MCPB
Item # 2
December 6, 2010

MEMORANDUM

DATE: December 1, 2010

TO: Montgomery County Planning Board

VIA: Dan Hardy, Chief DKH
Move/Transportation Planning Division

Nkosi Yearwood, Senior Planner NY
Vision/Community Based Planning Division

FROM: David Anspacher, Senior Planner (301-495-2191) DA
Move/Transportation Planning Division

DISCUSSION: MD 355/Rockville Pike Crossing Study

COMMUNITY-BASED PLANNING TEAM AREA: South Central Transit Corridor

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RECOMMENDATIONS: We recommend that the Board adopt the following comments for transmittal to the Montgomery County Department of Transportation (MCDOT):

1. We support the selection of Alternative 2B as the Locally Preferred Alternative for the MD 355/Rockville Pike Crossing Study among the four presented for consideration.

2. Alternative 2B includes both deep elevator and shallow pedestrian tunnel elements. It appears that the deep elevator is the more effective of the two elements at reducing pedestrian travel times and at enhancing Metrorail evacuation, while reducing nearly as many pedestrian conflicts.

EXECUTIVE SUMMARY

The MD 355/Rockville Pike Crossing Study has evaluated alternative means to improve connections across Rockville Pike in the vicinity of the Medical Center Metrorail Station. The study is being conducted by the Montgomery County Department of Transportation following the environmental document procedures of the National Environmental Policy Act (NEPA).

Alternative 2B would construct a shallow pedestrian tunnel beneath Rockville Pike and deep elevators on the east side of Rockville Pike connecting the Medical Center Metrorail Station mezzanine to street level, complementing the existing metro elevators on the west side of Rockville Pike. Metrorail users would benefit from direct access between the Metrorail station mezzanine and South Wood Road without crossing Rockville Pike at grade. Bus patrons, pedestrians, and bicyclists would benefit by having the ability to travel between the National Institutes of Health (NIH) and National Naval Medical Center (NNMC) without crossing Rockville Pike at grade. Drivers would benefit by the relocation of some pedestrian and bicyclist movements from the surface to below the grade of the road.

On November 23, 2010, Alternative 2B was identified as the preferred alternative by a consensus among local, state, and federal stakeholder agency representatives.

As complete funding has not been identified for any of the alternatives, it may be necessary to divide Alternative 2B into phases. If this becomes necessary, it will be important to understand the relative benefits of the deep elevator and the shallow pedestrian tunnel. Staff finds that while both elements are valuable, the benefits of Alternative 2B are more closely associated with the deep elevator than with the shallow tunnel.

PREVIOUS BOARD ACTIONS:
Staff presented the four alternatives for the MD 355 / Rockville Pike Crossing Study now under consideration to the Planning Board at the BRAC roundtable discussion on September 16, 2010.

RELATED PROJECTS:
This is one of several transportation projects proposed in response to the Base Realignment and Closure (BRAC) move of Walter Reed Army Medical Center to the National Naval Medical Center. The Maryland State Highway Administration (SHA) has proposed improvements projects at four intersections. The Montgomery County Department of Transportation (MCDOT) has proposed two shared-use paths and is evaluating access improvements to the Chevy Chase Valley neighborhood. Additional information on the full complement of BRAC transportation projects and related planning and policy guidance is available at the Department's BRAC website:

http://www.montgomeryplanning.org/transportation/brac/index.shtm

MCDOT is also conducting a Countywide Bus Rapid Transit (BRT) study that is considering the feasibility and desirability of BRT services along approximately two dozen arterial roadways in the County, including Rockville Pike. This study is expected to be completed in spring 2011.

SITE DESCRIPTION:
This project is located at the signalized intersection of MD 355/Rockville Pike and South Drive/South Wood Road. NIH is located on the west side of MD 355/Rockville Pike and the NNMC is located on the east side of Rockville Pike/MD 355. The Medical Center Metrorail Station access point, a kiss-and-ride lot, and a bus station with six bus bays are all located on the NIH side of the intersection. The bus station serves Metrobus, RideOn, and NIH and NNMC shuttle buses. Pedestrians traveling to NNMC cross the intersection at grade.

STUDY DESCRIPTION:
The MD 355 / Rockville Pike Crossing Study is being conducted by MCDOT to mitigate impacts of the BRAC relocation to NNMC in the immediate vicinity of the MD355/South Drive/South Wood Road intersection. Currently, there are about 2,500 pedestrian and bicycle crossings of MD 355/Rockville Pike at South Dr/South Wood Rd every weekday. In 2030 this is expected to climb to approximately 7,500 pedestrian and bicycle crossings per day, with the increase due largely to the scheduled BRAC move to the NNMC campus as well as increased transit usage by current employees and visitors per the NNMC transportation master plan.

The purpose of the study is to enhance the ability of travelers – pedestrians, bicyclists, and motorists and transit users – to cross between the east and the west side of Rockville Pike. The study Purpose and Need is to:

- Enhance/improve access to mass transit facilities
- Improve the mobility and safety of pedestrians and bicyclists crossing MD 355/Rockville Pike
- Improve traffic operations at the existing intersection of South Wood Road/South Drive/MD 355

The four Alternatives Retailed for Detailed Study (ARDS) are described below and are shown as Attachments 1 through 7 to this memorandum. More information is available on our website in the link to the "Alternatives Retailed for Detailed Study" report and presentation located at: http://www.montgomeryplanning.org/transportation/brac/brac7.shtm

- Alternative 1: No Build
  Minor improvements to enhance access, safety, and traffic operations. Serves as the baseline from which the other alternatives are evaluated. See Attachment 1.

- Alternative 2A: Pedestrian/Bicycle Underpass and Transportation System Management (TSM) / Transportation Demand Management (TDM) Improvements
  Alternative 2A provides a shallow pedestrian tunnel beneath Rockville Pike, permitting pedestrians and bicyclists to travel between the NIH and Medical Center sides of Rockville Pike without crossing at the intersection. This would reduce conflicts between pedestrians/bicyclists and vehicles, while potentially improving traffic operations. The TSM improvements would lengthen the southbound left turn lane on Rockville Pike to provide additional storage for vehicles entering NNMC. See Attachments 2 and 3.

