided	<i>Upper Rock Creek Master Plan (2004)</i>	Four-lanes divided	Four to six-lanes divided

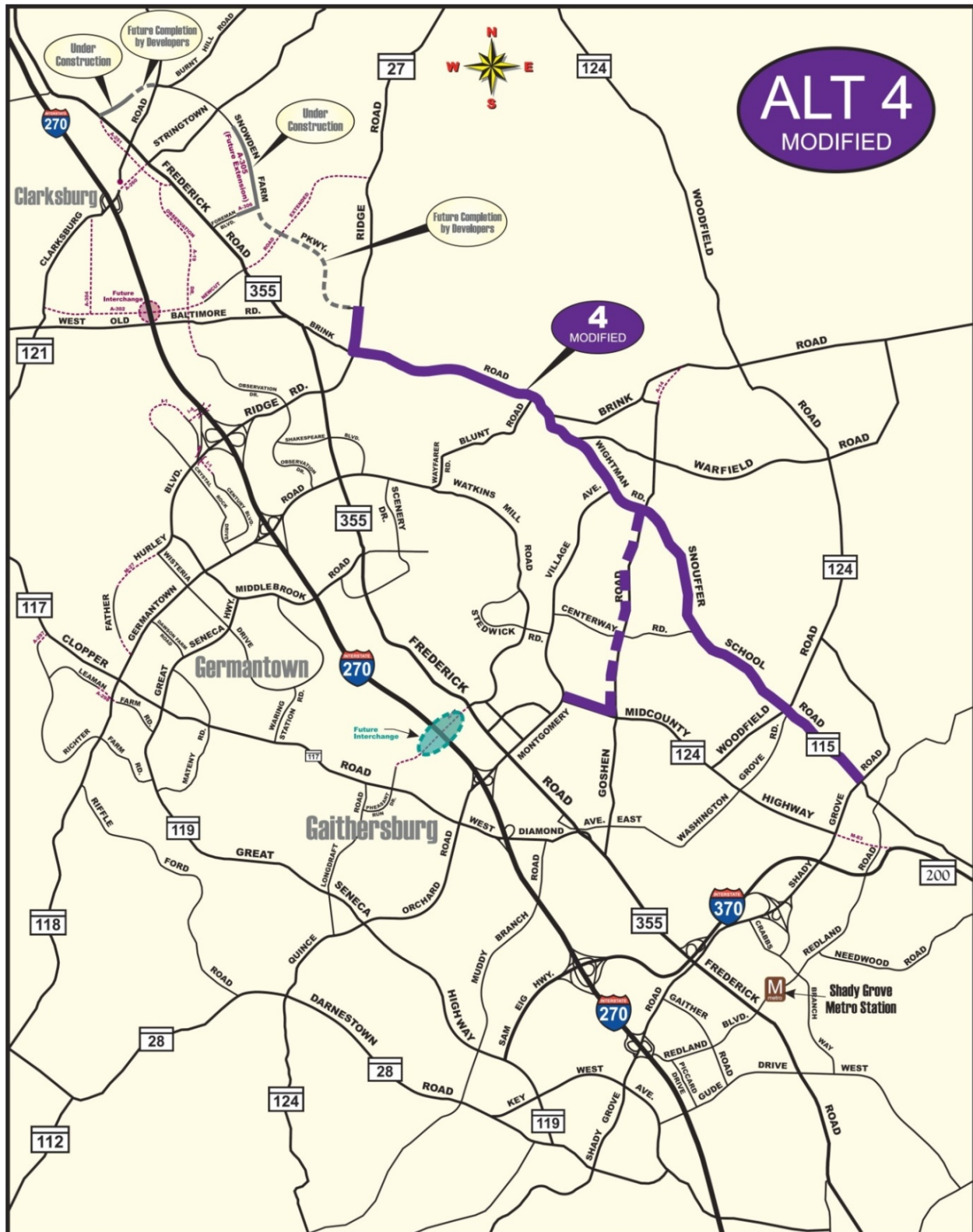


Figure III-3: Alternative 4 Modified



In summary, the improvements proposed under Alternative 4 Modified would substantially exceed the cross section proposed by the area master plans, except along Muncaster Mill Road between Ivy Oak Drive and Miller Fall Road. Under Alternative 4 Modified, the Brink/Wightman/Snouffer School/Muncaster Mill Road corridor would replace the Midcounty Highway, and therefore, would require measures to accommodate the mix of local and regional traffic that would be drawn to the corridor; including, improving the horizontal and vertical geometry to accommodate a 40 MPH design/posted speed, providing a raised median to limit the number of locations where left turns could be made, and widening to as many as six lanes to accommodate the projected traffic increases.

The typical four-lane section and the typical six-lane section, and associated right-of-way widths, are depicted on **Figure III-4** and **Figure III-5**. On-street bike lanes, a sidewalk, and a shared-use path are proposed throughout the alternative, consistent with Montgomery County's *Complete Streets* policy, which requires highway improvements to accommodate all transportation users, including motorist, transit rider, bicyclist, and pedestrian. The figures shown are "typical" sections which depict the cross sectional elements that are typically utilized throughout the alternative. There are many locations along the alternative where MCDOT, through consultation with the EPA, was able to reduce the width of the cross section by narrowing the median, eliminating a lane, or incorporating retaining walls. This effort resulted in a small reduction in the project's footprint, without compromising the LOS, design parameters, or safety features of the alternative. To minimize impacts to residential properties, proposed improvements were shifted either to the east or to the west of the corridor. These modifications were incorporated in the mapping of Alternative 4 Modified contained in the *Draft EER*.

