



**Montgomery County
Department of Transportation**

**MD 355 / Rockville Pike
Crossing Project**

**Final Report
September 2011**

prepared by:

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MD 355/ROCKVILLE PIKE CROSSING PROJECT

FINAL REPORT

Montgomery County Department of Transportation

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I. EXECUTIVE SUMMARY

The Montgomery County Department of Transportation (MCDOT) has completed a NEPA Study for improvements to MD 355/Rockville Pike at South Wood Road/South Drive, a heavily utilized intersection that accommodates motor vehicles, pedestrians and bicyclists, and transit vehicles. The Study, which was conducted from December 2009 to June 2011, involved preparation of a Categorical Exclusion (CE), traffic studies, development of alternatives, analysis of the feasibility, benefits, and impacts, comprehensive stakeholder coordination, and public involvement. The study area is in the northern/central portion of Bethesda in Montgomery County, Maryland.

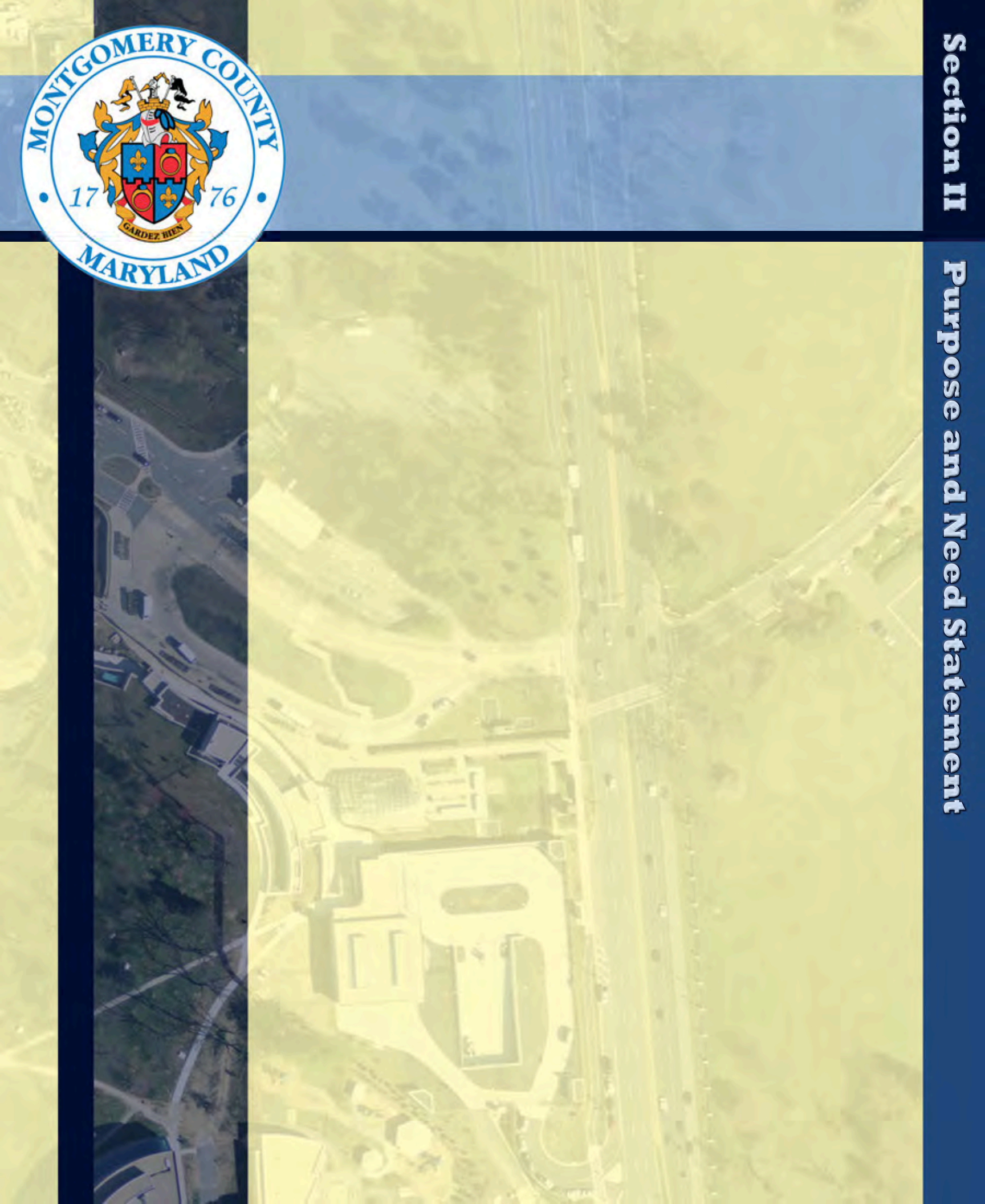
The study concluded with approval of a CE by the Federal Highway Administration (FHWA) for the selection of Alternative 2B: Pedestrian/Bicycle underpass and Deep Elevators, along with TSM/TDM improvements. The study team selected Alternative 2B because it is consistent with the Department of Defense's Defense Access Road (DAR) certification, and is able to most effectively separate pedestrian and bicyclists from vehicular traffic. Alternative 2B consists of the following components:

- Deep elevators on the east side of MD 355 (approximately 118 feet below grade), providing direct access to the Medical Center Metrorail station.
- A pedestrian and bicycle underpass between 19 and 30 feet below MD 355 to provide a fully separated crossing for pedestrians and bicyclists. Access to the underpass will be provided via elevators, escalators, and stairs.
- Extension of the southbound MD 355 left turn lane in the existing median of MD 355 to improve queuing for vehicles turning left onto South Wood Road.
- Expansion of the existing curb radius at the northwest corner of South Drive/MD 355 to improve geometrics (particularly for buses turning right into the Metrorail Station).

Two small-scale canopies (one over the stairs and escalator at each entrance) are included in the Preferred Alternative at the southeast corner of South Wood Road and MD 355 for Navy Support Activity Bethesda (NSAB) (formerly known as the National Navy Medical Center or NNMC throughout this study) pedestrian underpass access to Metrorail. Small-scale elevator enclosures, three on NSAB side and two on NIH side, are also included in the preferred alternative. The existing elevator enclosure on the NIH side will remain and serve as a model for these new structures.

A total of 1.13 acres of right-of-way and/or perpetual easements will be required to construct Alternative 2B. The right-of-way and/or perpetual easements required will be obtained from two property owners: NIH (0.60 acre) and NSAB (0.53 acre). The preferred alternative will affect 17 significant or specimen trees. No other impacts to natural or cultural resources are expected.

The study team estimates that the Alternative 2B improvements would cost between \$48 and \$58 million to construct. In addition, right-of-way estimated at \$4-\$8 million, however, during the discussion of right-of-way acquisitions with the stakeholders, it was noted that the property needed to accommodate the improvements could potentially be donated by the property owners.



II. PURPOSE AND NEED STATEMENT

A. Project Location

The MD 355/Rockville Pike Crossing Project is located in Bethesda, Maryland, a densely populated and developed area in the National Capital Region, inside the Capital Beltway (I-495), and adjacent to two large federal campuses, the National Institutes of Health (NIH) and the Navy Support Activity Bethesda (NSAB). The area is comprised of a vibrant urban district, and established residential neighborhoods. The study area limits, shown on the Study Area Map ([Appendix E – Attachment 1](#)), extend along MD 355 from Cedar Lane to Jones Bridge Road. The project area is focused on the intersection of MD 355/Rockville Pike and South Wood Road/South Drive. An environmental inventory was collected for this study to document the natural, social, and cultural resources presented in the study area and can be found in later in this document in [Appendix A - Environmental Inventory](#).

B. Project Background

The Montgomery County Department of Transportation initiated the current National Environmental Policy Act (NEPA) study in 2009. The federal lead agency for this NEPA study is the Federal Highway Administration (FHWA) and the cooperating agencies include NSAB and NIH. The stakeholder team established for this project also includes the following agencies:

- FHWA Delaware-Maryland (DelMar) Division
- Defense Access Road (DAR)
- Maryland State Highway Administration (SHA)
- Maryland Historical Trust (MHT)
- Maryland Department of Transportation (MDOT)
- Maryland-National Capital Park & Planning Commission (M-NCPPC)
- National Capital Planning Commission (NCPC)
- Washington Metropolitan Area Transit Authority (WMATA).

This study, and the associated improvements, are geared towards South Wood Road/South Drive Metrorail access and are being conducted in conjunction with 2005 Base Realignment and Closure Act (BRAC) actions. BRAC is the congressionally authorized process that the U.S. Department of Defense (DoD) has used to reorganize and consolidate its base structure to more efficiently and effectively support the military. In November 2005, Congress voted to approve the final recommendations of the BRAC Commission and Maryland benefited by gaining additional military and civilian positions.

The 2005 Base Realignment and Closure (BRAC) will realign tertiary care and additional activities from Walter Reed Army Medical Center (WRAMC) in Washington, DC to NSAB. The new center will be known as the Walter Reed National Military Medical Center at Bethesda (WRNMMC). According to the Department of the Navy's March 2008 Final Environmental Impact Statement (FEIS) for Activities to Implement 2005 BRAC Actions at NSAB, one goal associated with the proposed WRNMMC is to improve pedestrian access and mobility between the campus and the Medical Center Metrorail Station.

The BRAC action will result in the relocation of up to 2,500 employees from the Walter Reed Army Medical Center to the NSAB by September 2011, increasing employee population to 10,500. BRAC related relocations are expected to also increase the number of NSAB patient appointments and other visitors from the current level of approximately 497,000 annually (1,912 per weekday) to approximately 981,000 annually (3,773 per weekday) a total increase of 484,000 annually (1,862 per weekday) (Source: Department of the Navy's March 2008 FEIS For Activities to Implement 2005 BRAC Actions At NSAB). The Medical Center Metrorail Station serves several thousand NIH and NSAB employees and visitors, plus serves a significant amount of local area commuters. Ridership is expected to increase in the future and NSAB and NIH employees are expected to comprise about 72 percent of the total Medical Center Metrorail Station passengers by 2020, with patients and visitors expected to comprise an additional five percent of the Metrorail station's total boardings and alightings (Source: WMATA's July 2009 "Medical Center Station Access Improvement Study").

The Navy's FEIS includes an analysis that supports improved pedestrian connections between the campus and the Medical Center Metrorail Station that would make Metrorail and bus service more convenient and appealing to patients, visitors, and staff of NSAB. Because Metrorail serves a large portion of the metropolitan Washington D.C. area, many NSAB employees can choose Metrorail to make transit their primary mode of transportation. The 2008 NSAB Transportation Study in Support of Environmental Impact Statement states that providing a pedestrian connection (in the form of a bridge or tunnel) between the Metrorail station and NSAB would significantly reduce pedestrian exposure to unsafe crossing conditions along Rockville Pike in the vicinity of the NSAB South Gate/Metrorail station access. These findings correlate with the Navy's November 2008 NSAB Transportation Management Plan, which notes that future primary pedestrian movements will continue across Rockville Pike between the South Wood Road Gate and the Medical Center Metrorail Station.

In addition, the study area is situated within the boundaries of the April 1990 Bethesda/Chevy Chase Master Plan, which includes recommendations for a significant shift of transportation modes from auto use to transit and other mobility alternatives, along with providing improved access and safety for pedestrians and bicyclists.

In September 2009, the County applied for a Transportation Investment Generating Economic Recovery (TIGER) grant to fund the MD 355/Rockville Pike Crossing Project. In February 2010, the U.S. Department of Transportation announced that the Bethesda BRAC projects were not awarded TIGER Grant funding. However, the U.S. Congress approved an appropriation for transportation projects in communities with BRAC impacted military hospitals under the \$300 million FY2011 Defense Appropriations bill, which could serve as one source of funding for BRAC projects in Bethesda (the County intends to submit a grant proposal to the Office of Economic Adjustment for a portion of this appropriation). Additionally, \$28 million in DAR funding in DoD's budget is available. The projects listed in the May 2008 DAR Needs Report for NSAB include a bank of elevators on the east side of MD 355 at the study intersection and roadway improvements to the North Wood Road/MD 355 intersection, north of the study intersection.

C. Project Purpose

The purpose of the MD 355/Rockville Pike Crossing Project is to improve the movement of the traveling public between the west and east sides of MD 355/Rockville Pike at its intersection with South Wood Road and South Drive in Bethesda, Maryland. This transportation project is intended to: (1) enhance/improve access to mass transit facilities; and (2) improve the mobility and safety of pedestrians and bicyclists crossing MD 355/Rockville Pike and improve traffic operations at the existing intersection of South Wood Road/South Drive/MD 355.

D. Need for the Project

Currently, the majority of the transit facilities are located on the west side of MD 355/Rockville Pike, adjacent to (or in some cases on) the NIH campus. The only entrance to the Medical Center Metrorail Station (on the Red Line of WMATA's Metrorail System) is on the west side of MD 355, near the intersection of South Drive and MD 355. Due to potential safety concerns resulting from conflicts between pedestrians and vehicles, access to these facilities is challenging and inconvenient for the large number of transit riders traveling to and from NSAB who must cross MD 355 either on foot or by bicycle to access the Medical Center Metrorail Station, buses, or Kiss & Ride lot. In addition, ridership on Metrorail and bus is anticipated to increase in the future.

The NSAB 2008 FEIS and the WMATA "Medical Center Metrorail Station Access Improvement Study" raise concerns regarding conflicts between pedestrians and vehicles at the intersection of Rockville Pike and South Wood Road/South Drive during the shared signal phase. An existing at-grade Rockville Pike crosswalk links NSAB to the Medical Center Metrorail Station at South Wood Road. The current at-grade pedestrian crossing of MD 355 poses potential safety concerns and causes delays for pedestrians and vehicles. In the morning peak period, vehicles turning

east into NSAB's South Wood Road gate from northbound Rockville Pike experience traffic delays. In the evening peak period, conflicts between pedestrians and vehicles cause delays and on-post backups for vehicles exiting NSAB westbound from the South Wood road gate turning south onto Rockville Pike. Likewise, similar conflicts occur on the west side of Rockville Pike because the pedestrians cross Rockville Pike while vehicles exiting NIH are turning onto Rockville Pike. In the morning and afternoon peak periods, this conflict results in potential safety concerns and traffic delays and backups on the NIH Campus. Approximately 3,000 pedestrians cross MD 355 each day, and it is estimated that this number of pedestrians will increase to at least 6,700 by 2020 (Source: WMATA's July 2009 "Medical Center Metrorail Station Access Improvement Study").

Access to mass transit facilities in the study area is important to the thousands of transit patrons who work in or visit the study area. Transit users (Metrorail, Metrobus, Ride On, Kiss & Ride, NIH shuttles, and NSAB shuttles) and pedestrians and bicyclists from the surrounding community wishing to cross MD 355 to get to NSAB from the Medical Center Metrorail Station or NIH must compete with very high volumes of traffic traveling on MD 355, along with traffic turning into and out of NIH and NSAB. Enhancing the mobility (e.g. ease of travel) and safety of pedestrians and bicyclists would encourage walking and bicycling as a transportation choice.

Improving access to mass transit facilities, the mobility and safety of pedestrians and bicyclists crossing MD 355/Rockville Pike, and traffic operations at the existing intersection of South Wood Road/South Drive/MD 355 is needed to address the following specific factors:

- Accommodating the existing and future transit riders who visit, live, or work in the study area
- Providing a safe and efficient crossing of MD 355/Rockville Pike at South Wood Road/South Drive for all pedestrians and bicyclists
- Improving traffic flow into and out of NIH and NSAB at the intersection of South Wood Road/South Drive/MD 355.

E. Existing Conditions

1. Mass Transit Facilities and Services

Various transit services are currently offered in the study area, including Metrorail, Metrobus, Ride On, NIH shuttles, NSAB shuttles, and Kiss & Ride. Existing transit services are shown in **Appendix E – Attachment 2**.

WMATA Metrorail service is provided to the Medical Center Metrorail Station, located on the Metrorail Red Line. The station has a single entrance, located at the southwest corner of the intersection of MD 355/Rockville Pike and South Drive.

Parking is not available at the station. The first Metrorail trains depart the station at 5:12 AM on weekdays (7:12 AM on weekends) and last trains depart the station at 12:25 AM on weekdays (3:25 AM on weekends). WMATA Metrobus service is provided at six bus bays in the study area – four near the entrance to NIH on South Drive and one on each side of MD 355/Rockville Pike near the Medical Center Metrorail Station. All Metrobuses are fully accessible and are equipped with lifts or ramps for wheelchair accessibility.

Montgomery County operates Ride On bus service for five routes within the study area, sharing the six bus bays with WMATA near the entrance to NIH on South Drive and on MD 355/Rockville Pike. All Ride On buses are wheelchair accessible. Shuttles operated by NSAB and NIH provide transportation for patients and staff within each facility. Additionally, NSAB provides “Metro Line Shuttle” service from the Medical Center Metrorail Station to the main hospital and is intended to primarily serve patients, but also serves employees and visitors as space permits. The weekday-only “Metro Line Shuttle” operates continuously between 5:30 AM and 6:30 PM with an average headway of four to seven minutes, depending on traffic conditions and security clearance at the gate. All shuttles comply with Americans with Disabilities Act (ADA) accessibility requirements and have an 18-24-passenger capacity. Likewise, NIH operates seven different shuttle routes, six of which serve the Medical Center Metrorail Station, including a variable after-hours route. NIH shuttles generally operate with 10 to 25 minute headways between 6:00 AM and 7:00 PM. In order to connect between the two campuses, a shuttle transfer is required. NSAB and NIH shuttle route maps are shown in **Figure II-1**.

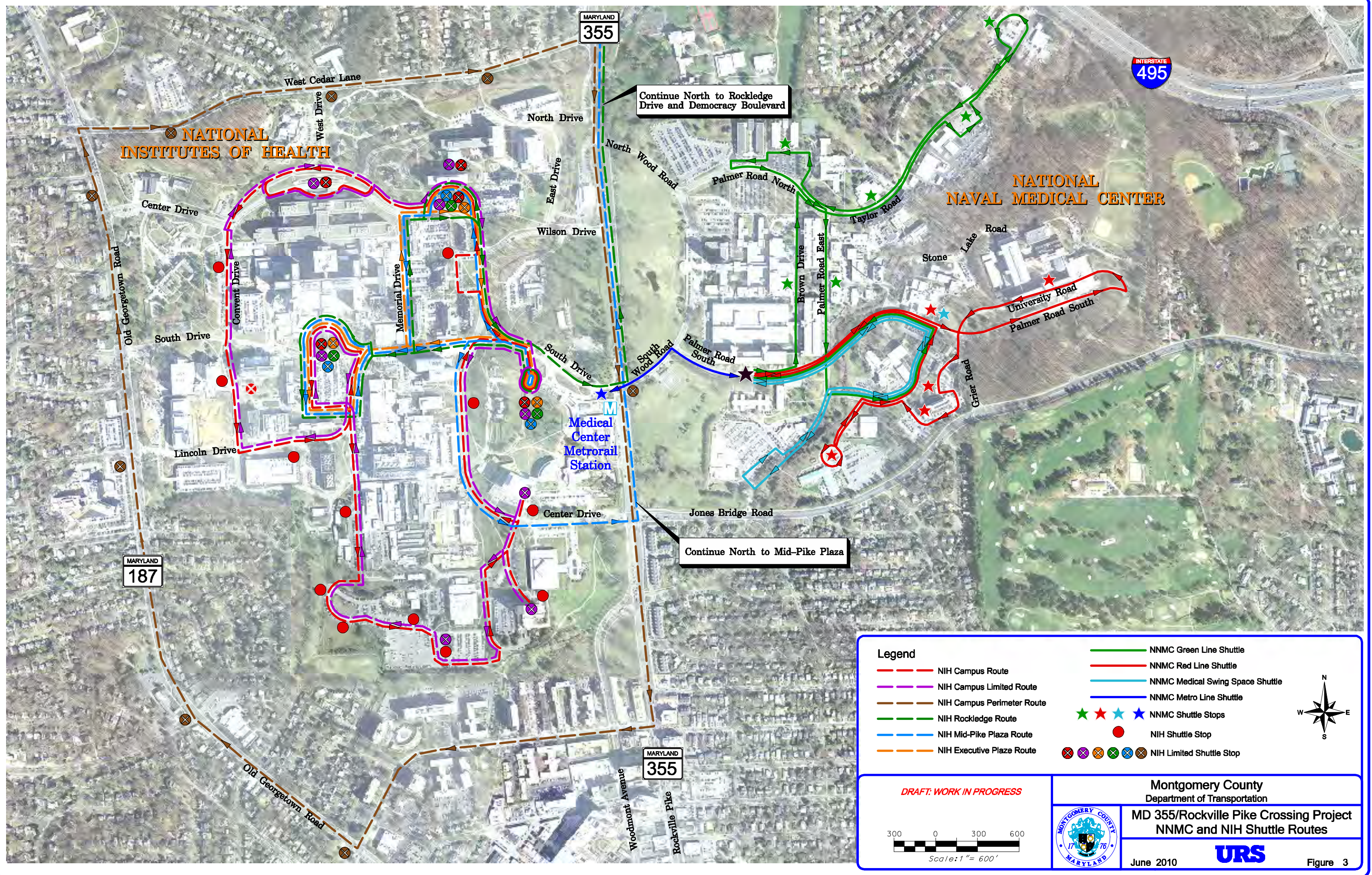
A public WMATA Kiss & Ride lot is located on the north side of South Drive, with pedestrian access to NIH, NSAB, the Medical Center Metrorail Station, and all bus/shuttle bays. Based on field observations, the Kiss & Ride lot is utilized, but not overwhelmed. Users of the Kiss & Ride lot generally access the Medical Center Metrorail Station but not the other transit services.

2. Pedestrian Facilities

The MD 355 and South Wood Road/South Drive intersection is signalized with pedestrian actuated crossing signals. The crossing of MD 355 is on the south leg of the intersection. Both sides of MD 355 feature sidewalks. The west side of MD 355 includes a paved eight-foot shared bike and pedestrian path. A five-foot concrete sidewalk runs along the east side of MD 355.

3. Bicycle Facilities

Several nearby trails provide bicycle access to the Medical Center Metrorail Station. A paved multi-use path skirts the southern perimeter of the NIH campus, connecting the station to Old Georgetown Road. The North Bethesda Trail runs between the NIH campus and the Twinbrook Metrorail Station on exclusive right-of-way and shared



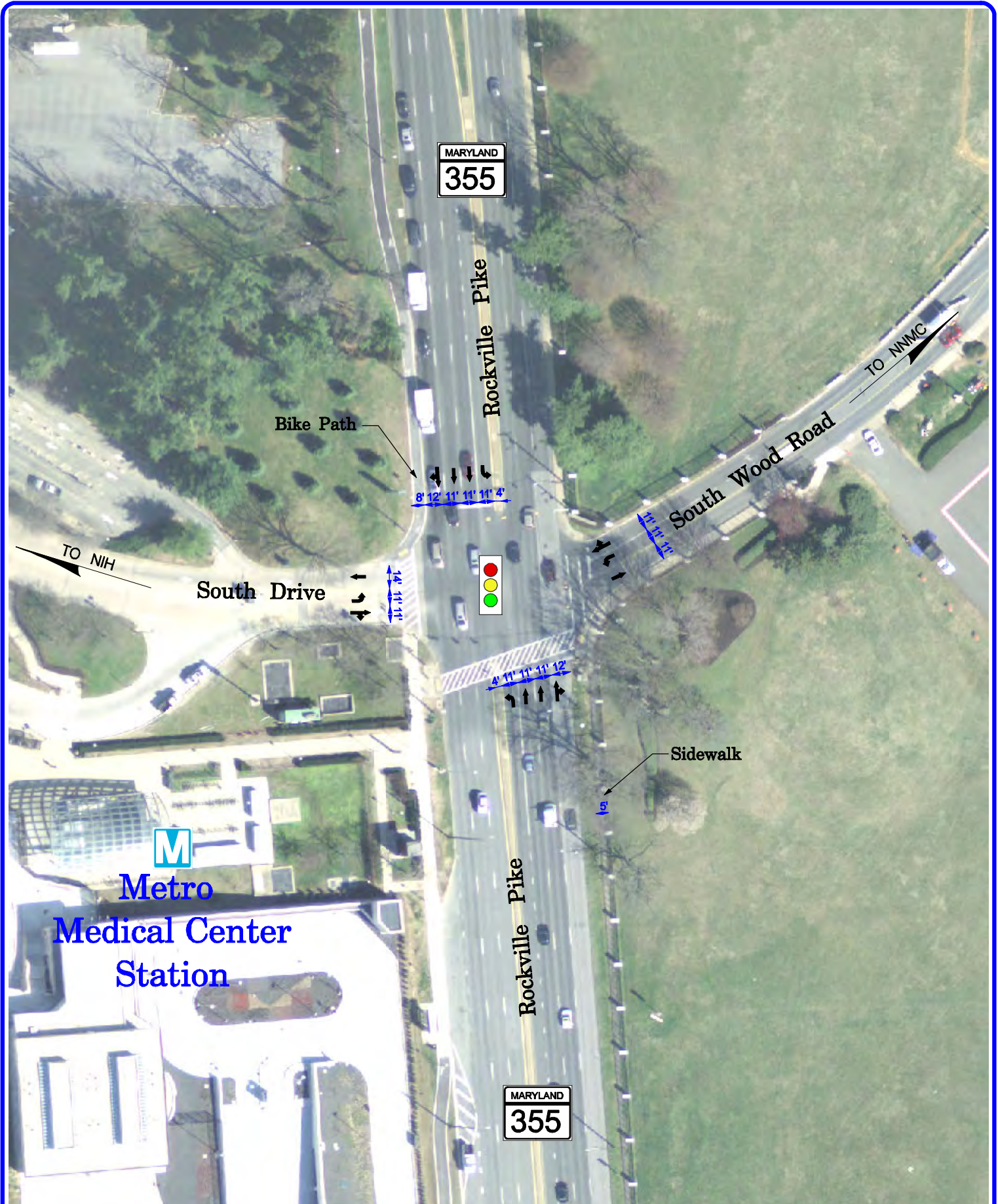
sidewalks. The segment of the North Bethesda Trail closest to the study area is directly on Old Georgetown Road. The Capital Crescent Trail connects Georgetown to downtown Bethesda via a paved trail along a former railroad right-of-way. An unpaved section of the Capital Crescent Trail also connects downtown Bethesda to downtown Silver Spring. In addition, the Rock Creek multi-use trail just east of NSAB is an asset to area cyclists commuting to the Medical Center Metrorail Station. There are 88 bicycle racks and 38 bicycle lockers located at the Medical Center Metrorail Station. The bike racks and bike lockers at this location are highly used.

4. Roadway Facilities

In the project area, MD 355/Rockville Pike is classified by the MD SHA Highway Location Reference as a Primary Arterial with curbed median, no access control, and a posted speed limit of 35 mph. MD 355 has a total of eight travel lanes at the signalized intersection with South Drive/South Wood Road – two 11-foot through lanes, one 12-foot through/right-turn lane, and a separate 11-foot left turn lane accessing the entrances to NIH and NSAB in each direction. In the left turn lanes, there is approximately 230 feet of storage on southbound MD 355 for vehicles turning left into NSAB and 460 feet of storage on northbound MD 355 for vehicles turning left into NIH. The raised concrete median at the intersection is four feet wide. South Drive and South Wood Road are both three-lane roadways at their intersection with MD 355, with one westbound lane (14 feet wide) entering the NIH campus and one eastbound lane (11 feet wide) entering the NSAB campus. The NIH gate is located west of the bus bay area and the NSAB gate is located just east of the MD 355/South Drive/South Wood Road intersection. In addition, each eastbound and westbound leg includes an 11-foot left turn lane and an 11-foot through/right turn lane exiting the campuses. Approximately 85 feet of left turn storage exists on eastbound South Drive exiting NIH and 125 feet of left turn storage length exists on westbound South Wood Road exiting NSAB.

The approach to South Drive from southbound MD 355 and the approach to southbound MD 355 from South Drive contain restricting curb radii, which make right turns into and out of the Medical Center Metrorail Station somewhat difficult for buses. The existing curb radii are 35 feet, while the minimum design turning radius for an inter-city bus is 45 feet, based on *AASHTO-Geometric Design of Highways and Streets* standards. Southbound buses making the turn from MD 355 into the Medical Center Metrorail Station frequently either swings left prior to their turn, which can create conflicts with southbound through vehicles, or run over the adjacent sidewalk, which can create conflicts with pedestrians and adversely impact mobility at the intersection. Existing geometric conditions are shown in **Figure II-2**.

While the South Wood Road leg of the intersection currently has one lane entering NSAB and two lanes exiting (one left turn lane and one through/right turn lane), future NSAB improvement plans call for its gate to be moved closer to the intersection (approximately 105 feet from the MD 355 curb line) with a reversible



center lane that would be used for both entering and exiting traffic, depending on the time of day.

F. Transit Ridership Analysis

1. Existing Ridership

As reported by WMATA in the July 2009 “Medical Center Metrorail Station Access Improvement Study,” the Medical Center Metrorail Station served an average of 10,422 Metrorail passengers per weekday in 2007, including 5,240 boardings and 5,182 alightings at the station. As WMATA has experienced a seven percent daily ridership growth since 2007, existing (2010) Metrorail ridership is estimated at 11,152 passengers per weekday (5,607 boardings and 5,545 alightings).