- Alternative 2B: Pedestrian/Bicycle Underpass, TSM/TDM Improvements, and Deep Elevators
  Alternative 2B combines the shallow tunnel and lengthened southbound left turn lane in Alternative 2A with deep elevators on the NNMC east side of Rockville Pike from the Metrorail Station mezzanine to ground level, complementing the existing Metro elevators on the NIH west side. Metrorail users traveling to and from the NNMC side of Rockville Pike would no longer have to cross Rockville Pike. See Attachments 4 and 5.

- Alternative 3: Grade Separation of MD 355 Under South Wood Road / South Drive
  Alternative 3 submerges Rockville Pike beneath the South Dr / South Wood Rd intersection. Pedestrians, bicyclists, and vehicles would be able to cross Rockville Pike on a bridge at ground level. A new signalized intersection would be located on Rockville Pike about 400 feet north of the existing intersection to accommodate vehicles entering and exiting the two campuses. A new jughandle road would extend to a second signalized intersection at South Drive, on the NIH campus just east of the security gate. This alternative includes a reconfigured kiss-and-ride lot. See Attachments 6 and 7.

In September 2010, just after the Board's roundtable discussion, MCDOT released a report titled "MD355/Rockville Pike Crossing Study: Results of Additional Analysis of the Alternatives Retained for Detailed Study" that analyzed the ARDS based on 12 metrics. A presentation summarizing the results of the study is located on our BRAC website at: http://www.montgomeryplanning.org/transportation/brac/brac7.shtm. This presentation is the basis for our recommendations.

FINDINGS AND STAFF ANALYSIS:

Master Plan Consistency

The 1990 Bethesda-Chevy Chase Master Plan does not provide specific recommendations for improving the Rockville Pike South Drive/South Wood Road intersection or a new Metrorail station entrance. However, the Master Plan emphasizes the importance of transit, rather than roadways to meet the needs of the Plan area. The Plan recommends that additional transportation service in Bethesda-Chevy Chase "should be based primarily on an expanded and vigorous program of transit and other mobility services. Use of these services is necessary because of the difficulty of expanding the capacity of many B-CC highways and due to the need to accommodate increased through traffic and the recommended level of development in B-CC." (p. 97).

The proposed new Medical Center Metrorail Station entrance on the Navy property supports the Plan's recommendations. The Master Plan notes that the Navy property's "critical location necessitates the development and implementation of such alleviation measures as the use of carpools, vanpools, employee-owned buses, and public transportation" (p.93). It further notes that "any future expansion of jobs or parking at Federal facilities be considered only in conjunction with an effective ridesharing/transit incentive program…" (p.92). The new metrorail station entrance with elevators will further improve pedestrian access and safety to the Navy campus.

Alternative 2B would best further these Master Plan goals.

Comparison of Alternative Performance

Each of the three ARDS alternatives satisfies the Purpose and Need of the study and are an improvement over the No Build condition. The MCDOT study evaluated 12 metrics to compare alternative performance toward meeting the study Purpose and Need. Exhibit 1 provides our

staff evaluation of how each of the four ARDS supports the 12 metrics in the study. Seven of the 12 metrics provide are identified as providing a meaningful difference between the alternatives.

The deep elevator in Alternative 2B provides the most direct means for improving pedestrian access between NNMC and the Metrorail station. Due to the high volume of pedestrians traveling to and from NNMC via Metrorail, this Alternative 2B results in the best reduction in pedestrian travel times and removes most of the pedestrians from the existing at-grade crossing.

Exhibit 2 evaluates three additional metrics considered by staff in developing our recommendations:

- Promoting Transit Over Auto Use: Alternative 2B best promotes transit use over auto use
- Metrorail Evacuation: Alternative 2B is the only alternative that would improve evacuation time from the Metrorail station
- Future Widening of MD 355: Each of the build alternatives would require design refinements to accommodate a significant widening of MD 355, if, for instance, the Countywide BRT study recommended addition of continuous, exclusive bus lanes

Exhibit 1. Evaluation of Study Metrics

Metric	No Build	Alternative 2A	Alternative 2B	Alternative 3	Meaningful Difference
Reduction in Pedestrian Conflicts with Motorized Vehicles	○	◒	●	●	Yes
Reduction in Pedestrian/Bicycle Travel Times	○	○	●	◒	Yes
Improvement in Traffic Operations	○	○	○	○	
Compatibility with Existing Bus Operations	●	◒	◒	◒	
Compatibility with Adjacent Projects	●	◒	◒	◒	
Compatibility with NNMC Proposed Gate Operations	○	○	○	●	Yes
Minimize Environmental Resource Impacts	●	◒	◒	◒	
Minimize Historic Resource Impacts	●	◒	◒	○	Yes
Minimize Right-of-Way Impacts	●	◒	◒	○	Yes
Improve Emergency Vehicle Access	○	○	○	○	
Maintenance of Traffic Impacts During Construction	●	◒	◒	○	Yes
Affordability of Capital Cost	●	◒	◒	○	Yes

● = Most Supportive ◒ = Moderately Supportive ○ = Minimally Supportive

Exhibit 2. Evaluation of Other Considerations

Metric	No Build	Alternative 2A	Alternative 2B	Alternative 3	Meaningful Difference
Promoting Transit Over Auto Use	○	◓	●	◓	Yes
Metrorail Evacuation	○	○	●	○	Yes
Accommodating Future MD 355 Widening	●	◓	◓	○	Yes

● = Most Supportive ◓ = Moderately Supportive ○ = Minimally Supportive

The following paragraphs describe each of these metrics in greater detail.

Metric #1: Reduction in Pedestrian Conflicts with Motorized Vehicles

The Purpose and Need Statement provided a summary of crash data for January 1, 2003 to December 31, 2007 showing a total of 64 police-reported accidents at the intersection of MD 355 and South Drive/South Wood Road, including the approaches. Some key points highlighted include:

- Rear-end collisions were the most common type, followed by left turn collisions
- Six single vehicle-pedestrian related collisions were reported
- 25 percent of the accidents resulted in injury, with six of those resulting in serious injury. There were no fatalities reported.

One of the objectives of the Purpose and Need statement is to "improve the mobility and safety of pedestrians and bicyclists crossing MD 355/Rockville Pike." This metric addresses safety by evaluating how well each alternative reduces the potential for collisions between pedestrians/bicyclists and motorized vehicles.

Potential conflicts occur when motorists are legally allowed to make a left or right turn on a green signal into the path of pedestrians and bicyclists who have the legal right-of-way to cross the road on a WALK signal. This metric identifies the number of times in a typical weekday that a pedestrian or bicyclist is exposed to turning vehicles as they cross the road at eight locations in the study area as shown as crossings A through H in Attachments 8 and 9.