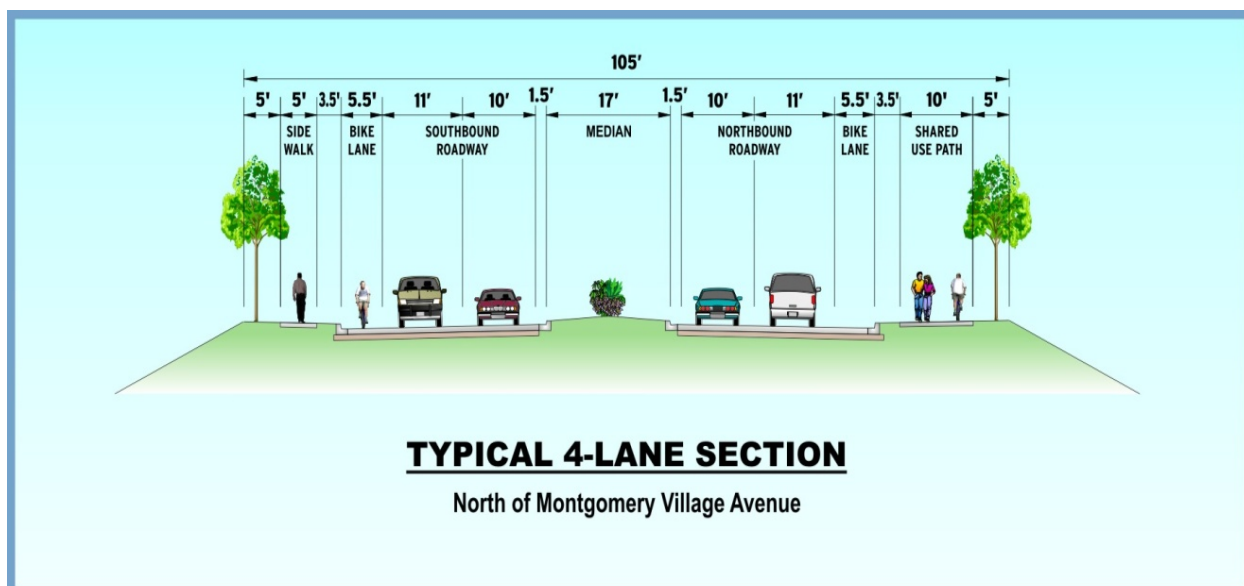


Figure III-4: Alternative 4 Modified, Four-Lane Typical Section

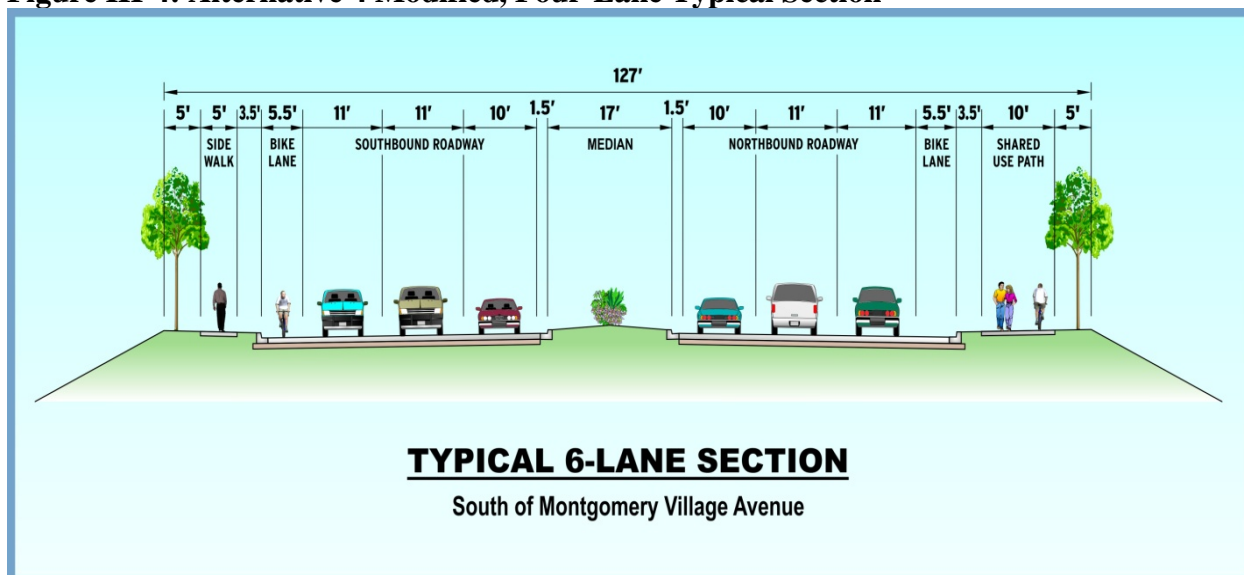


Figure III-5: Alternative 4 Modified Six-Lane Typical Section

4. Alternative 5 – MD 355 with Service Roads

Alternative 5 (**Figure III-6**), a 6.6-mile corridor, proposes existing roadways to be widened to six lanes. To minimize conflict points and increase safety and access control, service roads are proposed along MD 355 which would consolidate the number of driveways from 62 to 17. Intersection widening would occur, as needed, to enable the intersections along the alternative to operate at an acceptable LOS. The proposed improvements are depicted in detail in the mapping of Alternative 5 that was contained in the *Draft EER*. The existing profile, master planned profile, and proposed profile for each of the roads improved under Alternative 5 are summarized in **Table III-3**. Typical sections are shown in **Figure III-7** and **Figure III-8**.

Table III-3: Comparison of Master Planned Improvements and Alternative 5

ROADWAY	LIMITS	EXISTING PROFILE	GUIDING MASTER PLAN	MASTER PLANNED IMPROVEMENT	ALT 5 IMPROVEMENT
Ridge Road	Midcounty Highway to Brink Road	Six-lanes divided	Clarksburg Master Plan & Hyattstown Special Study Area (1994)	Six-lanes divided	Six-lanes divided with varying ROW, service roads, and increased access control
Ridge Road	Brink Road to Frederick Road		Germantown Master Plan (1989)		
Frederick Road	Ridge Road to planning area boundary (Seneca Creek)				
Frederick Road	Planning area boundary (Seneca Creek) to Montgomery Village Ave		Gaithersburg Vicinity Master Plan (1985)		
Montgomery Village Avenue	Frederick Road to Midcounty Highway			Four to six-lanes divided	