2. Projected Ridership

Based on WMATA’s study, ridership is anticipated to increase by 56 percent by 2020 (16,227 Metrorail passengers per weekday) with NSAB’s commitment to increase employee transit mode usage from 11 percent to 30 percent by that time. For the MD 355/Rockville Pike Crossing Project, the horizon year for analysis is 2030. It is expected that the transit ridership forecasts for 2030 will remain the same as those for 2020 because growth at NIH and NSAB will be stabilized before 2020. It is expected that the majority of Medical Center Metrorail Station users will be traveling to or from NIH or NSAB. Data presented in the July 2009 WMATA “Medical Center Metrorail Station Access Improvement Study” suggests that approximately 10 percent of the station’s daily users transfer at the Medical Center Metrorail Station. Of the remaining 90 percent, based on transit ridership information provided by

both NSAB and NIH, it is estimated that under existing conditions approximately 13 percent are traveling to NSAB and 77 percent are traveling to NIH. Under 2030 No Build conditions, it is estimated that approximately 29 percent will be traveling to NSAB and 61 percent will be traveling to NIH. Existing and projected Metrorail ridership volumes, based on these percentages, are shown below in **Table II-1**:

Table II-1: Existing and Forecasted 2030 Metrorail Transit Ridership

	Existing (2010) Daily Ridership	Projected (2030) Daily Ridership
Transfers	1,115	1,623
To/From NSAB	1,450	4,706
To/From NIH	8,587	9,898
Total	11,152	16,227

The 2008 NSAB Master Plan Update provided Metrobus and Ride On ridership data at the Medical Center Metrorail Station. Per weekday, Metrobus averages 461

westbound boardings, 463 westbound alightings, 419 eastbound boardings, and 394 alightings at the Medical Center Metrorail Station. Per weekday, Ride On averages 1,098 boardings and 1,131 alightings at the Medical Center Metrorail Station. Based on the Metrorail ridership percentages presented previously, 258 of the 1,988 total existing alightings cross MD 355 to go to NSAB.

A study on ridership conducted by NIH showed that between March 17, 2009, and March 23, 2009, a total of 1,335 passengers boarded and 891 were dropped off at the Medical Center Metrorail Station by NIH shuttle service. Based on the most recent data, the NSAB “Metro Line Shuttle” serves approximately 415 riders daily, including employees and visitors.

WMATA reported in the July 2009 “Medical Center Metrorail Station Access Improvement Study” that, according to the capacity analysis, the Medical Center Metrorail Station is not expected to be capacity constrained under Build or No Build conditions in 2020. As NIH and NSAB are the generator of the majority of the transit traffic at the Medical Center Metrorail Station, and since all of the growth at NIH and NSAB is expected to occur before 2020, the capacity assessment is assumed valid for 2030, as well.

The Medical Center Metrorail Station bus stops and Kiss & Ride lot generally serve employees, patients, and visitors to NSAB and NIH, or patrons transferring to other transit services or destined to other places of employment in the study area. Access to the transit facilities described above is made by Metrorail, bus, walking, or bicycling. The Medical Center Metrorail Station bus loop and Kiss & Ride facility are very constrained geometrically and the bus bay designated for NIH and NSAB shuttle use is located farthest from the station entrance. This bus bay is less accessible for those who are mobility challenged, because pedestrians must travel down a hill to access this bus bay.

Based on anticipated increases to transit ridership, improved access to mass transit facilities in the project area is necessary to better integrate connectivity between rail, bus, car/vanpool, and pedestrian/bicycle commuters. By providing a safe crossing of MD 355 that links the existing north-south bike path along the west side MD 355 with the sidewalk on the east side, an improved crossing of MD 355/Rockville Pike could contribute to the use of pedestrian and bicycle paths for local residents, thereby reducing the overall use of single occupancy vehicles. Improved access to the Metrobus and Metrorail facilities at the Medical Center Metrorail Station would likely increase the attractiveness of transit as an alternate mode of travel.

G. Analysis of Pedestrian and Bicycle Activity

1. Existing Pedestrian and Bicycle Activity

During the AM peak period, 78 percent of the passengers exiting the station walk to their destination and in the PM peak period, 85 percent of riders walk to the station. Morning access and evening egress reveal high cycling activity, which are seven and five percent of the trips during these time periods, respectively.

At the intersection of MD 355 and South Wood Road/South Drive, the traffic signal has a three-minute cycle during the AM and PM peak periods with a maximum of 29 seconds allocated for South Wood Road/South Drive through and turning movements and east-west pedestrian traffic per cycle. Pedestrians and bicyclists make up a substantial portion of the traffic at the MD 355/Rockville Pike and South Wood Road/South Drive intersection. Currently, NSAB employees and visitors cross MD 355/Rockville Pike at-grade or utilize the NSAB shuttle service to access the Medical Center Metrorail Station. Based on count data collected for this study in December 2009, approximately 320 pedestrians cross MD 355 at this intersection in the AM peak hour. In the PM peak hour, approximately 260 pedestrians cross MD 355 at this intersection. During the three hour AM (6:00AM to 9:00AM) and PM (3:00PM to 6:00PM) peak periods, 695 and 780 pedestrians cross MD 355, respectively. Based on transit usage data provided in the 2008 NSAB Transportation Study in Support of Environmental Impact Statement, a total of 2,440 pedestrians currently cross MD 355 per day.

Field observations confirm that the 29-second maximum pedestrian walk cycle provides sufficient time for non-disabled pedestrians, moving at the Manual on Uniform Traffic Control Devices (MUTCD) standard of 3.5 feet per second, to cross MD 355 under existing conditions. Montgomery County crosswalk design standards require a maximum walking speed of 3.5 feet per second. This equates to a walk cycle of 22 seconds. The existing signal timing provides an additional seven seconds of time for a pedestrian to cross MD 355. The pedestrian crossing phase of MD 355 coincides with the signal phase of the minor approaches (South Drive and South Wood Road) and pedestrians may also experience up to a 2.5-minute wait at the intersection per signal cycle. During mid-day, when traffic is relatively light, some pedestrians were observed crossing MD 355 during the northbound/southbound green phase. Similarly, in the PM peak, when there was little southbound MD 355 traffic and northbound MD 355 traffic was congested to the point of being gridlocked, a small number of pedestrians were observed crossing during the mainline green phase and weaving through the stopped northbound traffic.

As would be expected, disabled pedestrians travel in the study area throughout the day. The duration of the walk cycle to cross MD 355 requires that pedestrians travel

at approximately 2.6 feet per second, which is adequate time for most pedestrians with restricted mobility. The Medical Center Metrorail Station provides elevators and ramps and NSAB and NIH shuttles are ADA-compatible.

Approximately 30 bicyclists per day were counted at the project location, with most utilizing the north-south trail alongside MD 355 and not crossing the MD 355/South Wood Road/South Drive intersection. Currently, NIH supports a strong bicycle commuter population and NSAB has stated its support for encouraging bicycling to its campus. Metrobuses can accommodate bicycles, but during peak hours, bicycles are not allowed on the Metrorail. Based on data collected, those bicyclists are not passing through the MD 355/South Wood Road/South Drive intersection. Bicyclists who approach the Metrorail station from the south and enter using the walkway just south of South Drive were not counted as passing through the intersection. Bicyclists who arrive at the Metrorail station via bus or Metrorail also do not pass through the intersection and therefore were not included in the count. In terms of available bicycle facilities, of the station's 88 bicycle racks, 35 percent were utilized in 2006 and of the 38 bicycle lockers, 100 percent were utilized, according to WMATA.

2. Projection of Future Pedestrian and Bicycle Activity

As reported in the NSAB 2008 FEIS, BRAC related relocations are expected to increase the number of NSAB patient appointments and other visitors from 1,912 per weekday to approximately 3,773 per weekday. To understand the pedestrian traffic operations, the study team performed pedestrian peak period counts and developed forecasts based on the existing counts, along with NSAB personnel increases (from approximately 8,000 to 10,500) and transit usage goals (from 11 percent to 30 percent) for the future. It is estimated that pedestrian crossings of MD 355 in 2030 will increase from 320 to 990 in the AM peak and increase from 260 to 805 in the PM peak. During the three hour AM and PM peak periods, 2,150 and 2,415 pedestrians are expected to cross MD 355, respectively, in 2030. Based on future transit usage data provided in the 2008 NSAB Transportation Study in Support of Environmental Impact Statement, a total of 7,530 pedestrians are projected to cross MD 355 per day in 2030. With regard to non-motorized use of the intersection, bicyclists are included with pedestrians in the projections. This projection is greater than the 2020 estimate of 6,700 pedestrians presented in the WMATA "Medical Center Metrorail Station Access Improvement Study," but is consistent with the transit goals and personnel increases at NSAB. This growth in pedestrian traffic will increase safety concerns in the study area, as conflicting vehicular traffic will compete with the existing 29-second maximum pedestrian walk cycle. As the signal at the intersection of MD 355 and South Wood Road/South Drive is part of a system of signals along the MD 355 corridor, changing the signal timing at this location, even by a few seconds, could significantly affect delays for vehicles throughout the MD 355 corridor.

In addition, based on current usage, the complete utilization of bicycle lockers today at the Metrorail station indicates that more lockers could be necessary to accommodate both existing passengers and future growth at the station.

H. Traffic and Safety Analysis

1. Existing and Future Travel Demand

To assess the existing (2010) and future (2030) traffic operations at the existing intersection of South Wood Road/South Drive/MD 355, the study team used the field observed existing volumes and the forecasted future No Build volumes in the study area. The evaluation provided the study team with Levels of Service (LOS), delay, and queue lengths for the movements at this intersection (See **Appendix B – Traffic Analysis** for data). The study team collected information on existing traffic volumes in the study area. Traffic volume data was collected at the intersection in December 2009, during which vehicular movements and pedestrian counts for the AM and PM peak periods were tabulated. Once acquired, the existing AM and PM peak hour traffic data and the average daily traffic (ADT) data were balanced throughout the study area network. This data represents 2010 existing conditions.

Based on trends for MD 355 in the MWCOG travel demand forecasting model (Version 2.2, Round 7.2a) and the M-NCPPC travel demand forecasting model (Version 2.1d, Round 7.2a), the study team determined the background annual growth rate (0.3 percent), which was applied to the existing turning movement volumes to generate future 2030 background volumes. The team then developed forecasts for traffic in and out of NIH and NSAB using information gathered from the following reports.

- NIH Master Plan 2003 Update (March 2005)
- FEIS for NIH Master Plan 2003 Update (March 2005)
- NSAB Master Plan Update 2008 (November 2008)
- NSAB Transportation Management Plan (November 2008)
- NSAB Transportation Study in Support of Environmental Impact Statement (March 2008).

Although the models were used to compute the background growth rate in the study area, they did not provide detailed forecasts for the NIH and NSAB gates. These documents provided information that was used to develop detailed projections on employment growth, increases in the number of patients and visitors, and goals for increases in employee carpooling and transit usage, which allowed the team to develop forecasts with a greater level of precision for the NIH and NSAB land uses than the models could.

It is estimated that approximately 18,800 people work at the NIH main campus today. Based on agency needs and the capacity of local and regional infrastructure, NIH has projected a campus population of 22,000 for the planning horizon of 2020. For this study, the study team estimated that the NIH population would reach 22,000 by 2020 and remain at that number through 2030. Also, NIH is committed to maintaining peak hour traffic volumes at or below the volumes experienced in 1992, a volume which they are currently well below. Therefore, while the NIH gates are expected to experience increased traffic volumes in 2030, those increases are expected to be relatively small.

It is estimated that approximately 8,000 people work at NSAB today. The BRAC action is expected to add approximately 2,500 new employees, and almost double the number of patients and visitors traveling to NSAB each year. However, while NSAB is growing, the institution is also enacting measures to increase transit ridership and carpool usage, thereby greatly decreasing the potential number of vehicles arriving at NSAB. If NSAB's travel mode goals are met by 2030, the significant increase in trips to NSAB each day (due to the BRAC action) will result in a relatively minor increase in the daily number of vehicles passing through the NSAB gates by 2030.

The study team applied the background growth rate and the land use and trip distribution data from the aforementioned documents to the existing conditions volumes to compute 2030 No Build forecast volumes. **Table II-2** shows the existing and 2030 No Build forecasted approach volumes for each leg of the MD 355/Rockville Pike and South Drive/South Wood Road intersection during the AM and PM peak hours. The volumes include all through and turning movements on each intersection leg.

Table II-2: Existing and Forecasted 2030 No Build Peak Hour Volumes

Intersection Leg	Existing Volume (AM Peak Hour)	Existing Volume (PM Peak Hour)	2030 No Build Volume (AM Peak Hour)	2030 No Build Volume (PM Peak Hour)
NB MD 355	1,440	2,660	1,545	2,835
SB MD 355	2,680	1,885	2,870	2,020
EB South Drive	175	305	195	335
WB South Wood Road (NSAB)	140	425	145	445
TOTAL	4,435	5,275	4,755	5,635

As shown in **Table II-2**, eastbound and westbound traffic must compete with very high volumes of traffic traveling on MD 355. Transit users, pedestrians, and bicyclists wishing to cross MD 355 to get to NSAB from the Medical Center Metrorail Station or NIH must compete with traffic turning southbound from South Drive and South Wood Road.

Additionally, the NSAB 2008 FEIS notes that NSAB staff carpools are strongly encouraged. Participants in the carpool program must register for a parking pass and are allotted reserved parking, whereas other employee parking areas are on a first-come, first-serve basis. The NSAB Transportation Management Plan states that the average vehicle occupancy is 1.12 persons per vehicle and the goal is for average vehicle occupancy to be 1.5 persons per vehicle. The NIH Master Plan 2003 Update calculates average vehicle occupancy to be approximately 1.18 persons per vehicle, which is not expected to change.

Queues on South Drive from vehicles exiting the Kiss & Ride lot and from vehicles exiting NIH block the exit from the bus bay area, causing bus delays and creating conflicts as the buses attempt to join the travel stream. Additionally, the bus pull-off area on southbound MD 355 just south of the intersection is utilized as a Kiss & Ride area by some vehicles even though a Kiss & Ride lot is provided on South Drive.

Based on data provided by NSAB, **Table II-3** shows inbound traffic volumes and percent distributions at each NSAB security gate with and without BRAC volumes:

**Table II-3: Inbound NSAB Security Gate Traffic Volumes
(Existing and 2011 with BRAC)**

Gate	Gate #	AM Peak Hour Volume	% of Total	PM Peak Hour Volume	% of Total
Existing Inbound Traffic					
North (North Wood Road)	1	913	46	29	9
South (South Wood Road)	2	400	20	194	62
Navy Exchange (Jones Bridge Road)	3	360	18	90	29
Navy Lodge (Jones Bridge Road)	4	21	1	0	0
USU (Jones Bridge Road)	5	310	15	0	0
TOTAL		2004	100	313	100
Projected 2011 Inbound Traffic (with BRAC)					
North (North Wood Road)	1	1073	42	108	15
South (South Wood Road)	2	538	21	262	37
Navy Exchange (Jones Bridge Road)	3	448	18	79	11
Navy Lodge (Jones Bridge Road)	4	234	9	0	0
USU (Jones Bridge Road)	5	260	10	259	37
TOTAL		2552	100	708	100

In addition to pedestrians, bicyclists, automobiles and transit vehicles, fire and rescue operations and emergency patient transport are sometimes required between the two medical facilities. These vehicles must use the same congested roadway system used by all regular vehicular traffic in the area, and are therefore impacted by existing traffic queues and delays, even with emergency vehicle procedures in place. South Wood Road serves as the entrance to the emergency room at NSAB, and is also used for emergency vehicles to travel between NSAB and NIH. There are approximately five NSAB emergency vehicle responses to the NIH

campus per month and approximately 17 NIH emergency vehicle responses to the NSAB campus per month.

Improving the mobility of Emergency Response vehicles between facilities has been identified as a goal to ensure a rapid response during emergencies. The Bethesda Hospitals' Emergency Preparedness Partnership, consisting of NSAB, the NIH Clinical Center, and Suburban Hospital Healthcare System identified in 2004 a critical need for improved transportation access between the three medical facilities during emergency events (such as 9/11) to support the partnership's current emergency preparedness initiatives. One of the major goals of the partnership is to respond rapidly and successfully during a major disaster incident/catastrophic event and to sustain operations when hospitals have reached maximum surge capacity and local, state, and county resources have been depleted.

2. Traffic Operations

Under existing conditions, South Drive provides access to the Medical Center Metrorail Station Kiss & Ride lot, the NIH South Drive Gate, and a bus loop for Metrobuses and Ride On buses. Essentially, South Drive is a two-way road that leads to the NIH gate, with a Kiss & Ride lot on the north side, and a bus loop on the south side. Vehicles destined to the Kiss & Ride lot enter South Drive and take an immediate right turn into the Kiss & Ride lot. These vehicles then proceed through the Kiss & Ride lot to an exit near the NIH gate, then turn left onto South Drive to approach MD 355. Buses destined for the bus loop proceed on South Drive beyond the bus loop exit, and then turn left into the loop to approach their appropriate stop locations. The buses then proceed to the end of the bus loop and turn right onto South Drive to approach MD 355. Vehicles destined to the NIH gate simply proceed on South Drive, past the Kiss & Ride lot and bus loop, to the NIH gate beyond.

The study team used the traffic volumes developed for this study to evaluate the traffic operations at the MD 355/South Wood Road/South Drive intersection. The study team used the simulation modeling software Synchro and SimTraffic to assess the existing and future traffic operations at this intersection (see CD in [Appendix B](#) for data). The study team developed, validated, and calibrated a Synchro/SimTraffic model of the study area network for the AM and PM peak hours using the existing traffic volumes, traffic signal data, and field observation data to provide a reasonable replication of actual existing traffic operations. The Synchro/SimTraffic model, once calibrated for existing conditions, was used in the assessment of future No Build conditions to obtain LOS, delay, and queuing information.

The LOS is a qualitative measure of operational conditions within a traffic stream. LOS ranges from A to F, where a LOS A represents optimal conditions and a LOS F represents saturated or failing conditions. However, when an intersection is functioning at a LOS F it may not be possible to quantify the degree of failing operations. In this case, delay can be used as a metric that is more meaningful and

easier to compare across movements and scenarios. Delay is defined as the average time between stopping and clearing an intersection per vehicle over the peak hour.

The highest volumes at the intersection of MD 355 and South Wood Road/South Drive are along southbound MD 355 in the AM and northbound MD 355 in the PM. With the existing signal timing in place, which prioritizes the mainline, the movements on the east and west approaches experience the worst levels of service.

Today, the MD 355/South Wood Road/South Drive intersection operates at LOS C in the AM peak period with an average delay of 34.0 seconds and LOS F in the PM peak period with an average delay of 115.4 seconds. When examined in isolation, with optimized signal timings, the intersection operates at LOS D in the PM peak, even though certain legs operate at LOS F. When examined as part of a system, as this intersection currently operates, the intersection operates at LOS F in the PM peak with existing signal timings. In 2030, this intersection is forecasted to operate at LOS D in the AM peak period with an average delay of 37.8 seconds and LOS F in the PM peak period with an average delay of 131.4 seconds.

Specifically, in the AM peak hour, vehicles traveling through the intersection of MD 355 at South Drive/South Wood Road experience congestion and delay, particularly on the southbound approach. In the southbound through/right turn lanes, the queues are relatively short and do not appear to create conflicts with any other access points. However, the southbound left turn queue extends beyond its available storage, into one of the southbound through lanes during several signal cycles throughout the AM peak hour. Left turning vehicle queues are stationary while the through lanes are moving. Based on forecasted demand in 2030, conditions at this intersection are expected to worsen. The traffic operations at the intersection, given in LOS and delay at each leg for the AM and PM peak hours, as modeled with Synchro/SimTraffic software, are summarized in **Table II-4**.

Table II-4: Existing and 2030 No Build Peak Hour Level of Service and Delay Per Vehicle (in seconds)

	NB MD 355		SB MD 355		EB South Drive		WB South Wood Road	
	Left	Through / Right	Left	Through / Right	Left	Through / Right	Left	Through / Right
AM Peak Hour (Existing)	D/37.9	C/23.0	D/49.7	C/31.5	E/75.7	F/80.6	E/78.1	E/71.2
PM Peak Hour (Existing)	A/7.6	C/28.5	D/37.1	B/17.7	F/-	E/72.7	E/71.7	F/204.0
AM Peak Hour (2030)	D/40.6	C/23.7	E/67.7	C/34.3	E/79.4	F/98.3	F/88.5	E/71.8
PM Peak Hour (2030)	A/8.4	C/32.8	D/42.7	B/18.5	F/-	F/89.6	F/84.0	F/222.9

Because of the congestion on northbound MD 355, the opposing left turn delay on eastbound South Drive is too large for the Synchro model to quantify in the PM peak

hour for both existing and 2030 No Build conditions. The software has limitations under congested conditions and when queues exceed a certain distance (which varies by the nature of the approach), as a result of the number of arrival pattern variables.

The traffic signals along MD 355 have been coordinated to optimize traffic flow throughout the corridor during the AM and PM peak periods. Due to the very high traffic volumes flowing into the corridor, significant delays are still being experienced. However, those delays are experienced more as a few long stops with some flushing of the system in between, rather than a long series of stops and starts.

Intersection queuing distance, or queue length, is another indicator of traffic operations and was obtained from the Synchro/SimTraffic analysis. This value is the 95th percentile queue, which is the maximum queue expected during all but the worst five percent of the peak hour. **Table II-5** presents the existing and 2030 No Build maximum queuing distance for each leg of the MD 355/Rockville Pike and South Drive/South Wood Road intersection during the AM and PM peak hours. The existing queuing distances computed using Synchro appears to be consistent with field observations.

Table II-5: Existing and 2030 No Build Maximum Queuing Distance (in feet)

	NB MD 355	SB MD 355	EB South Drive		WB South Wood Road	
	Left	Left	Left	Through / Right	Left	Through/ Right
AM Peak Hour (Existing)	165	450	145	205	105	180
PM Peak Hour (Existing)	30	105	650	200	120	850
AM Peak Hour (2030)	185	575	165	275	110	185
PM Peak Hour (2030)	30	120	-	250	135	875

Like the delay calculation, the eastbound South Drive 2030 No Build PM peak hour left turn queuing distance is too large for the analysis to quantify using Synchro. Relative to the existing volume, an estimate of the future queue length for the eastbound left turn would be approximately 715 feet. However, this length depends significantly upon the storage available on northbound MD 355. If there is no storage available on MD 355 to allow the eastbound left turning vehicles to depart South Drive, the queue may be significantly longer.

As shown in **Table II-5**, queuing deficiencies are present under existing conditions and are projected to worsen by 2030 if no improvements are made. Southbound MD 355 left turn queuing is currently 450 feet in the AM peak, while only 215 feet of storage currently exists. This queuing length is projected to increase to 575 feet by

2030 in the AM peak. Queuing beyond the available storage forces vehicles to queue in the MD 355 through lanes, which prohibits them from flowing through the intersection. Vehicles making left turn onto MD 355 from eastbound South Drive currently have 85 feet of storage for the 650 feet of queuing that the movement experiences in the PM peak. Also, the exit from the bus pickup/drop-off area is located approximately 125 feet away from the intersection and the through/right turning vehicles queuing on eastbound South Drive create a barrier to buses in both the existing AM and PM peaks. For westbound South Wood Road, the existing 125 feet of storage length for vehicles making left turn onto southbound MD 355 will not be adequate for the queues anticipated in the 2030 No Build PM peak. Additionally, Palmer Road South is located approximately 400 feet away from the intersection and is currently blocked in the PM peak due to queuing of through and right turning vehicles.

It should be noted that National Security threat levels could drastically affect the existing and future queuing distances of vehicles entering both federal facilities. If the threat level reaches "high" or "severe," different screening practices would be put in place, including vehicle inspections and personnel ID checks. These screening practices would increase the queuing of vehicles entering both facilities.

3. Safety Analysis

Pedestrian, bicyclist, and motorist safety is an important concern in the study area. As discussed previously, large numbers of pedestrians and vehicles conflict with one another at the MD 355/South Wood Road/South Drive intersection, leading to decreased pedestrian mobility. The study team obtained recent crash history for the study area to analyze these conflicts with respect to crash rate. Crash data for the period of January 1, 2003 to December 31, 2007 (the latest data available) was provided by the Montgomery County Department of Transportation's Division of Traffic Engineering and Operations. This data represents only those crashes for which police reports were prepared. There were a total of 64 reported accidents at the intersection of MD 355 and South Drive/South Wood Road, including the approaches. Based on the number and severity of crashes, this intersection has not been identified by SHA as a Candidate Safety Improvement Intersection (CSII) during the analysis years. A detailed summary of the crash data is presented in **Table II-6**. Some key points 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.
- Of the 113 vehicles involved in the accidents, 73 were passenger cars and 12 were transit buses.

Table II-6: Crash Summary for MD 355 at South Drive/South Wood Road (1/1/03 to 12/31/07)

Severity	# of Crashes	Crash Type	# of Crashes
Fatality	0	Rear-end	26
Disabled	6	Left-turn into Opposing Traffic	15
Injured	10	Single Vehicle (pedestrian related)	6
Possible Injury	8	Sideswipe with Traffic	5
Not Injured	40	Head-on	1
		Turning Right Into Traffic	1
		Rear end into Left Turning Veh	2
		Other Involving Left Turning Veh	3
		Unknown	1
		Fixed Object	1
		Other	3
Total	64	Total	64
Time of Day	# of Crashes	Day of the Week	# of Crashes
12:00 AM to 3:00 AM	1	Weekday	52
3:00 AM to 6:00 AM	1	Weekend	12
6:00 AM to 9:00 AM	9	Total	64
9:00 AM to 12:00 PM	9	Reported Year	# of Crashes
12:00 PM to 3:00 PM	16	2003	15
3:00 PM to 6:00 PM	16	2004	13
6:00 PM to 9:00 PM	6	2005	11
9:00 PM to 12:00 AM	6	2006	12
		2007	13
Total	64	Total	64
Vehicle Type	# of Vehicles Involved	Direction of Movement	# of Vehicles
Passenger Cars	73	SB (L, T, R)	(12,45,0)
Transit Bus	12	NB (L, T, R)	(7,42,1)
Recreational Vehicle	11	EB (L, T, R)	(1,0,1)
Van	7	WB (L, T, R)	(3,1,1)
Pickup Truck	5		
N/A	15		
Other	5		
Total	128	Total	(23,88,3)
Weather	# of Crashes	Surface Conditions	# of Crashes
Clear/Cloudy	50	Wet	18
Raining	13	Dry	46
Snow/Sleet	1		
Total	64	Total	64
Illumination	# of Crashes	Condition of Drivers	# of Crashes
Daylight	47	Normal	58
Dark-Lights On	14	Drinking / Drugs	4
Dawn/Dusk	3	Other or N/A	2
Total	64	Total	64

With the high volumes on MD 355 during peak hours, it is likely that congestion is a factor that contributes to rear-end collisions being the most common type of accident.

Of the six crashes involving pedestrians, only one citation was given to a driver that illegally proceeded through the intersection and hit an emergency responder that was present for a response call to an earlier crash. A second pedestrian crash involved a vehicle failing to yield right-of-way to a pedestrian legally in the crosswalk. Three pedestrian crashes resulted from pedestrians failing to follow existing traffic controls (e.g. crossing against the WALK signal or crossing outside of the crosswalk). The last crash involved a bicyclist in the northbound direction that failed to move with the flow of vehicular traffic and changed lanes unexpectedly.

Yellow times, as well as the stopping and intersection sight distances for the northbound and southbound approaches, were reviewed and determined to be adequate for the vehicles. Based on *AASHTO-Geometric Design of Highways and Streets* standards, the minimum required stopping sight distance is 360 feet. Northbound MD 355 has a measured sight distance greater than 500 feet and southbound MD 355 has a measured sight distance of 445 feet. Meeting the requirements for stopping sight distance also fulfills the requirement for left-turn sight distance from MD 355. Factors such as speeding, congestion, and/or selection of less than adequate gaps may contribute to the predominant rear-end and left-turn collisions.

I. Smart Growth and Related Studies

1. Maryland Smart Growth Law

Subsequent to the 1992 Planning Act, Maryland established the Priority Funding Act (1997) to direct State funded growth-related projects to areas designated by local jurisdictions as Priority Funding Areas (PFAs). The study area is located inside the Capital Beltway and is within the Priority Funding Area (PFA).

2. Related Projects and Studies

Various other projects in the study area correspond with the project purposes of enhancing/improving access to mass transit facilities, improving pedestrian and bicyclist mobility and safety, and improving traffic operations. Some of these projects are discussed below.

3. WMATA Medical Center Metrorail Station Access Improvement Study

In July 2009, the Washington Metropolitan Area Transit Authority (WMATA), in collaboration with the Maryland Department of Transportation (MDOT) and

MC-DOT completed the Medical Center Metrorail Station Access Improvement Study. This study examined access improvements for the Medical Center Metrorail Station by assessing existing station access for all travel modes, including pedestrian, bicycle, bus, and personal automobile, as well as the station's ability to accommodate both general and BRAC-related growth in the immediate area. Five station access alternatives were analyzed in the study: (1) improved at-grade crossing; (2) east-side elevator access; (3) shallow pedestrian tunnel; (4) east-side elevator access and shallow pedestrian tunnel; and (5) pedestrian bridge. The study findings were used by Montgomery County to apply for DAR certification to request project funding from the Department of Defense.

4. SHA Intersections Improvement Project

In the vicinity of the study area, SHA is implementing intersection improvement projects that are focused on maintaining the existing or slightly improved LOS. These projects include capacity improvements at the intersections to accommodate the increases of BRAC-related traffic and include upgrades to adjoining bicycle and pedestrian paths. The design phase is in progress with scheduled project completion in late 2011. The four major intersections of the SHA Intersections Improvement Project are:

- MD 355 (Rockville Pike) and Cedar Lane
- MD 187 (Old Georgetown Road) and Cedar Lane
- MD 355 (Rockville Pike) and Jones Bridge Road
- MD 185 (Connecticut Avenue) and Jones Bridge Road.

5. Montgomery County Facilities Study

Montgomery County is conducting a Facilities Study of the construction of new and renovation of existing pedestrian and bicycle paths in the area surrounding NSAB, to accommodate BRAC-related growth. Reconstruction of the MD 355 bike path is underway and other improvements are being designed for East Cedar Lane, West Cedar Lane, Battery Lane and Glenbrook Parkway, and Jones Bridge Road. All projects are scheduled for construction completion no later than September 2011.