Overall, the study estimates that in 2030 Alternative 3 would have slightly fewer potential conflicts than Alternative 2B, though the difference is minor. Both alternatives are an improvement over the existing condition, and have nearly 2,000 fewer crossings than Alternative 2A.

While improving safety of all crossings is important, the Purpose and Need Statement singles out the Rockville Pike/MD 355 crossing. The study estimates that Alternatives 2A and 2B would eliminate 68% and 93% of pedestrians/bicyclists crossing Rockville Pike, respectively. Alternative 3 is the only alternative that eliminates 100% of conflicts for pedestrians and bicyclists crossing Rockville Pike, because it submerges Rockville Pike beneath South Drive / South Wood Road. While all of the alternatives provide pedestrians and bicyclists with an option to avoid crossing Rockville Pike at grade, the study notes that if Alternatives 2A and 2B are constructed, some pedestrians and bicyclists will still choose to cross at grade[1].

Number of Pedestrians Experiencing Potential Conflicts With Vehicles

		2010	2030	2030	2030	2030
Location		**Existing**	**No Build**	**Alt 2A**	**Alt 2B**	**Alt 3**
A	Kiss & Ride	90	125	125	125	125
B	South Drive	1730	2395	2395	2395	2395
C	Bus Loop	1730	2395	2395	2395	2395
D	South Drive at MD 355	160	220	220	220	220
E	MD 355	2440	7530	2410	530	0
F	South Wood Rd at MD 355	460	640	640	640	640
G	Jughandle at South Dr	0	0	0	0	125
H	Jughandle at MD 355	0	0	0	0	220
Total		**6610**	**13305**	**8185**	**6305**	**6120**

There is only a minor difference between Alternative 2B and Alternative 3 in reducing the total number of conflicts between pedestrians/bicyclists and motor vehicles, and both alternatives are superior to Alternative 2A.

We concur with the study that Alternative 3 is slightly better at eliminating conflicts crossing MD 355 than Alternative 2B, but only because some pedestrians will choose to cross at-grade even if presented with a similarly direct alternative in a tunnel due to a variety of perceived safety and comfort considerations.

Metric #2: Reduction in Pedestrian Travel Times

This metric evaluates how well each alternative reduces the amount of time it takes the average pedestrian to cross Rockville Pike, considering the total walking time between the NNMC gate and either the Metrorail mezzanine or the NIH bus shelters.

The total walking time includes time spent walking, waiting at a traffic signal, or riding an escalator/elevator. It is related to two of the objectives in the Purpose and Need Statement:

- Enhance/improve access to mass transit facilities
- Improve the mobility and safety of pedestrians and bicyclists crossing MD 355/Rockville Pike

[1] Experience at the White Flint Metro station indicates that approximately 70% of pedestrians crossing Rockville Pike use the tunnel.

If no improvements are made at this intersection, the average time for pedestrians to cross Rockville Pike will be 3 minutes and 37 seconds in 2030. Using data provided in the study we estimated that Alternative 2B reduces the average pedestrian/bicycle travel time by nearly 60% (or two minutes) compared with the No Build condition. In contrast, Alternative 3 reduces travel time for the average pedestrian and bicyclist by 35% or just over one minute.

Travel Time and Travel Time Savings

Alternative	Travel Time (minutes:seconds)	Travel Time Savings
No Build	3:37	0%
Alternative 2A	3:14	12%
Alternative 2B	1:43	59%
Alternative 3	2:29	35%

Alternative 2B best addresses the Purpose and Need statement by saving the average pedestrian and bicyclist nearly two minutes compared with the No Build. The deep elevator from the east (NNMC) side of Rockville Pike to the Metrorail station mezzanine provides the greatest time-savings value, as indicated by the difference between Alternative 2A (with only the shallow tunnel) and Alternative 2B (with both the shallow tunnel and the deep elevator).

Metric #3: Improvement in Traffic Operations

A third objective of the Purpose and Need Statement is to "improve traffic operations at the existing intersection of South Wood Road/South Drive/MD 355." The study evaluates traffic operations for this intersection and also for the corridor between Jones Bridge Road and Cedar Lane in 2030, compared with the No Build condition. Both level of service and seconds of delay per vehicle are reported for the intersection. The percent change in network delay is reported for the corridor.

Alternative 3 employs a new jughandle roadway to facilitate turns from MD 355 to the new access roadway over a depressed MD 355, replacing the existing South Wood Road/South Drive/MD 355 intersection with two new signalized intersections:

- A MD 355 signal with the jughandle roadway relocated several hundred feet to the north from the existing signal, and
- A signal between the jughandle roadway and South Drive opposite the entrance to the metrorail station bus bays

Alternative 3 shows the biggest improvement in delay at the MD 355 intersection compared with the No Build condition. In the AM peak hour, LOS is expected to improve from LOS D to LOS C with an average reduction in delay per vehicle of 17 seconds compared with the No Build condition. In the PM peak hour, LOS is expected to improve from LOS F to LOS C, with an average reduction in delay per vehicle of 112 seconds compared with the No Build condition. However, in a congested network, apparent improvements at one location can be offset by additional delays at other locations. The overall network delay for Alternative 3 increases by 11% in the AM peak hour and 10% in the PM peak hour compared with the No Build condition.

Alternative 2A and Alternative 2B would experience delay that is similar to the No Build condition. They experience essentially the same amount of delay at the Rockville Pike/South Dr intersection, and a 1% increase in network delay. Therefore, while Alternative 3 provides substantial improvements in intersection delay compared with Alternatives 2A and 2B, especially during the PM peak hour, the overall increase in network delay for Alternative 2A and Alternative 2B is better than Alternative 3.

AM Peak Hour Delay

Metric	Existing (2010)	No Build (2030)	Alt 2A (2030)	Alt 2B (2030)	Alt 3 (2030)	
					MD 355	South Dr
Level of Service	C	D	D	D	C	B
Delay (sec/vehicle)	31	37	36	36	20	16
Network Delay (% increase)	--	--	2%	2%	11%	

PM Peak Hour Delay

Metric	Existing (2010)	No Build (2030)	Alt 2A (2030)	Alt 2B (2030)	Alt 3 (2030)	
					MD 355	South Dr
Level of Service	F	F	F	F	C	B
Delay (sec/vehicle)	122	137	137	137	25	17
Network Delay (% increase)	--	--	1%	1%	10%	

Because the Level of Service and Network Delay analyses favor different alternatives, the traffic operations metrics do not provide a meaningful difference among alternatives.