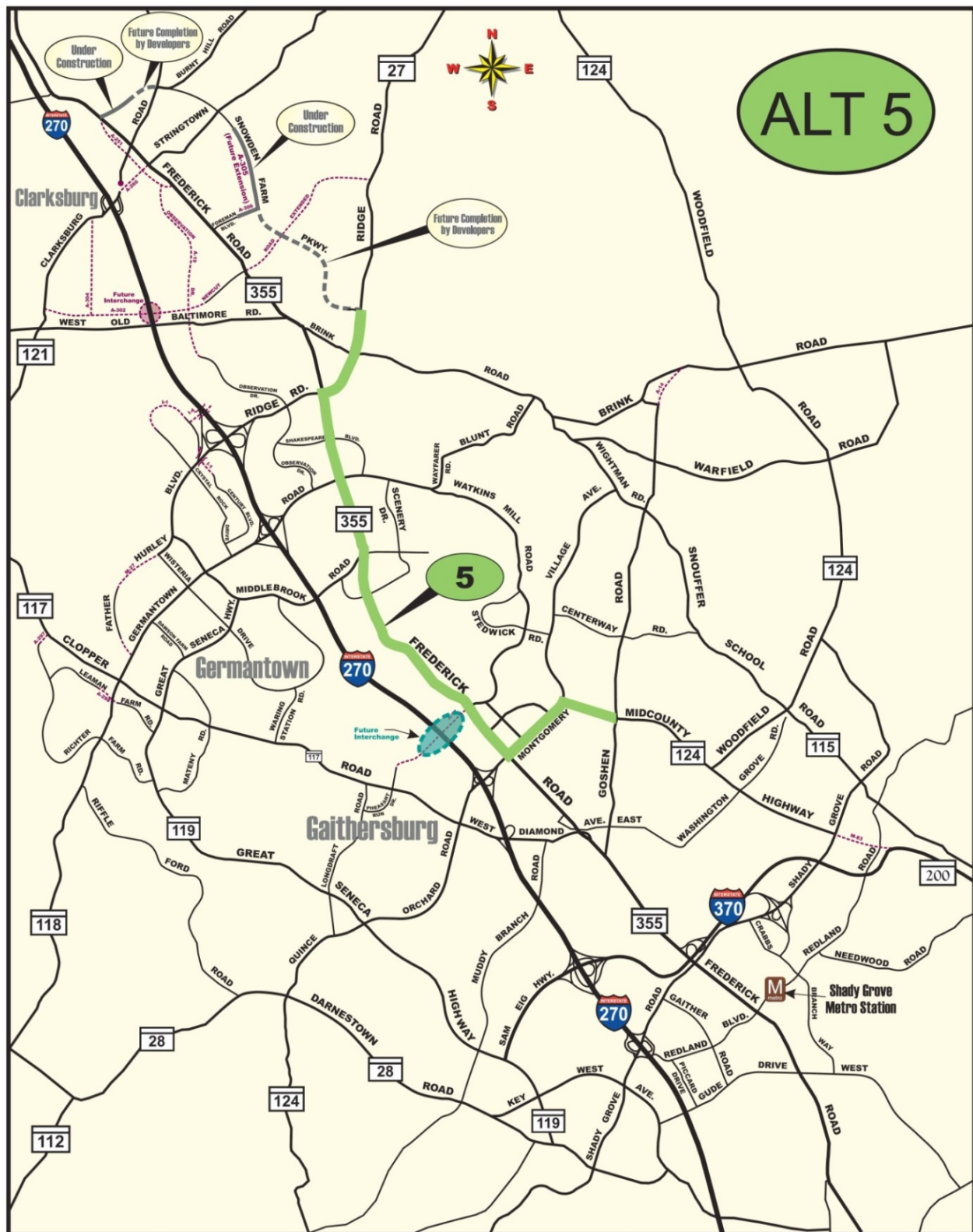


Figure III-6: Alternative 5

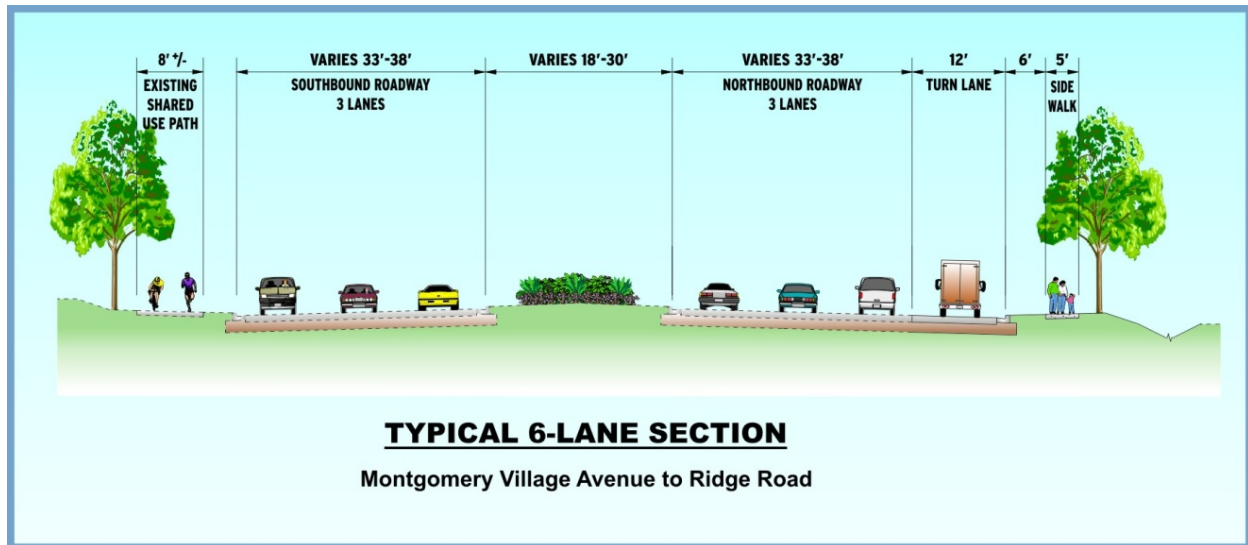


Figure III-7: Alternative 5 Typical Six-Lane Section

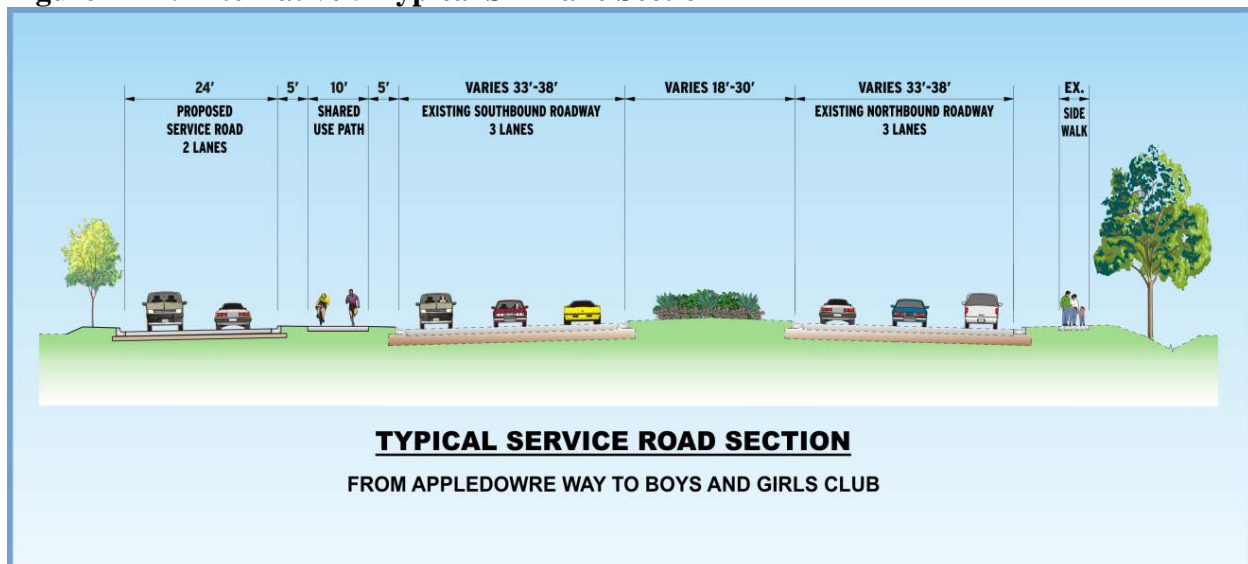


Figure III-8: Alternative 5 Typical Service Road Section

5. Alternative 8 – Master Plan Alignment Truncated at Watkins Mill Road

Alternative 8 follows the Master Plan alignment from Snowden Farm Parkway south to Watkins Mill Road, leaving a 0.8-mile gap in the Midcounty Highway between Watkins Mill Road and Montgomery Village Avenue. This alternative was originally evaluated due to concerns that the Master Plan alignment (Alternative 9) south of Watkins Mill Road would result in extensive environmental impacts to Whetstone Run. The proposed corridor improvements are described in **Table III-4**. In addition to the corridor widening described in **Table III-4**, Intersection improvements along Watkins Mill Road at Stedwick Road and at Russell Avenue would be constructed. New traffic signals would be installed along Watkins Mill Road at Russell Avenue and at Travis Road, and intersection improvements would be constructed along MD 355 at Kaiser Permanente and at Montgomery Village Avenue.

