



Welcome

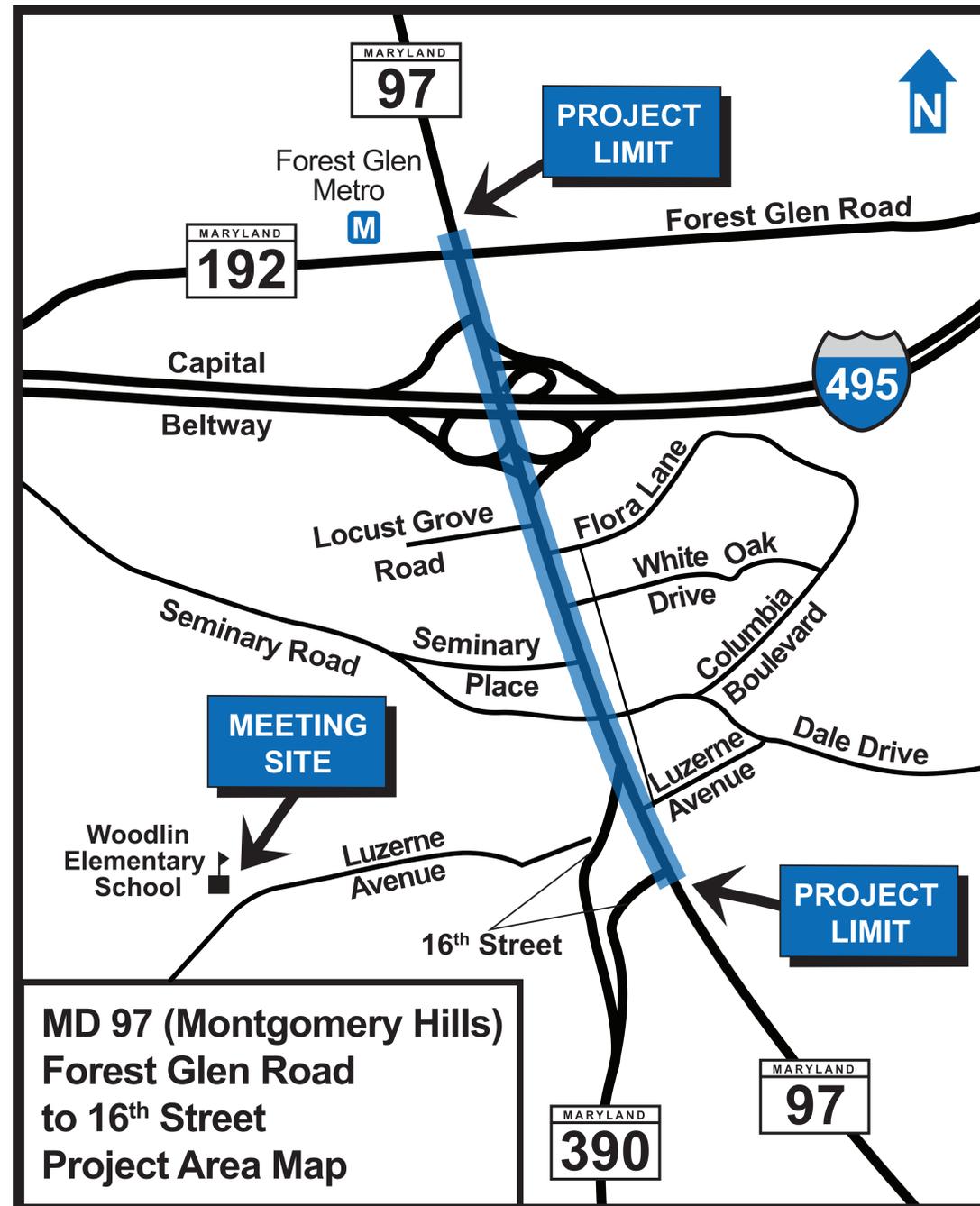
MD 97 – Montgomery Hills Project Planning Study from Forest Glen Road to 16th Street

Alternatives Public Workshop

PURPOSE OF THE WORKSHOP

- **To present preliminary alternatives for the project**
- **To provide an opportunity for interested individuals, associations, businesses, citizen groups, and government agencies to offer comments on priorities and challenges within the project area**