Metric #4: Compatibility with Existing Bus Operations

An objective of the Purpose and Need Statement is to "enhance/improve access to mass transit facilities." This metric measures how well each alternative addresses the objective by estimating the travel times impacts to bus routes during the AM peak hour and PM peak for buses traveling in four directions:

1. Buses traveling on Rockville Pike in the northbound direction from Jones Bridge Road to the Medical Center Metrorail Station.
2. Buses traveling on Rockville Pike in the southbound direction from Wilson Drive to the Medical Center Metrorail Station.
3. Buses traveling eastbound from the "bus loop" located at NIH on South Drive to the Medical Center gate.
4. Buses traveling westbound from the Medical Center gate to the "bus loop" located at NIH on South Drive.

WMATA and RideOn operate eight bus routes that travel in a north-south direction on Rockville Pike and stop at the "bus loop" located on South Drive at NIH. NNMC operates a high-frequency shuttle route that travels in an east-west direction between NNMC and the "bus loop" at NIH.

In the northbound, southbound, and westbound directions the study indicates that during the AM peak hour, travel times are an improvement over the No Build. In the eastbound direction, travel time improves 30 seconds for Alternative 2A and 2B and nearly two minutes for Alternative 3 compared with the No Build condition.

Bus Route Travel Times in AM Peak Hour (seconds)

Direction	Bus Route	No Build	Alt 2A	Alt 2B	Alt 3
Northbound	Rockville Pike from Jones Bridge Rd to Metro Station	97	83	83	82
Southbound	Rockville Pike from Wilson Dr to Metro Station	57	60	60	51
Eastbound	NIH Bus Loop to NNMC Gate	133	99	99	26
Westbound	NNMC Gate to NIH Bus Loop	87	69	69	55

The study indicates that changes in bus travel times during the PM peak hour are minimal except:

- In the northbound direction Alternative 2 increases by 40 seconds
- In the eastbound direction Alternative 3 drops from extreme congestion to 25 seconds

Bus Route Travel Times in PM Peak Hour (seconds)

Direction	Bus Route	No Build	Alt 2A	Alt 2B	Alt 3
Northbound	Rockville Pike from Jones Bridge Rd to Metro Station	94	93	93	136
Southbound	Rockville Pike from Wilson Dr to Metro Station	56	65	65	56
Eastbound	NIH Bus Loop to NNMC Gate	>300	>300	>300	25
Westbound	NNMC Gate to NIH Bus Loop	>300	>300	>300	>300

Note: Travel times above 300 seconds represent extreme congestion

The quantitative data presented above for the travel runs in Alternative 3 may appear to be, on balance, the lowest. However, Alternative 3 presents another challenge for transit riders. Currently, not all buses on Rockville Pike turn into the Metrorail station bus bays to pick up passengers. Bus shelters along MD 355 allow riders ready access from the Metrorail station portal to the J7 route at curbside. Under Alternative 3, these shelters would need to be removed because MD 355 would be depressed. Those bus routes would need to be rerouted into the bus bays in order to provide Metrorail station connectivity, adding travel times not explicitly analyzed in the study. Therefore, we note that there are advantages and disadvantages for each alternative and that none of the alternatives is clearly superior based on the analysis.

Metric #5: Compatibility with Adjacent Projects

The study identifies three projects that will be impacted by the construction of Alternatives 2A, 2B, or 3. These projects are: 1) intersection improvements at Rockville Pike / Cedar Lane, 2) intersection improvements at Rockville Pike / Jones Bridge Road, and 3) pedestrian facilities on the east side of Rockville Pike. We believe that continuing coordination with these projects will

ensure compatibility during the design process and that this metric does not provide a meaningful difference among alternatives.

Metric #6: Compatibility with NNMC Proposed Gate Operations

Currently, the NNMC security gate is located about 285 feet from the MD 355/South Wood Road intersection. There is a single lane approach to the guard house. Vehicle storage is currently insufficient as traffic sometimes backs up into the intersection and southbound left turning traffic entering NNMC sometimes backs up into the southbound MD 355 through lanes.

Independent of this study, NNMC plans to move the security gate slightly westward to about 125 feet from the MD 355/South Wood Road intersection. This will be somewhat offset by adding two additional approach lanes to the guard house during the AM peak period. However, backups into the intersection and into the southbound through lanes are likely to be exacerbated under the No-Build alternative.

Alternative 2A and 2B would result in similar backups as the No Build alternative. Alternative 3 would eliminate backups into the intersection and on southbound MD 355 because vehicles entering NNMC would use the new jughandle road.

The table below indicates the percent of storage that is required to eliminate backups for all traffic entering NNMC and for southbound left turns entering NNMC during the AM peak period.

Percent of Require Storage Provided (AM Peak Period)

		Security Gate Distance	% of Require Storage Provided	
Scenario	**Year**	**from Intersection**	**All Traffic to NNMC**	**SB Lefts to NNMC**
Existing	2010	285 ft	32	45
	2010	125 ft	26	36
No-Build	2030	125 ft	25	34
Alternative 2A	2030	125 ft	25	34
Alternative 2B	2030	125 ft	25	34
Alternative 3	2030	125 ft	100	n/a

Alternative 3 best addresses this metric by preventing backups from the NNMC security gate from affecting traffic operations along MD 355.

Metric #7: Minimize Environmental Resource Impacts

The study evaluated several environmental impacts, including impacts to wetlands, streams, floodplains, parks, and trees. Alternatives 2A and 2B would remove 17 trees with a diameter at breast height (DBH) of 24 inches or greater, whereas Alternative 3 would remove 27 trees. There are no impacts to wetlands, streams, floodplains, or parks. The evaluation of environmental impacts does not provide a meaningful difference among the build alternatives.