6. Maryland Transit Administration Purple Line

The Purple Line is a 16-mile east-west high capacity rapid transit way extending from Bethesda in Montgomery County to New Carrollton in Prince George's County, proposed by the Maryland Transit Administration (MTA). If constructed, the Purple Line would enhance transportation to the Medical Center Metrorail Station by connecting communities in Prince George's and Montgomery counties, as the Bethesda endpoint would be accessible to and from the Bethesda Metrorail Station, which is located one stop away from the Medical Center Metrorail Station on the Red Line. The MTA anticipates receiving permission from the Federal Transit

Administration (FTA) to enter the next phase of the Purple Line Project, which is Preliminary Engineering, in 2010.

The MD 355/Rockville Pike Crossing Project stands alone from these other area projects and will address safety and capacity issues for those who access NSAB and NIH from the Metrorail station and the community. The limits of the study are centered on the intersection of MD 355 with South Wood Road and South Drive because that is the existing location of (1) access to the Medical Center Metro Station and (2) where a large number of pedestrians and bicyclists cross MD 355. The SHA intersection improvements, while in close proximity from a traffic and access standpoint, are far too distant to deal with the focused issue of safe and efficient pedestrian and bicycle crossing and increased access to the transit hub.

J. Summary of Project Purpose and Needs

The purpose of the MD 355/Rockville Pike Crossing Project is to improve the movement of the traveling public between the west and east sides of MD 355/Rockville Pike at its intersection with South Wood Road and South Drive in Bethesda, Maryland. This transportation project is intended to: (1) enhance/improve access to mass transit facilities; and (2) improve the mobility and safety of pedestrians and bicyclists crossing MD 355/Rockville Pike and improve traffic operations at the existing intersection of South Wood Road/South Drive/MD 355.

Currently, transit users, pedestrians, and bicyclists wishing to cross MD 355 to get to NSAB from the Medical Center Metrorail Station or NIH must compete with very high volumes of traffic traveling between South Wood Road, South Drive, and MD 355. This project is needed to improve the mobility and safety of pedestrians and bicyclists crossing MD 355/Rockville Pike and improve traffic operations at the intersection of South Wood Road/South Drive/MD 355 by reducing existing conflicts between pedestrians and vehicles.

Existing (2010) Metrorail ridership is estimated at 11,152 passengers per weekday and is anticipated to increase to 16,227 passengers per weekday by 2020 with NSAB's commitment to increase employee transit mode usage from 11 percent to 30 percent by that time. Based on the anticipated increases to transit ridership, improved access to mass transit facilities in the project area is necessary to accommodate and integrate connectivity between all commuters.

Approximately 30 bicyclists per day were counted at the project location, with most utilizing the north-south trail alongside MD 355 and not crossing the MD 355/South Wood Road/South Drive intersection. Bicyclists who approach the Metrorail station from the south and enter using the walkway just south of South Drive and those who arrive at the Metrorail station via bus or Metrorail also do not pass through the intersection and therefore were not included in the count. It is estimated that pedestrian crossings of MD 355 in 2030 will increase from the existing number of 320

to 990 in the AM peak and increase from 260 to 805 in the PM peak. During the three hour AM and PM peak periods, 2,150 and 2,415 pedestrians are expected to cross MD 355, respectively, in 2030. In total, 7,530 pedestrians are projected to cross MD 355 per day in 2030. With regard to non-motorized use of the intersection, bicyclists are included with pedestrians in the projections.

This growth in pedestrian and bicycle traffic will increase safety concerns in the study area, as vehicular traffic will compete with the existing 29-second maximum pedestrian walk cycle. By providing a safe crossing of MD 355 that links the existing north-south bike path along the west side MD 355 with the sidewalk on the east side, an improved crossing of MD 355/Rockville Pike could contribute to the use of pedestrian and bicycle paths for local residents.

Existing peak hour traffic volumes at the intersection are 4,435 in the AM and 5,275 in the PM and are projected to increase to 4,755 and 5,635 in the 2030 AM and PM peak hours, respectively. Today, the MD 355/South Wood Road/South Drive intersection operates at LOS C in the AM peak period with an average delay of 34.0 seconds and LOS F in the PM peak period with an average delay of 115.4 seconds. In 2030, this intersection is forecasted to operate at LOS D in the AM peak period with an average delay of 37.8 seconds and LOS F in the PM peak period with an average delay of 131.4 seconds. Due to congestion along the MD 355 corridor in the AM and PM peak periods, eastbound and westbound traffic must compete with very high volumes of traffic traveling on MD 355. Transit users, pedestrians, and bicyclists wishing to cross MD 355 to get to NSAB from the Medical Center Metrorail Station or NIH must compete with traffic turning southbound from South Drive and South Wood Road.

The study team used the most recent crash data available (from 2003 to 2007), collected by Montgomery County, to evaluate the safety issues in the project area associated with vehicular and pedestrian traffic. The safety analysis shows that there were a total of 64 accidents at the intersection of MD 355 and South Drive/South Wood Road, including the approaches. Injuries were reported in 16 of the accidents, with six of those resulting in serious injury, and eight accidents resulted in possible injury. Six accidents involved pedestrians and there were no fatalities reported. Of the 113 vehicles involved in the accidents, 73 were passenger cars and 12 were transit buses.

The safety concerns in the project area associated with pedestrian and vehicular traffic supports the need for improved access to mass transit facilities, improved mobility and safety of pedestrians and bicyclists crossing MD 355, and improved traffic operations at the intersection of MD 355 and South Drive/South Wood Road.

The MD 355/Rockville Pike Crossing Project would improve access to mass transit facilities in one of the most congested areas in the region. It would better integrate connectivity between rail, bus, car/vanpool, and pedestrian/bicycle commuters.

Increasing transit usage is part of the approach to mitigate forecasted congestion levels in this area of Montgomery County associated with BRAC impacts. Improved access to the Medical Center Metrorail Station would likely increase the attractiveness of Metrorail as an alternate mode of travel. It is also anticipated that this project will promote the use of pedestrian and bicycle paths for local residents, thereby reducing the use of single occupancy vehicles.

K. Project Goals and Objectives

Based on the study area needs documented in this study, the following primary goals and objectives related to the Purpose and Need were identified for this project:

- Improve pedestrian mobility between NSAB, NIH, and Medical Center Metrorail Station facilities through improved crossing of MD 355
- Improve pedestrian safety within the project area by minimizing conflicts with vehicular traffic
- Improve traffic operations to and from NSAB and NIH/Medical Center Metrorail Station at the MD 355/South Wood Road/South Drive intersection

The following secondary goals and objectives are not central to the Purpose and Need, but are still important considerations. These attributes will not be used as the main factor in determining which alternatives should be analyzed or carried forward, but will be used to support selection of a Preferred Alternative:

- Promote alternative modes of transportation such as rail, bus, car/vanpools, pedestrians and bicycle commuting
- Improve efficiency with which emergency and transit vehicles move between the NIH and NSAB campuses.



III. ALTERNATIVES RETAINED FOR DETAILED STUDY

A. Development of Preliminary Alternatives

To meet the outlined goals and objectives, the study team investigated a wide array of potential concepts to understand their feasibility. These concepts ranged from pedestrian-only crossings of MD 355 to overpass and underpass concepts that could accommodate vehicles as well as pedestrians and bicyclists. Once the Purpose and Need was drafted and agreed to by the project stakeholders, the study team developed a set of preliminary alternatives from the concepts that could potentially meet the project Purpose. The preliminary alternatives that were developed were grouped into four categories of improvement type, including:

- No-Build
- Transportation System Management/Transportation Demand Management (TSM/TDM)
- Interchange Alternatives
- At-Grade Intersection Improvements with Pedestrian/Bicyclist Crossing.

For each of the proposed preliminary alternatives list below, pedestrian and bicycle access facilities designed to be in compliance with the Americans with Disability Act (ADA) would be maintained during and after construction, in configurations similar to existing conditions. Similarly, access to transit services (e.g., Metrobus, Ride On, Metrorail, Kiss & Ride, etc.) would be maintained as proposed improvements are implemented. Coordination with SHA on other MD 355 intersection improvement projects at Jones Bridge Road and Cedar Lane has been and will continue throughout the design and construction process.

1. No-Build

Alternative 1 – The No-Build Alternative is required as part of the National Environmental Policy Act (NEPA) to form a basis of comparison for the build alternatives. With the No-Build Alternative, no substantial improvements would be made in the study area beyond those improvements included in the County's Capital Improvement Plan (CIP) or Metropolitan Washington Council of Governments' (MWCOC's) Constrained Long Range Transportation Plan (CLRP) for 2035. **Table III-1**, below, provides a summary of the forecasted 2030 No-Build traffic conditions in LOS and intersection delay.

**Table III-1: 2030 No-Build Peak Hour Intersection LOS and Delay
(seconds per vehicle)**

Condition	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
2030 No-Build	D	36.5 s/veh	F	136.9 s/veh

As mentioned previously, the study team also investigated the operations of the roadway network along MD 355, between Cedar Lane and Jones Bridge Road. SimTraffic software was used to evaluate the operations of the corridor segment for 2030 No-Build conditions with typical NSAB gate functions, as well as with an assumed increase in NSAB gate delays. The assumed delays at the NSAB gate were evaluated in response to concerns that the operations at the gate could be relatively easy to disrupt, particularly with visitors not accustomed to security requirements. The potential delays were then evaluated for their effect on the proposed improvements to determine the overall effect on network congestion.

Based on standard gate operations data, normal processing time was assumed to be approximately eight seconds per vehicle. To assess the impact of the potential delay at the gate to the overall network the traffic team assumed 19 seconds per vehicle if a delay were to occur at the gate. The network delay data is presented below, in **Table III-2**, as a percentage of overall network delay, where 2030 No-Build is the baseline (i.e., network is considered to function with a forecasted delay of 545.2 s/veh in the AM peak and 1341.3 s/veh in the PM peak). In the tables provided in this document, any percentage above zero represents increased delay; likewise, a negative value, under zero percent, shows a potential decrease in delay. As shown in **Table III-2**, additional delays at the NSAB gate would increase network delay by 15 percent in the AM peak, when most traffic is entering NSAB and by two percent in the PM peak over normal No-Build operations.

Table III-2: Peak Hour Network Delay for 2030 No-Build, and 2030 No-Build with Additional Delay at the NSAB Gate

Condition	AM Peak Hour Delay (Percent Change)	PM Peak Hour Delay (Percent Change)
2030 No-Build	545.2 s/veh (NA)	1341.3 s/veh (NA)
2030 No-Build With Additional NSAB Gate Delay	624.7 s/veh (15%)	1367.6 s/veh (2%)

2. Transportation System Management/Transportation Demand Management (TSM/TDM)

Alternative 2: TSM/TDM Alternative – This alternative consists of at-grade pedestrian and bicyclist facility enhancements developed to meet the project Purpose and Need while attempting to minimize costs and impacts. TDM elements include improving transit passenger amenities (e.g., enhanced bus shelters,

passenger information systems, etc.), encourage NSAB to investigate opportunities to assign drivers to use other access gates, encouraging telecommuting and use of bicycles, transit-oriented development, and reduce vehicle dependency. The TSM elements include minor capacity improvements, signal phasing or timing modifications, signal prioritization, and traffic calming measures (e.g., advanced pedestrian notification signals, synchronization of traffic signals, lighted crosswalks, flashing caution lights, pedestrian refuge median, accessible pedestrian signals, raised and/or textured pavement, improved sight distance, enlarged curb radii, etc.). Specifically, the following TSM elements are included in Alternative 2:

- Extend the southbound left turn lane (replacing exiting median with roadway surface to minimize impacts) on MD 355 approximately 425 feet to provide additional queue storage length to improve through traffic operations.
- Provide a separate pedestrian crossing signal phase that would allow pedestrians to cross at the same time as southbound left turning vehicles to remove all pedestrian/vehicular conflicts, improving pedestrian mobility and safety.
- Investigate opportunities to provide Kiss & Ride and bus pull off facilities on the east side (NSAB) of MD 355. (Note: these facilities were considered for all preliminary at-grade improvement options)
- Introduce traffic calming measures such as pedestrian median refuge, in-roadway lighted crosswalks, flashing caution lights, raised pavement, improved pedestrian signal notification and accessibility.
- Increase the curb radius from southbound MD 355 to South Drive to accommodate wider turning radii of buses.

See **Appendix E – Attachment 3** for more details.

3. Interchange Alternatives

This category of improvements would involve grade separating MD 355 and South Wood Road/South Drive so that vehicular, pedestrian, and bicyclist traffic using South Wood Road/South Drive would no longer conflict with traffic along MD 355. The proposed relocation of the NSAB gate (an improvement that is separate from this study) was considered in the development of these alternatives.

Alternative 3: Interchange with MD 355 Under South Wood Road/South Drive –

With this alternative, MD 355 would be lowered to cross beneath South Wood Road/South Drive, thereby creating a grade separation of the intersecting roadways. South Wood Road/South Drive would be carried on structure at its existing grade (with little to no change in elevation) to allow vehicles, pedestrians, and bicycles to cross over the MD 355 travel lanes. From south of the Wilson Drive intersection, MD 355 would slope down at a three percent grade under the South Wood Road/South Drive overpass then rise at a six percent grade, tying into the Jones Bridge Road approach. Vehicular access to MD 355 from South Wood Road/South Drive would be

provided via an at-grade T-intersection 400 feet north of the South Wood Road/South Drive crossing. All existing turning movements (those normally occurring at South Wood Road/South Drive) would be relocated via a jug handle to a signalized intersection on the NIH campus (Note: The study team considered a roundabout in lieu of a signal at this new intersection; however, the analysis resulted in poor traffic operations and increased impacts and was therefore dropped from consideration). See **Appendix E – Attachment 4** for more details on Alternative 3.

Alternative 4: Tight Urban Diamond Interchange – With this alternative, MD 355 would be lowered to cross beneath a reconstructed South Wood Road/South Drive connection (with the same three and six percent grades as Alternative 3) as a diamond interchange. This option would provide access to/from MD 355 while allowing movement between NIH and NSAB for vehicles, pedestrians, and bicycles separated from MD 355 through traffic. Access to/from MD 355 would be provided via right exit/merge lanes. Along with other permanent property impacts, this proposed improvement would require temporary relocation of vehicular movements to a new signalized intersection 400 feet north of the new crossing during construction. Also, this interchange design would prevent traffic heading south from NIH and NSAB from turning left onto eastbound Jones Bridge Road. As the study team was refining Alternative 4, three different scenarios were investigated; 1) single lane ramps to minimize property and cultural resource impacts; 2) double lane ramps to increase roadway capacity and operations; and 3) a pedestrian only signal phase for improved pedestrian mobility and safety. See **Appendix E – Attachment 5** for more details.

4. At-Grade Intersection Alternatives with Pedestrian & Bicyclist Crossing Options

This category of alternatives includes improvements to intersection operations at South Wood Road/South Drive to meet the traffic operational needs identified in the study area combined with one of five pedestrian/bicyclist mobility and safety options proposed for this study to meet the transit access and pedestrian/bicycle mobility and safety needs identified in the study area. The three intersection improvements are described below, followed by the five pedestrian/bicyclist crossing options. The intersection improvements take into consideration the proposed relocation of the NSAB gate. Any of the at-grade intersection improvements could be combined with any of the five crossing options. Similarly to Alternative 2, the study team investigated opportunities to include a new Kiss & Ride and bus pull off facilities on the east side of MD 355 (NSAB property) for each at-grade alternative.

Alternative 5: Double Left Turns – Double left turn lanes are proposed from southbound MD 355 into NSAB and from NIH to northbound MD 355 to increase the available storage for these turning vehicles and improve traffic operations. The proposed southbound MD 355 double left turn lanes would require a realignment of

northbound MD 355 travel lanes. Even with a grade-separated pedestrian/bicyclist crossing, at-grade pedestrian crossing facilities would still be required for those who choose not to use the proposed new crossing option. See **Appendix E – Attachment 6** for more details.

Alternative 6: Southbound Jug Handle – All existing left turning vehicle movements (both into and out of NIH and NSAB) would be relocated to a new signalized intersection approximately 400 feet north of the South Wood Road/South Drive intersection. The existing South Wood Road/South Drive intersection would be reconfigured to accommodate through and right turning movements between NIH and NSAB and on MD 355. Similar to Alternative 5, an at-grade pedestrian/bicyclist crossing would be required for those who choose not to use the proposed new crossing option. As with Alternative 3, all turning movements would be relocated via the jug handle to a signalized intersection on the NIH campus (Note: Similar to Alternative 3, a roundabout was investigated here in lieu of a standard traffic signal, but was dropped from consideration due to impacts and poor operations). A traffic signal would still exist at the intersection of MD 355/South Wood Road/South Drive. Only east-west through movements between NIH and NSAB would be permitted at this location. See **Appendix E – Attachment 7** for more details.

Alternative 7: Northbound Jug Handle – Existing southbound left, and northbound left and right turning movements would be relocated approximately 400 feet south of the South Wood Road/South Drive intersection to tie-in with proposed jug handle lanes constructed on NSAB property adjacent to the helipad. The jug handle would provide northbound access to NIH and northbound and southbound access to NSAB. A traffic signal would still exist at the intersection of MD 355/South Wood Road/South Drive. However, no inbound traffic would be permitted to enter South Wood Road at the existing intersection. The South Wood Road security gate would be relocated to process jug handle traffic. Traffic bound for NIH would have an exclusive barrier separated lane to avoid having to stop at the NSAB gate. See **Appendix E – Attachment 8** for more details.

5. Pedestrian/Bicyclist Crossing Options

As noted above, the following options were developed to be combined with the at-grade alternatives to satisfy all elements of the project Purpose and Need. The options were specifically intended to address pedestrian and bicyclist safety and mobility while adhering to the Americans with Disability Act (ADA) design requirements. The TSM/TDM pedestrian/bicyclist crossing option includes the portion of Alternative 2 described above that improves pedestrian mobility and safety. The other four options are based on the concepts developed as part of the Washington Metropolitan Area Transit Authority (WMATA) study completed in July 2009. See **Appendix E - Attachments 6 through 8** for more details on all of the proposed Pedestrian/Bicyclist Crossing Options.

TSM Bicycle/Pedestrian At-Grade Crossing Option – Based on the elements investigated as part of Alternative 2 (but without geometric improvements), these at-grade pedestrian/bicyclist improvements at the existing MD 355/South Wood Road/South Drive intersection would include a separate pedestrian signal phase, advanced pedestrian notification signals, synchronization of traffic signals, lighted crosswalks, flashing caution lights, pedestrian refuge median, accessible pedestrian signals, raised and/or textured pavement.

Deep Elevator Option – A series of high speed elevators would be installed to connect the east side (NSAB) of MD 355 directly to the Metrorail station, approximately 100 feet below the surface. This option would benefit Metrorail riders, but not surface pedestrians and bicyclists. As an example of the efficiency of high speed elevators, WMATA operates six high speed elevators at the Forest Glen Metrorail station, moving passengers approximately 200 feet in 20 seconds (approximately 600 feet per minute). An at-grade crossing would be maintained for those who choose not to use the deep elevators.

Shallow Pedestrian/Bicyclist Underpass Option – A pedestrian and bicyclist underpass of MD 355 would be constructed approximately 25-50 feet below the surface, requiring Metrorail riders to exit the station to access the crossing. This option would be accessible by all pedestrians and bicyclists crossing MD 355. ADA compliant ramps and/or elevators would be provided along with escalators and/or stairs to maintain accessibility. An at-grade crossing would be maintained for those who choose not to use the underpass. The average WMATA-operated escalator runs at approximately 85 feet per minute. An at-grade crossing would be maintained for those who choose not to use the underpass.

Deep Elevators/Shallow Pedestrian/Bicyclist Underpass Combination Option – This option would be a combination of the previous two options so that Metrorail riders and other users could access the facilities and avoid conflicts with vehicles. An at-grade crossing would be maintained for those who choose not to use the underpass or deep elevators.

Pedestrian Bridge Option – A pedestrian/bicyclist bridge would be constructed over MD 355 just south of the MD 355/South Wood Road/South Drive intersection. ADA compliant ramps and/or elevators would be provided along with escalators and/or stairs to maintain accessibility. In addition, an at-grade crossing would be maintained for those who choose not to use the overpass.

B. Screening of Preliminary Alternatives

Based on the study area needs documented in the Purpose and Need Statement and from comments received from project stakeholders, the following screening criteria and measures of effectiveness were used to determine the alternatives to be retained for detailed study (ARDS):

- **Pedestrian and Bicyclist Safety and Mobility**– The study team looked for opportunities to decrease the number of conflicts between pedestrian/bicyclist and motor vehicles as well as ways to improve mobility between NSAB, NIH, and the Medical Center Metro Station.
- **Intersection Traffic Operations** – The study team evaluated intersection LOS and travel delays for each alternative to determine how the improvements would affect intersection operations for comparison purposes.
- **Network Traffic Operations** – The study team evaluated network (Jones Bridge Road to Cedar Lane) delay for each alternative for comparison to No-Build and other proposed build conditions.
- **Compatibility with Other Projects Proposed within the Study Area** – The study team evaluated the effects on proposed SHA and NSAB projects in close proximity to the MD 355/South Wood Road/South Drive intersection.
- **Impacts to Environmental and Cultural Resources** – The study team identified resources and investigated impacts to natural environmental features and cultural elements for potential adverse effects.

To assess intersection and network traffic operations, simulation models were developed for the MD 355 corridor between Jones Bridge Road and Cedar Lane using Synchro/SimTraffic. This analysis tool incorporates varying travel speeds and arrival rates, various driver behaviors, specific signal timing patterns and roadway geometry (including storage lengths), and the influence that one roadway feature may have on another, such as traffic from one intersection queuing into an adjacent intersection or a merge affecting lane distributions on a freeway segment. The simulation models were developed and calibrated using the AM and PM peak hour turning movement volumes, existing lane configurations, and existing posted speeds. The existing roadway alignments and geometric conditions were incorporated into the simulation models by using scaled aerial photographs of the study area as a background for the simulation model roadway networks. The output from Synchro, which is shown below for each preliminary alternative represents the operation of a particular intersection in isolation, that is, without considering the effects of adjacent intersections and roadway operations. The output from SimTraffic, which is also presented for each alternative, represents the operational behavior of the intersection as part of a system.

The Synchro analysis yields a Level of Service (LOS) for the intersection as well as overall intersection delay per vehicle. The LOS is a letter grade that represents the operational characteristics of an intersection, roundabout, freeway feature (merge, diverge, freeway segment, or weave), or an arterial corridor segment. The characteristics of the LOS grades are presented below:

- **LOS A:** Free traffic flow, low traffic volumes, minimal delays. Traffic volumes are significantly below the roadway feature's capacity.

- LOS B: Stable traffic flow, low to moderate traffic volumes, minor delays. Traffic volumes are well below the roadway feature's capacity.
- LOS C: Stable traffic flow, moderate traffic volumes, noticeable but acceptable delays. Traffic volumes are increasing, but are still well below the roadway feature's capacity.
- LOS D: Approaching unstable traffic flow, moderate to heavy traffic volumes, noticeable delays. Traffic volumes are approaching the roadway feature's capacity.
- LOS E: Unstable traffic flow, heavy traffic volumes, significant delays and vehicle backups, intersection warrants upgrade to address operations. Traffic volumes are reaching the roadway feature's capacity (the v/c ratio is approaching 1.0).
- LOS F: Unstable traffic flow, extensive delays and vehicle backups, intersection warrants upgrade to address deficiencies. Traffic volumes have exceeded the roadway feature's capacity (the v/c ratio has exceeded 1.0). LOS F conditions cannot be observed under existing conditions, but can be predicted to occur under future conditions.

The SimTraffic yields results, in terms of delay per vehicle, for each approach to the intersection. Please note, however, that the output does not necessarily represent conditions that would actually occur. For example, SimTraffic may show a delay for a particular approach that is over 1,500 seconds. While this number is not “real” in the sense that vehicles would be delayed at an intersection for 25 minutes, it does show that the delay at a particular approach will be significant. When dealing with highly congested corridors, like MD 355, it is difficult to rely on the results of the simulation models to predict “real” delay. Instead, the results are useful in understanding trends and making comparisons between different scenarios and alternatives.

C. Preliminary Alternatives Dropped from Further Consideration

The study team applied the results of the technical analyses, goals and objectives, and screening criteria to all of the preliminary alternatives to assess which alternatives may not adequately meet the project Purpose and Need. It was determined that four of the seven preliminary alternatives, and three of the pedestrian/bicycle crossing options, would not adequately meet the goals and objectives and thus were recommended to be dropped from further consideration. In addition the team determined that the proposed east side (NSAB) Kiss & Ride and bus pull off facilities should be dropped from all at-grade alternatives due to concerns regarding impacts to cultural resources.

Alternative 4: Tight Urban Diamond Interchange – With this alternative, pedestrian mobility and safety remains a concern, because pedestrian crossings would not be completely separated from the vehicular traffic on the South Wood

Road/South Drive ramps. The study team investigated a pedestrian only signal phase; however the traffic analysis shows that this phase change made overall network operations worse in comparison to the 2030 No-Build condition (See **Tables III-3** and **III-4**). In addition, from an operational standpoint, queued vehicles being processed at the NSAB security gate could potentially block egress from the northbound MD 355 exit ramp during the AM peak period. The study team considered doubling the number of lanes on the ramps for added capacity, however little overall operational benefit resulted when compared to the significant impacts associated with the larger footprint. It was also determined that if the NSAB gate processing times were increased beyond what was assumed for this study, traffic would queue back along the ramps, ultimately onto mainline MD 355, blocking through lanes and worsening congestion. Moreover, the team investigated opportunities to improve pedestrian safety through signal phase modifications; however the team ultimately determined that the minor benefit to pedestrians was outweighed by the negative impacts to traffic operations and historic property.

Traffic analyses also showed a high volume of traffic turning from southbound MD 355 to access South Wood Road/South Drive and the NIH visitor parking garage in the AM peak period that would present operational and queuing issues. There were also concerns raised that the substandard distance for motorists entering southbound MD 355 from the ramp to safely weave across the three lanes to make a left turn onto eastbound Jones Bridge Road was insufficient. While the study team does not know the number of vehicles that would need to make that movement, it was noted as a potential safety issue and design flaw.

In addition to concerns regarding traffic operations and safety, the team also expressed concerns regarding the high levels of impact to properties and their associated cultural resources. Because of the extent of the improvements is so large there was a consensus among team members that Alternative 4 would be considered to have a significant adverse effect on the NSAB property, which is listed on the National Register of Historic Places.

Overall Alternative 4 does show some potential to improve traffic operations; however, the combination of concerns regarding gate operations negatively affecting the overall network, minimal improvements to pedestrian safety, and significant impacts to cultural resources were too great for the study team to carry it forward.

Table III-3: Alternative 4 Peak Hour LOS and Delay per Vehicle (in seconds)

Condition		AM Peak Hour		PM Peak Hour	
		LOS	Delay	LOS	Delay
2030 No-Build		D	36.5 s/veh	F	136.9 s/veh
Alt 4 – Single Lane Ramps NB and SB	SB Ramps	F	248.2 s/veh	E	56.0 s/veh
	NB Ramp	D	50.0 s/veh	D	36.3 s/veh
Alt 4 – Two Lane Ramps NB and SB	SB Ramps	F	117.2 s/veh	D	52.2 s/veh
	NB Ramp	C	24.6 s/veh	D	35.6 s/veh
Alt 4 – Two Lane Ramps & Pedestrian Signal Phase	SB Ramps	F	142.0 s/veh	E	70.0 s/veh
	NB Ramp	C	29.3 s/veh	D	44.9 s/veh
Alt 4 - With Additional NSAB Gate Delay	SB Ramps	F	117.2 s/veh	D	52.2 s/veh
	NB Ramp	C	24.6 s/veh	D	35.6 s/veh

Table III-4: Peak Hour Network Delay for Alternative 4 Scenarios

Condition	AM Peak Hour Delay (Percent Change)	PM Peak Hour Delay (Percent Change)
2030 No Build	545.2 s/veh (NA)	1341.3 s/veh (NA)
Alt. 4 – Single Lane Ramps	908.3 s/veh (67%)	1307.2 s/veh (-3%)
Alt. 4 – Two Lane Ramps	552.8 s/veh (-4%)	1275.8 s/veh (-5%)
Alt. 4 – Two Lane Ramps with Pedestrian Signal Phase	551.8 s/veh (1%)	1556.7 s/veh (16%)
Alt. 4 – With Additional NSAB Gate Delay	902.0 s/veh (65%)	1226.0 s/veh (-9%)

Alternative 5: Double Left Turns – This alternative was dropped because it would require reconfiguration of the planned NSAB security gate that includes reversible travel lanes. The double left turn would compromise the reconfigured NSAB gate design because two receiving lanes would be required in lieu of the proposed reversible lane. This reconfiguration creates concerns regarding peak hour travel operations (See **Tables III-5** and **III-6**).

Because the construction of the southbound double left turn lanes require widening onto NSAB property, there are concerns that the NSAB security gate processing/queuing area would be reduced by approximately 30 feet per lane (60 feet total), therefore negatively affecting operations. Conversely, the widening could require relocation of the NSAB security gate which could affect Anti-Terrorism Force Protection (ATFP) requirements. The extended left turn bay proposed as part of Alternative 2 would give a similar benefit as the double left turns (in terms of eliminating blockage of the through lanes on southbound MD 355), but with no property or cultural resource impacts. In addition, the double left turns out of NIH on

South Drive appear to offer no operational benefits to NIH security gate operations based on the forecasted volume of northbound left turning traffic.