PROJECT LOCATION



EXISTING CONDITIONS

ROADWAY

- Seven-lane roadway (three NB lanes, three SB lanes, reversible lane)
- Signalized intersections at:
 - Forest Glen Road
 - I-495 interchange
 - Seminary Place
 - Columbia Boulevard
 - 16th Street
- Numerous commercial access points
- High traffic volumes
- High crash rates
- Poor Level of Service at many intersections

PEDESTRIAN / BICYCLE

- Sidewalks not compliant with Americans with Disabilities Act standards
- Limited crosswalks
- No on-road bicycle accommodations

TRANSIT SERVICES

- Metrobus
- Ride-On Bus
- Metrorail

PROJECT PURPOSE

To establish a balanced approach to transportation within the MD 97 corridor that:

- **Evaluates vehicular, pedestrian and bicyclist mobility and safety**
- **Accommodates proposed transit enhancements**
- **Establishes a sense of place within the Montgomery Hills community**

PROJECT NEEDS

Improved Vehicular Circulation

- The Montgomery Hills section of MD 97 carries more vehicular traffic than any other non-interstate road in Montgomery County. Access to side streets and local businesses along the corridor is difficult.



Unobstructed Pedestrian Access

- Sidewalks along this corridor are generally non-compliant with Americans with Disabilities Act (ADA) standards. Signs and utility poles on sidewalks in both directions along MD 97 present numerous reduced-width areas and obstacles for wheelchair accessibility.



PROJECT NEEDS

Designated Bicycle Access

- The lack of dedicated bicycle lanes and road-sharing signage or markings makes it difficult for bicyclists to travel through the area. Heavy traffic volumes and the lack of shoulders create conditions that discourage bicycle use.



Improved Transit Accessibility

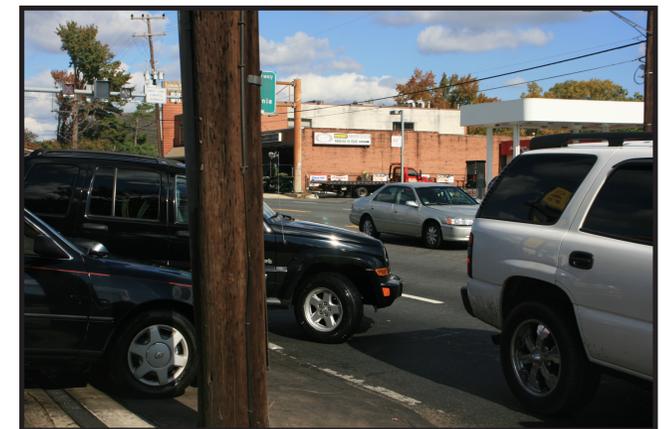
- Transit accessibility within the study corridor is impeded by the high levels of traffic congestion along MD 97 and the lack of adequate pedestrian/bicyclist connectivity throughout the study area.



PROJECT NEEDS

Improved Safety

- 380 police-reported crashes occurred from 2007 through 2009. Approximately 150 of those crashes (40 percent) resulted in injuries; none were fatal.



Established Sense of Place

- Existing conditions create a disorienting environment for motorists, especially for those exiting and entering I-495. For motorists unfamiliar with the corridor, the reversible lane, cluttered signage, and unclear lane markings may create confusion.





OVERVIEW OF 2011 EXISTING AND 2040 TRAFFIC

Note: Information for Alternatives 1-7 is based on 2040 traffic projections.