Alternative 8 is depicted on **Figure III-9**. The orange dots identify proposed intersection improvements necessary to adjust for the rerouted traffic seeking to bridge the gap of Midcounty Highway terminus at Watkins Mill Road. There are several different travel paths that motorists on Midcounty Highway could take to bridge the gap:

- Stedwick Road → Montgomery Village Avenue,
- Russell Avenue → Christopher Avenue → Montgomery Village Avenue, or
- MD 355 → Montgomery Village Avenue.

The LOS at every intersection along these three travel paths would satisfy congestion standards for Montgomery County and the City of Gaithersburg.

Table III-4: Comparison of Master Planned Improvements and Alternative 8

Table 11-1: Comparison of Master Planned Improvements and Alternative 8					
ROADWAY	LIMITS	EXISTING PROFILE	GUIDING MASTER PLAN	MASTER PLANNED IMPROVEMENT	ALT 8 IMPROVEMENT
Midcounty Highway	Ridge Road to Brink Road	Unconstructed	Clarksburg Master Plan & Hyattstown Special Study Area (1994)	Six-lanes divided	Four-lane divided incorporating one of three Northern Terminus Options: A, B, or D
Midcounty Highway	Brink Road to Middlebrook Road		Germantown Master Plan (1989)		Four-lane divided
Middlebrook Road	Midcounty Highway to Frederick Road	Two to four-lanes divided			
Midcounty Highway	Middlebrook Road to Planning area boundary (Seneca Creek)	Unconstructed			

ROADWAY	LIMITS	EXISTING PROFILE	GUIDING MASTER PLAN	MASTER PLANNED IMPROVEMENT	ALT 8 IMPROVEMENT
Midcounty Highway	Planning area boundary (Seneca Creek) to Frederick Road		Gaithersburg Vicinity Master Plan (1985)	Four to six-lanes divided	
Watkins Mill Road	Various intersections	Two to four-lanes divided		Four-lanes divided	No widening proposed. Intersection improvements at Stedwick Road, Russell Avenue, and Travis Avenue. Signalized intersections at Russell Avenue and Travis Avenue
Frederick Road	Planning area boundary (Seneca Creek) to Montgomery Village Ave	Six-lanes divided		Six-lanes divided	No widening proposed. Intersection improvements at Kaiser Permanente and Montgomery Village Avenue
Montgomery Village Ave	Frederick Road to Midcounty Highway			Four to six-lanes divided	No widening proposed
Midcounty Highway	Montgomery Village Avenue to Goshen Road	Four-lanes divided		Four to six-lanes divided	Six-lanes divided

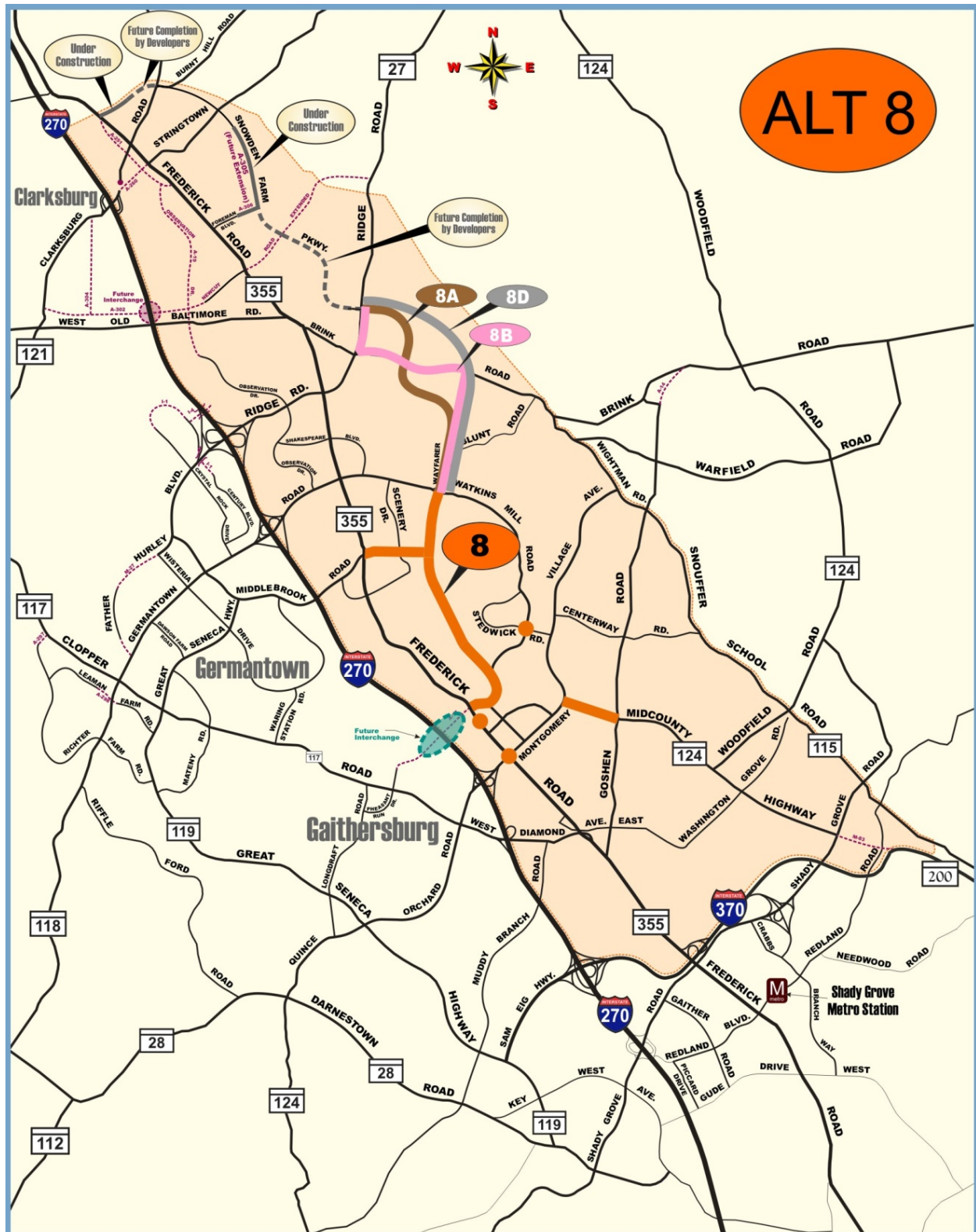


Figure III-9: Alternative 8

6. 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. **Table III-5** describes the proposed improvements. The proposed route is identified on **Figure III-10**.