Table III-5: Alternative 5 Peak Hour LOS and Delay per Vehicle (in seconds)

Condition	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
Alt. 5 – Geometric Improvements	C	32.8 s/veh	F	85.0 s/veh
Alt. 5 – Geometric Improvements With Additional NSAB Gate Delay	C	32.8 s/veh	F	85.0 s/veh

Table III-6: Peak Hour Network Delay for Alternative 5 Scenarios

Condition	AM Peak Hour Delay (Percent Change)	PM Peak Hour Delay (Percent Change)
2030 No-Build	545.2 s/veh (NA)	1341.3 s/veh (NA)
Alt. 5 – Geometric Improvements with Pedestrian Only Signal Phase	558.1 s/veh (2%)	1406.2 s/veh (5%)
Alt. 5 – With Additional NSAB Gate Delay	608.2 s/veh (12%)	1412.4 s/veh (5%)

Alternative 6: Southbound Jug Handle – With this alternative, the proximity of the proposed signal prior to the NIH security gate could negatively affect operations (See **Tables III-7** and **III-8**) and adding an additional signal on MD 355 in close proximity to the South Wood Road/South Drive intersection would adversely affect operations on MD 355. Bus operations could potentially be impacted due to eastbound vehicles blocking the bus bay loop. In addition, the more circuitous route combined with the signal at MD 355/South Wood Road/South Drive could lengthen the time it takes for patients to reach the NSAB emergency room. Transit vehicles would also be negatively affected by the circuitous route to access the Metrorail station.

If additional delays were to occur at the NSAB gate with the proposed Alternative 6 improvements in place, the overall network would be expected to experience approximately 126 percent higher delay during the AM peak when compared to the No-Build base condition. Unlike Alternative 3, the Alternative 6 configuration would require traffic destined for NSAB to pass through the MD 355/South Wood Road signalized intersection. With extra delays at the gate, and relatively little signal time dedicated to the through movement from South Drive, the southbound vehicles intending to enter NSAB would experience significant delays, queuing back along southbound MD 355 beyond Cedar Lane further contributing to congestion. Because of the operational and mobility issues associated with the proposed reconfiguration of movements, Alternative 6 was recommended to be dropped from consideration.

Table III-7: Alternative 6 Peak Hour LOS and Delay per Vehicle (in seconds)

Condition		AM Peak Hour		PM Peak Hour	
		LOS	Delay	LOS	Delay
Alt. 6 – Geometric Improvements	Existing South Wood Road/South Drive	B	16.7 s/veh	C	28.0 s/veh
	New signal on MD 355	B	10.8 s/veh	B	14.2 s/veh
	New Signal at NIH Security Gate	A	8.3 s/veh	A	8.2 s/veh
Alt. 6 – Geometric Improvements With Additional NSAB Gate Delay	Existing South Wood Road/South Drive	B	16.7 s/veh	C	28.0 s/veh
	New signal on MD 355	B	10.8 s/veh	B	14.2 s/veh
	New Signal at NIH Security Gate	A	8.3 s/veh	A	8.2 s/veh

Table III-8: Peak Hour Network Delay for Alternative 6 Scenarios

Condition	AM Peak Hour Delay (Percent Change)	PM Peak Hour Delay (Percent Change)
2030 No-Build	545.2 s/veh (NA)	1341.3 s/veh (NA)
Alt. 6 – Geometric Improvements	588.5 s/veh (8%)	1512.5 s/veh (13%)
Alt. 6 – With Additional NSAB Gate Delay	1229.7 s/veh (126%)	1575.2 s/veh (17%)

Alternative 7: Northbound Jug Handle – While there is potential for improved traffic operations and vehicle queue storage during peak travel times, negative effects result from signal coordination and impacts to NSAB gate operations and airspace restrictions (with this alternative, the NSAB security gate would have to be relocated from its current alignment on South Wood Road and a separate pedestrian only gate would be required). Likewise, the more circuitous route combined with the new signal at the jug handle intersection with MD 355 could lengthen the time it takes for patients to reach the NSAB emergency room. In addition, construction of the new access roadway would have an adverse effect on NSAB property, which is listed in the National Register of Historic Places as an historic district. Additional security measures would be required along South Wood Road to inhibit incoming vehicular traffic from the MD 355 intersection. Additionally, NIH and transit traffic must travel a circuitous route and the resulting queues may interfere with the intersection and NSAB security gate operations.

Operationally, Alternative 7 is similar to Alternative 6, but places the new intersection on MD 355 south of South Wood Road, and provides direct access to NSAB. During the AM peak hour, traffic operations would be expected to be very

similar to the No-Build condition. In the PM peak hour, the new intersection to the south on MD 355 would allow vehicles to more efficiently depart NSAB and NIH onto northbound MD 355, significantly decreasing the delays experienced on those approaches. However, the addition of more NIH and NSAB vehicles to the MD 355 system reduces the ability for vehicles from other sources to enter MD 355, thereby increasing overall network delays throughout the corridor. If extra delays occurred at the NSAB gate on South Wood Road the overall network would be expected to experience 17 percent and 27 percent higher delays during the AM and PM peak, respectively, when compared to the No-Build base condition. Alternative 7 was ultimately dropped due to the overall negative impact to the roadway network (See [Tables III-9](#) and [III-10](#)) and a lack of safety and mobility improvements for pedestrians.

Table III-9: Alternative 7 Peak Hour LOS and Delay per Vehicle (in seconds)

Condition		AM Peak Hour		PM Peak Hour	
		LOS	Delay	LOS	Delay
Alt. 7 – Geometric Improvements	Existing South Wood Road/South Drive	B	19.6 s/veh	F	82.2 s/veh
	New signal on MD 355	A	6.3 s/veh	A	5.7 s/veh
	New Signal at NSAB Gate	A	6.0 s/veh	B	13.2 s/veh
Alt. 7 – Geometric Improvements With Additional NSAB Gate Delay	Existing South Wood Road/South Drive	B	19.6 s/veh	F	82.2 s/veh
	New signal on MD 355	A	6.3 s/veh	A	5.7 s/veh
	New Signal at NSAB Gate	A	6.0 s/veh	B	13.2 s/veh

Table III-10: Peak Hour Network Delay for Alternative 7 Scenarios

Condition	AM Peak Hour Delay (Percent Change)	PM Peak Hour Delay (Percent Change)
2030 No-Build	545.2 s/veh (NA)	1341.3 s/veh (NA)
Alt. 7 – Geometric Improvements	544.6 s/veh (0%)	1699.4 s/veh (27%)
Alt. 7 – With Additional NSAB Gate Delay	639.1 s/veh (17%)	1621.7 s/veh (27%)

TSM Bicycle/Pedestrian At-Grade Crossing Option (Signal Phase Enhancement and Kiss & Ride Elements Only) – During the alternatives analysis, the study team determined that proposed changes to existing geometry (i.e., extending the southbound left turn lane into South Wood Road) would not affect traffic operations but would improve vehicle queuing distances. Conversely, proposed modifications to the signal timing would increase wait times on each approach, for pedestrians as well as for vehicles (as shown in [Table III-11](#)), and would have adverse effects on travel time delays throughout the MD 355 corridor ([Table III-12](#)). Specifically, LOS and delay would increase significantly, further overloading the currently stressed roadway capacity. In addition, there were no safety or mobility benefits that could

be directly attributed to providing a separate signal phase, therefore it was dropped from consideration for failure to meet project Purpose and Need.

As noted previously, the study team determined that the potential impacts associated with a proposed Kiss & Ride facility on the NSAB property would be too great to implement at this time and has therefore been dropped from consideration. The team did note that the Kiss & Ride may be eligible for implementation in the future, as part of another project.

Table III-11: TSM Bicycle and Pedestrian Signal Phase Enhancement Peak Hour LOS and Delay per Vehicle (in seconds)

Condition	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
2030 No-Build	D	36.5 s/veh	F	136.9 s/veh
TSM Bicycle/Pedestrian Signal Phase Enhancement	D	70.2 s/veh	F	198.9 s/veh

Table III-12: Peak Hour Network Delay for TSM Pedestrian/Bicycle Signal Phase Enhancement

Condition	AM Peak Hour Delay (Percent Change)	PM Peak Hour Delay (Percent Change)
2030 No-Build	545.2 s/veh (NA)	1341.3 s/veh (NA)
TSM Bicycle/Pedestrian Signal Phase Enhancement	557.8 s/veh (2%)	1360.7 s/veh (1%)
TSM Pedestrian/Bicycle Signal Phase Enhancement with Additional NSAB Gate Delay	589.5 s/veh (8%)	1412.3 s/veh (5%)

Pedestrian Bridge – While it would be less disruptive to construct a pedestrian bridge over MD 355 compared to an underpass or deep elevator system, the bridge would likely have an adverse effect on the historic viewsheds in the study area and create potential sight distance concerns on MD 355. Based on feedback from stakeholders, the study team noted concerns that the bridge could block the view of the traffic signals for northbound MD 355 traffic, unless the traffic signals are installed on the pedestrian bridge itself. In addition, research has shown that pedestrians are less likely to use a pedestrian bridge instead of an at-grade crossing when given the choice. Due to these concerns, the pedestrian bridge was dropped from consideration.

D. Alternatives Retained for Detailed Study

The following description and attached mapping of the ARDS defines the action currently under consideration. The concept level mapping that accompanies this package includes the existing conditions study area map which represents the No-Build Alternative (Alternative 1) and three Build ARDS (Alternatives 2A, 2B, and 3). A map of each alternative described below is provided in [Appendix E – Attachments 9 through 11](#).

Alternative 1: No-Build – This alternative is being retained to provide a comparison with existing conditions and the build alternatives even though it would not address the project Purpose and Need. This alternative assumes no substantial improvements beyond those in the County's Capital Improvement Plan (CIP) or Metropolitan Washington Council of Governments (MWWCOG) Constrained Long Range Transportation Plan (CLRTP) for 2035. This alternative does not address impacts of BRAC on the study area.

As discussed earlier in this document and summarized in [Table III-13](#), below, 2030 No-Build traffic is expected to operate at LOS F during the AM peak hour, and traffic exiting South Wood Road and South Drive may have to wait through more than one signal cycle before departing. Further, the southbound left turn traffic into NSAB may occasionally queue beyond its storage lane.

In the PM peak hour the MD 355 corridor would be congested. Traffic flow on northbound MD 355 would encounter a bottleneck north of Cedar Lane, which would cause queues at intersections throughout the network. These queues would result in a condition in which traffic approaching the South Wood Road/South Drive intersection on northbound MD 355 would frequently have to stop while their signal was green due to the back of queue from Wilson Drive extending all the way to South Drive. Southbound MD 355 would be expected to operate more smoothly with the exception of a queue in the southbound left turn lane to Jones Bridge Road which would be expected to frequently extend back through South Drive. Queues on South Wood Road and South Drive are predicted to be extensive. Extra delays occurring at the NSAB gate would be expected to increase overall network delays by approximately 15 percent during the AM peak (when entering volumes are highest) and two percent during the PM peak as shown in [Table III-14](#), below.

**Table III-13: 2030 No-Build Peak Hour Intersection LOS and Delay
(seconds per vehicle)**

Condition	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
2030 No-Build	D	36.5 s/veh	F	136.9 s/veh

Table III-14: Peak Hour Network Delay for 2030 No-Build & 2030 No-Build with Additional Delay at the NSAB Gate

Condition	AM Peak Hour (Percent Change)	PM Peak Hour (Percent Change)
2030 No-Build	545.2 s/veh (NA)	1341.3 s/veh (NA)
2030 No-Build With Additional NSAB Gate Delay	624.7 s/veh (15%)	1367.6 s/veh (2%)

Alternative 2A: Pedestrian/Bicycle Underpass with At-Grade TSM Improvements – this alternative consists of combining the safety enhancement of the grade-separated pedestrian and bicycle underpass with certain elements of Alternative 2 TSM improvements (e.g., lower cost geometric improvements, traffic calming measures, and transit station improvements) and would more adequately meet the goals and objectives of the project than would Alternative 2 alone. The grade separated pedestrian/bicycle underpass would reduce conflicts with vehicles, while potentially improving traffic operations. In addition the proposed at-grade geometric roadway improvements would also enhance traffic operations through improved vehicle mobility. **Tables III-15** and **III-16** illustrate the traffic analyses conducted for this alternative. Physical changes to the area under consideration for this alternative include:

- Extension of the southbound MD 355 left turn lane for vehicles turning left onto South Wood Road to improve queuing
- Expansion of the existing curb radius at the northeast corner of South Drive/MD 355 to improve geometrics (particularly for buses)
- Constructing a pedestrian and bicycle underpass approximately 30 feet below MD 355 to provide a fully separated crossing for pedestrians and bicyclists. Access to the underpass will be provided via elevators, escalators, and stairs.

Alternative 2B: Pedestrian/Bicycle Underpass and Deep Elevators with At-Grade TSM Improvements – This alternative incorporates the features of the shallow tunnel with deep elevators option with the TSM elements of Alternative 2. The proposed deep elevators on the east side of MD 355 would provide direct access, 118 feet below grade, to the Metrorail station. The deep elevators will give employees and visitors to NSAB direct access from the Metrorail station platform to the South Wood Road entrance without having to cross MD 355 at grade. In addition, non-Metrorail users would benefit from the safety provided by the shallow underpass crossing of MD 355 (similar to Alternative 2A). Meanwhile, the at-grade TSM roadway geometric improvements would enhance vehicle mobility. See **Tables III-15** and **III-16** for traffic analysis summary.

For both Alternatives 2A and 2B, removing the majority of the pedestrians and bicycles from the at-grade crossing of MD 355 at South Wood Road and South Drive would reduce pedestrian/vehicle conflicts and would also be expected to allow

more of the traffic exiting NIH and NSAB to proceed during each signal cycle, which would be a traffic operations improvement when compared to the No-Build condition, particularly in the PM peak hour when more vehicles are exiting NSAB and NIH.

Removal of queue overflow conflicts (where vehicles extend beyond the turn lane into the through lane) for the southbound left turn lane during the AM peak would be expected to allow slightly more efficient operations on southbound MD 355 through the MD 355/South Wood Road/South Drive intersection. More efficient operation at this location means that more vehicles would be arriving at Jones Bridge Road than would under the 2030 No-Build condition, which would put slightly more pressure on that intersection. Similarly, more efficient departures from South Wood Road and South Drive would put more traffic on MD 355, particularly during the PM peak hour where space would already be limited by congestion. This condition would lead to fewer vehicles traveling northbound on MD 355 would pass through the intersection. The net result of the improvements at MD 355/South Wood Road/South Drive would be expected to be a slightly increased overall network delay during both peak hours (less than four percent).

As shown in **Table III-16**, if extra delays occurred at the NSAB gate on South Wood Road the overall network would be expected to experience approximately 8 percent higher delays during the AM peak when compared to the No-Build base condition. The extra delays anticipated under Alternative 2 would be less than those expected under the 2030 No-Build condition due to the additional southbound left turn storage length for vehicles entering NSAB.

**Table III-15: Alternative 2A & 2B Peak Hour LOS and Delay per Vehicle
(in seconds)**

Condition	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
Alternatives 2A & 2B with Decreased Number of At-Grade Pedestrian Crossings	D	35.4 s/veh	F	136.5 s/veh

Table III-16: Peak Hour Network Delay for Alternatives 2A and 2B Scenarios

Condition	AM Peak Hour Delay (Percent Change)	PM Peak Hour Delay (Percent Change)
Alts. 2A & 2B with Decreased At-Grade Pedestrian Crossing	549.6 s/veh (1%)	1381.6 s/veh (3%)
Alts. 2A & 2B – With Additional NSAB Gate Delay	589.5 s/veh (8%)	1412.3 s/veh (5%)

Alternative 3: Grade Separation of MD 355 under South Wood Road/South Drive
– This alternative involves lowering MD 355 to cross under South Wood Road and South Drive. South Wood Road and South Drive would be reconstructed to provide

through movements only (without a signal) for vehicles, pedestrians and bicycles at its existing grade. Vehicle access to MD 355 would be provided via a relocated at-grade intersection 400 feet north of the South Wood Road/South Drive crossing. An exit/entrance “jug handle” would be located between the new intersection and the north side of the NIH “Kiss and Ride,” connecting to South Drive. Traffic operations are expected to improve under Alternative 3. Even with an operational breakdown at the NSAB gate, Alternative 3 is expected to operate acceptably as demonstrated in **Tables III-17** and **III-18**.

While the overall corridor shows an anticipated increase in delays of 11 percent in the AM peak hour and 10 percent in the PM peak hour when compared to the No-Build condition, during the AM peak hour the relocated intersection is expected to operate much more efficiently than the existing intersection would. However, as movements out of NSAB and NIH improve, more traffic would be able to flow through the network, which would put an additional burden on other intersections in the corridor, resulting in an overall increase in corridor-wide delays.

As shown in **Table III-18**, if extra delays occurred at the NSAB gate on South Wood Road the overall network would be expected to experience approximately 13 percent higher delays during the AM peak when compared to the No-Build base condition. The extra delays anticipated would be expected to be five percent higher than the Alternative 3 base condition due to the extra storage provided for vehicles approaching the NSAB gate.

Table III-17: Alternative 3 Peak Hour LOS and Delay per Vehicle (in seconds)

Condition		AM Peak Hour		PM Peak Hour	
		LOS	Delay	LOS	Delay
Alternative 3	On MD 355	C	20.4 s/veh	C	25.1 s/veh
	On South Drive	B	15.9 s/veh	B	17.4 s/veh

Table III-18: Peak Hour Network Delay for Alternative 3 Scenarios

Condition	AM Peak Hour (Percent Change)	PM Peak Hour (Percent Change)
2030 No-Build	545.2 s/veh (NA)	1341.3 s/veh (NA)
Alt. 3 – Geometric Improvements	605.1 s/veh (11%)	1473.0 s/veh (10%)
Alt. 3 – Geometric Improvements With Additional NSAB Gate Delay	616.4 s/veh (13%)	1472.7 s/veh (10%)



IV. RESULTS OF ADDITIONAL ANALYSIS PERFORMED ON THE ARDS

A. Purpose of Additional Analysis

The purpose of this section is to summarize the results of the additional analysis performed on the Alternatives Retained for Detailed Study (ARDS) for the MD 355 (Rockville Pike) Crossing Study. The information provided is intended to assist the stakeholder group in better assessing each alternative and how it supports the project Purpose and Need and ultimately identifying a Preferred Alternative.

B. Measures of Effectiveness

Since the identification of the ARDS, a number of analyses have been conducted to assess the Build alternatives and how they support the project Purpose and Need compared to the No-Build Alternative and to each other. As the preliminary alternatives were developed, the project team developed screening criteria to determine which alternatives had the greatest potential to meet the needs of the project. This section will summarize the additional analyses conducted and the results of each analysis as it relates to the screening criteria outlined below.

Screening Criteria:

1. Pedestrian/bicyclist safety, including reduction in pedestrian/bicycle and vehicle conflicts
2. Efficiency of pedestrian and bicycle movements (i.e., travel times and appeal of route)
3. Traffic operations at the MD 355/South Wood Road/South Drive intersection (i.e., Level of Service (LOS), intersection queue lengths, delay)
4. Compatibility with bus operation
5. Compatibility with adjacent projects in the study area
6. Compatibility with NSAB proposed gate operations and processing
7. Environmental impacts
8. Emergency vehicle access

In addition to these screening criteria, the study team examined Maintenance of Traffic concepts to understand the feasibility, phasing, and impacts of the alternatives during construction, as well as developed cost estimates for each alternative. The results of these evaluations are also included in this package to be used during the decision-making process.

1. Pedestrian/Bicyclist Safety

To assess whether the proposed improvements would enhance pedestrian safety, the study team looked into whether there would be a reduction in conflict points between pedestrian/bicycle and motorized vehicle users of the intersection. **Figures IV-1 and IV-2** illustrates the existing and proposed vehicle and pedestrian/bicycle conflict points for each alternative. Letter A – H represent the actual pedestrian movement locations and the direction of movement is noted with an orange arrow. Alternatives 2A and 2B will have the same number of conflict points as the No-Build Alternative except for crosswalk E because we have assumed that some individuals will choose to cross at grade instead of using the underpass.

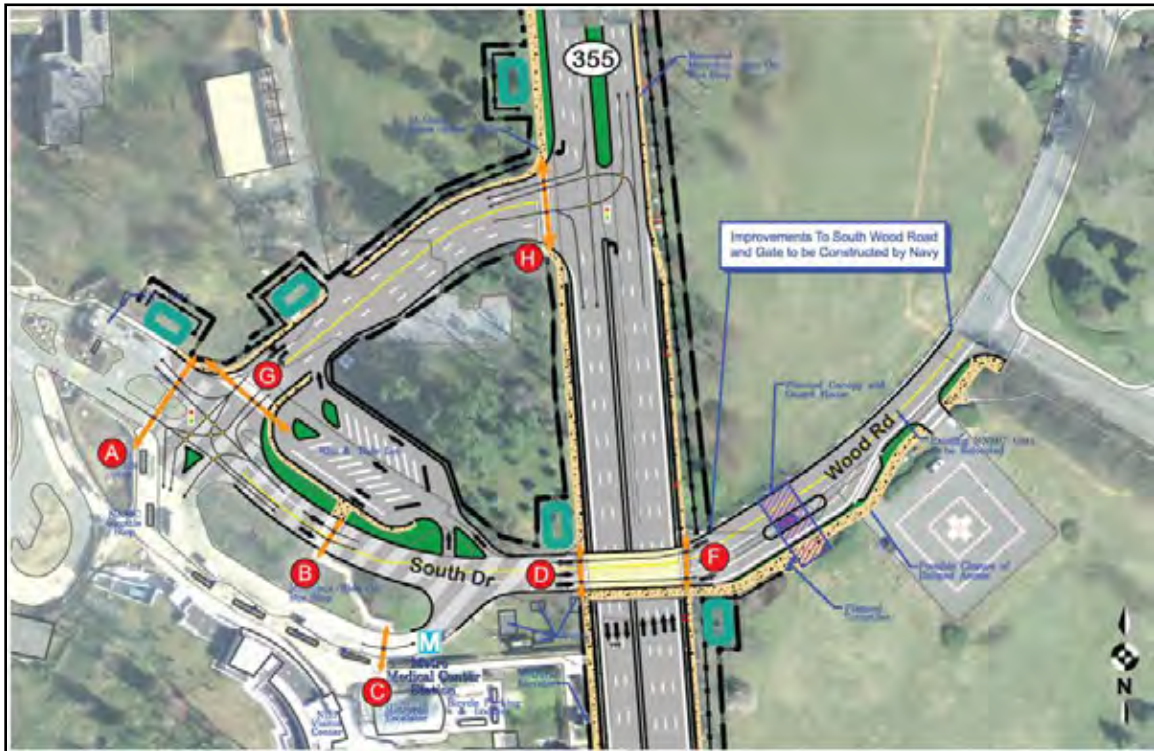
For those who chose to use the underpass, there will be no conflicts with vehicle traffic crossing MD 355, resulting in a safer crossing path. Those who continue to use the at-grade crossing will continue to experience vehicle conflicts and wait times at the MD 355 and South Wood Road/South Drive intersection.

Alternative 3 is the only alternative that will eliminate conflict points for those who cross from the Metro Station to NSAB at crosswalk E, which is eliminated under the proposed improvements for this alternative.

**Figure IV-1: Pedestrian Conflicts
Existing, No Build, and Alternative 2A and 2B**



**Figure IV-2: Pedestrian Conflicts
Alternative 3**



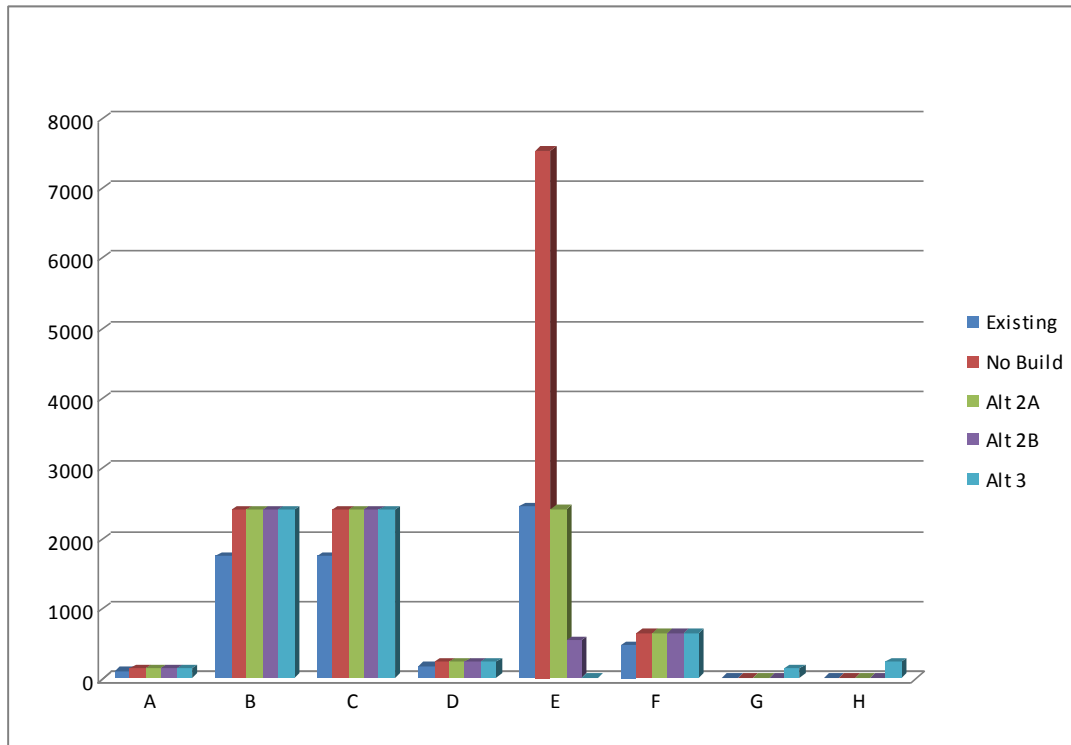
The corresponding daily total of pedestrians in each crosswalk was determined for the existing, No-Build, and build alternatives for the project. As shown in **Table IV-1** and **Figure IV-3**, the volumes of existing and no-build pedestrians/bicyclists using the crosswalk locations will either remain the same or decrease for most of the scenarios presented in the build alternatives. Only for Alternative 3 will an increase in the pedestrian/bicyclist use be seen at the new crosswalk locations, G and H.

Table IV-1: Existing and Proposed Pedestrian Volumes for Daily Total of Pedestrians in a Crosswalk

ALT	Existing	No Build	Alternative 2A*	Alternative 2B*	Alternative 3
Crossing A	90	125	125	125	125
Crossing B	1730	2395	2395	2395	2395
Crossing C	1730	2395	2395	2395	2395
Crossing D	160	220	220	220	220
Crossing E	2440	7530	2410	530	0
Crossing F	460	640	640	640	640
Crossing G	0	0	0	0	125
Crossing H	0	0	0	0	220

*70% of pedestrians crossing MD 355 above ground will use shallow tunnel, based on documented split at Marinelli Road.

Figure IV-3: Existing and Proposed Pedestrian Volumes for Daily Total of Pedestrians in a Crosswalk



To eliminate any potential perceived safety concerns with the below-grade crossings, appropriate lighting as required by the Illuminating Engineering Society of North America should be provided. Other measures such as video surveillance and emergency call boxes could also be considered to further enhance safety.

2. Efficiency of Pedestrian and Bicycle Movements

To address this criterion, travel times were calculated based on the time spent walking, waiting at a traffic signal, or riding an escalator/elevator. The team conducted field investigations to establish the exiting pedestrian travel times for the various conditions. This data was used to then develop the forecasted travel times for the various build alternatives. The following assumptions were made for the analysis:

- Pedestrian travel speed = 3.5 feet per second
- Random arrival rate, pedestrians will wait approximately $(180-29)/2 = 76$ seconds before they can proceed across MD 355. (Signal Phase at MD 355 is 180 seconds, 29 seconds of which is dedicated to pedestrians.)
- Existing Metro Station escalator travels approximately 220 feet in approximately 2 minutes and 45 seconds (1.33 feet/second). Assume same travel rate for shallow tunnel escalators. Shallow tunnel escalators are expected to be approximately 40 feet long.

- Deep elevators will be expected to travel at a rate of approximately 588 feet/minute and be approximately 116 feet deep.
- Bicyclists, when traveling with a large group of pedestrians, will have the same average travel speed as the surrounding pedestrians.

The total number of pedestrians and bicyclists crossing MD 355 is the total estimated 2030 pedestrian and bicycle volume for both directions, for a 24-hour weekday, crossing between the NSAB gate on South Wood Road and the Medical Center Metro Station. Estimates for the number of pedestrians that will use the crosswalk versus the shallow tunnel are based on pedestrian count data collected at the White Flint Metro Station, in which both a crosswalk and a shallow tunnel are provided for pedestrians crossing MD 355 at Marinelli Road. Estimates for the number of pedestrians that would be expected to use the deep tunnel versus the crosswalk or shallow tunnel crossing are based on the number of pedestrians destined for NSAB that will be expected to arrive at the Medical Center Metro Station via Metrorail. **Table IV-2** illustrates the No-Build and Build crossing times and average travel time for each build alternative as well as the assumed number of pedestrians/bicyclists taking the different paths offered under each build alternative. As shown on **Figures IV-4** through **IV-7**, each build alternative is expected to reduce the average travel time per person, although the travel time for the individual pedestrian or bicyclist will depend on the specific route taken.

The study team also investigated the assumed number of pedestrians/bicyclists taking the different paths offered under each build alternative (see **Table IV-2**).