Signal Intersection LOS	2011 Existing Conditions				Alternative 1: No Build 3 Lanes Northbound (NB), 3 Lanes Southbound (SB), center reversible lane				Alternative 2: Transportation Systems Management (TSM)/ Transportation Demand Management (TDM) 3 Lanes NB, 3 Lanes SB, center reversible lane			
	AM		PM		AM		PM		AM		PM	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Forest Glen Road	E	79	E	58.6	F	156.4	F	164.7	F	164.6	F	154.2
IS 495 WB Ramp	A	9.5	B	13.4	B	17.8	B	17.8	B	16.7	B	10.2
IS 495 EB Ramp	D	54	C	23.4	F	91.3	F	89	E	73	D	54.1
Flora Lane												
Seminary Place	B	12.4	B	15.3	B	17.5	E	66	C	30.3	B	10.5
Seminary Road	D	37.3	C	34.3	F	271.6	F	469.3	F	276.8	F	214
16th Street (MD 390 NB)	C	24.3	D	50.3	B	16.3	B	15.7	C	22.2	F	87.6

Signal Intersection LOS	Alternative 3: Master Plan 3 to 4 lanes NB, 4 lanes SB, center median				Alternative 4 3 lanes NB and SB, center median				Alternative 5 3 lanes NB, 4 lanes SB, center median			
	AM		PM		AM		PM		AM		PM	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Forest Glen Road	F	80	F	221.4	F	169.3	F	169.3	F	161.4	F	134.7
IS 495 WB Ramp	E	71.2	C	28.4	B	16.9	B	10.2	C	20.9	A	7.7
IS 495 EB Ramp	F	87.1	E	72.2	E	68.2	D	54.7	F	101.6	D	52.9
Flora Lane	A	6.4	A	3.9								
Seminary Place	D	43.5	D	37.7	F	110.4	E	62.6	D	37.2	E	59
Seminary Road	F	85.7	F	104.8	F	208.2	F	140.8	F	125.7	F	119.8
16th Street (MD 390 NB)	C	27.1	E	76	E	71	E	72.7	E	77.9	C	24.6

Signal Intersection LOS	Alternative 6: Bus Rapid Transit (BRT) 3 lanes NB, 3 lanes SB, 2 center bus lanes				Alternative 7: Georgia Avenue Tunnel 6 surface lanes (3 NB, 3 SB), 4 tunnel lanes (2 NB, 2 SB)			
	AM		PM		AM		PM	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Forest Glen Road	F	117.3	F	84.1	E	63.2	D	50.2
IS 495 WB Ramp	C	35.3	A	9.8	A	6.5	D	54.2
IS 495 EB Ramp	F	111.8	D	77.8	C	24.9	E	56.7
Flora Lane								
Seminary Place	C	31.4	B	14.6	B	16.4	B	19.4
Seminary Road	E	95.6	D	43.8	C	30	D	47.9
16th Street (MD 390 NB)	C	57.3	B	23.8	B	18.2	F	80.5

Delay (sec) represents the average time needed for a vehicle to pass through the intersection.