Table III-5: Comparison of Master Planned Improvements and Alternative 9

ROADWAY	LIMITS	EXISTING PROFILE	GUIDING MASTER PLAN	MASTER PLANNED IMPROVEMENT	ALT 9 IMPROVEMENT
Midcounty Highway	Ridge Road to Brink Road	Unconstructed	Clarksburg Master Plan & Hyattstown Special Study Area (1994)	Six-lanes divided	Four-lanes divided incorporating one of three Northern Terminus Options: A, B, or D
Midcounty Highway	Brink Road to Middlebrook Road	Unconstructed	Germantown Master Plan (1989)		Four-lanes divided
Middlebrook Road	Midcounty Highway to Frederick Road	Two to four lanes divided			
Midcounty Highway	Middlebrook Road to planning area boundary (Seneca Creek)	Unconstructed			
Midcounty Highway	Planning area boundary (Seneca Creek) to Montgomery Village Ave	Unconstructed	Gaithersburg Vicinity Master Plan (1985)	Four to six-lanes	
Midcounty Highway	Montgomery Village Avenue to Goshen Road	Four-lanes divided			

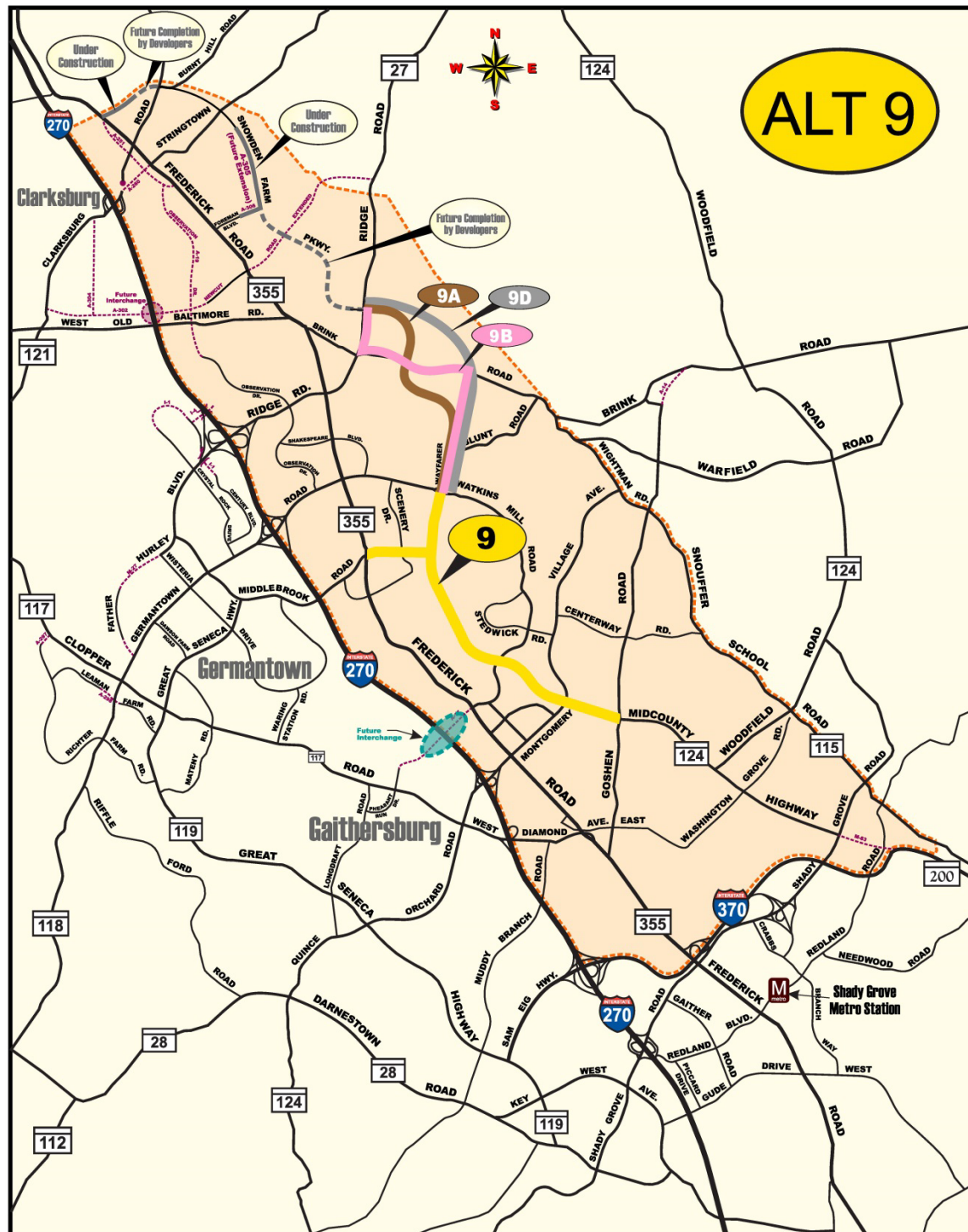


Figure III-10: Alternative 9

7. *Alternative 8 and Alternative 9 Typical Sections*

North of Middlebrook Road, where the highway right-of-way is not constrained by development, Alternatives 8/9 would have an “open” cross section, with “parkway” type features such as 11-foot travel lanes and a narrow landscaped median, designed to a 40 MPH design speed, the same design speed as proposed with the other alternatives. Rainfall would run off the roadway into a bioswale that would be constructed on one of both sides of the highway. The bioswale would be designed with filtration and infiltration capacity. South of Middlebrook Road, where the highway reservation is limited by adjacent development, streams, or Pepco transmission towers, Alternatives 8/9 would have a “closed” cross section. The runoff would be confined by curb and gutter, collected in a storm drain system, and discharged to a stormwater management facility either outside the right-of-way or beneath the pavement (locations would be determined during final design). If this alternative were selected, every effort would be made during final design to construct underground stormwater basins as an alternative to constructing ponds within parkland. Typical sections are depicted in **Figure III-11** and **Figure III-12**.