Table IV-2: Projected Pedestrian Volumes

Path of Choice	Total Distance Traveled (feet)	Average Travel Time (sec/person)	Number of Pedestrians/Bicyclists Per Day
2030 No Build			
Crosswalk Route	495	217	7,530
Alternative 2A (2030)			
Crosswalk Route	495	217	2,410
Shallow Tunnel Route	430	183	5,120
Alternative 2B (2030)			
Crosswalk Route	495	217	530
Shallow Tunnel Route	430	183	1,127
Deep Elevator Route	230	78	5,873
Alternative 3 (2030)			
Overpass Route	520	149	7,530

Scale: NTS

Pedestrian Travel Times **No-Build Alternative**

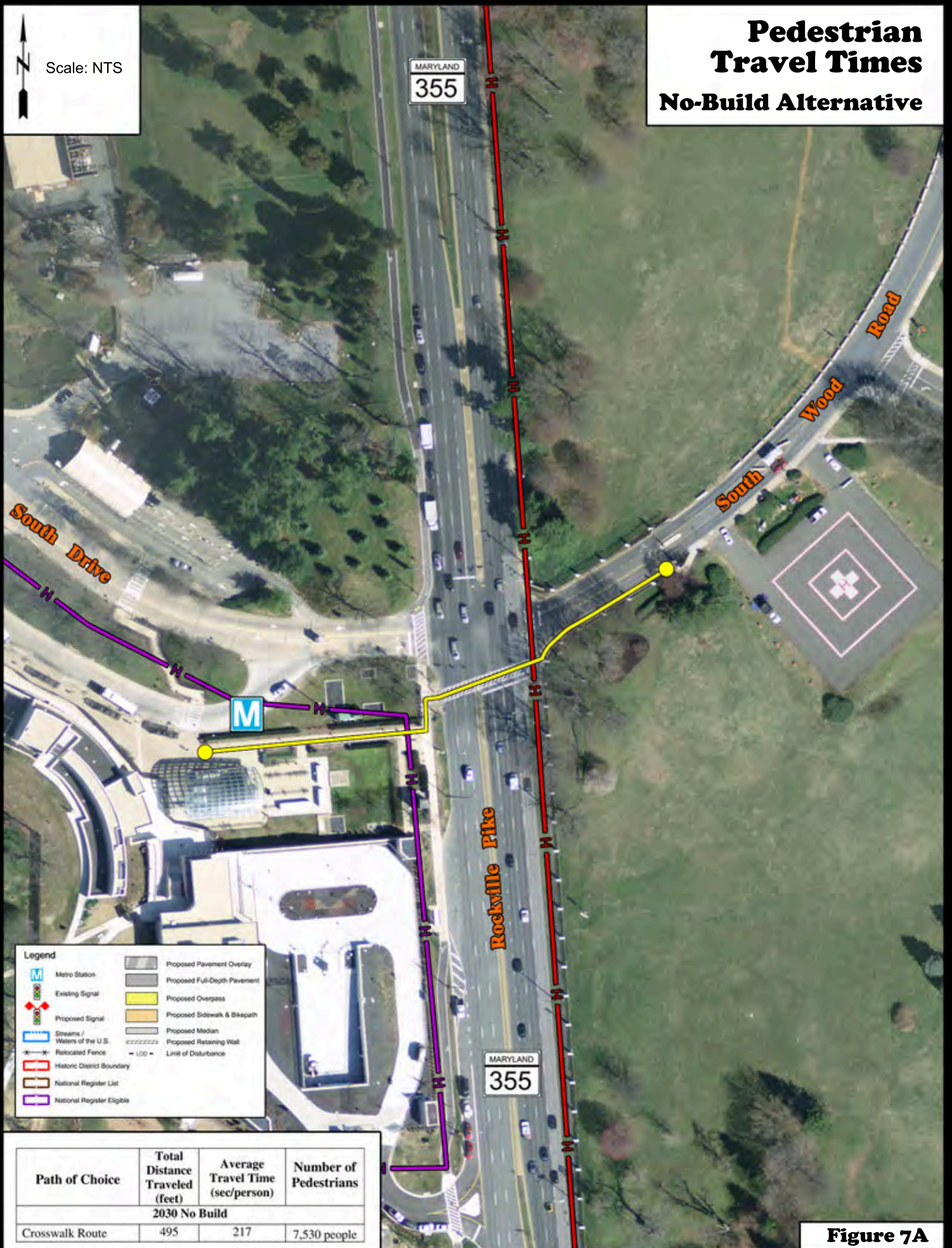


Figure 7A

Scale: NTS

Pedestrian Travel Times Alternative 2A

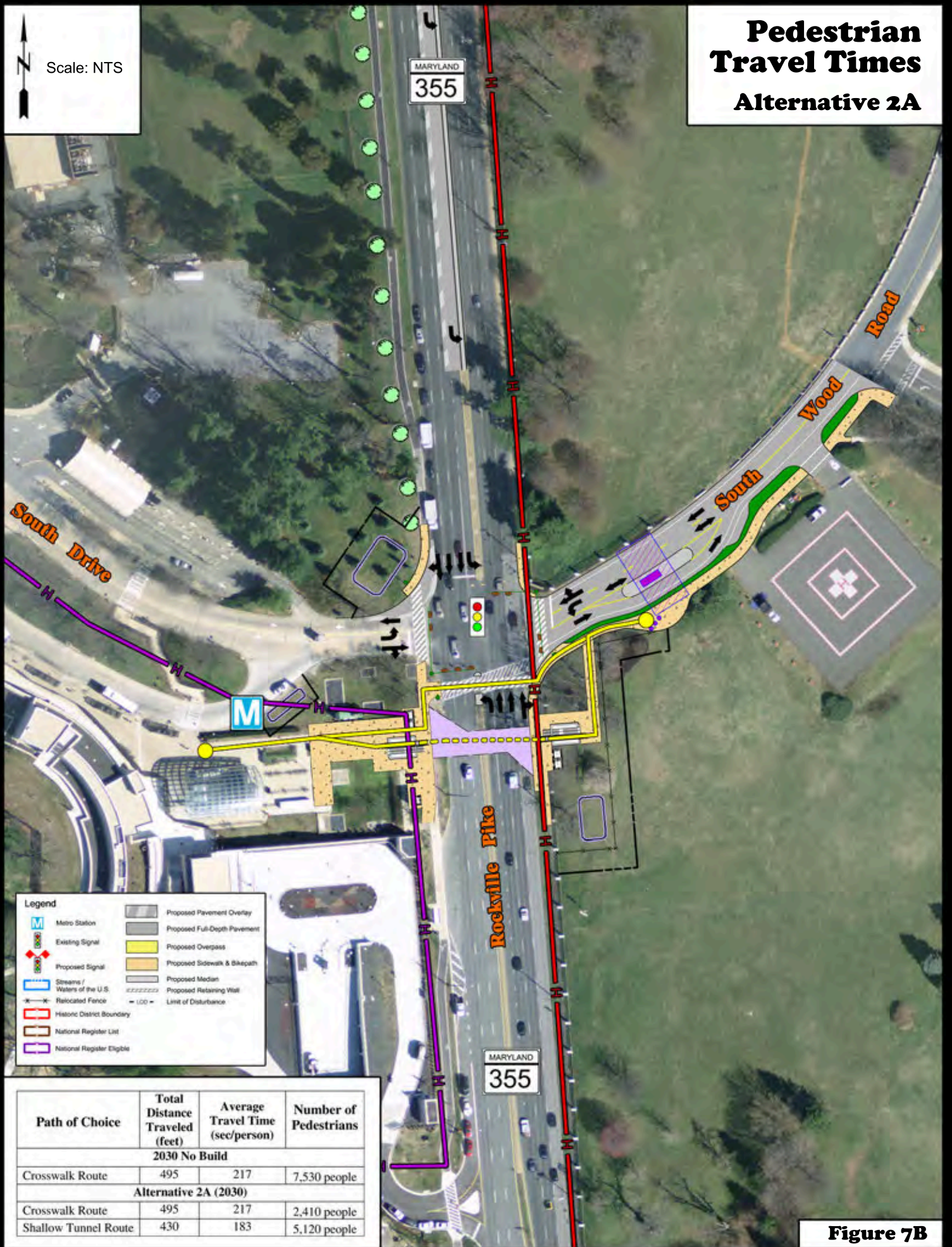


Figure 7B



Scale: NTS

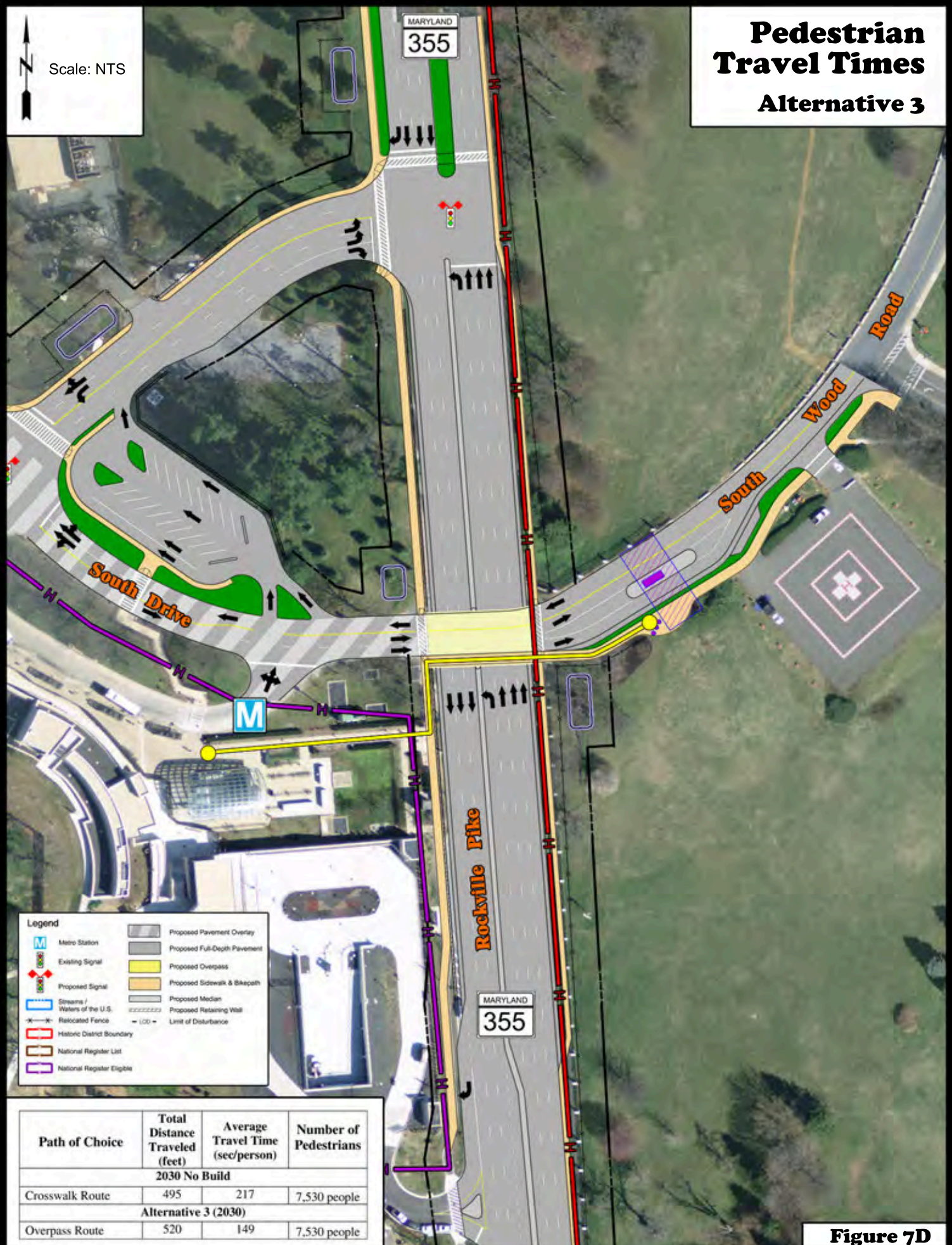
Pedestrian Travel Times Alternative 2B



Figure 7C

Scale: NTS

Pedestrian Travel Times **Alternative 3**



- Legend**
- Metro Station
 - Existing Signal
 - Proposed Signal
 - Streams / Waters of the U.S.
 - Relocated Fence
 - Historic District Boundary
 - National Register List
 - National Register Eligible
 - Proposed Pavement Overlay
 - Proposed Full-Depth Pavement
 - Proposed Overpass
 - Proposed Sidewalk & Bikepath
 - Proposed Median
 - Proposed Retaining Wall
 - Limit of Disturbance

Path of Choice	Total Distance Traveled (feet)	Average Travel Time (sec/person)	Number of Pedestrians
2030 No Build			
Crosswalk Route	495	217	7,530 people
Alternative 3 (2030)			
Overpass Route	520	149	7,530 people

Figure 7D

3. Traffic Operations

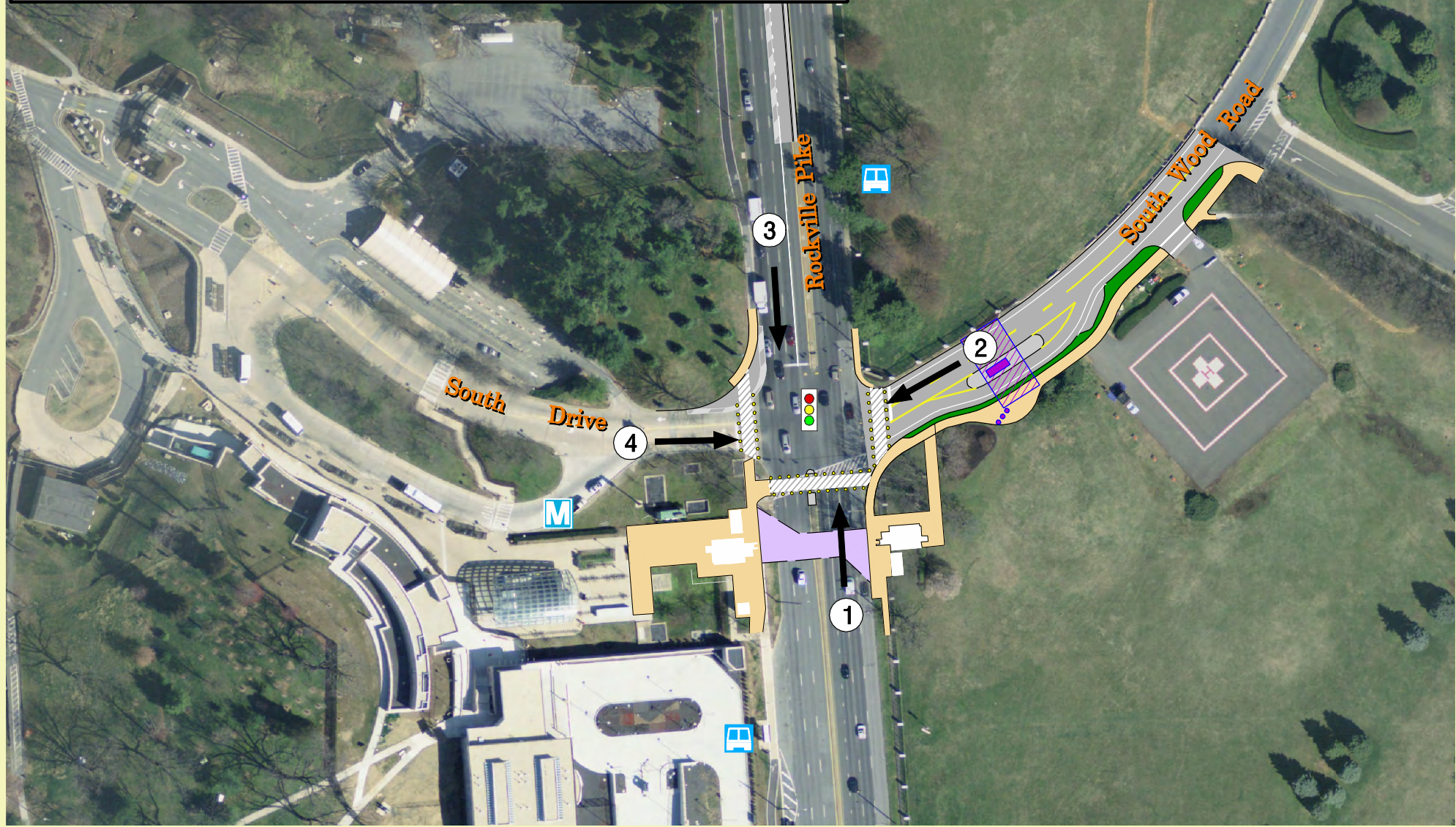
To evaluate traffic operations at this intersection, traffic volume data for the 2010 (existing) conditions were obtained, and traffic volume data for the 2030 (future) conditions were forecast for this study. The study area is urban in nature and land uses are built out to near capacity levels. Based on travel forecasting models from MWCOG and MNCPPC, a background growth rate of approximately 0.3 percent was applied to any movement that did not exclusively serve an NIH or NSAB gate. Traffic volumes and forecasts for NIH were taken from the NIH Master Plan 2003 Update, Main Campus and the FEIS for NIH Master Plan 2003 Update, Main Campus. Traffic volumes and forecasts for NSAB were obtained from the following sources: National Naval Medical Center Master Plan Update 2008; National Naval Medical Center Transportation Management Plan, November 2008; and the National Naval Medical Center Transportation Study in Support of Environmental Impact. For a more detailed discussion of the forecasted traffic, please see the Purpose and Need Statement.

The study team collected extensive data, including travel time runs, queue length observations, and traffic volumes, and developed Synchro and SimTraffic simulation models to determine the level of service (LOS) and network delay for the various alternatives. The simulation models assume that the NSAB gate relocation is part of the No Build condition, and that the existing signal timings will be maintained throughout all future No Build and Build conditions. Where new traffic signals are required for Alternative 3, the phasing and timing was designed to be consistent with the coordination and phasing of the signals at nearby intersections.

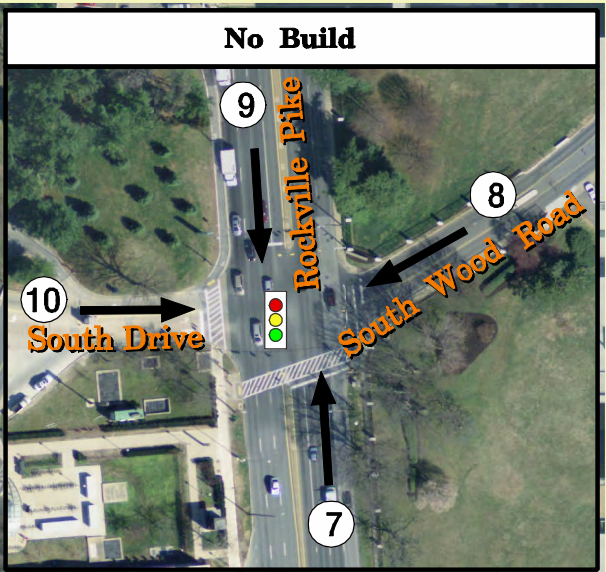
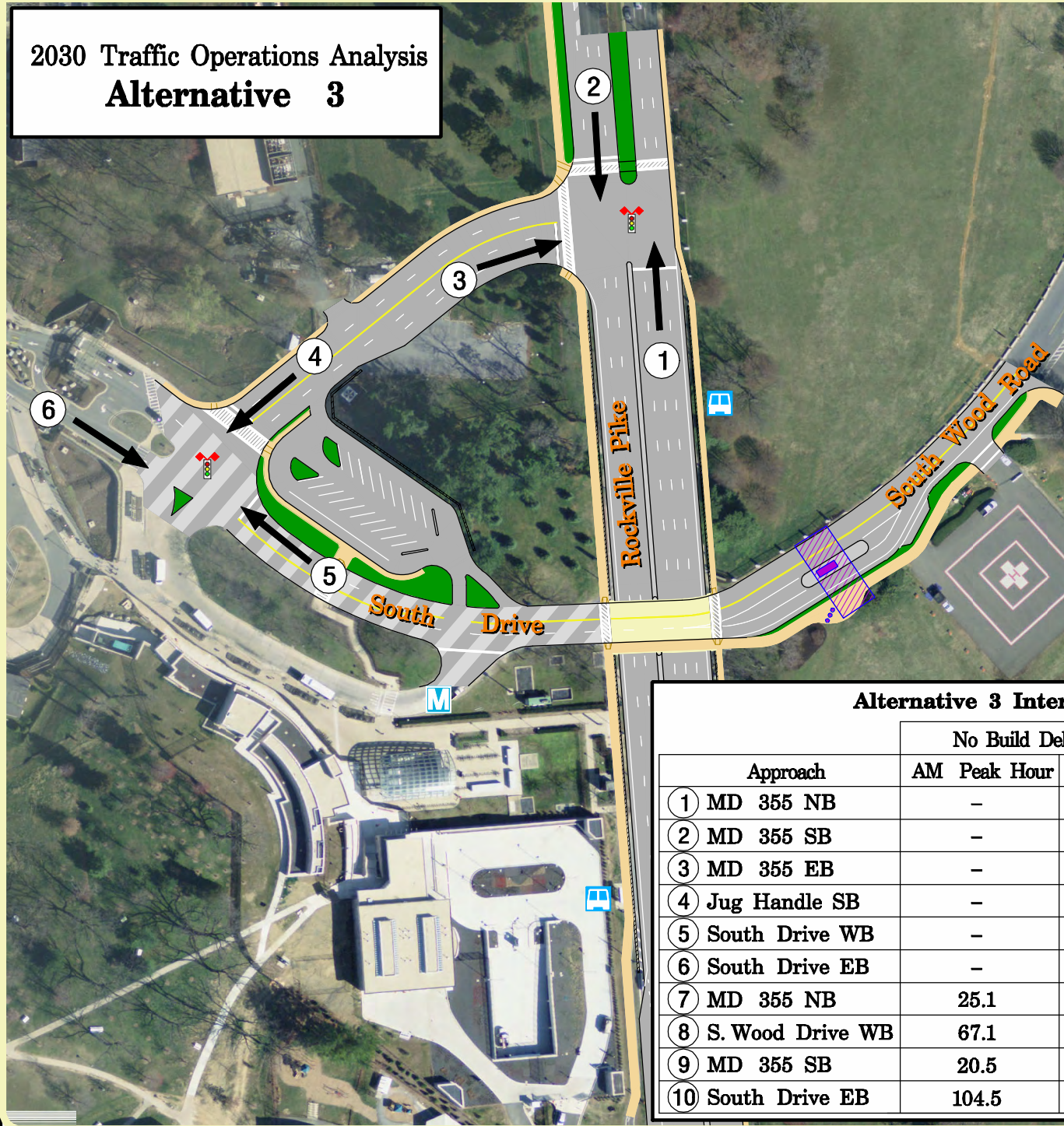
The peak hour results from the simulation models for the No-Build condition and the proposed improvements were used to understand the operational trends associated with the average travel time and delay experienced by the overall network, the intersection, and individual intersection approaches. **Table IV-3** illustrates the LOS and delay for the MD 355/South Wood Road/South Drive intersection for all alternatives retained for detailed study. **Table IV-4** illustrates the effect of the ARDS on the MD 355 corridor from south of Jones Bridge Road to north of Cedar Lane in terms of changes in overall corridor-wide delays. **Figure IV-8** demonstrates the intersection approach delay for all build alternatives.

Alternative 2A & 2B Intersection Approach Delay						
Approach		No Build Delay (s /veh)		Build Delay (s /veh)		
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	PM Peak Hour
①	MD 355 NB	25.1	96.6	23.9	105.2	
②	S. Wood Drive WB	67.1	456.5	77.6	787.3	
③	MD 355 SB	20.5	64.6	19.0	70.9	
④	South Drive EB	104.5	5264.7	220.1	7141.1	

2030 Traffic Operations Analysis
Alternative 2A & 2B



2030 Traffic Operations Analysis
Alternative 3



Alternative 3 Intersection Approach Delay							
Approach		No Build Delay (s /veh)		Build Delay (s /veh)			
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	PM Peak Hour	PM Peak Hour
①	MD 355 NB	—	—	18.9	231.0		
②	MD 355 SB	—	—	19.6	40.5		
③	MD 355 EB	—	—	51.2	592.5		
④	Jug Handle SB	—	—	5.2	8.1		
⑤	South Drive WB	—	—	6.6	771.3		
⑥	South Drive EB	—	—	28.9	7159.5		
⑦	MD 355 NB	25.1	96.6	—	—		
⑧	S. Wood Drive WB	67.1	456.5	—	—		
⑨	MD 355 SB	20.5	64.6	—	—		
⑩	South Drive EB	104.5	5264.7	—	—		

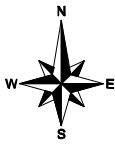
Legend

Metro Station
 Bus Stop
 Existing Signal
 Proposed Signal

Proposed Pavement Resurface
 Proposed Full-Depth Pavement
 Proposed Underpass
 Proposed Overpass
 Proposed Sidewalk & Bikepath
 Proposed Median

Proposed Retaining Wall
 Proposed Crosswalk

DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



Montgomery County
Department of Transportation

MD 355 (Rockville Pike) Crossing Study
2030 Traffic Operations Analysis

Date
September 2010

Figure No.
8

Table IV-3: Intersection LOS and Delay

Condition		AM Peak Hour		PM Peak Hour	
		LOS	Delay	LOS	Delay
Existing Conditions		C	30.6 s/veh	F	121.7 s/veh
2030 No-Build Conditions		D	36.5 s/veh	F	136.9 s/veh
Alternatives 2A and 2B					
Alts. 2A & 2B – with Pedestrian Underpass/Elevators		D	35.4 s/veh	F	136.5 s/veh
Alternative 3					
Alt. 3 – Grade Separated Improvements	On MD 355	C	20.4 s/veh	C	25.1 s/veh
	On South Drive	B	15.9 s/veh	B	17.4 s/veh

Table IV-4: Increases in Peak Hour Network Delays

Condition		AM Peak Hour	PM Peak Hour
2030 No-Build Conditions		N/A	N/A
Alternatives 2A and 2B			
Alts. 2A & 2B – with Pedestrian Underpass/Elevators		2%	1%
Alternative 3			
Alt. 3 – Grade Separated Improvements		11%	10%

The analyses shown in **Table IV-3** present an assessment of the intersections in isolation, without the influence of queues or delays that may extend from other nearby intersections. The value in this approach is to determine the optimum lane configuration for individual intersections, and to identify the source of network constraints, if they exist.

The analyses shown in **Table IV-4** present an assessment of the network delays throughout the entire corridor (MD 355 from south of Jones Bridge Road to north of Cedar Lane, including the cross street approaches), and the results presented in **Figure IV-8** provide the delays expected for each approach of the intersection(s) of focus. These results are from a traffic simulation model, and should be examined in terms of the trends they represent, particularly when compared to the No-Build condition, rather than the actual numbers shown.

a. Alternatives 2A and 2B

The results of the analyses demonstrate that both build alternatives would be expected to result in traffic operations similar to the No-Build condition. The data shows that reducing the number of pedestrians using the at-grade crossing will be expected to provide a small amount of reduction in the intersection delay, but that there would likely be no change in the intersection LOS. The overall network delay is expected to remain fairly consistent with the 2030 No-Build conditions.

b. Alternative 3

This alternative is expected to improve traffic operations for all approaches of the intersection of MD 355 and South Wood Road/South Drive. Providing a grade separation at MD 355 and South Wood Road/South Drive is expected to improve the Insert Figure IV-8 overall LOS for all approaches. When examined in isolation, the overall intersection LOS is expected to improve from a D to a C with an average delay per vehicle reduction of approximately 16 seconds in the AM peak hour, and from an F to a C with an average delay per vehicle reduction of approximately 112 seconds in the PM peak hour under this build condition. However, in a congested network, improvements to one location can lead to additional delays at other locations. Consequently, the overall network peak hour network delays may increase 10 to 11 percent under the Alternative 3 Build condition.

Explained another way, in a congested corridor, which MD 355 is during the peak periods, a vehicle is only able to enter the corridor once another vehicle leaves. Available “slots” for vehicles on the corridor are limited. Under the No Build condition, many of the slots on mainline MD 355 in the vicinity of South Drive and South Wood Road are occupied by through vehicles arriving from elsewhere on MD 355. Vehicles are able to exit South Drive and South Wood Road onto MD 355 only when slots are available at the same time that those vehicles receive a green signal, and when the presence of pedestrians in the MD 355 crosswalk does not obstruct their ability to proceed onto MD 355 before the east/west signal phase ends.

To provide acceptable traffic operations at the proposed signal on South Drive, the signal was designed to provide a protected left turn for traffic leaving NIH. The protected left turn provides vehicles from NIH the opportunity to occupy some of the available “slots” along the jug handle. Without this protected left turn phase, the heavy volume of right turning traffic exiting NSAB would restrict the ability for any left turning traffic from NIH to enter the jug handle.

Under Alternative 3 conditions, more traffic from the side street approaches on MD 355 means that fewer vehicles from the mainline through approaches will be able to enter the same segment of MD 355. As this traffic queues further back along MD 355, traffic on nearby cross streets, such as Cedar Lane and Jones Bridge Road, will be expected to be affected as well. Congestion exists in the corridor, and vehicles will experience delay. Improvements at one location only change who will experience the most delay.

4. Compatibility with Bus Operations

The study team assessed whether the proposed improvements would be compatible with the existing bus services within the study area. To understand the impact to the existing bus services, the study team estimated the delay per transit vehicle along

potential bus routes during the peak periods of travel. **Figures IV-9 through IV-11** demonstrates the route changes and delay related to each build alternative.