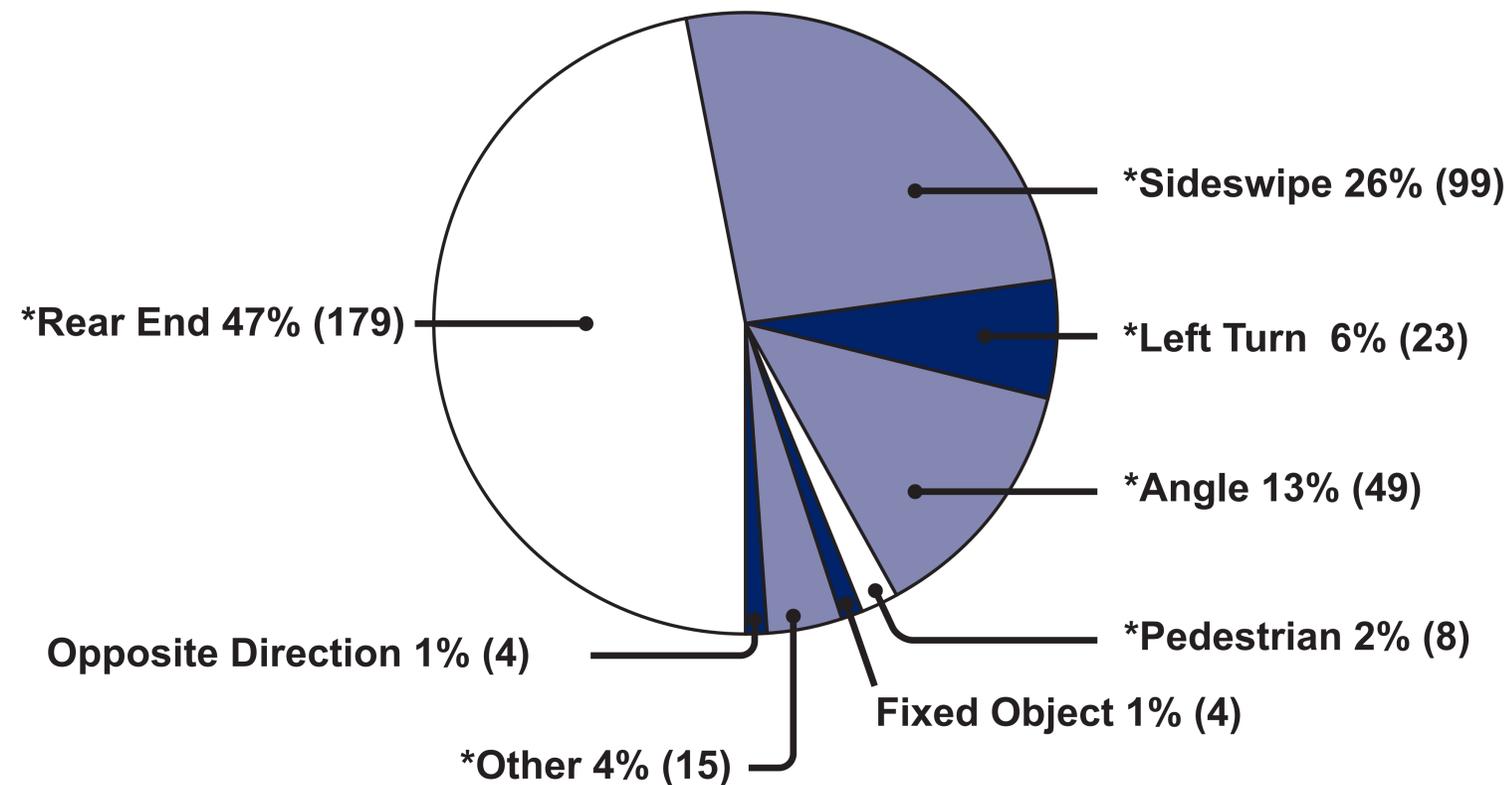
Level of Service (LOS) is a measure of congestion experienced by drivers. LOS ranges from A (free flow, with little or no congestion) to F (failure, with stop-and-go conditions).

LOS	Delay (sec)
A	≤ 10
B	10-20
C	20-35
D	35-55
E	55-80
F	≥ 80

SAFETY SUMMARY

MD 97 CRASHES 2007-2009

(based on 380 police-reported crashes in project corridor)



*Crash types significantly higher than statewide average

()-Approximate number of crashes

Notes:

- Truck-related crashes accounted for 6% of the overall total
- No crashes involving parked vehicles occurred during this period



EVALUATION OF ALTERNATIVES USING MEASURES OF EFFECTIVENESS

Measures of Effectiveness	Alternative 1 No-Build 3 Lanes NB, 3 Lanes SB, center reversible lane	Alternative 2 TSM/TDM 3 Lanes NB, 3 Lanes SB, center reversible lane	Alternative 3 Master Plan 3 to 4 lanes NB, 4 lanes SB, center median	Alternative 4 3 lanes NB and SB, center median	Alternative 5 3 lanes NB, 4 lanes SB, center median	Alternative 6 BRT 3 lanes NB, 3 lanes SB, 2 center bus lanes	Alternative 7 Georgia Avenue Tunnel 6 surface lanes (3 NB, 3 SB), 4 tunnel lanes (2 NB, 2 SB)
1. Automobile Accessibility							
Determined using factors of travel time including vehicular delay	1	1	3	2	3	4	5
2. Pedestrian Accessibility							
Determined using factors of Pedestrian <i>Level of Comfort</i> , presence of pedestrian refuge area, crossing distance, and number of crossings	1	2	5	4	5	3	4
3. Bicycle Accessibility							
Determined using factors of Bicycle Level of Comfort and consistency with the Montgomery County Bike Master Plan and SHA bicycle standards	1	4	3	4	5	4	4
4. Transit Accessibility							
Determined using factors such as availability of queue jumps, opportunity for TSP, and on-street bus lanes	1	4	3	4	4	5	3
5. Safety							
Determined using factors of access points, conflict points, presence of a safety buffer, presence of a median, number of crosswalks, and 16th Street redesign	1	2	4	5	5	3	5
6. Other Considerations							
Determined using the factor of aesthetic improvements	1	2	4	5	4	2	4
Determined using factors of constructability	5	4	3	3	3	3	1
Determined based on number of displacements, impacts, and parking impacts	5	4	2	3	2	3	2