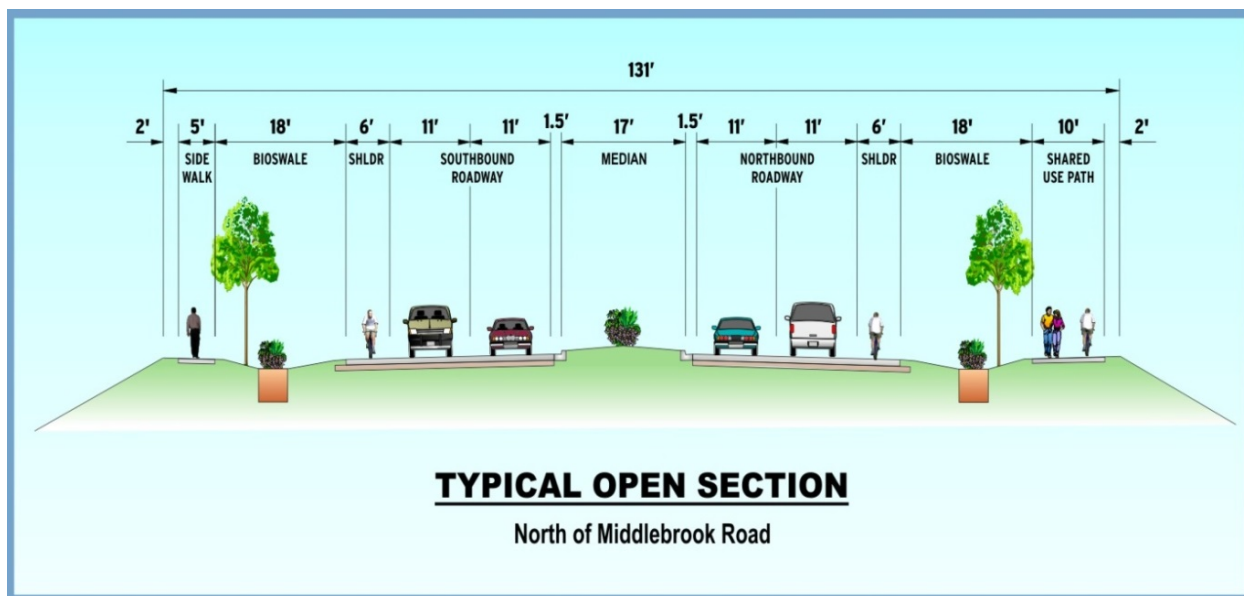


Figure III-11: Alternatives 8 & 9 Typical Open Section

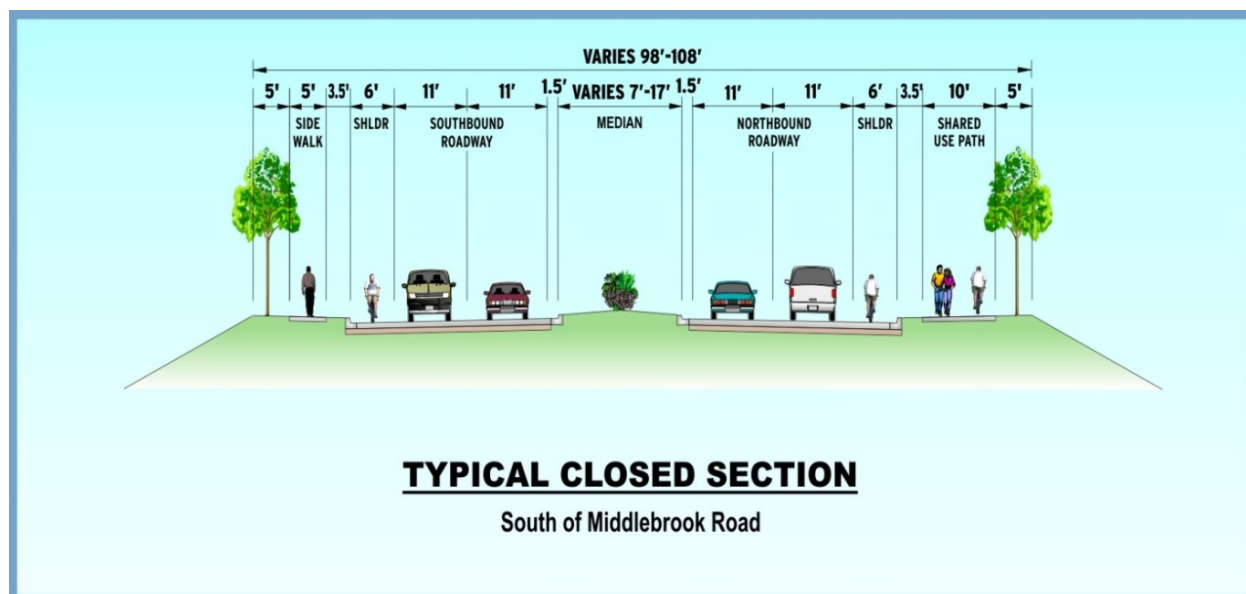


Figure III-12: Alternatives 8 & 9 Typical Closed Section

8. *Northern Terminus Options*

Three options for the northern terminus of Alternatives 8 and 9 were evaluated: Option A, Option B, and Option D.

Northern Terminus Option A proposes a four-lane divided highway with controls of access along the Master Plan alignment. Option A would traverse the North Germantown Greenway Stream Valley Park and the Seneca Crossing Local Park along a series of S-shaped curves (see **Figure III-9** and **Figure III-10**). 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.

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 would be widened to a six-lane divided highway by a developer, per a previously-issued County subdivision approval.

Northern Terminus Option D would follow the same alignment as Option B across the 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 intersect Wildcat

Road, a County-designated Rustic 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 and longer culvert. Option D would continue westward across the All Souls Cemetery and intersect Ridge Road at the future intersection with Snowden Farm Parkway.

B. Modifications to Reduce Impacts

Since receiving concurrence on the ARDS in early 2011, MCDOT evaluated numerous measures to avoid and minimize impacts to parkland, woodland, wetlands, streams, floodplains, and residential properties. It should be noted that MCDOT elected to incorporate numerous avoidance and minimization measures into the refined alternatives as a result of its commitment to environmental stewardship. Design elements considered included lengthened and elevated bridges, construction of retaining walls, and alignment shifts. The implementation of some of the design modifications are discussed below.

1. Alternatives 8 and 9

The Master Plan alignment (Alternative 9 and the portion of Alternative 8 north of Watkins Mill Road) has been protected from development since its designation on the Master Plan in the 1960s. In addition, over the intervening years, much of the land encompassing the Master Plan alignment, between Brink Road and Montgomery Village Avenue, was acquired and designated as parkland by Montgomery County, the City of Gaithersburg, or the Montgomery Village Foundation, with the knowledge that the Midcounty Highway Master Plan alignment would ultimately pass through these properties.

Because the Master Plan alignment has been protected from development and used as parkland, Alternatives 8 and 9 would result in greater impacts to natural resources than the other alternatives which widen existing roads. MCDOT recognizes the value of the parkland along the Master Plan alignment, which provides numerous amenities as summarized in **Table III-6**.