Impacts to Environmental Resources

Natural Impacts	No Build	Alt 2A	Alt 2B	Alt 3
Wetlands (acres)	0	0	0	0
Streams (LF)	0	0	0	0
Floodplains (acres)	0	0	0	0
Parks (acres)	0	0	0	0
Trees - DBH 24"+	0	17	17	27

Metric #8: Minimize Historic Resource Impacts

There are two historic properties listed on the Master Plan for Historic Preservation, #35/9, Peter Estate on the west side and #35/8, Bethesda Naval Hospital on the east side of Rockville Pike. Alternatives 2A and 2B would have 0.8 acres of impacts and Alternative 3 would have 1.3 acres of impacts. The Maryland Historical Trust (MHT) provided comments on the study alternatives. Alternatives 2A and 2B could result in a No Adverse Effect determination if the NNMC gatehouse, and any Metrorail canopies, be designed in a manner that is sensitive to the historic properties. **Alternative 3 would impact the physical features that contribute to the property's setting and significant historic landscape, that the character defining elements of the NNMC Historic District would be obscured from travelers on MD 355, and that the alternative could cause an Adverse Effect that could not be avoided through sensitive design.**

Metric #9: Minimize Right-of-Way Impacts

Alternative 2A and 2B would impact a little more than one acre of private property, roughly split between NIH and NNMC. Alternative 3 would impact over four acres of private property, three-quarters of which is located on NIH property and is largely related to the construction of the jug handle road.

There is only a minor difference in the right-of-way impacts to Alternatives 2A and 2B; both have less right-of-way impacts than Alternative 3.

Right-of-Way Impacts (acres)

Institution	Alt 2A	Alt 2B	Alt 3
NIH	0.60	0.60	3.14
NNMC	0.52	0.53	1.23
Total	1.12	1.13	4.37

Metric #10: Improve Emergency Vehicle Access

This metric evaluates the travel time impact for emergency vehicles entering NIH and NNMC. There are no changes in travel time between the No Build condition and Alternative 2A and 2B. Travel times for emergency vehicles increase between 8 and 33 seconds to NNMC. Travel time increases slightly to NIH in the northbound direction but decreases slightly to NIH in the

southbound direction. The travel time for emergency vehicles between NNMC and NIH improves slightly.

Emergency Vehicle Travel Time <u>Improvement</u> Compared with the No Build (seconds)

Direction	Alt 2A	Alt 2B	Alt 3
Southbound on Rockville Pike to NNMC	0	0	-8
Southbound on Rockville Pike to NIH	0	0	12
Northbound on Rockville Pike to NNMC	0	0	-33
Northbound on Rockville Pike to NIH	0	0	-11
Between NNMC and NIH	0	0	5

Note: A positive number indicates a shorter trip than the No Build; a negative number indicates a longer trip than the No Build.

Metric #11: Maintenance of Traffic Impacts during Construction

The study proposed a construction phasing and maintenance of traffic plan for each of the alternatives. All of the alternatives would have major maintenance of traffic impacts during construction and would require the construction of temporary roadways. However, any of the build alternatives would provide similar maintenance of traffic challenges.

Metric #12: Affordability of Cost Estimates

Costs associated with the three alternatives include purchase of NIH and NNMC property, maintenance of traffic, and construction costs. **Alternative 2A has the lowest cost estimate and Alternative 3 has the highest cost estimate.**

Comparison of Cost Estimates (millions)

Element		Alt 2A	Alt 2B	Alt 3
Design Cost		$4-$6	$8-$10	$8-$10
Right-of-Way Costs	NIH	$1-$4	$1-$4	$10-$20
	NNMC	$1-$4	$1-$4	$3-$7
	Total	$4-$8	$4-$8	$15-$25
Construction Costs		$16-$20	$38-$42	$36-$40
Total		**$25-$31**	**$48-$58**	**$58-$70**

<u>Other Considerations</u>

Promoting Transit over Auto Use

The Master Plan recommends that additional transportation service in Bethesda-Chevy Chase should be based primarily on an expanded and vigorous program of transit and other mobility services. **Alternative 2B best promotes transit use over auto use by: 1) substantially reducing pedestrian travel time to Metrorail, Metrobus, RideOn, and the NNMC Shuttle and 2) providing the opportunity for all pedestrians/bicyclists crossing Rockville Pike to**

avoid conflicts with vehicles. While Alternative 2A and Alternative 3 all reduce conflicts for pedestrians/bicyclists, they do not substantially improve travel time to transit.

Metrorail Evacuation

According to the Medical Center Station Access Improvement Study, the Medical Center Station does not comply with emergency evacuation standards established by the National Fire Protection Association (NFPA) Standard for Fixed Guideway Transit and Passenger Rail Systems 2007 (NFPA 130). These standards require clearing the platform in four minutes and reaching a point of safety in six minutes. Emergency evacuation of passengers is nearly three to four times longer than established in NFPA 130. **Alternative 2B is the only alternative that improves emergency evacuation from the Medical Center Station.**

Existing Emergency Evacuation Results from Medical Center Station

Measure	NFPA Standard	AM Peak	PM Peak
Time to clear platform (min.)	4.0	12.4	11.8
Time to point of safety (min.)	6.0	22.9	21.1

Source: Medical Center Station Access Improvement Study – Final Report, July 2009

Accommodating Future MD 355 Widening

Another consideration not identified in the study is the adaptability to a potential bus rapid transit (BRT) route on Rockville Pike that is currently under study as part of the MCDOT Countywide BRT Study. This study will make recommendations for priority treatments for BRT routes, including exclusive lanes. The results of this study are expected in early 2011. **We expect that any of the alternatives would need to be modified during the design process if they were to accommodate the addition of exclusive bus lanes on Rockville Pike, should this be a recommendation of the Countywide BRT study.**

We expect that it would be easier to accommodate the addition of exclusive bus lanes with Alternatives 2A and 2B. The tunnels in these alternatives would have to be made longer to accommodate the additional roadway width and the elevator in Alternative 2B would have to be set back an appropriate distance to accommodate the future roadway widening. Alternative 3 by contrast would have to include the roadway widening for BRT in the initial project to avoid very expensive wall, bridge, and road reconstruction in the future.

We note that the Bethesda-Chevy Chase Master Plan states that a possible long-term change, beyond the life of the 1990 Master Plan, would be the addition of a lane in each direction on MD 355 between north of Cedar Lane and Jones Bridge Road to reduce congestion and to accommodate HOV in peak periods (p. 114). While the widening described is not an affirmative master plan recommendation, we believe that the addition of lanes for Bus Rapid Transit on MD 355 would be consistent with this wording and as well the strong support for transit in the rest of the Master Plan.

Selection of Locally Preferred Alternatives for NEPA projects need to consider other relevant projects for which the design is reasonably certain, such as projects programmed in the Capital Improvements Program (CIP) or the Constrained Long Range Plan (CLRP). BRT is an important, but currently speculative, consideration on MD 355. **Therefore, selection of the Locally Preferred Alternative should not consider the relative impacts on a potential BRT on MD 355.** The Countywide BRT Study will need to be coordinated with the design of the project that results from this NEPA study.