Access routes to and from the Medical Center Station are not expected to change in Alternatives 2A and 2B. Therefore, as demonstrated in **Table IV-5**, Alternative 2A and 2B will be expected to result in a slight reduction in delay for buses traveling along both northbound and southbound MD 355 due to removal of the majority of the pedestrian and bicycle traffic from the MD 355 / South Wood Road / South Drive intersection. These reductions in delay for bus traffic are expected to be consistent with those for all traffic approaching the study intersection since the bus routes will not change. These results are from a traffic simulation model, and should be examined in terms of the trends they represent, particularly when compared to the No-Build condition, rather than the actual numbers shown. While the Synchro model works well under uncongested conditions the model is not designed to accurately represent extreme congested conditions which occur on MD 355 in the PM peak hour. The results for the No-Build and Alternatives 2A/2B (from the bus loop to the NSAB gate) will be extremely high for the PM peak in comparison to all other scenarios shown in Table 5. Where the model predicts delays above five to ten minutes, the results should be interpreted as an extreme congested condition rather than the actual forecasted delay determined by the model.

The routes to and from Medical Center Station would change under Alternative 3. Trips to and from the north would be expected to spend less time on MD 355, and therefore experience fewer delays, and trips to and from the south would be expected to spend more time on MD 355, and therefore experience additional delays.

Table IV-5: Existing and Forecasted Peak Hour Bus Delay per Vehicle

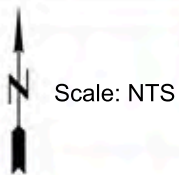
	AM Peak Hour	PM Peak Hour
	Delay (s/veh)	
From Jones Bridge Road Intersection to the Metro Station – Northbound		
No-Build	33.9	107.7
Alternatives 2A & 2B	33.5	95.2
Alternative 3	39.7	251.6
From Wilson Drive Intersection to the Metro Station – Southbound		
No-Build	37.8	82.6
Alternatives 2A & 2B	35.9	75.2
Alternative 3	33.8	55.7
From the Bus Loop to the NSAB Gate – Eastbound		
No Build	121.2	4737.3
Alternatives 2A & 2B	87.2	8782.9
Alternative 3	26.3	24.8
From the NSAB Gate to the Bus Loop – Westbound		
No-Build	68.6	468.8
Alternatives 2A & 2B	51.1	473.3
Alternative 3	55.4	543.2

Scale: NTS

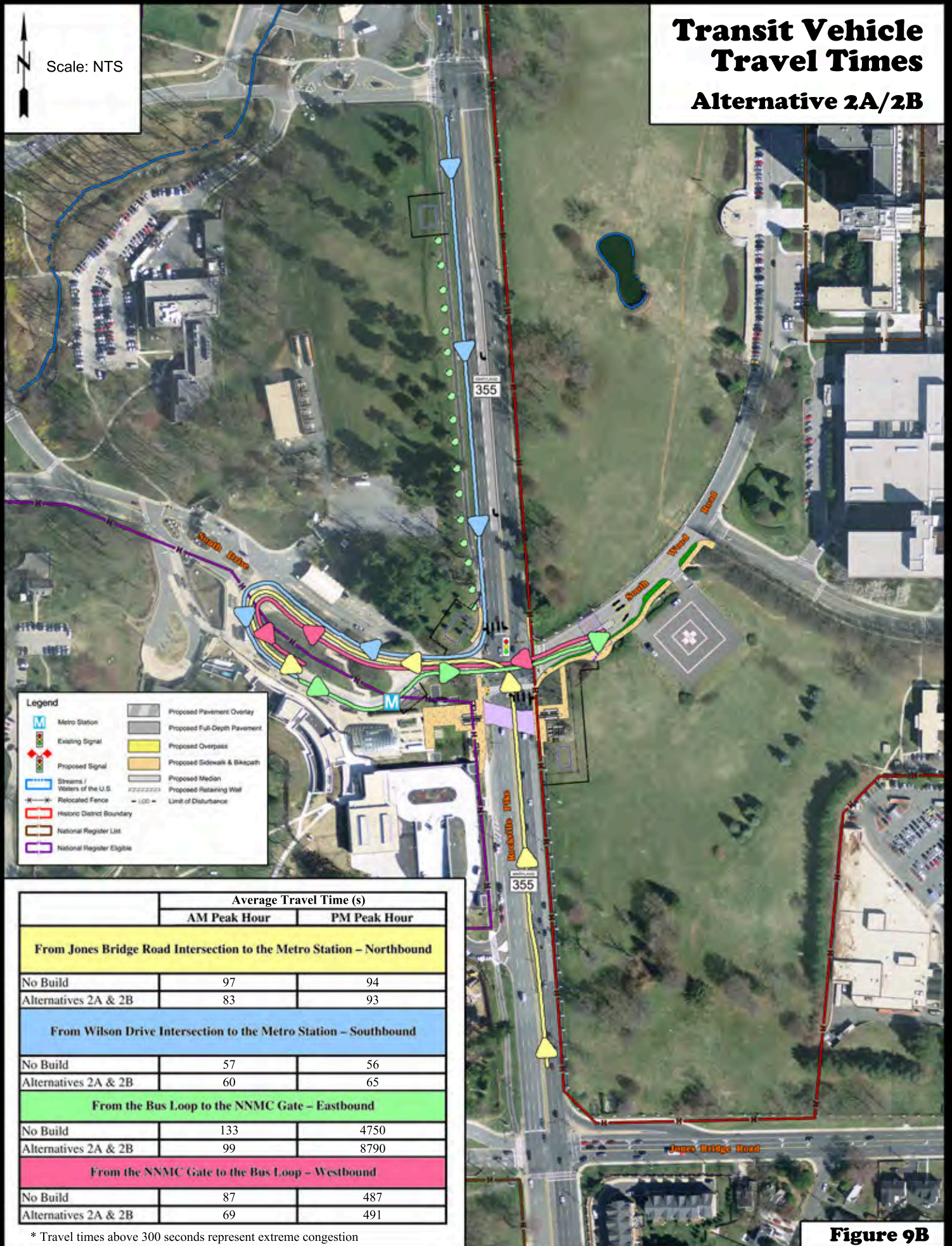
Transit Vehicle Travel Times No-Build Alternative



Figure 9A



Transit Vehicle Travel Times Alternative 2A/2B



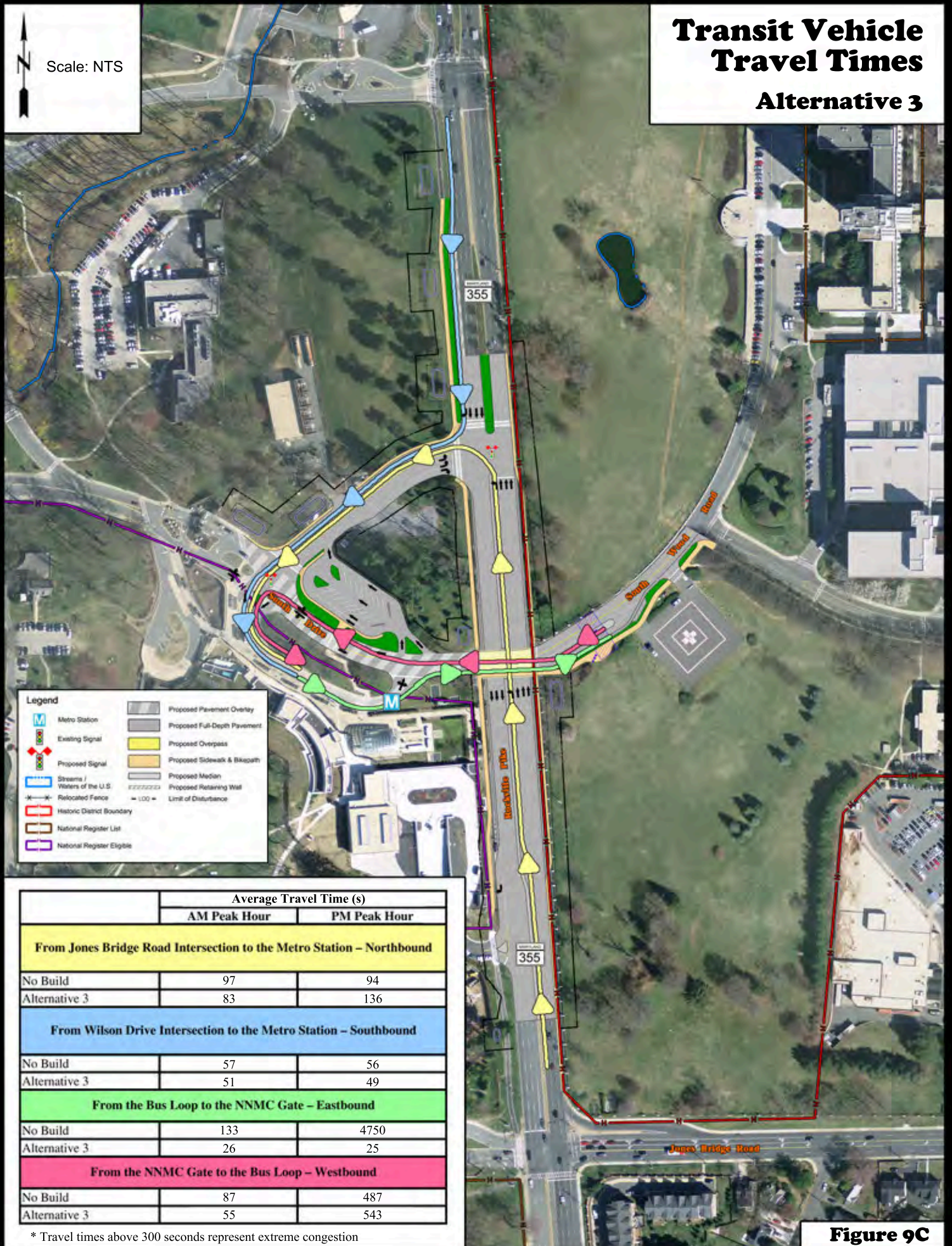
	Average Travel Time (s)	
	AM Peak Hour	PM Peak Hour
From Jones Bridge Road Intersection to the Metro Station – Northbound		
No Build	97	94
Alternatives 2A & 2B	83	93
From Wilson Drive Intersection to the Metro Station – Southbound		
No Build	57	56
Alternatives 2A & 2B	60	65
From the Bus Loop to the NNMC Gate – Eastbound		
No Build	133	4750
Alternatives 2A & 2B	99	8790
From the NNMC Gate to the Bus Loop – Westbound		
No Build	87	487
Alternatives 2A & 2B	69	491

* Travel times above 300 seconds represent extreme congestion

Figure 9B

Scale: NTS

Transit Vehicle Travel Times Alternative 3



5. Compatibility with Adjacent Projects

Early on in the planning process, a number of related projects were identified in the study area. The coordination with all of these projects is essential as this study moves forward. Maintenance of traffic will need to be coordinated to ensure that all resources are implemented in the most effective way, depending upon the funding and timing of each proposed improvement. Continuous coordination with the project teams associated with the following projects will need to continue throughout the duration of this project.

1. Maryland State Highway Administration Intersection Improvements Projects:
 - a. MD 355 (Rockville Pike) and Cedar Lane
 - b. MD 355 (Rockville Pike) and Jones Bridge Road
2. Montgomery County Facilities Study.

If selected for construction Alternatives 2A, 2B, and 3 will have the following temporary construction impacts associated with the adjacent projects. All construction activities will need to be coordinated among the projects to ensure compatibility.

- MD 355 (Rockville Pike) and Cedar Lane
 - All build alternatives are compatible with the proposed improvements at this intersection.
- MD 355 (Rockville Pike) and Jones Bridge Road
 - Alternative 2A and 2B could have minor disruptions associated with maintenance of traffic. The proposed improvements will result in temporary removal and reconstruction of the MD 355 median at this location.
 - Alternative 3 would require a temporary reconstruction of the channelized right-turn lane proposed by SHA at this location.
- Montgomery County Facilities Study
 - All build alternatives will require temporary relocation and reconstruction of the pedestrian facilities along the eastside of MD 355 between Cedar Lane and Jones Bridge Road.

6. Compatibility with NSAB Proposed Gate Operations

The effects of the gate operations at NSAB proved to be very important to the traffic operations within the project area due to the proximity of the South Wood Road Gate to MD 355. Many stakeholders are concerned about how the proposed alternatives will operate if there is a delay in processing vehicles through the gate at NSAB. To assess the effects of delays at the NSAB gate on traffic operations along MD 355 for each ARDS, the team conducted the traffic operations analyses assuming approximately two to three times more delay during both peak hours.

As shown in **Table IV-6** below, during the AM peak hour, in which more traffic is entering NSAB compared to the PM peak hour, Alternatives 2A and 2B are expected to operate about the same with gate delay compared to the No Build condition, and Alternative 3 is expected to operate slightly better than the No Build condition. **Table IV-7** illustrates the effect of the ARDS on the MD 355 corridor from south of Jones Bridge Road to north of Cedar Lane in terms of changes in overall corridor-wide delays. Alternatives 2A and 2B provide an improvement over the No-Build Gate Delay condition, while with Alternative 3, the network operates slightly worse.

Table IV-6: Intersection LOS and Intersection with Delay at NSAB

Condition		AM Peak Hour		PM Peak Hour	
		LOS	Delay	LOS	Delay
2030 No-Build Conditions		D	36.5 s/veh	F	136.9 s/veh
Alternative 2					
Alt. 2A & 2B – Geometric Improvement With Delay at NSAB Gate		D	35.4 s/veh	F	136.5 s/veh
Alternative 3					
Alt. 3 – Grade Separated Improvements with Delay at NSAB Gate	On MD 355	C	20.4 s/veh	C	25.1 s/veh
	On South Drive	B	15.9 s/veh	B	17.4 s/veh

Table IV-7: Increase in Peak Hour Network Delays with Delay at NSAB

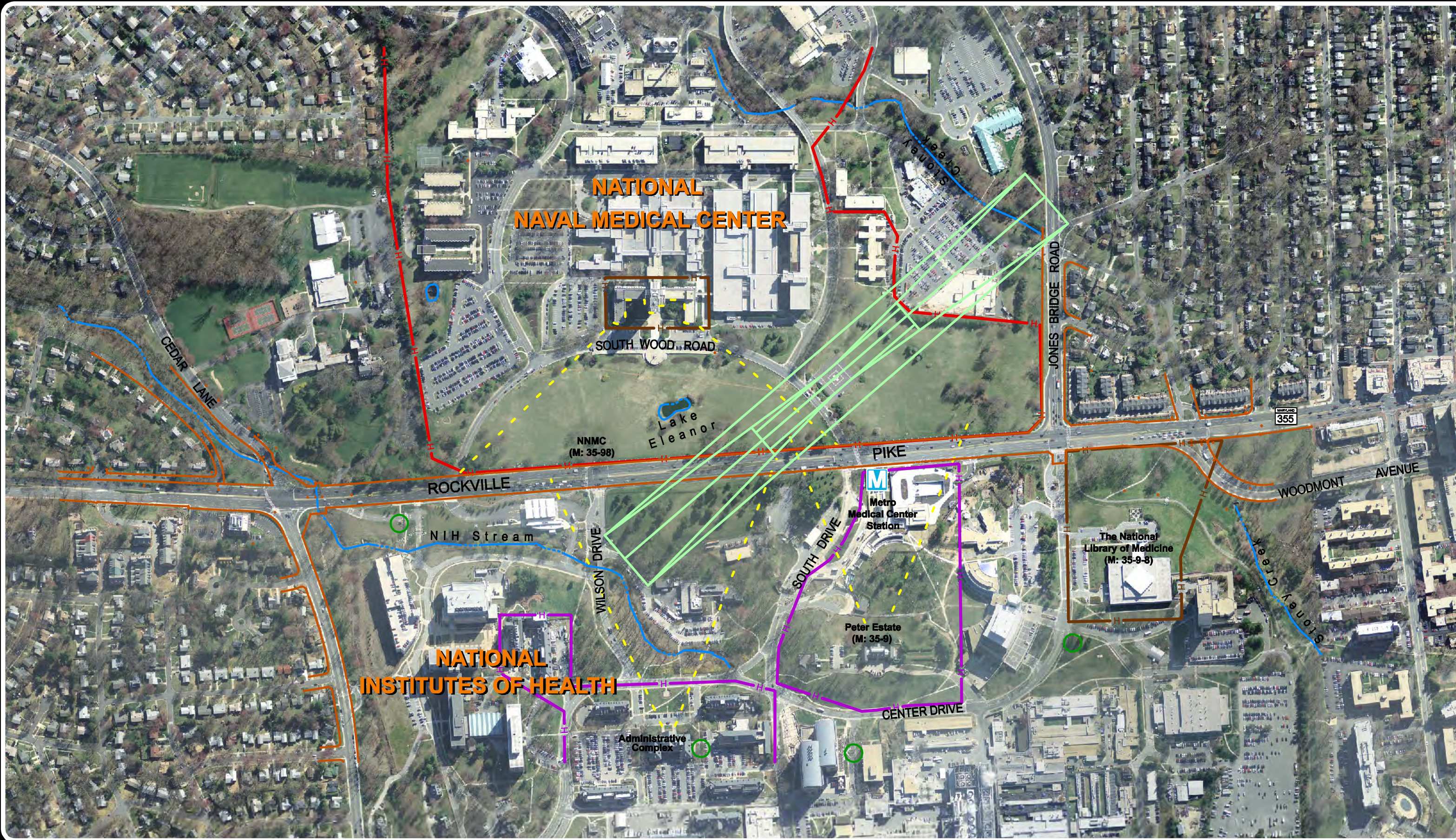
Condition	AM Peak Hour	PM Peak Hour
2030 No-Build Conditions	N/A	N/A
2030 No Build Conditions – With Delay at NSAB Gate	15%	2%
Alts. 2A & 2B – With Delay at NSAB Gate	8%	5%
Alt.3 – Grade Separated Improvements With Delay at NSAB Gate	13%	10%

7. Environmental Impacts

This criterion was established to take into account the impact of each of the ARDS on the natural, cultural, and socio-economic resources that exist within the MD 355 study area. An environmental overview was conducted to assist in documenting the impacts caused by the proposed improvements of this study. The following is a summary of the a) natural environment, b) cultural resources, and c) community effects.

a. Natural Environment

The project team has investigated the impacts for each alternative as it relates to the following natural resources located in the study area as shown on **Figure IV-12**,



Legend

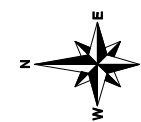
- ▬ Historic District Boundary
- ▬ National Register List
- ▬ National Register Eligible

- ▬ Streams / Waters of the U.S.
- County Champion Tree
- ▬ Protected Open Space and Historic Resource Viewsheds

- M Metro Station
- ▬ Existing Roadway Right-of-Way
- ▬ Airspace Restrictions

0 400' 800'
SCALE: 1"=400'

DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



Montgomery County
Department of Transportation



MD 355 (Rockville Pike) Crossing Study
Environmental Features

Date
September 2010

URS

Figure No.
10

wetlands, streams, floodplains, parks, and forests. **Table IV-8** summarizes the potential natural environmental impacts for each build alternatives.

Table IV-8: Natural Environmental Impacts¹

Features	Alternative 2A	Alternative 2B	Alternative 3
Wetlands (acres)	0	0	0
Streams (LF)	0	0	0
Floodplains (acres)	0	0	0
Parks (acres)	0	0	0
Trees DBH - 24" and Larger (number)	17	17	27

¹ Impacts may be further reduced in final design as a result of more detailed engineering

b. Cultural Resources

The project team has initiated Section 106 consultation with the Maryland Historical Trust (MHT) regarding the identification of historic and archaeological properties within the project area, and the project alternatives' effects on these properties. It is anticipated that the build alternatives will impact the NSAB fence and landscape (contributing resources in NSAB Historic District). The effect determination will guide further consultation regarding the development of the project.

The study team has received feedback from MHT regarding its preliminary analysis of the project alternatives currently under consideration. Alternatives 2A and 2B, if further designed in a manner that is sensitive to the historic properties, could result in a no adverse effect determination. MHT suggested that the County examine the Navy's proposed plan for new security gatehouses into the NSAB at North Wood/South Wood Drive. A streamlined and transparent design for the Metro rail canopies was also suggested to avoid obstructing the vistas to and from historic properties.

Alternative 3 was determined to have an impact on the physical features that contribute to the property's setting and significant historic landscape. It was also determined that the character defining elements of the NSAB Historic District would be obscured from the travelers on MD 355. MHT concluded that the proposed improvements would potentially cause an adverse effect that could not be avoided through sensitive design. Discussions with MHT are on-going to better understand their concerns and provide them with new information regarding the alternative development process. **Table IV-9** lists the NRHP and NRHP eligible impacts for the three build alternatives. These impacts are illustrated in **Figures IV-13** through **IV-15**.

Scale: NTS

Cultural Impacts

Alternative 2A

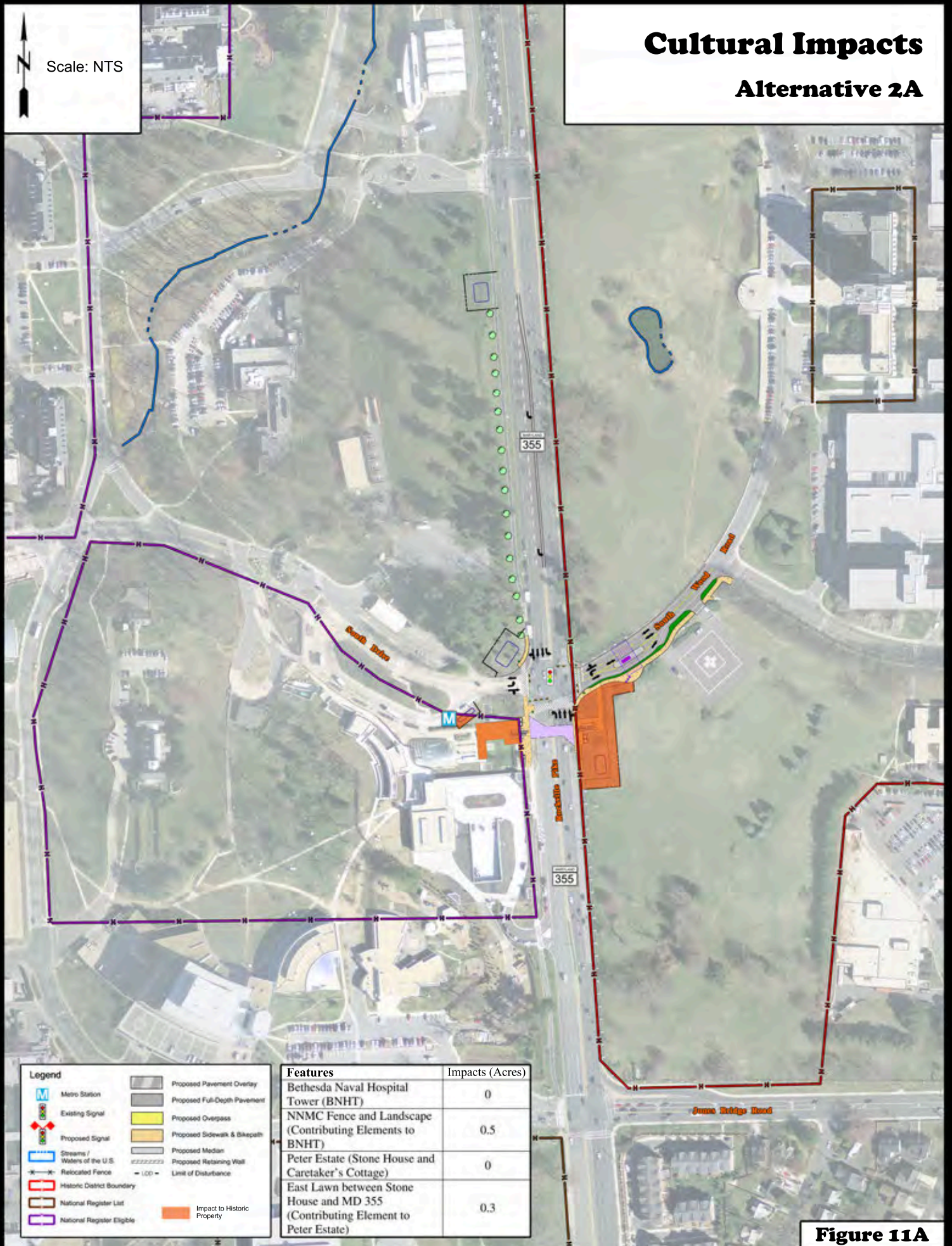


Figure 11A

Scale: NTS

Cultural Impacts

Alternative 2B



Figure 11B

Scale: NTS

Cultural Impacts

Alternative 3

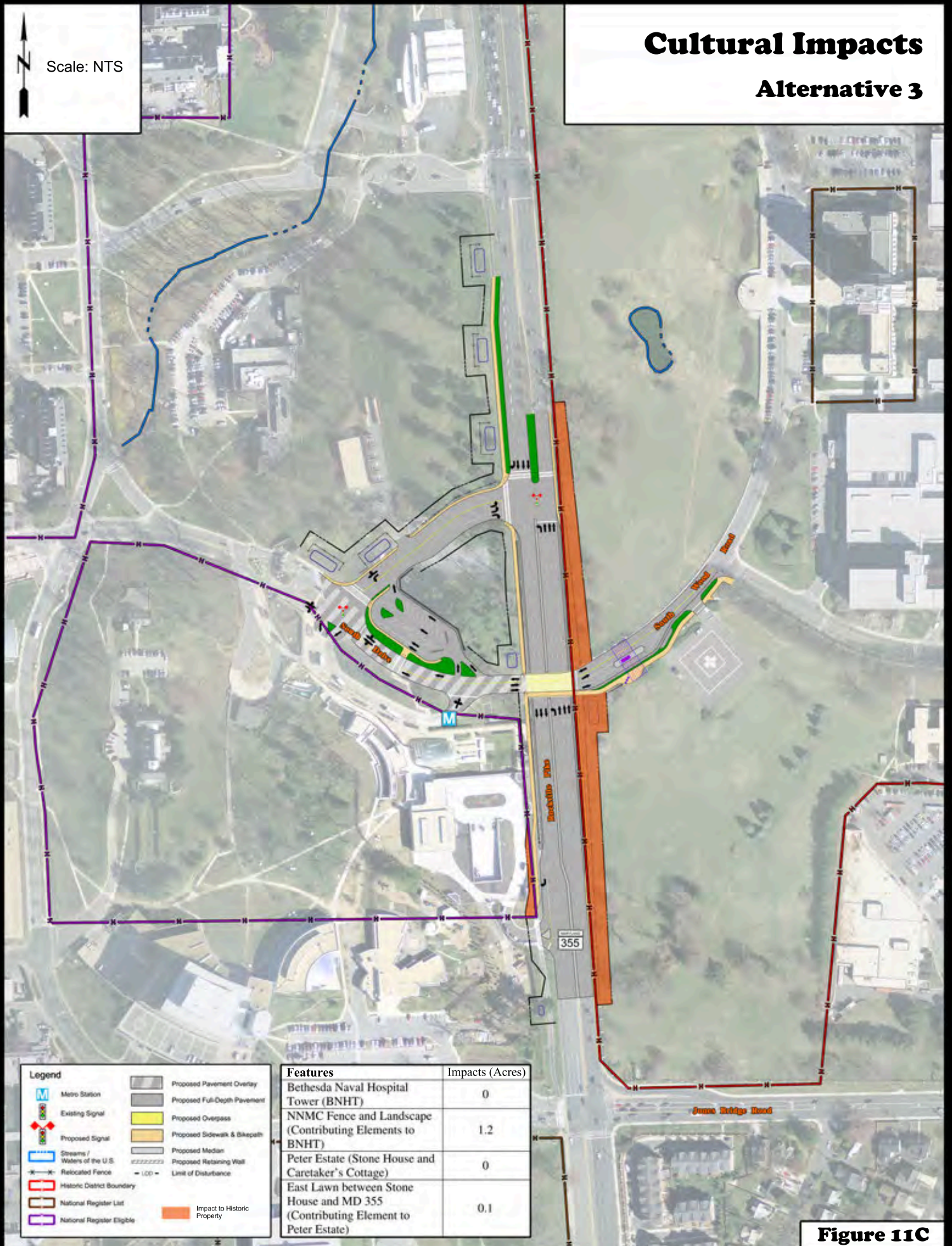


Table IV-9: Historic Property Impacts (acres)

Features	Alternative 2A	Alternative 2B	Alternative 3
Bethesda Naval Hospital Tower (BNHT)	0	0	0
NSAB Fence and Landscape (Contributing Elements to BNHT)	0.5	0.5	1.2
Peter Estate (Stone House and Caretaker's Cottage)	0	0	0
East Lawn between Stone House and MD 355 (Contributing Element to Peter Estate)	0.3	0.3	0.1

c. Community Effects

The community impacts discussed below are related to the property impacts for this study. This project will not increase roadway capacity within the corridor, therefore, there should be no effect caused by the project on the surrounding communities. Depending on the alternative chosen, approximately 0.5 acre to four acres of right-of-way from NIH would be required and approximately 0.5 to two acres of right-of-way would be required from the NSAB. No displacement or relocation of residences and businesses are anticipated for this project. Right-of-way impacts are shown in **Table IV-10** below.

Table IV-10: Right-of-Way and Displacements

Features	Alternative 2A	Alternative 2B	Alternative 3
Number of Residential Properties Affected	0	0	0
Number of Commercial Properties Affected	0	0	0
Number of Displacements	0	0	0
NIH Right-of-Way (acres)	0.60	0.60	3.14
NSAB Right-of-Way (acres)	0.52	0.53	1.23
Total Right-of-Way (acres)	1.12	1.13	4.37

8. Emergency Vehicles Access

As with any transportation improvement, those who provide emergency services will also be impacted by the proposed change. To clearly tell the story regarding emergency vehicles, we looked at the change in distance for each route and the time of travel for each ARDS.