In recognition of the importance and value of the parkland, forest, and the aquatic resources, MCDOT employed various features to avoid and minimize impacts to natural resources, including the provision of bridges at all of the significant waterway and wetland crossings. A summary of the proposed bridge crossings for Alternatives 8 and 9 is presented in **Table III-7**.

Table III-6: Area Parks and Amenities

PARK RESOURCE	Seneca Crossing Local Park	North Germantown Greenway Stream Valley Park	Great Seneca Creek Stream Valley Park	Blohm Park	South Valley Park
TOTAL ACREAGE	28.1	380.8	2,012.9	24.3	32.1
AMENITY					
Hiking Trails			✓	✓	✓
Mountain Biking			✓		
Ball Fields					✓
Habitat for Forest Interior Species		✓	✓		
Stream Buffer	✓	✓	✓	✓	✓
Biodiversity Area		✓	✓		
Extended activities of the Dayspring Church Silent Retreat Center		✓	✓		
Bird Watching Pavilion				✓	
Greenway	✓	✓	✓	✓	✓
Scenic Vistas		✓	✓	✓	✓

Each of the proposed bridges would have sufficient horizontal clearance to accommodate a wildlife bench adjacent to the stream. Additionally, 11 feet of under clearance would accommodate deer passage. MCDOT has committed to bridging to avoid stream impacts and is committed to working with the agencies throughout the design process to design the bridges so that they can sustain the resources and habitat below. Further evaluation of the bridge heights, widths, or spans would include consideration of any beneficial and adverse effects associated with modifying the bridge designs, and coordination to ensure that any change is acceptable to all agencies.

A description of each bridge crossing and other avoidance/minimization techniques employed on Alternatives 8 and 9 is presented below.

- Wildcat Branch - With Option A, the stream and associated wetlands would be completely bridged with an 80-foot long bridge providing 15 feet of under clearance. The alignment was shifted slightly outside the highway reservation to minimize impacts to wetlands and mature forest.
- Wildcat Branch - With Option D, stream impacts were reduced by aligning the option to cross Wildcat Branch where it is already piped beneath Wildcat Road. The new culvert would be longer, resulting in 165 additional feet of stream impact, but no wetlands would be impacted.

Table III-7: Bridge Characteristics

BRIDGE LOCATION	LENGTH	WIDTH	UNDER CLEARANCE TO STREAM BED	UNDER CLEARANCE TO WETLAND
Wildcat Branch	80'	88'	18'	15'
Dayspring Creek	280'	88'	20'	19'
Brandermill Tributary	200'	88'	43'	35'
Great Seneca Creek	500'	88'	25'	17'
Alt 9 over Whetstone Run	230'	Varies from 112' - 128'	16'	11'
Alt 8 over Whetstone Run	220'	95'	12-13'*	7-8'*

** Under Alt 8, a single-span bridge was proposed in order to avoid a relocation of Whetstone Run. The longer beams required for a single-span bridge would have greater depth, thus reducing the under clearance to 7-8 feet. The under clearance could be increased to 11 feet if a center pier were provided, but the pier placement would require a relocation of Whetstone Run.*

- Dayspring Creek - With all Northern Terminus Options, Dayspring Creek and its associated wetlands would be spanned with a 280-foot long bridge that would provide 19 feet of under clearance. MCDOT is also proposing a 5.75% grade on the northern approach to the bridge in order to minimize the height of the fill slopes and their encroachment on the park.
- Brandermill Tributary - Brandermill Tributary and its associated wetlands would be completely spanned with a 200-foot long bridge that would provide 35 feet of under clearance.
- Great Seneca Creek - A 500-foot long bridge with 17 feet of under clearance would span both branches of the stream, the Seneca Creek Greenway Trail, and 75% of the riparian wetlands. The alignment of Alternative 8 and 9 was modified so the piers and abutments would not impact the two branches of the stream. Retaining walls are proposed on both approaches to the bridge, reducing wetland impacts to 0.5 acres. The bridge length would accommodate a bench for deer passage parallel to each branch of the stream.
- Whetstone Run - With Alternative 9, a two-span, 230-foot long bridge is proposed over Whetstone Run within Blohm Park. Approximately 750 feet of Whetstone Run would be realigned to restore the stability of the stream in the vicinity of the bridge. The bridge would provide 11 feet of under clearance. Less than 0.02 acres of wetland fill would be required at this crossing.



- Whetstone Run - With Alternative 8, a single-span, 220-foot long bridge is proposed over Whetstone Run within Blohm Park, resulting in less than 0.03 acres of wetland fill. However, the absence of a center pier beneath the bridge would necessitate deeper beams, reducing the under clearance to less than eight feet, which would likely shade-out the 0.15 acres of emergent/scrub-shrub wetland that lies beneath the bridge. To provide 11 feet of under clearance, a center pier could be constructed, which would result in an additional 198 square feet (< 0.01 acres) of wetland fill and 750 feet of stream relocation, but would allow deer passage and hiker passage beneath the bridge.
- Seneca Crossing Local Park, 28.1 acres, owned by Montgomery County - Option D would avoid impacts to this park. Option A would impact 3.65 acres (13%) and Option B would impact 1.1 acres (3.9%) of Seneca Crossing Local Park.
- North Germantown Greenway Stream Valley Park, 380.8 acres, owned by Montgomery County - The alignment of Option A was shifted to follow the top of the ridge. Option A would impact 24.9 acres (6.5%) of the North Germantown Greenway Stream Valley Park. Option B and Option D were evaluated by MCDOT, in response to requests by the environmental agencies, because they would cross the park perpendicularly, thereby reducing impacts to North Germantown Greenway Stream Valley Park. Options B and D have a grade of 5.75% to more closely match the existing terrain, reducing the encroachment into the park. Option B and D would reduce park impacts to 12.8 acres (3.4% of the total park resource).
- Great Seneca Creek Stream Valley Park, 2,012.85 acres, owned by Montgomery County - Two segments of the Seneca Creek Greenway Trail would need to be relocated to maintain the continuity of the trail in the vicinity of the bridge over Brandermill Tributary. A trail would be constructed beneath the bridge over Dayspring Tributary to connect the Seneca Creek Greenway Trail to the sidewalk that is proposed along the west side of Alternatives 8 and 9. The shared use path that is proposed along the east side of Alternatives 8 and 9 would also connect to the Seneca Creek Greenway Trail just north of Middlebrook Road. The Trail would also be maintained beneath the bridge over Great Seneca Creek. The total impact to Great Seneca Creek Stream Valley Park would be 14.72 acres (0.7% of the total park area).
- Blohm Park, 24.33 acres, owned by the City of Gaithersburg - Alternative 9 would traverse Blohm Park and impact 2.56 acres (10.5%) of parkland. Alternative 8 would impact 1.90 acres (7.8%) of Blohm Park. The trail could be relocated to pass beneath the bridge, but the under clearance would be only seven feet, unless a center pier was included. The bird watching pavilion could be relocated to a more remote location of the park at the request of the City of Gaithersburg.
- South Valley Park, owned by Montgomery Village Foundation - Alternative 8 would avoid the active recreational facilities, but would impact 2.16 acres (6.7 %) of the property. To reduce the proximity impacts of Alternative 9 on the active recreational

facilities (i.e., the fish pond and ball fields), retaining walls were incorporated along both sides of the highway in the vicinity of the Windbrooke community, and the alignment was shifted toward the community, away from the active recreational facilities and Whetstone Run. A 225-foot long, 14-foot wide pedestrian bridge was proposed in the *Draft EER* to carry the shared use path, thereby avoiding the need to relocate this reach of Whetstone Run.