Designation	Worst					Best
Number	1	2	3	4	5	

TSM/TDM - Transportation Systems Management / Transportation Demand Management
BRT - Bus Rapid Transit
NB - Northbound
SB - Southbound

ALTERNATIVES AND OPTIONS UNDER CONSIDERATION

Alternative 1: No-Build

**Alternative 2. Transportation Systems Management (TSM)/
Transportation Demand Management (TDM)**

Alternative 3. Master Plan

Alternative 4. Three Lanes Northbound (NB) and Southbound (SB)

Alternative 5. Three Lanes NB and Four Lanes SB

Alternative 6. Bus Rapid Transit

Alternative 7. Georgia Avenue Tunnel

**Option A: Transit Queue Jumps/Transit Signal Priority
(applicable to Alternatives 4 and 5)**

**Option B: Signal Relocation/Modification (applicable to
Alternative 5 only)**

ALTERNATIVE 1: NO-BUILD

- **No displacements**
- **No change to traffic flow**
- **No improvement in bicycle or pedestrian Level of Comfort**
- **No construction cost (only normal maintenance costs)**
- **No crosswalk refuge area**
- **No median**
- **Left-turn lane restrictions during peak periods**
- **Skewed 16th Street crosswalk remains**

ALTERNATIVE 2: TRANSPORTATION SYSTEMS MANAGEMENT (TSM)/TRANSPORTATION DEMAND MANAGEMENT (TDM)

- **Added grass buffer to separate travel lanes from pedestrian sidewalks**
- **Wider sidewalks for ADA compliance and improved pedestrian accessibility and comfort**
- **16-foot-wide outside lane for improved bicycle accessibility**
- **Transit enhancements for improved bus movements**
- **Minimal expansion of right-of-way resulting in minimal displacements**
- **No crosswalk refuge area**
- **No grass median**
- **Left-turn lane restrictions during peak periods**
- **Skewed 16th Street crosswalk remains**

ALTERNATIVE 3: MASTER PLAN

- **Four travel lanes southbound to improve traffic flow in the southbound direction**
- **Wider sidewalks for ADA compliance and improved pedestrian movement and comfort**
- **Raised landscaped median for traffic calming and aesthetic enhancement**
- **Median refuge area at crosswalks for pedestrian safety**
- **Shopping center entrance shifted to align with Flora Lane, creating four-way intersection**
- **Possible signal added at Flora Lane to improve access**
- **Columbia Boulevard closed at Seminary Road intersection**
- **Highest number of displacements**
- **Closed Corwin Drive access to create additional parking**
- **No wide outside lane; on-road bicycles must share lane with vehicular traffic**
- **Left turns allowed during peak periods**

ALTERNATIVE 4: THREE LANES NORTHBOUND AND SOUTHBOUND

- **Reduced vehicular capacity**
- **Added grass buffer to separate travel lanes from pedestrian sidewalks**
- **Wider sidewalks for ADA compliance and improved pedestrian movement and comfort**
- **16-foot-wide outside lane for improved bicycle accessibility**
- **Raised landscaped median for traffic calming and aesthetic enhancement**
- **Median refuge area at crosswalks for pedestrian safety**
- **Shopping center entrance shifted to align with Flora Lane and form a four-way intersection**
- **Closure of 16th Street skewed right turn. Combine all 16th Street traffic at signal**
- **Columbia Boulevard closed at intersection with Seminary Road**
- **Fewer displacements than Master Plan Alternative**
- **Left turns allowed during peak periods**