Emergency vehicle routes were analyzed from north and south of the intersection, and between NSAB and NIH. The reference points, as shown in **Figures IV-16** through **IV-17**, include Point A at MD 355/Wilson Lane north of the intersection, Point B on NSAB property at South Wood Road/South Palmer Road, Point C at MD 355/Jones Bridge Road south of the intersection, and Point D at the NIH Gate on South Drive. Based on the distances between these points and the speed of travel, travel time was calculated. Traffic signal preemption was assumed for emergency vehicles and vehicle speeds were obtained from the Synchro analysis for each alternative. Assumed speeds on MD 355 for No-Build, Alternative 2A, and Alternative 2B were 6 mph in the northbound direction and 9 mph in the southbound direction. For Alternative 3, the assumed speeds on MD 355 were 4 mph in the northbound direction and 7 mph in the southbound direction. For South Drive and South Wood Road, 35 mph speeds were assumed. In addition, a 5 second delay was assumed at each intersection with preemption to reflect safe maneuvering conditions.

Alternatives 2A and 2B would provide the same route for emergency vehicles as the No-Build condition. Emergency vehicle travel time to NIH and NSAB, under Alternative 3, is expected to decrease from north of the intersection, but increase from south of the intersection due to the creation of the jug handle (less time spent on MD 355 when approaching from the north). North of the intersection, travel time to NSAB is expected to equal the No-Build condition. Emergency vehicle travel time from north of the intersection to NIH is expected to decrease by 20 seconds compared to the No-Build condition. An increase of 140 seconds from the No-Build condition for the emergency vehicle travel time is estimated to occur from south of the intersection to NSAB. Emergency vehicle travel time from south of the intersection to NIH is expected to increase by 130 seconds from the No-Build condition. Alternative 3 would provide a 10 second decrease in travel time over the No-build and Alternatives 2A and 2B. See **Tables IV-11** and **IV-12** and **Figures IV-16** through **IV-18** for more detailed information.

Table IV-11: Existing and Forecasted Emergency Vehicle Distance (feet)

Condition	From North into NSAB (Point A to Point B)	From North into NIH (Point A to Point D)	From South into NSAB (Point C to Point B)	From South into NIH (Point C to Point D)	From NSAB to NIH (Point B to Point D)
No-Build	1618	1728	1385	1614	1130
Alt. 2A	1618	1728	1385	1614	1130
Alt. 2B	1618	1728	1385	1614	1130
Alt. 3	2194	1273	2910	2011	1130

Scale: NTS

Emergency Vehicle Travel Times No-Build Alternative



Legend	
	Metro Station
	Existing Signal
	Proposed Signal
	Stream/Waters of the U.S.
	Relocated Fence
	Historic District Boundary
	National Register List
	National Register Eligible
	Proposed Pavement Overlay
	Proposed Full-Depth Pavement
	Proposed Overpass
	Proposed Sidewalk & Bikepath
	Proposed Median
	Proposed Retaining Wall
	Limit of Disturbance

Distance (Feet)					
	From North into NNMCM (Point A to Point B)	From North into NIH (Point A to Point D)	From South into NNMCM (Point C to Point B)	From South into NIH (Point C to Point D)	From NNMCM into NIH (Point B to Point D)
No-Build	1618	1728	1385	1614	1130

Time (Seconds)					
	From North into NNMCM (Point A to Point B)	From North into NIH (Point A to Point D)	From South into NNMCM (Point C to Point B)	From South into NIH (Point C to Point D)	From NNMCM into NIH (Point B to Point D)
No-Build	40	42	34	39	28

Figure 12A

Scale: NTS

Emergency Vehicle Travel Times Alternative 2A/2B

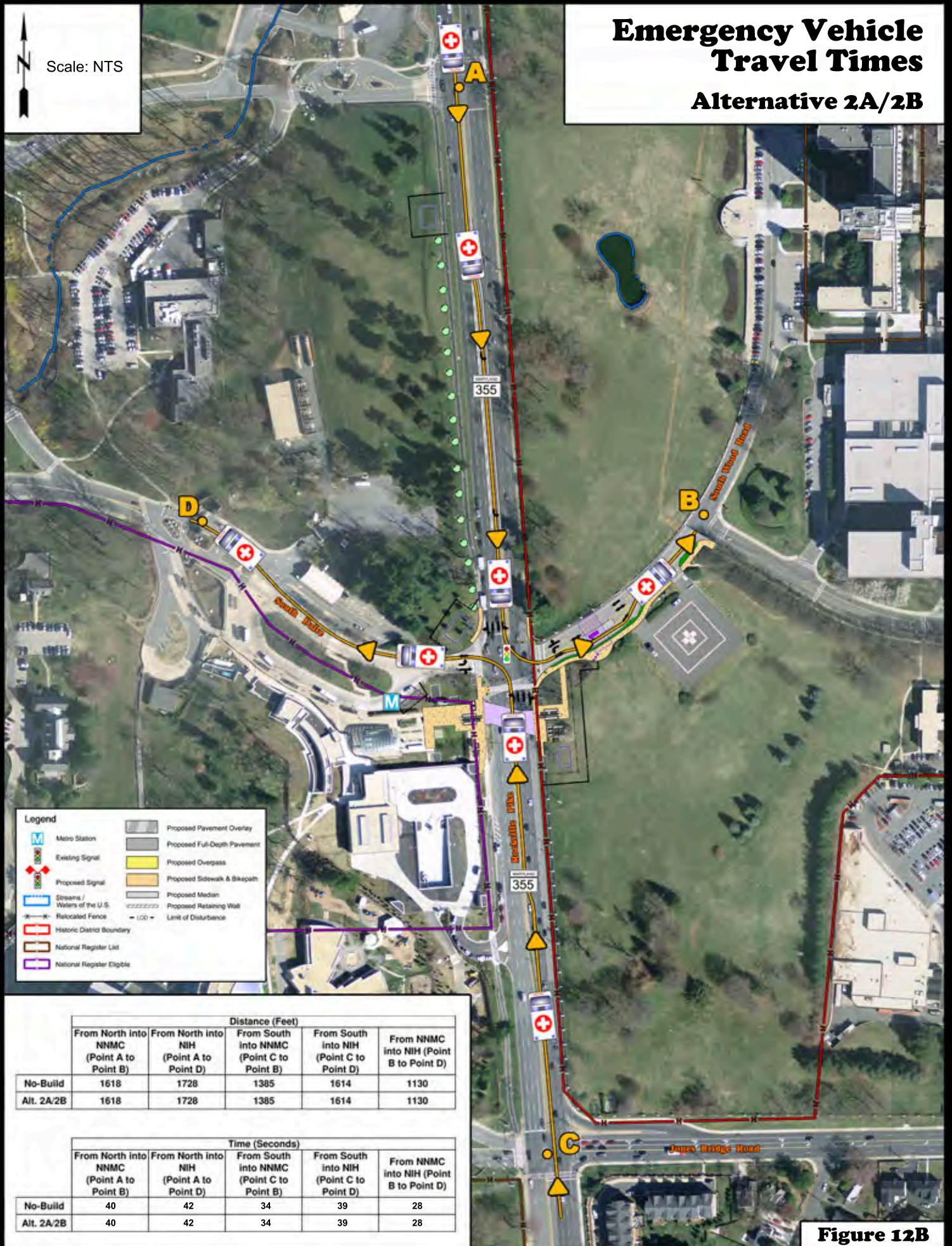


Figure 12B

Scale: NTS

Emergency Vehicle Travel Times

Alternative 3

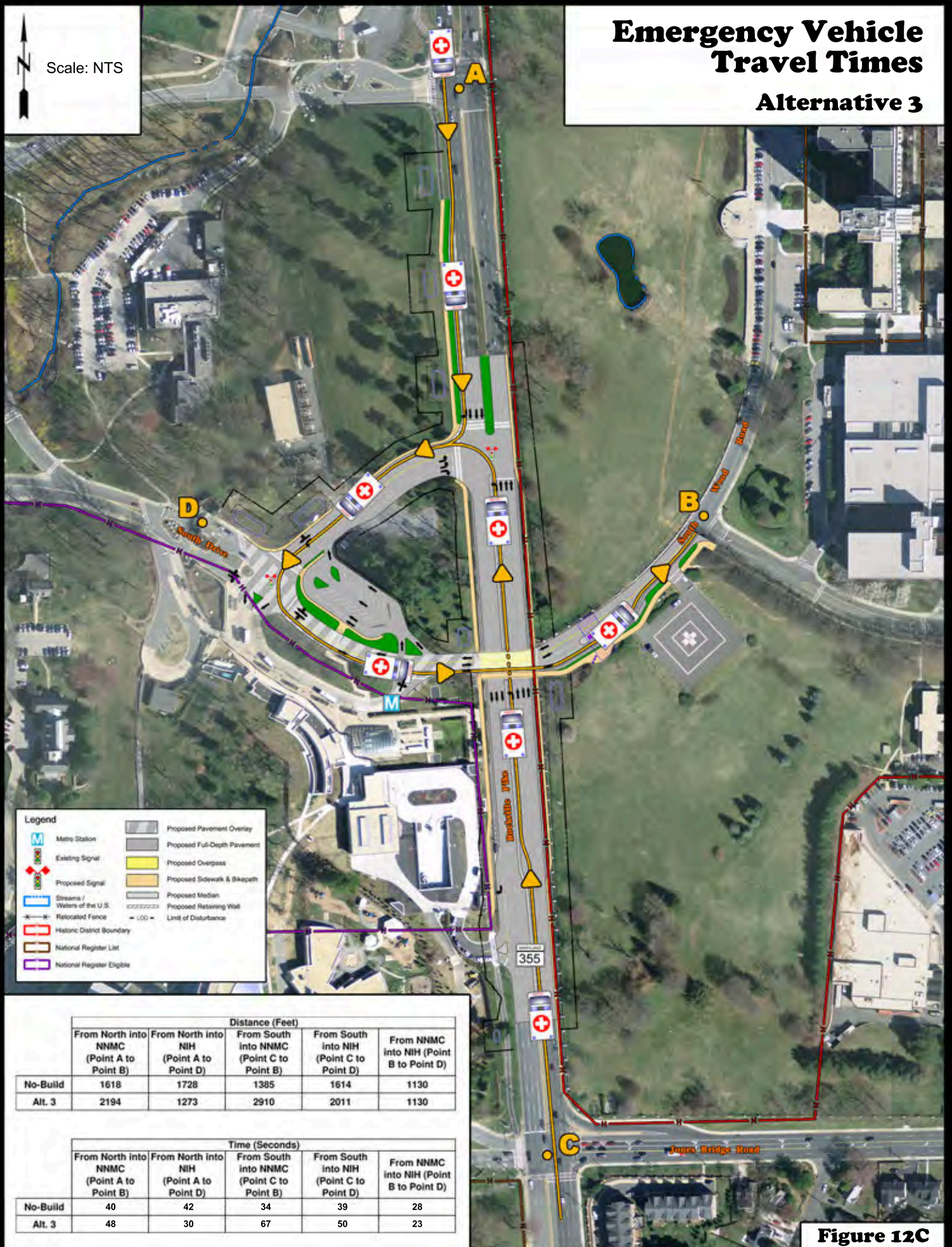


Figure 12C

Table IV-12: Existing and Forecasted Emergency Vehicle Time (seconds)

Condition	From North into NSAB (Point A to Point B)	From North into NIH (Point A to Point D)	From South into NSAB (Point C to Point B)	From South into NIH (Point C to Point D)	From NSAB to NIH (Point B to Point D)
No-Build	100	100	120	120	40
Alt. 2A	100	100	120	120	40
Alt. 2B	100	100	120	120	40
Alt. 3	100	80	260	250	30

9. Maintenance of Traffic Impacts during Construction

As part of the preliminary engineering for the ARDS, the study team developed concepts for construction phasing of each build alternative. This phasing will be important in selecting an alternative that can be constructed while also maintaining the safety and mobility of the pedestrians and motorists in the study area.

During construction, all existing travel lanes will be maintained during weekday peak hours on MD 355. Additional lanes may be closed during off-peak hours as necessary to perform work adjacent to travel lanes. In addition, speed limits during construction will be reduced to 30 mph, and returned to the existing 35 mph conditions once work is completed. Compliance with standard and accepted design requirements and Americans with Disabilities Act (ADA) requirements will be maintained throughout construction. Efforts will be made to relocate existing bus stops disturbed during construction.

See **Appendix D - Preliminary Maintenance of Traffic Summary** for the detailed phased construction plans for all build alternatives. It should be noted that the construction plans are subject to change based on future design modifications and will ultimately be determined by the operating agency and their contractor.

No gate closures are proposed at any time during any construction phase. As a result of shorter queuing storage areas between MD 355 and the security checkpoints during one or more phases, vehicles will need to queue on MD 355 in the turn lanes. A temporary access road could be constructed from MD 355 to South Wood Drive during construction. The temporary road would align with the location of the new connection spur between MD 355 and NIH on the west side. The temporary access road could provide more than 100 feet of additional storage, but would require the existing security checkpoint to be relocated or a temporary checkpoint constructed. Another option would be to use the existing roadway for right turns from northbound MD 355 and the temporary roadway for left turns from southbound MD 355 to maximize stacking of queue vehicles, but this would require two security checkpoints. Once an alternative is selected and funded for the next phase of design, a more detailed MOT plan will be developed and coordination with affected property owners and the public will be undertaken.

a. Alternative 2A & 2B Construction Phasing

Alternative 2A and 2B would be constructed in three phases. Below is a summary of the proposed construction phasing and associated stages of implementation of the proposed shallow tunnel and associated access elements, extended southbound left turn lane, widened northwest curb radius, and deep elevator (2B only) elements.

Phase I involves constructing a temporary roadway, shallow tunnel (using cut and cover method), and deep elevator shafts (2B only) to be completed in five separate Stages.

As part of *Stage I*, the study team recommends that a temporary road be constructed adjacent to existing northbound MD 355. Existing northbound traffic would then be relocated to the temporary roadway and existing south bound traffic relocated to the existing northbound MD 355 travel lanes. A temporary signal would be constructed to maintain access at South Wood Road and South Drive. The existing NSAB security fence would be relocated according to final design plans.

In *Stage II*, traffic would be relocated to the east, excavation, temporary utility relocation, and construction of the western segment of the shallow tunnel would occur. Western stairs, elevators, escalators, vents, canopy, and pedestrian/bicycle pathways would be constructed. Once the passageway is complete, utilities will be relocated back, and southbound MD 355 would be reconstructed.

Stage III would involve shifting southbound MD 355 traffic back to the reconstructed southbound travel lanes while northbound MD 355 traffic would remain on the temporary roadway. Modifications to the temporary signal would take place to maintain access to South Wood Road and South Drive. Existing utilities located in the vicinity of existing northbound travel lanes would be temporarily relocated for the excavation and construction of the eastern segment of the shallow tunnel passageway. Once the passageway is complete, utilities would be returned and northbound MD 355 reconstructed.

Stage IV would involve shifting northbound MD 355 back to the original alignment, and removal of the temporary roadway pavement. The traffic signal at the original MD 355/South Wood Road/South Drive intersection would be reconstructed. Construction of the remaining segment of the shallow tunnel passageway, stairs, elevators, pedestrian/bicycle pathways, and escalators east of MD 355 would occur.

Stage V applies only to Alternative 2B and would involve the excavation and construction of the deep elevator shafts, emergency stairs, and tunnel connection to the existing Metrorail Station Mezzanine. New utilities, mechanical elements, vents, and structures associated with the deep elevators would be constructed according to WMATA design specifications and construction procedures.

Phase II consists of work related to the proposed extension of the existing southbound MD 355 left turn into South Wood Road. Advanced warning signs, temporary pavement markings and channelization devices would be utilized. All work on the lane extension would occur during off-peak hours in the median area and adjacent travel lanes.

Phase III includes widening of the curb radius and realigning the sidewalk located at the northwest corner of MD 355 and South Drive. Temporary re-striping of existing lanes during construction to 10-foot lanes and closure of the right lane during off-peak hours would be required. All sidewalks, bicycle paths, and roadway lighting would be constructed in their ultimate location.

b. Alternative 3 Construction Phasing

Alternative 3 is proposed to be constructed in two phases. Below is a summary of the proposed construction process for the implementation of the jug handle connector road, the reconfigured Kiss and Ride Lot, structures associated with the grade-separated crossing of MD 355, and new/relocated signalized intersections.

Phase I involves a single stage construction the jug handle connector road (connecting MD 355 to South Drive), the reconfigured Kiss and Ride Lot, temporary northbound MD 355 roadway, temporary South Wood Road and South Drive roadway, and modifying existing MD 355 to meet Maintenance of Traffic needs.

Specifically, Phase I involves the construction of the jug handle connector road between MD 355 and South Drive to the edge of existing MD 355. Simultaneously, the Kiss and Ride Lot would be reconfigured and a temporary roadway for South Drive would be constructed. In addition, construction of a temporary roadway adjacent to existing northbound MD 355 and associated sidewalk and NSAB fence relocations would occur. A temporary traffic signal would be implemented for the new intersection created by the temporary roadway.

Phase II consists of a five stage approach to constructing proposed MD 355, finalizing the jug handle connector road and relocated intersection, temporary bridge deck, temporary signals, reconstructing medians, implementing permanent structures, and removal of temporary structures. These improvements will be completed in four stages.

Stage I would involve the shifting of northbound traffic to the temporary roadway and shifting southbound traffic to the existing northbound roadway. A temporary bridge deck would be constructed to maintain access to South Wood Road and South Drive during the proposed excavation of existing MD 355 alignments. Temporary traffic signals would be implemented. Retaining walls and stormwater management associated with the lower southbound MD 355 alignment would be put in place.

Utilities would be temporarily and/or permanently relocated for the lowering of southbound MD 355.

Stage II work would relocate MD 355 South Wood Road/South Drive intersection to the temporary bridge and temporary South Wood Road/South Drive roadways constructed in Phase I. The existing southbound right turn into South Drive would be prohibited and relocated to the jug handle connector road. Reconstruction of the lowered southbound MD 355 would occur. Utilities would be relocated as necessary. The alignment of the temporary bridge could be adjusted slightly to the north to provide additional room for construction of the permanent western bridge abutment and necessary construction equipment.

Stage III would involve shifting southbound traffic back onto the reconstructed southbound MD 355 underpass. A temporary signal would be implemented at the intersection of southbound MD 355 and the jug handle connector road. Left turns from South Wood Road to south bound MD 355 would be redirected to turn right at the new MD 355/jug handle connector road intersection. The temporary traffic signal at relocated northbound MD 355 roadway and South Wood Road/South Drive would be maintained. Excavation, utility relocation, and associated retaining walls and stormwater management elements of the proposed northbound MD 355 alignment and the permanent bridge structure connecting South Wood Road/South Drive over MD 355 would occur.

Stage IV would shift South Wood Road/South Drive onto the completed bridge over MD 355. Temporary traffic signals at southbound MD 355 and the jug handle connector road and at the northbound MD 355/South Wood Road/South Drive intersections would be maintained. The temporary bridge would be removed. Excavation, utility replacement, and roadway reconstruction of the lowered northbound MD 355 alignment would occur.

Stage V would include the installation of the permanent traffic signal and associated roadway lighting at MD 355/jug handle connector road and shift all turning movements to this location. Northbound traffic would be shifted to the reconstructed underpass. All temporary roadways would be removed. Sidewalks, bicycle paths, and roadway lighting would be constructed in their ultimate location.

10. Cost Estimates

Below is a summary of the cost estimates developed for the build alternatives.

a. Right-of-way

Table IV-13 summarizes the right-of-way cost in 2010 dollars. These costs are based on the required property impacts associated with each alternative. The study used real estate pricing data provided by SHA's Office of Real Estate for similar projects

within the study area which impacted NSAB and NIH property. The estimates incorporated costs for property acquisition, damages, and contingencies to cover unforeseen future costs. During the discussion of right-of-way acquisitions with the stakeholders, it was noted that the property needed to accommodate the improvements could potentially be donated by the property owners.

Table IV-13: Right-of-Way Costs (in \$ Millions)

Right-of-way Cost	Alternative 2A	Alternative 2B	Alternative 3
NIH	\$1 - 4	\$1 - 4	\$10 - 20
NSAB	\$1 - 4	\$1 - 4	\$3 - 7
Total	\$4 - 8	\$4 - 8	\$15 - 25

b. Maintenance of Traffic

Table IV-14 summarizes the Maintenance of Traffic cost for each build alternative. These costs are based on the elements and phasing required to maintain vehicular and pedestrian/bicycle movements during construction.

Table IV-14: Maintenance of Traffic Costs (in \$ Millions)

Maintenance of Traffic	Alternative 2A	Alternative 2B	Alternative 3
Total	\$1 - 2	\$2 - 3	\$6 - 7

c. Overall Construction

Table IV-15 summarizes the overall construction costs. These costs reflect the overall roadway construction, right-of-way, maintenance of traffic, and utility relocation costs estimated for these alternatives. The cost estimates are included in **Appendix C**.

Table IV-15: Construction Costs (in \$ Millions)

Construction Costs	Alternative 2A	Alternative 2B	Alternative 3
Total	\$25 - 31	\$48 - 58	\$58 - 70



V. SELECTED ALTERNATIVE

A. Stakeholder Recommendation Meeting

A Stakeholder Recommendation Meeting was conducted on November 23, 2010 (**Appendix E – Attachment 12**) to determine which of the ARDS would be identified as the team's preferred alternative for approval by the Federal Highway Administration (FHWA). Representatives from the following agencies participated:

- Montgomery County Department of Transportation (MCDOT)
- Maryland-National Capital Park and Planning Commission (M-NCPPC)
- Naval Support Activity Bethesda
- National Institutes of Health
- FHWA DelMar Division
- Defense Access Roads (DAR)
- Maryland State Highway Administration
- Washington Metropolitan Area Transit Authority.

Each agency was asked for its current thinking on which alternative should be advanced as the locally preferred alternative. All of the agencies expressed support for Alternative 2B: Pedestrian Bicycle Underpass and Deep Elevators, along with TSM/TDM improvements as the preferred alternative. Alternative 2B was regarded as the most effective choice, consistent with the DAR certification, and able to most effectively separate pedestrian and vehicular traffic. All represented agencies stated they would support this alternative as the preferred alternative recommendation to FHWA. Alternative 2B consists of the following components:

- Deep elevators on the east side of MD 355 (118 feet below grade), providing direct access to the Metrorail station.
- A pedestrian and bicycle underpass between 10 and 30 feet below MD 355 to provide a fully separated crossing for pedestrians and bicyclists. Access to the underpass provided via elevators, escalators, and stairs.
- Extension of the southbound MD 355 left turn lane in the existing median of MD 355 to improve queuing for vehicles turning left onto South Wood Road
- Expansion of the existing curb radius at the northwest corner of South Drive and MD 355 to improve geometrics (particularly for buses turning right into the Metrorail Station).

A small-scale canopy is included in the preferred alternative at the southeast corner of South Wood Road and MD 355 for NSA Bethesda pedestrian underpass access to Metrorail. Small-scale elevator enclosures, three on the NSA Bethesda side and two

on the NIH side, are also included in the preferred alternative. The existing elevator enclosure on the NIH side will remain and serve as a model for these new structures. A cross section of Alternative 2B is included in **Appendix E – Attachment 13**.

B. Environmental Effects of the Preferred Alternative

The study team conducted an environmental inventory and initiated coordination with various resource agencies to identify natural, socio-economic, and cultural resources that exist in the study area (**Appendix A**). For the ARDS and the MCDOT Preferred Alternative, a series of environmental technical studies were conducted to identify potential contaminated hazardous sites, assess impacts on air quality, identify impacts of highway noise on noise sensitive areas, and assess the indirect and cumulative effects of the project.

1. Socio-Economic Resources

a. Right-of-Way and Easement Requirements

The construction of a pedestrian and bicycle underpass and deep elevator will extend beyond the existing right-of-way. A total of 1.13 acres of right-of-way and/or perpetual easements will be required to construct the proposed improvements. The right-of-way and/or perpetual easements required will be obtained from two property owners: NIH (0.60 acre) and NSA Bethesda (0.53 acre). All right-of-way/easements and right-of-entry agreements would be acquired following approval of the CE from the FHWA and prior to commencing with construction activities.

b. Pedestrian and Bicycle Access

Pedestrian and bicycle access facilities will be maintained during and after construction for the preferred alternative, in configurations similar to existing conditions.

c. Smart Growth

Smart Growth is characterized by compact, transit-oriented, bicycle-friendly land use, with neighborhood schools, walkable streets, mixed use development and a wide range of housing choices. Subsequent to the 1992 Planning Act, Maryland established the Priority Funding Act (1997) to direct state funded growth-related projects to areas designated by local jurisdictions as Priority Funding Areas (PFAs). The project study area, located inside the Capital Beltway, is within the PFA, and is therefore consistent with Maryland's Smart Growth legislation. The current PFA

encapsulates the entire Washington D.C metro area within the Capital Beltway, including NIH and NSA Bethesda.

d. Conformance with Local/Regional Plans

The preferred alternative will improve access to mass transit facilities and encourage the use of transit to mitigate forecasted congestion levels in this area of Montgomery County associated with BRAC impacts. The project is consistent with *Montgomery County's General Plan* (1993).

e. Environmental Justice

In compliance with Executive Order (EO) 12898 "Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations," Montgomery County is taking steps to avoid disproportionate high and adverse effects on minority and low income communities. Both NSA Bethesda's 2008 BRAC Environmental Impact Statement (EIS)/Record of Decision (ROD) and NIH's Final EIS for the Master Plan 2003 Update (March 2005) determined that based on the population diversity and average incomes in the census tracts surrounding the NSA Bethesda and the NIH, the area does not contain an identifiable minority or low income community. Disproportionate impacts to such communities are therefore not anticipated with the preferred alternative.

f. Indirect and Cumulative Effects

In accordance with the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations (40CFR 1508.25), the indirect and cumulative effects of this study were evaluated. The preferred alternative will not increase roadway capacity overall in the corridor and therefore does not provide a means to encourage new development in the study area. No indirect effects are anticipated on natural, cultural, or social resources with the preferred alternative.

The following planned projects in the study area are intended to enhance and improve access to mass transit facilities, improve pedestrian and bicyclist mobility and safety, and improve traffic operation. The MD 355/Rockville Pike Crossing Project stands alone from these other projects. This project will address safety and capacity issues for those who access NSA Bethesda and NIH from the Metrorail station and the community.

- WMATA Medical Center Metrorail Station Access Improvement Study
- Maryland State Highway Administration (SHA) MD 355 Intersection Improvement Projects at Jones Bridge Road and Cedar Lane
- NSA Bethesda Gate Improvement Projects
- Montgomery County Facilities Study
- Maryland Transit Administration (MTA) Purple Line Study.

g. Cultural Resources

Within the study's area of potential effects (APE), there are two historic resources. The first historic resource, "The Stone House," also known as the George Freeland Peter Estate (M: 35-9-1), is located within the 0.25 mile APE on the grounds of NIH. The George Freeland Peter Estate was determined eligible for listing in the NRHP in 1985. The property has been designated a "Master Plan Historic Individual Site" by the Montgomery County M-NCPPC. The historic site's boundaries include the south side of South Drive and the west side of Wisconsin Avenue, MD 355. The second historic resource, the NSA Bethesda Historic District, consists of 18 contributing buildings situated on 131 acres of land. This historic district was listed in the NRHP in 1998. The district's landscape fronts MD 355 and is identified in the NRHP nomination form as contributing to the historic character of the property.

On February 17, 2011, the Maryland Historical Trust (MHT) concurred that the preferred alternative will have no adverse effect on archeological and historic resources (**Appendix E – Attachment 16**). Although the impacts will involve relocating a portion of a fence surrounding NSA Bethesda, minor roadway improvements, and the construction of stairs, escalator, and elevators with a small-scale canopy, the MHT concurred that the impacts could be avoided through careful design. In addition, the areas on the Alternative 2B concept plan identified as potential sites for stormwater management facilities are not in the location that was identified as having any medium to high potential for archaeological resources.

The following consulting parties were copied on the MHT letter: SHA, NIH, NSA Bethesda, Montgomery County Historic Preservation Commission, and Montgomery Preservation, Inc. No comments were received from these parties.

2. Natural Environmental Resources

a. Wetlands and Waters of the U.S.

No impacts to Waters of the United States (WUS), including wetlands, would occur with the preferred alternative.

b. Floodplains

No impacts to Federal Emergency Management Agency (FEMA) designated 100-year floodplains would occur with the preferred alternative.

c. Section 4(f)

There are no publicly-owned parklands, recreation areas, wildlife and/or waterfowl refuges present in the study area.

This project meets the requirements for a *de minimis* impact finding for historic resource impacts based on the following criteria (See **Appendix F – REC Letter** for more details on the *de minimis* finding):

- The SHPO, as part of the Section 106 process, determined that the project would have no adverse effect on historic properties (**Appendix E – Attachment 16**).
- The SHPO has been informed of FHWA's intent to make a *de minimis* impact finding based on their written concurrence in the Section 106 determination.
- The views of the consulting parties participating in the Section 106 consultation have been considered.

In addition, 0.60 acre of temporary easements will be required from NSA Bethesda to construct the project. In accordance with 23 CFR 774.13(d) and given that the improvements would occur by temporary occupancy only, the requirements of Section 4(f) would not apply in this instance based on the following criteria:

- The duration of the impact will be temporary, i.e., less than the time needed for construction of the project.
- There will be no change in ownership of the land.
- The scope of work will be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) resource are minimal.
- There are no anticipated permanent adverse physical effects.
- The land being used will be fully restored, i.e., the resource will be returned to a condition, which is at least as good as that which existed prior to the project.

d. Forest Conservation and Specimen Trees

Significant and specimen trees have been identified in the project area. Significant trees are those having a diameter at breast height (DBH) of 24 inches or greater and specimen trees are those having a DBH of 30 inches or greater. The preferred alternative will affect 17 significant or specimen trees. Any unavoidable impacts to trees within the publicly-owned right-of-way will require a Roadside Tree Permit from the Maryland Department of Natural Resources (MDNR) Forest Service. Land development in the project area is also subject to Forest Conservation Act (FCA) approval administered by M-NCPPC. Both FCA and Roadside Tree Permit authorizations will be obtained by the project owner.

e. Rare, Threatened, and Endangered Species

According to the US Fish and Wildlife Service (USFWS) (letter dated January 27, 2010) and the MDNR Natural Heritage Division (letter dated January 13, 2009), there are no known occurrences of federal or state listed rare, threatened, and

endangered species in the project area. Copies of the letters from the USFWS and MDNR are included as **Appendix E – Attachments 17 & 18**.