- Retaining walls were incorporated at numerous locations along Alternative 8 and 9 to reduce wetland and stream impacts (at Seneca Creek, wetland 63, and Whetstone Run south of Watkins Mill Road) and residential impacts (at the Seneca-Whetstone, Windbrooke, and Woodland Hills neighborhoods).
- High headwalls were incorporated into Alternative 9 to reduce the impacts associated with a new culvert in Walkers Run at Station 166, and to reduce the impacts associated with widening the existing Midcounty Highway at the existing culvert of Whetstone Run at Station 124 and at the existing culvert of Whetstone Run beneath Goshen Road.
- Noise walls would be evaluated during final design, consistent with the Montgomery County Highway Noise Abatement Policy.

2. *Alternative 4 Modified*

A variety of measures were incorporated into the design of Alternative 4 Modified to minimize impacts including the following:

- North of the intersection of Wightman and Brink Roads (between Stations 106 to 110), a large wetland was avoided by widening Brink Road on the west side of the existing highway.
- In the vicinity of Station 217, a slight shift to the east reduced the impact to Wetland 28.
- A new 250-foot long bridge over Seneca Creek would provide a larger hydraulic opening to ensure the roadway would no longer be flooded during a 100-year storm event, and 11 feet of under clearance was provided to accommodate deer and hiker passage.

Substantial efforts were devoted to minimizing the impacts to communities.

- At six locations, the roadway widening was shifted away from residences on the west side of the road, resulting in greater right-of-way impacts to the following non-residential properties on the east side of the road: Kaufmann Park, Goshen Oaks Shopping Center, the County's proposed Multi-Agency Service Park, Muncaster Recreational Park, Covenant Life Church, and Laytonia Recreational Park. The right-of-way required does not significantly impact the current or proposed land uses of the non-residential properties.

- The median width was reduced from 17 feet to seven feet between Aspenwood Lane and Goshen Road, and along the Muncaster Recreational Park.
- A lane was deleted in the northbound direction between Montgomery Village Avenue and Aspenwood Lane, thereby reducing impacts to residences on both sides of Wightman Road.
- Retaining walls were proposed at numerous locations along the alternative to reduce the impacts to residences, businesses, churches, wetlands, and parkland.
- Noise walls would be evaluated during final design, consistent with the Montgomery County Highway Noise Abatement Policy.

3. *Alternative 5*

Impacts to natural environmental resources would be minimal with Alternative 5; therefore, avoidance and minimization efforts were not required.

- Noise walls would be evaluated during final design, consistent with the Montgomery County Highway Noise Abatement Policy.

The revised impacts and costs for each Alternative are summarized below in **Table III-8**.

Table III-8: Summary of Impacts and Costs

RESOURCES	ALTERNATIVES RETAINED FOR DETAILED STUDY									
	1	2	4 MOD	5	8A	8B	8D	9A	9B	9D
PROPERTY IMPACTS										
Residences Displaced (no.)	0	0	2	0	0	1	1	0	1	1
Businesses Displaced (no.)	0	0	0	3	0	0	0	0	0	0
Partial Acquisition from Residential Prop. (no.)	0	0	242	92	96	120	103	125	149	132
Partial Acquisition from Business Property (no.)	0	0	67	82	15	17	15	14	16	14
Total Number Parcels from which Property will be Acquired¹	0	0	353	180	131	157	133	161	187	163
NOISE IMPACTS										
Residences within 67 dBA Noise Contour (no.)	0	0	417	228	114	125	114	217	234	217
PARK IMPACTS										
Total (ac)	0	0	19.4	0.2	45.2	30.5	29.4	49.0	33.5	32.4

RESOURCES	ALTERNATIVES RETAINED FOR DETAILED STUDY									
	1	2	4 MOD	5	8A	8B	8D	9A	9B	9D
PRIME, STATEWIDE IMPORTANT FARMLAND										
Total (ac)	0	0	2.8	0	17.7	3.1	31.5	17.7	3.1	31.5
WATER RESOURCES										
STREAMS										
Piped Streams (LF)	0	0	1,282	70	749	520	914	485	256	650
Relocated Streams (LF)	0	0	0	0	0	0	0	989	989	989
Total Permanent (LF)	0	0	1,282	70	749	520	914	1,474	1,245	1,639
Total Temporary (LF)	0	0	30	0	75	75	75	60	60	60
NONTIDAL WETLANDS										
Permanent										
Fill (ac)	0	0	0.26	0	0.76	0.76	0.76	0.87	0.87	0.87
Conversion (ac)	0	0	0.27	0	1.78	1.69	1.69	1.70	1.60	1.60
Temporary (ac)	0	0	0.10	0	0.76	0.74	0.74	0.82	0.80	0.80
NONTIDAL WETLAND BUFFER										
Permanent (ac)	0	0	0.82	0	0.74	0.57	0.57	0.99	0.82	0.82
Temporary (ac)	0	0	0.03	0	0.13	0.13	0.13	0.15	0.13	0.13
100-YEAR FLOODPLAIN IMPACTS										
Permanent (ac)	0	0	4.5	0.4	2.9	2.9	2.9	4.8	4.8	4.8
Temporary (ac)	0	0	0.24	0	0.58	0.58	0.58	0.58	0.58	0.58
FOREST IMPACTS										
Total (ac)	0	0	31.0	2.0	57.6	52.5	61.4	72.9	67.7	76.7
SPECIAL PROTECTION AREAS										
Total Added Impervious Surface (ac)	0	0	1.4	0	7.2	1.7	4.8	7.2	1.7	4.8
FIDS HABITAT										
Direct (ac)	0	0	0	0	16.7	11.2	11.2	19.4	11.2	11.2
Indirect (ac)	0	0	2.2	0	66.8	54	58.4	74.1	54	58.4
THREATENED & ENDANGERED SPECIES										
Number of Species Impacted	0	0	0	0	0	0	0	0	0	0
COST										
\$ Millions²	0	41	251	120	283	264	276	357	339	350

NOTE: Potential impacts are based on preliminary engineering. Further refinement of impacts would occur during project design.

¹ Includes residences, businesses, churches, schools, community facilities, parkland, and public works properties.

² Cost excludes \$14 million for Middlebrook Road construction.