AGENCY STAFF CONSENSUS REGARDING LOCALLY PREFERRED ALTERNATIVE

On November 23, 2010, MCDOT conducted a stakeholder meeting to obtain staff comments on a locally preferred alternative. All stakeholders present at the meeting accepted Alternative 2B as the consensus-preferred alternative, even though some stakeholders preferred elements of other alternatives.

- NIH staff identified Alternative 3 as their preference, as it is the only alternative to eliminate all conflicts between pedestrians and vehicles on Rockville Pike and because it provides a direct connection that would facilitate the transport of patients to and from NNMC during an emergency. However, they indicated that Alternative 2B would be acceptable and that it may be possible to transport patients through the pedestrian tunnel in an emergency with proper design.
- NNMC staff indicated that any of the three alternatives would be acceptable as long as a traffic signal could be installed at the intersection of Rockville Pike and North Wood Road and operated during the PM peak period. A traffic signal at this location is not part of this study but is being investigated by SHA as part of the Cedar Lane intersection design.
- SHA staff indicated that either Alternative 2A or 2B would be acceptable. They noted that consideration of a deep elevator-only alternative is important because the shallow pedestrian tunnel common to Alternatives 2A and 2B would have a greater impact on maintenance of traffic during construction, and would provide only marginal improvements, compared to the deep elevator.
- WMATA staff indicated that either Alternative 2A or 2B would be acceptable. They were less inclined to support Alternative 3 because it would require relocating bus stops on Rockville Pike further away from NIH and NNMC and it would increase the travel time for buses.

Both Federal Highway Administration (FHWA) staff and Department of Defense representatives of the Defense Access Roadways (DAR) program participated in the November 23 meeting. Both FHWA and DAR representatives noted the study's consistency with the NEPA process which would facilitate their concurrence with the Locally Preferred Alternative identified by the local agencies.

FUNDING

Complete funding has not been identified for any of the proposed alternatives. Both the House and Senate versions of the FY2011 Defense Appropriations bill include $20 million in Defense Access Road funding which would go towards the MD 355 Crossing Study in Bethesda, but this is not enough for the least expensive build alternative. The House version of the bill also includes additional federal funding for the transportation response to BRAC in Bethesda and at Fort Belvoir, which would include up to $40M in additional funding for this project in Tier 2 (for a total of $60M), but the additional funding is not in the Senate version of the bill. The differences would have to be resolved in conference. If $60M is made available for this project, it would be sufficient to construct Alternative 2A or 2B. It is also at the low end of the range of costs shown for Alternative 3.

As complete funding has not been identified for any of the alternatives, it may be necessary to divide Alternative 2B into phases. If this becomes necessary, it will be important to understand the relative benefits of the deep elevator and the shallow tunnel as summarized in this staff report.

PUBLIC OUTREACH

On July 20, 2010, MCDOT staff and their consultants conducted a public open house to discuss the MD 355/Rockville Pike Crossing Study. They prepared a number of poster boards discussing the purpose and need of the project, the process, the alternatives under consideration, and the schedule. Comment cards were provided at the public meeting and written comments were accepted through August 3, 2010. Below is a summary of the 28 written comments that were received:

- A mix of support for Alternatives 2B and 3
- Include a dedicated northbound right turn lane (or lanes) to MD 355 for vehicles traveling to NNMC
- Locate bus stops to maximize pedestrian access to the crossing
- Use NNMC gate diversions to control the traffic flowing
- Improve connections between Suburban Hospital, NIH and NNMC
- Provide additional bikeways on the east side of Rockville Pike
- Increase parking area at the Metrorail Station

Our BRAC website is located at:
http://www.montgomeryplanning.org/transportation/brac/index.shtm

Legend

- Metro Station
- Existing Signal
- Bus Stop

ATTACHMENT 1

100' 0 100' 200'

Scale:1"= 200'

DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED

N W E S

Montgomery County
Department of Transportation

MD 355 (Rockville Pike) Crossing Study
Alternative 1 No-Build

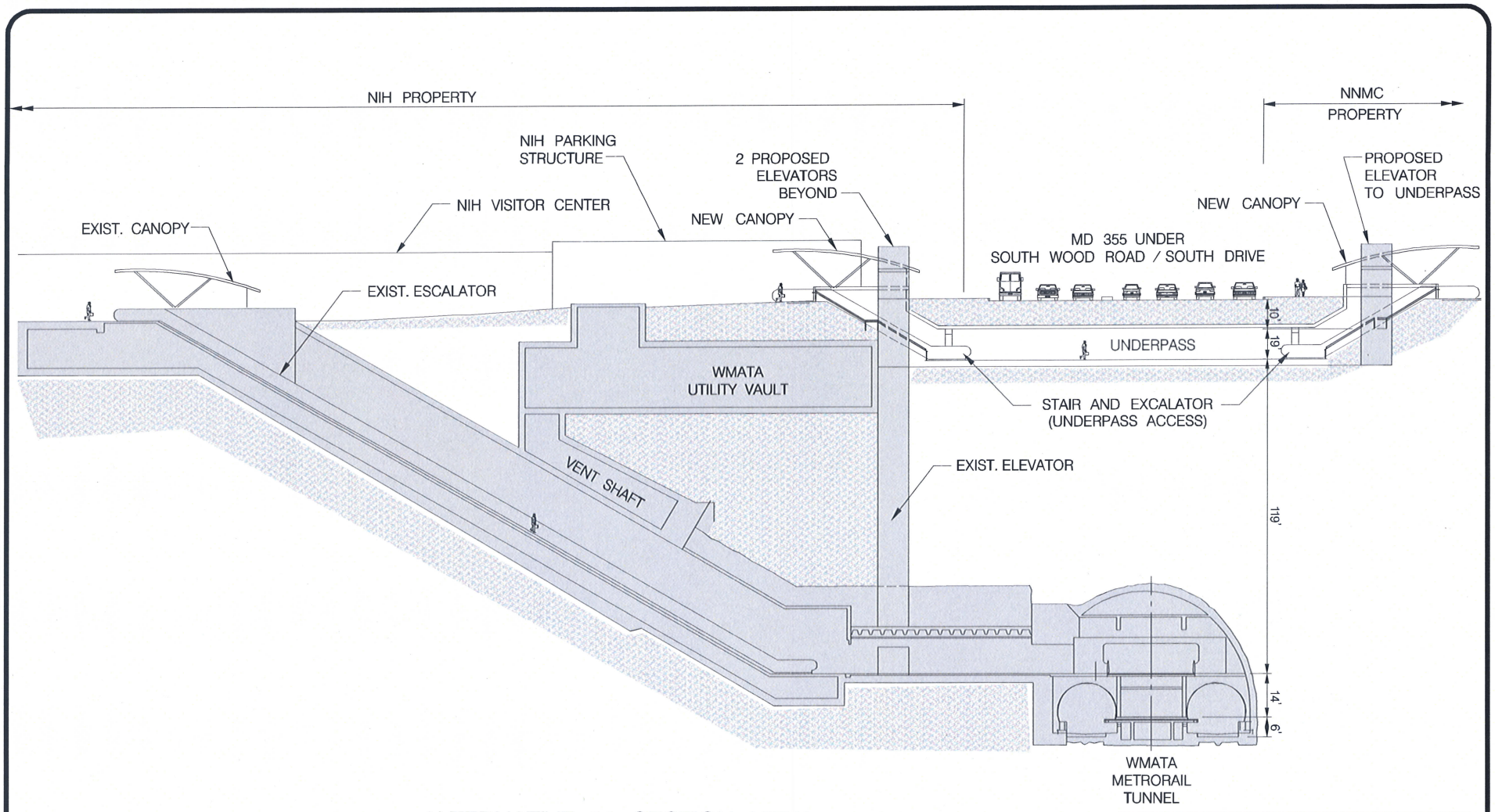
Date
September 2010

URS

Figure No.
2

ATTACHMENT 2

ATTACHMENT 3



ALTERNATIVE 2A SECTION VIEW
(LOOKING NORTH TO WILSON LANE)

SCALE: 1" = 30'

15 0 15 30
SCALE IN FEET

Montgomery County
Department of Transportation

MD 355 (Rockville Pike) Crossing Study
Alternative 2A Section View

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September 2010

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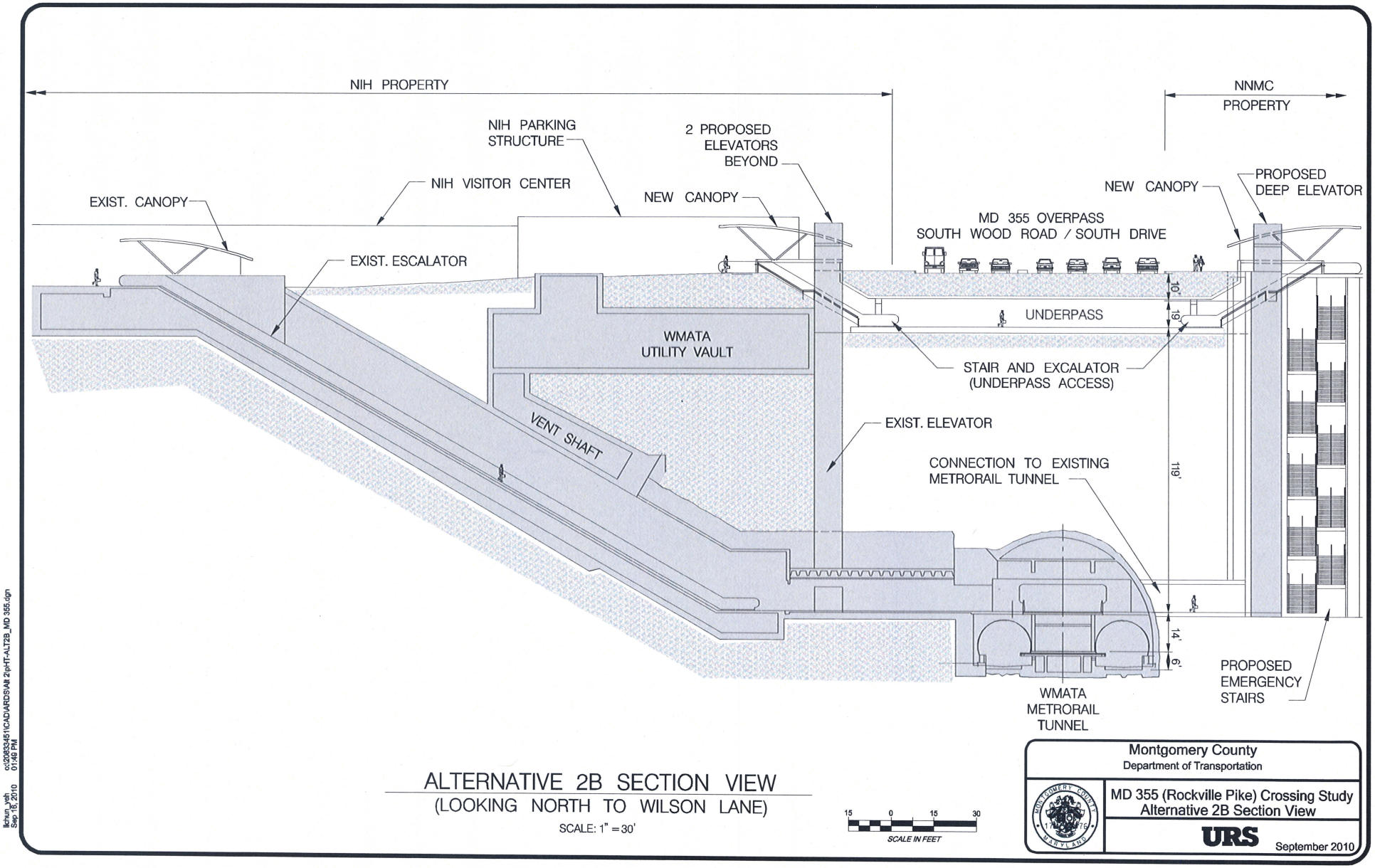
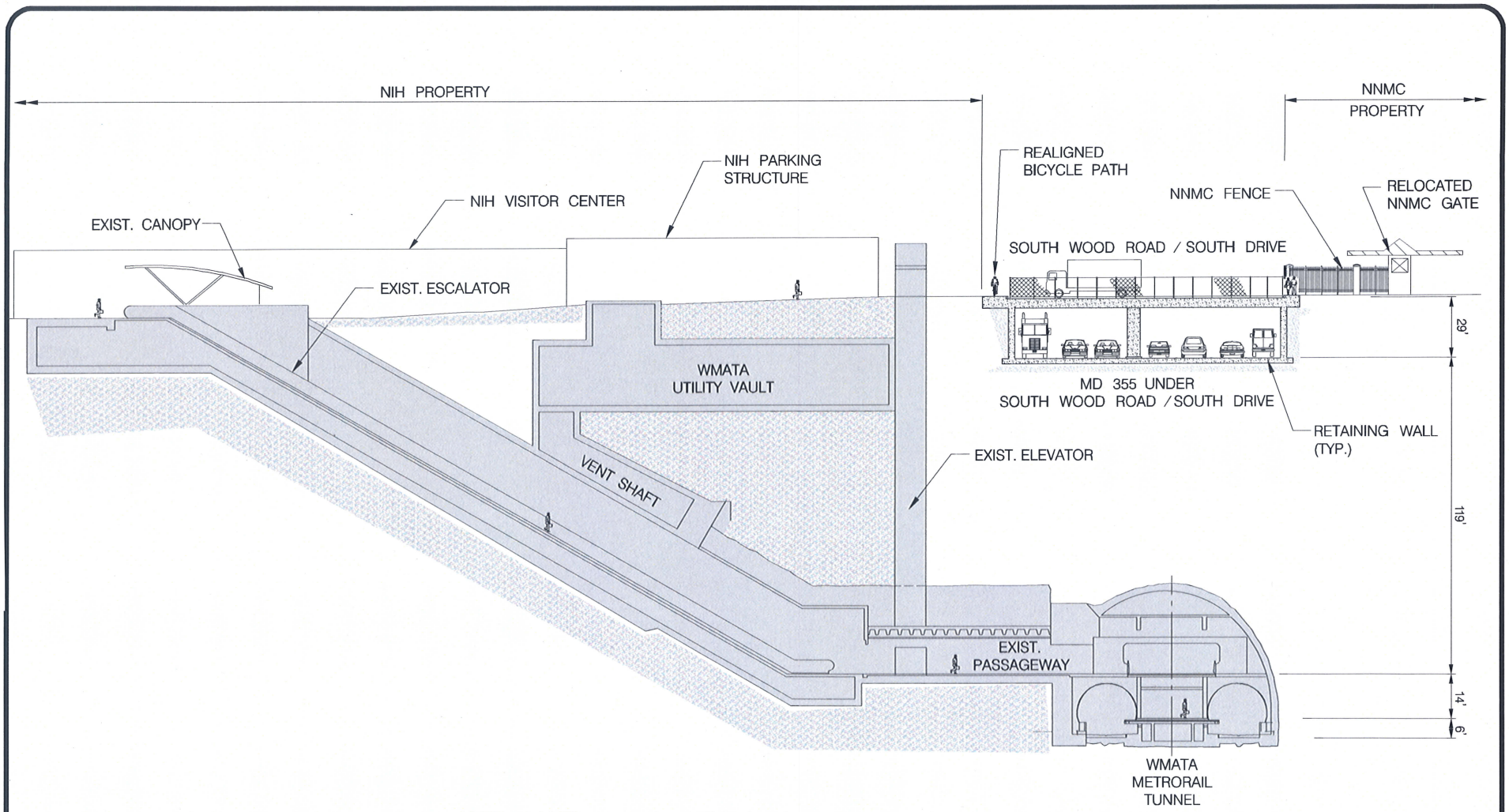
ATTACHMENT 4