ALTERNATIVE 5: THREE LANES NORTHBOUND FOUR LANES SOUTHBOUND

- **Four travel lanes southbound to improve traffic flow in the southbound direction**
- **Added grass buffer to separate travel lanes from pedestrian sidewalks**
- **Wider sidewalks for ADA compliance and improved pedestrian movement and comfort**
- **16-foot-wide outside lane for improved bicycle accessibility**
- **Raised landscaped median for traffic calming and aesthetic enhancement**
- **Median refuge area at crosswalks for pedestrian safety**
- **Closure of 16th Street skewed right turn. Combine all 16th Street traffic at signal**
- **Columbia Boulevard closed at intersection with Seminary Road**
- **Increased displacements due to added travel lane**
- **Left turns allowed during peak periods**

ALTERNATIVE 5, OPTION B: SEMINARY PLACE CLOSURE WITH FLORA LANE SIGNAL OPTION

- **Shopping center entrance shifted to align with Flora Lane, creating a four-way intersection**
- **Removes existing signal at Seminary Place and relocates the signal at Flora Lane to increase distance between two signalized intersections**
- **Converts Seminary Place access with MD 97 to right-in/right-out**
- **Left-turning movements shift to Seminary Road, which may result in longer traffic queues and delays on Seminary Road**
- **Roadway access modifications could impact Montgomery County's Seminary Road/Seminary Place Project**

ALTERNATIVE 6: BUS RAPID TRANSIT (BRT)

- **Wider sidewalks for ADA compliance and improved pedestrian movement and comfort**
- **16-foot-wide outside lane for improved bicycle accessibility**
- **No grass buffer area between sidewalk and travel lanes**
- **Closure of 16th Street skewed right turn. Combine all 16th Street traffic at signal**
- **Two added travel lanes and added area for transit station platforms may increase the number of displacements**
- **BRT could reduce overall number of vehicles within the corridor**
- **Center bus lanes would make left-turn movements difficult in this area**
- **Crosswalk refuge areas at transit station locations only**

ALTERNATIVE 7: GEORGIA AVENUE TUNNEL

- Provides increased roadway capacity within this segment
- Added grass buffer to separate travel lanes from pedestrian sidewalks
- Wider sidewalks for ADA compliance and improved pedestrian movement and comfort
- Raised landscaped median for traffic calming and aesthetic enhancement
- Median refuge area at crosswalks for pedestrian safety
- Fewer vehicles using the surface-level roadways through the Montgomery Hills community
- 16-foot-wide outside lane for improved bicycle accessibility on the surface level
- Left turns (on surface streets) allowed during peak periods
- Since the tunnel begins south of I- 495 and ends just beyond the 16th Street traffic signal, it will only accommodate vehicles coming from MD 97 southbound or I-495 westbound that intend to stay on Georgia Avenue. All other traffic will remain on the surface level
- Unique long-term drainage requirements
- Possible bottlenecks at northern tunnel's ingress/egress points due to narrow roadway footprint and piers located beneath the beltway bridge
- A decrease in pass-through traffic on the surface level may impact businesses that rely on impulse shoppers
- The close proximity of the tunnel to adjacent buildings and foundations could cause vibration
- Maintenance of traffic during construction will be significantly more difficult than for the other build alternatives
- Initial construction costs and long-term maintenance will be significantly higher than for the other build alternatives
- Longer construction period: two to three years for utility relocations and three to four years for actual construction
- Long-term ventilation, lighting, and electrical costs will be unique tunnel considerations
- Utility impacts will be higher than those of the other build alternatives
- A specific maintenance building may be required near the tunnel for prompt response to emergencies

ENVIRONMENTAL CONSIDERATIONS

- **Numerous businesses along MD 97**
- **Residential neighborhoods**
- **Environmental Justice populations**
- **Community facilities:**
 - Churches / cemeteries
 - Montgomery Hills Park
 - Public parking lots
 - Forest Glen Metro Station
 - Silver Spring Volunteer Fire Department
- **National Register of Historic Places eligible properties:**
 - Grace Episcopal Cemetery & Confederate Monument
 - Calvary Evangelical Lutheran Church
- **Minimal natural environmental features**
- **Potential hazardous materials sites**
 - gas stations
 - dry cleaners