ATTACHMENT 5

ATTACHMENT 6

ATTACHMENT 7



ALTERNATIVE 3 SECTION VIEW
(LOOKING NORTH TO WILSON LANE)

SCALE: 1" = 30'

15 0 15 30
SCALE IN FEET

Montgomery County
Department of Transportation

MD 355 (Rockville Pike) Crossing Study
Alternative 3 Section View

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September 2010

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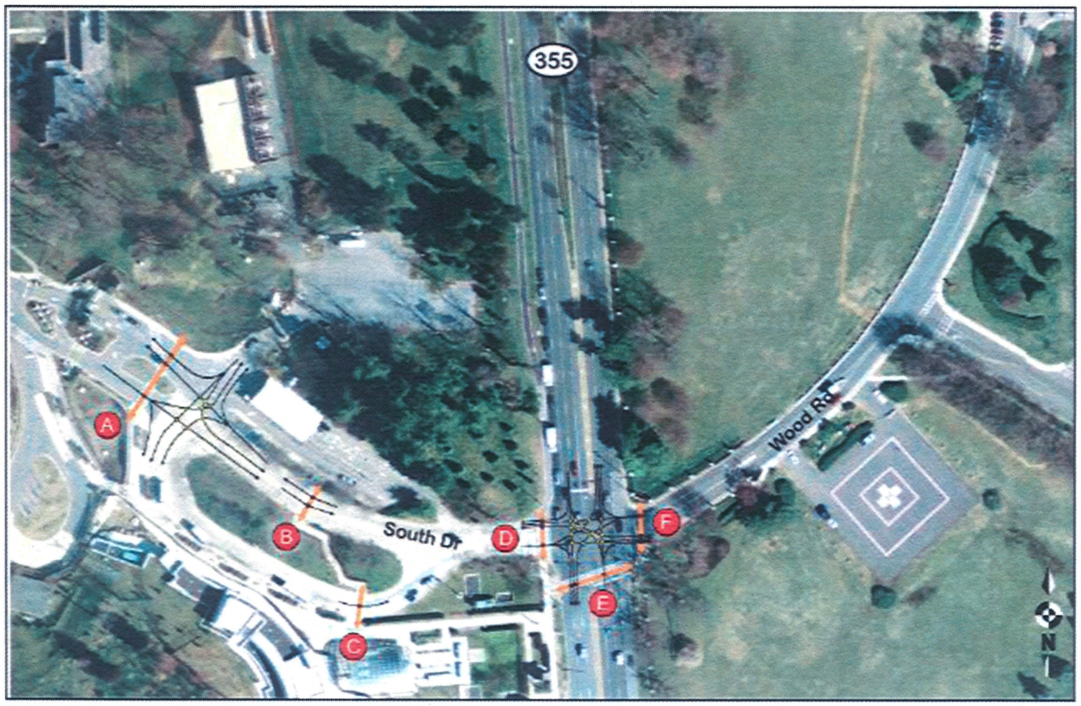
ATTACHMENT 8

Figure 6A: Pedestrian Conflicts
Existing, No Build, and Alternative 2A and 2B



Attachment 9

Figure 6B: Pedestrian Conflicts
Alternative 3