SUMMARY OF IMPACTS

Resource Category		Alternative 1 No - Build 3 Lanes NB, 3 Lanes SB, center reversible lane	Alternative 2 TSM/TDM 3 Lanes NB, 3 Lanes SB, center reversible lane	Alternative 3: Master Plan 3 to 4 lanes NB, 4 lanes SB, center median	Alternative 4: 3 lanes NB and SB, center median	Alternative 5: 3 lanes NB, 4 lanes SB, center median	Alternative 6: BRT 3 lanes NB, 3 lanes SB, 2 center bus lanes	Alternative 7: Georgia Ave Tunnel 6 surface lanes (3 NB, 3 SB), 4 tunnel lanes (2 NB, 2 SB)
Potential Displacements (Number)								
Residential	Alternative	0	0	0	0	0	0	0
	Option	N/A	N/A	N/A	0	0	N/A	N/A
Commercial	Alternative	0	2 - 13	10 - 27	4 - 18	6 - 26	8 - 24	4 - 26
	Option	N/A	N/A	N/A	0	0	N/A	N/A
Total		0	2 - 13	10 - 27	4 - 18	6 - 26	8 - 24	4 - 26
Properties Impacted (Number)								
Residential	Alternative	0	0	0	0	0	0	0
	Option	N/A	N/A	N/A	0	0	N/A	N/A
Commercial	Alternative	0	32	40	38	39	38	40
	Option	N/A	N/A	N/A	0	0	N/A	N/A
Total		0	32	40	38	39	38	40
Right-of-Way Required (Acres)								
Alternative		0	1.12 - 3.10	4.76 - 6.64	2.18 - 5.78	3.07 - 7.23	3.03 - 4.85	2.36 - 6.88
Option		N/A	N/A	N/A	0.16	0.11	N/A	N/A
Total		0	1.12-3.10	5.21-7.26	2.34 - 5.94	3.18 - 7.34	3.03 - 4.85	2.39 - 7.20
Woodland (Acres)								
Alternative		0	0.08	0.08	0.80	0.80	0.80	0.80
Option		N/A	N/A	N/A	0.00	0.00	N/A	N/A
Total		0	0.08	0.08	0.80	0.80	0.80	0.80
Estimated Cost (Millions)*		0\$	\$30-\$40	\$75-\$85	\$55-\$65	\$70-\$80	\$60-\$70	\$180-\$200

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Transportation Demand Management
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NB - Northbound
SB - Southbound

Note: The following resources will not be impacted by the MD 97 Montgomery Hills Project Planning Study:
Streams, Wetlands, Floodplains, Chesapeake and Atlantic Coastal Bay Critical Areas
*Ranges for cost estimates for the roadway include, but are not limited to: preliminary engineering, right-of-way acquisition, roadway construction, utility, and maintenance of traffic. Tunnel cost estimate includes fire, ventilation, long-term drainage systems, retaining walls at the entrance of the tunnel, etc. in addition to cost estimates for the roadway.

ENVIRONMENTAL SITE DESIGN

- **Environmental Site Design (ESD)**
 - **Strives to recreate pre-development conditions**
 - **Uses several smaller facilities instead of a few large ones**
 - **More project-area oriented**

- **Impacts in MD 97 Project Area**
 - **May require partial acquisition of several properties**
 - **May require treatment facilities to be located underground to minimize environmental impacts**
 - **Final acreage will be determined during design**

RELATED TRANSPORTATION PROJECTS

- **Forest Glen Passageway Feasibility Study (Montgomery County)**
- **Seminary Road/Second Avenue Study (Montgomery County)**
- **Bus Rapid Transit Feasibility Study (Montgomery County)**



MARYLAND

97

PROJECT SCHEDULE

Location/Design Public Hearing – **Winter 2014/2015**

Project Planning Complete – **Winter 2015/2016**



STAY CONNECTED

For information and updates about the MD 97 – Montgomery Hills Project Planning Study, please visit www.roads.maryland.gov under Projects and Studies, SHA Projects Page, Montgomery County.



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