Table V-1 summarizes the potential natural environmental impacts for the preferred alternative.

Table V-1: Natural Environmental Impacts

Features	Preferred Alternative 2B
Wetlands (acres)	0
Streams (linear feet)	0
Floodplains (acres)	0
Parks (acres)	0
Significant Trees (number)	9 ¹
Specimen Trees (number)	8 ¹

¹ Impacts to trees may be further reduced in final design because of more detailed engineering

3. Noise and Air Quality

Noise and air analyses are not warranted since the proposed project does not result in any significant capacity improvements. In addition, there are no noise sensitive areas located in the project area. This project is exempt from the requirement that a conformity determination be made (U.S. EPA Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans, Programs or Projects-Final Rule).

This project will not result in any meaningful changes in traffic volumes, vehicular mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the No-Build Alternative. As such, this project will generate minimal air quality impacts for the Clean Air Act criteria pollutants and has not been linked with any special Mobile Source Air Toxics (MSAT) concern. Consequently, this project is exempt from an analysis for MSATs.

Moreover, the EPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years. Even after accounting for a 64 percent increase in vehicle miles traveled (VMT), FHWA predicts MSATs will decline in the range of 57 percent to 87 percent, from 2000 to 2020, based on regulations now in effect, even with a projected 64 percent increase in VMT. This will both reduce the background level of MSATs as well as the possibility of even minor MSAT emissions from this project.

Projects which are exempt from project level conformity are also exempt from the PM_{2.5} project level conformity determination requirements, in accordance with 40

CFR 93.126. Exempt projects are listed in 40 CFR 93.126 in Table 2 and the proposed project is an example of a Safety—Railroad/highway crossing project in that table. This project will improve safety and will not increase through traffic capacity.

4. Hazardous Materials

A Hazardous Materials Screening Assessment was completed for the preferred alternative. The assessment identified properties of concern based on a database search of regulatory files for potentially contaminated sites in and around the project area. A review of the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list revealed that there is one CERCLIS site within approximately 0.5 mile of NSA Bethesda. A review of the Resource Conservation and Recovery Act Corrective Action Activity (CORRACTS) list revealed that there are two CORRACTS sites within approximately one mile of NIH and NSA Bethesda. There are also two Resource Conservation and Recovery Act treatment, storage and disposal facilities (RCRA-TSDF) sites within approximately 0.5 mile of the project area. Within approximately 0.25 mile of NIH and NSA Bethesda, there are two RCRA-Large quantity generator (LQG) sites. There is one open case monitored by the Oil Control Program (OCPCASES) and one Land Restoration Program (LRP) site within 0.5 mile of NIH. One Underground Storage Tank (UST) is also located within approximately 0.25 mile of NIH. None of these sites would be impacted by the project.

5. Long-Term Maintenance Commitments

Mechanical elements, such as escalators and elevators would require regular maintenance by the facility owners for the preferred alternative. Ownership and maintenance responsibilities will be determined before the project proceeds through the design and construction phases.

6. Coordination with SHA Improvements

As noted previously, SHA is currently designing roadway improvements at the intersection of MD 355 and Jones Bridge Road independent of this MD 355/Rockville Pike Crossing Project. The Medical Center Metro station, bus stops and entrances to NIH and NSA Bethesda are all located at or adjacent to the MD 355, South Drive, and South Wood Road intersection, which is the northern limit of SHA's proposed improvements. SHA has proposed resurfacing, signal and pedestrian upgrades at the MD 355 and Jones Bridge Road intersection that would extend north to the South Drive and South Wood Road intersection. These proposed improvements would overlap with MCDOT's Preferred Alternative. The SHA project will be advertised and constructed under its own separate contract; however, at the time of publication of this document, SHA did not have completed construction plans for its MD 355 and Jones Bridge Road project.

While project compatibility and coordination will be a continuous effort between agencies, without an SHA project in place at Jones Bridge Road, the extent of project overlap is not entirely known at this time. Regardless, project plans are being shared between SHA and MCDOT, and SHA, as a project stakeholder, has provided comments at several milestones during project development for the MD 355/Rockville Pike Crossing Study. SHA and MCDOT will work together to reduce or eliminate any duplication of effort/construction and work to coordinate improvements in their ultimate configuration/location.

The two projects serve separate users and are on different schedules. The project under consideration by MCDOT focuses on improving access to mass transit facilities, pedestrian/bicycle mobility and traffic operations at MD 355 and South Drive and South Wood Road, while SHA's project intends to address vehicular traffic safety and service at the MD 355 and Jones Bridge Road intersection. Additionally, while construction schedules have not been established for either project, it is expected (based on the current project status and scope of work) that SHA's improvements will be in place much sooner than MCDOT's improvements. In that regard, the proposed pedestrian amenities, such as audible and countdown pedestrian signals (APS/CPS), Americans with Disabilities Act (ADA) upgrades, and hiker/biker trail improvements may be realized through SHA's project before MCDOT's project can be constructed.

C. Public Involvement

The study team conducted public outreach efforts such as participation at three monthly BRAC Implementation Committee (BIC) meetings and uploads to the Montgomery County BRAC website, as well as a project-specific public workshop. The target audience for the outreach efforts included the adjacent communities, employees, visitors, patients at NSA Bethesda and NIH, current or potential WMATA transit users, and travelers along MD 355.

MCDOT presented study information at three BIC meetings: January 19, 2010, May 11, 2010, and December 21, 2010. Each meeting included a study and schedule update. In addition, all of the study materials presented at these meetings were uploaded onto the County's BRAC website so they could be reviewed by those who did not attend the meetings. Comments from the BIC meeting attendees and all who viewed the website were encouraged. At each meeting, the team took questions from the BIC members and others in attendance and provided immediate feedback to questions. A majority of the questions received at the BIC meetings focused on how the proposed improvements would benefit the surrounding communities and how they would enhance existing transit and pedestrian facilities. Below is a summary of the comments received at each meeting. For more detail, summaries of the three BIC meetings are included in **Appendix E – Attachment 14**.

1. BIC Meeting – January 19, 2010

The purpose of the January 19, 2010 meeting was to introduce the study to members of the BIC committee and interested members of the community and provide an overview of the NEPA process, the public involvement plan, the Draft Purpose and Need Summary, and the study scope and schedule. In general, there was support for the project, with many comments focused on defining the purpose and need so that appropriate solutions could be developed. At this first meeting, there was concern from some participants that the County had already selected an interchange concept that was submitted as part of the TIGER Grant Application. The Director of the Montgomery County DOT assured the members that the NEPA study would consist of an evaluation of all reasonable and feasible alternatives that could meet the Purpose and Need. Other concerns about reallocating funding from other projects to this project were also expressed, and again the County DOT Director assured the audience that this was not the case. There was also strong support for including improvements to pedestrian safety and accessibility, where were confirmed to be components of this project.

2. BIC Meeting – May 11, 2010

The purpose of the May 11, 2010 meeting was to review the detailed Purpose and Need Statement, project goals and objectives, preliminary alternatives, next steps, and solicit feedback from attendees. Comments consisted of clarifying portions of the seven preliminary alternatives. In general, the BIC members and members of the public who attended the meeting were supportive of the alternatives under study. No formal opposition was expressed.

3. BIC Meeting – December 21, 2010

The purpose of the December 21, 2010 meeting was to provide a detailed description of each of the four proposed ARDS, and a detailed discussion of the ARDS evaluation results. Details of the primary and secondary evaluation criteria were shared with the BIC members and members of the public who were in attendance. Comments generally consisted of points of clarification about each of the ARDS, which the project team answered at the meeting. It appeared that there was support for all of the ARDS, but that Alternative 2 was preferred by many of the BIC members because of its lower cost and right-of-way needs and ability to be constructed in phases. The meeting concluded with a discussion of the next steps, specifically the identification of a Preferred Alternative and completion of the environmental documentation.

4. Public Workshop – July 20, 2010

A public workshop was held on July 20, 2010 at Bethesda-Chevy Chase High School in Bethesda, Maryland. The meeting notice, comment card, and summary are

included in **Appendix E – Attachment 14**. Approximately 85 people attended the meeting. The purpose of the public meeting was to present the elements of the study, including the project's purpose and need, goals and objectives, potential solutions, and to obtain input from the community. Many comments related to the alternatives components, traffic, transit enhancements, and other miscellaneous project concerns were received, tabulated, and submitted to stakeholders for consideration. Several refinements, such as the proposed shallow pedestrian underpass, the relocation of existing bus stops, recommended double-sided elevator designs, and placing more emphasis on providing improvements that would serve pedestrians and bicyclists have been incorporated into the preferred alternative based on input received from the public and the project stakeholders.

D. Conclusion

The Categorical Exclusion for this project was approved by FHWA on May 13, 2011. The Categorical Exclusion documented the study team's recommendation of Alternative 2B: Pedestrian/Bicycle underpass and Deep Elevators, along with TSM/TDM improvements as the Preferred Alternative and provided a detailed summary of the project's purpose and need, alternatives development process, environmental effects analysis, and public involvement.

FHWA concurred that Alternative 2B “will not involve any significant environmental impacts to socio-economic or natural resources, and will not induce significant foreseeable alterations in land use or affect planned growth.” and will therefore be carried forward as the Selected Alternative designated for future design and construction phases.

A copy of the approved CE and its Attachments are included in **Appendix E**.



VI. REFERENCES

Final Environmental Impact Statement (FEIS) for the Master Plan 2003 Update for the National Institutes of Health (NIH) Campus in Bethesda, Maryland.

Final Environmental Impact Statement for Activities to Implement 2005 Base Realignment and Closure Actions at National Naval Medical Center, Bethesda, Maryland

Medical Center Station Access Improvement Study, Final Report July 2009, Washington Metropolitan Area Transit Authority

Purple Line Alternatives Analysis and Draft Environmental Impact Statement, US Department of Transportation, Maryland Department of Transportation and the Maryland Transit Administration, September 2008

US Census, American Community Survey, 2006 – 2008



VII. APPENDICES

- 1. Appendix A – Environmental Inventory**
- 2. Appendix B – Traffic Analysis**
- 3. Appendix C – Detailed Cost Estimates**
- 4. Appendix D – Preliminary Maintenance of Traffic Summary**
- 5. Appendix E – Categorical Exclusion Document**
- 6. Appendix F – Request for Environmental Classification Letter**

APPENDIX A – ENVIRONMENTAL INVENTORY

Environmental Inventory

Using available data, the study team conducted a preliminary investigation of the natural and human environmental and cultural resources in the study area. The following sections summarize the results of the environmental inventory of socio-economic, cultural, and natural resources within the study area.

1. Cultural Resources

Section 106 of the National Historic Preservation Act of 1966, as amended, requires federal agencies to consider the impacts of undertakings on historic properties (including architectural properties and archaeological sites) that are either listed in the National Register of Historic Places (NR) or eligible for listing (36 CFR 800). If projects are federally permitted, licensed, funded, or partially funded, the project must comply with Section 106. This project is expected to utilize United States Department of Defense (DoD) funding, and as such, would need to comply with Section 106 of the National Historic Preservation Act (NHPA).

2. Historic Properties in the Project Area

A site visit was conducted to identify potential historic properties in the project area. Reviews were conducted of readily available published sources both online and at the Maryland Historical Trust (MHT) library and archives in Crownsville, Maryland – the repository for the Maryland State Historic Preservation Office. In addition, the 1878 G.M. Hopkins Montgomery County Map, Bethesda District No. 7, was reviewed for site history information. The review activity was directed towards locating all previously identified above-ground historic or potentially historic properties within a half-mile radius of the project location, and all previously-identified archaeological sites within a one-mile radius of the project location.

3. Archeological Resources

Research identified 16 documented archaeological sites within a one-mile radius of the project location. In accordance with MHT policies, no map of these sites or specific location information is provided (**Table A-1**). Of these sites, 11 are prehistoric and five are multicomponent sites that exhibit evidence of both prehistoric and historic occupation. The prehistoric sites date from the Paleo-Indian Period (10,000 BC to 7,500 BC) through the Late Woodland (AD 900 to AD 1650) and consist of short-term resource procurement and seasonal occupation camps with many of the sites represented by lithic scatters. The historic sites date from the late 18th century through the early 20th century and represent the occupation of owners before the development of the NIH and NSAB.

Table A-1: Documented Archaeological Sites within One Mile of Study Area

Site Number	Location	Quad Map	Type	Context	Eligibility
18MO35	NIH	Wash. West	Prehistoric	Paleo-Indian-Woodland	Undetermined
18MO243	NIH	Wash. West	Prehistoric	Late Archaic-Woodland	Eligible
18MO332	MNCPPC*	Kensington	Prehistoric	Unknown	Undetermined
18MO462	NIH	Kensington	Prehistoric & Historic	Late Archaic & Woodland, 18th/19th C	Not Eligible
18MO463	NIH	Kensington	Prehistoric & Historic	Early-Middle Woodland, 19th to 20th C	Not Eligible
18MO464	NIH	Kensington	Prehistoric & Historic	Middle Woodland and 20th C	Not Eligible
18MO465	NIH	Kensington	Prehistoric & Historic	Late Archaic & Woodland, 20th C	Not Eligible
18MO469	NIH	Kensington	Prehistoric	Early Woodland	Not Eligible
18MO555	NSAB	Kensington	Prehistoric & Historic	Unknown and 19th C	Undetermined
18MO556	NSAB	Kensington	Prehistoric	Late Archaic	Undetermined
18MO644	NSAB	Kensington	Prehistoric	Unknown	Not Eligible
18MO645	NSAB	Kensington	Prehistoric	Unknown	Not Eligible
18MO646	NSAB	Kensington	Prehistoric	Unknown	Not Eligible
18MO647	NSAB	Kensington	Prehistoric	Unknown	Not Eligible
18MO648	NSAB	Kensington	Prehistoric	Unknown	Not Eligible
18MO654	NIH	Wash. West	Prehistoric	Unknown	Not Eligible

*MNCPPC Rock Creek Stream Valley Park

None of the recorded sites on either the NIH or NSAB properties are located within the immediate area of ground disturbance for the proposed project and would not be affected. The archaeological site nearest the project area is 18MO35, a prehistoric site of undetermined temporal association with materials suggesting long-term occupation from the Paleo-Indian (10,000 BC to 7,500 BC) to the Woodland Period (1,000 BC to AD 1600). The site is located approximately 2,640 feet (800 meters) due west of the proposed project area and is within the NIH property. The site was first documented in 1971 and has not been evaluated for NR eligibility.

Many of the prehistoric sites located on both NIH and NSAB have been formally evaluated for eligibility for listing in the NRHP and were determined not eligible due to previous disturbance or lack of diagnostic cultural materials. However, the existence of documented prehistoric archaeological sites near the project area

suggests a moderate probability of encountering sites in areas previously undisturbed by development.

4. Above-Ground Resources

Research revealed twenty documented above-ground properties within a one-half mile radius of the project area (**Figure A-1**). The majority of these properties are located within the NIH or NSAB complexes. The NIH undertook a cultural resource inventory of its property in 1997 and determined 20 buildings are eligible for listing in the NR, either individually or as contributing resources to a historic district. Eighteen of these buildings are beyond the immediate project area and are not likely to be affected by the proposed project.

One historic property located on the NIH property, “The Stone House,” also known as the George Peter Freeland Estate (M:35-9-1), is located in the proposed project area. The George Peter Freeland Estate was determined eligible for listing in the NR in 1985. The property has been designated a “Master Plan Historic Individual Site” by the Maryland National Capital Park and Planning Commission – Montgomery County (M-NCPPC). The south side of South Drive and the west side of Wisconsin Avenue are included within the site boundary.

The landscape associated with the George Peter Freeland Estate was regarded as an integral design feature that contributed to the historic character of the property as recently as 2000; as indicated in a historic resource inventory form prepared by NIH for the property. This documentation describes the east lawn as a “visual approach to the house...articulated by a series of stone wall terraces of the same bluestone as the house: a row of bushes atop one of the walls acts as a stage front to the grand portico.”¹ The inventory form describes the site as retaining the feeling of the original property, noting “This portion of the Peter estate (east lawn) between the Stone House and Rockville Pike remains open and landscaped, providing a broad and elegant vista which continues to evoke the setting and atmosphere of the 1930s estate.”² However, subsequent Metro-related construction at the southwest intersection of Wisconsin Avenue and South Drive has compromised the integrity of setting of the east lawn, as described in the 2000 inventory form.

The proposed project area will also encroach on the National Naval Medical Center Historic District, listed in the NRHP in 1998 and consists of 131 acres and 18 contributing buildings. The district’s landscape fronts Wisconsin Avenue and is identified in the NRHP nomination form as contributing to the historic character of the property. The nomination defines the significance of landscaped areas as “An integral part of Building 1 (Bethesda Naval Hospital Tower)...its front landscape area and monumental flagpole set directly on center with the main tower. The formal

¹ NIH Historic Resources Inventory Form, M: 35-9-1, “The Stone House”; The George Peter Freeland Estate, Section 7, pg 5.

² Ibid., Section 8, pg 5.

landscape immediately west of Building 1 is semicircular in appearance, shaped by the formal semi-circular drive (Wood Road) that leads visitors into the site from the north and from the south.”³ The nomination emphasizes the role the landscape plays in defining the architectural experience of the building: “the extensive greensward surrounding the monument remains much as it appeared after its initial development. The experience, therefore, of entering a prominent and distinguished naval facility is clear and one is compelled to acknowledge and admire that which remains of its architectural character.”⁴ These properties are listed in **Table A-2**.

Table A-2: Documented Historic Properties within One-Half Mile of the Project Area

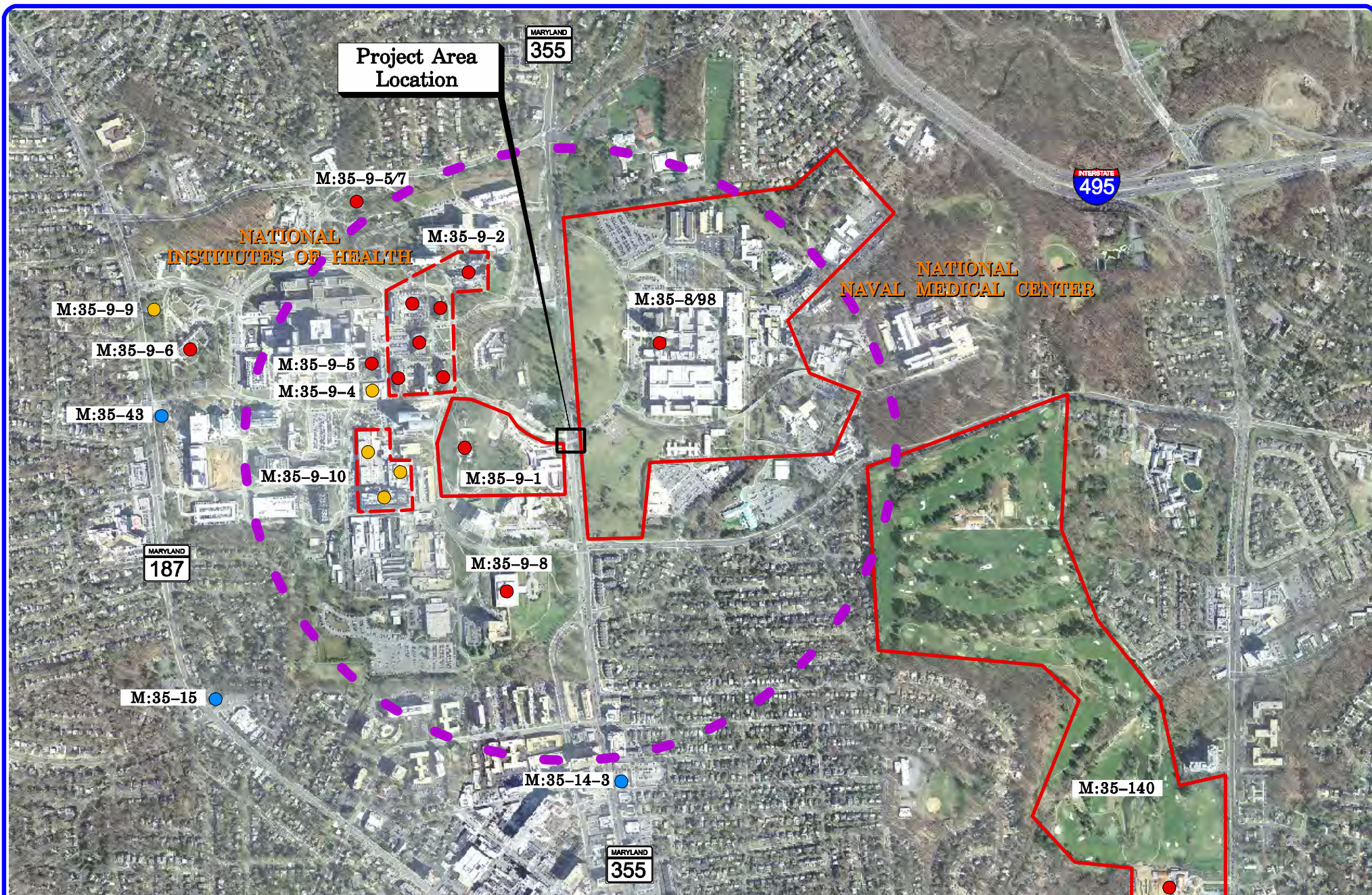
Site Number	Location	Resource Name	Construction Date	Eligibility Status
M:35-8	NSAB	Bethesda Naval Hospital Tower	1942	NR Listed 1977
M:35-9-1	NIH	George Freeland Peter House Estate (Buildings 16 and 16A)	1931	Eligible 1985
M:35-9-2	NIH	NIH Historic Core (Buildings 1-6)	1936-1941	Eligible 2000
M:35-9-3	NIH	Tree Tops (Building 15)	1926	Eligible 1995
M:35-9-4	NIH	Animal Building (Building 9)	1943	Not Eligible 2000
M:35-9-5	NIH	Memorial Laboratory (Building 7)	1947	Eligible 2000
M:35-9-6	NIH	Convent Sisters of Visitation (Building 60)	1922	Eligible 2000
M:35-9-7	NIH	Officer's Quarters (Buildings 15 B1-G2, 15 H and 15 I)	1940	Eligible 1997
M:35-9-8	NIH	National Library of Medicine (Building 38)	1962	Eligible 2000
M:35-9-9	NIH	Caretaker's Cottage (Building 61)	1920s	Not Eligible 1996
M:35-9-10	NIH	NIH Buildings 11, 12 and 13	1954	Not Eligible 2003
M:35-15	E of NIH	Old Schoolhouse	1800-1899	Not Evaluated
M: 35-14-3	S of NSAB	Little Tavern	1940	Not Evaluated
M:35-43	W of NIH	Bethesda Community Store	1900-1924	Not Evaluated
M:35-98	NSAB	NSAB Historic District*	1939-1942	NR Listed 1998
M:34-140	SE of NSAB	Columbia County Club	1911	Eligible 2002

* The NSAB Historic District consists of 131 acres of the 242-acre complex, which contains 90 buildings. 36 Buildings are in the NSAB Historic District and 18 are contributing.

5. Project Implications

³ NRHP Registration Form, M: 35-98, National Naval Medical Center Historic District, Section 7, pg 11.

⁴ Ibid. Section 7, pg 4.

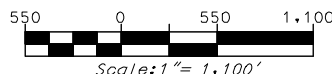


Legend

- NRHP Not Eligible
- NRHP Not Evaluated
- NRHP Eligible



Half-Mile Study Area



Montgomery County
Department of Transportation

MD 355/Rockville Pike Crossing Project
Historical Properties within One-Half Mile

June 2010

URS

Figure A-1

Because the proposed project could potentially have an adverse effect on historic properties and will utilize Federal funding; compliance with Section 106 of the NHPA is required. Compliance with Section 106 requires the consideration of alternatives in consultation with MHT and other relevant stakeholders. The compliance processes may require any or all of the following:

- Additional archeological investigation to determine if archaeological resources are present in the project area. This may include focused research to determine the level of ground disturbance in the project area or on-site testing to identify the presence of archaeological features or artifacts.
- Preparation of a Section 106 Memorandum of Agreement (MOA) to resolve adverse effects on historic properties (NSAB Historic District, archaeological sites). An MOA may include mitigation measures such as Phase III archaeological data recovery (should NRHP-listed or eligible archaeological sites be adversely affected by the project).

6. Section 4(f)

Section 4(f) of the U.S. Department of Transportation Act of 1966 requires that the proposed use of land from a publicly-owned parkland, recreation area, wildlife and/or waterfowl refuge, or any significant historic or archaeological site, as part of a federally funded or approved transportation project, is permissible only if there is no feasible and prudent alternative to the use. Final action requiring the taking of such land must also document and demonstrate that the proposed action includes all possible planning to minimize harm to the property resulting from such use.

There are no publicly-owned parklands, recreation areas, wildlife and/or waterfowl refuges present in the study area. Data collection to determine whether significant historic or archaeological sites are present and their eligibility is underway. An effects determination through consultation with the Maryland Historical Trust (MHT) will be completed in conjunction with the alternatives development process.

The proposed project will not utilize USDOT funds; therefore, a Section 4(f) evaluation will not be required. Additional details on Section 4(f) and the effects of the preferred alternative are provided at the end of this document.

7. Section 6(f)

The Land and Water Conservation Fund Act of 1965 (16 USC 460) established a fund to subsidize State and Federal acquisition of lands and waters for recreational and conservation purposes. Section 6(f) of the Land and Water Conservation Fund Act requires that the Secretary of the U.S. Department of the Interior (USDOI) approve any conversion of lands purchased or developed with assistance under this act to a use other than public, outdoor recreation use.

According to previous studies, there are no Section 6(f) lands in the study area.

8. Waters of the U.S./Wetlands

Waters of the United States (U.S.), including wetlands, are regulated under Sections 401 and 404 of the Clean Water Act, the Maryland Tidal Wetlands Act, and the State of Maryland Non-tidal Wetlands Protection Act.

Based on previous wetlands/waters investigations completed for the project area, the following resources were identified:

a. NSAB

Lake Eleanor is located in the lawn area between MD 355 and the Naval Hospital Tower (Palustrine Open-Water).

No wetlands are associated with the existing stream system (Stoney Creek) which is located beyond the study area (Wetland Investigation Report, NSAB FEIS).

b. NIH

No wetlands are present on the NIH campus and the NIH stream is located to the west of the study area (NIH Master Plan 2003 Update, March 2005).

No impacts to waters of the U.S., including wetlands, are anticipated for this project.

9. Rare, Threatened, and Endangered Species

No federal or State listed rare, threatened, or endangered (RTE) species have been identified on the NSAB property according to previous studies conducted in the project study area.

No RTE species are known to exist in the study area according to a January 7, 2010 U.S. Fish and Wildlife Service (USFWS) letter. According to the Maryland Department of Natural Resources (MDNR) in their letter dated January 13, 2010, no RTE species have been documented within the study area.

10. Floodplains

While the 100-year floodplain of Stoney Creek is located on the NSAB facility, it is beyond the project area. The floodplain associated with the NIH stream is also located beyond the project area.

No impacts to designated 100-year floodplains are anticipated for this project.

11. Air Quality

Project effects were determined during the alternatives development phase (including the relevance of PM 2.5 and Mobile Source Air Toxics). The effects of the preferred alternative are detailed at the end of this document.

12. Noise

Project effects analyzed during the alternatives development phase. The effects of the preferred alternative are detailed at the end of this document.

13. Forest Conservation

According to previous studies, no forest resources are present in the project area. Five of Montgomery County's champion trees are located on the NIH campus; however, they are beyond the project area. Roadside trees may be located within the publicly-owned right-of-way along MD 355. These specimens will be identified during field surveys and avoided if possible during the alternatives development phase. Any unavoidable removal of trees within the publicly-owned right-of-way will require a Roadside Tree Permit from MDNR Forest Service. Land development in the project area is also subject to Forest Conservation Act (FCA) approval administered by M-NCPPC. Both FCA and Roadside Tree Permit authorizations will be completed following selection of an alternative. The effects of the preferred alternative are detailed at the end of this document.

a. NSAB

Vegetation on the NSAB property along MD 355 consists of "formal plantings found around developed areas." Wooded areas are located along the eastern portion of the property beyond the study area.

b. NIH

According to available resources, wooded areas on the NIH campus do not meet the definition of forest established by Montgomery County and MDNR.

14. Relocations

No displacement or relocation of residences and businesses are anticipated for this project. The effects of the preferred alternative are detailed at the end of this document.

15. Environmental Justice

Based on the population diversity and average incomes in the census tracts surrounding the NSAB and the NIH, the area does not contain an identifiable minority or low income community and disproportionate impacts are therefore not anticipated (NIH Final EIS for the Master Plan 2003 Update).

16. Hazardous Materials

Previous studies completed for the study area do not identify any past releases of hazardous materials in the project area. Supplemental database searches will be conducted to determine if there have been any recent releases of hazardous materials in the study area and their closure status. The effects of the preferred alternative are detailed at the end of this document.

17. Smart Growth

The study area is located inside the Capital Beltway and is within the Priority Funding Area (PFA). The proposed project is consistent with the 1992 Planning Act and 1997 Priority Funding Areas Act relative to its enhancement of transit-oriented, bicycle-friendly, and walkable streets.

18. Indirect and Cumulative Effects

Project effects were determined during the alternatives development phase. The effects of the preferred alternative are detailed at the end of this document.

APPENDIX B – TRAFFIC ANALYSIS

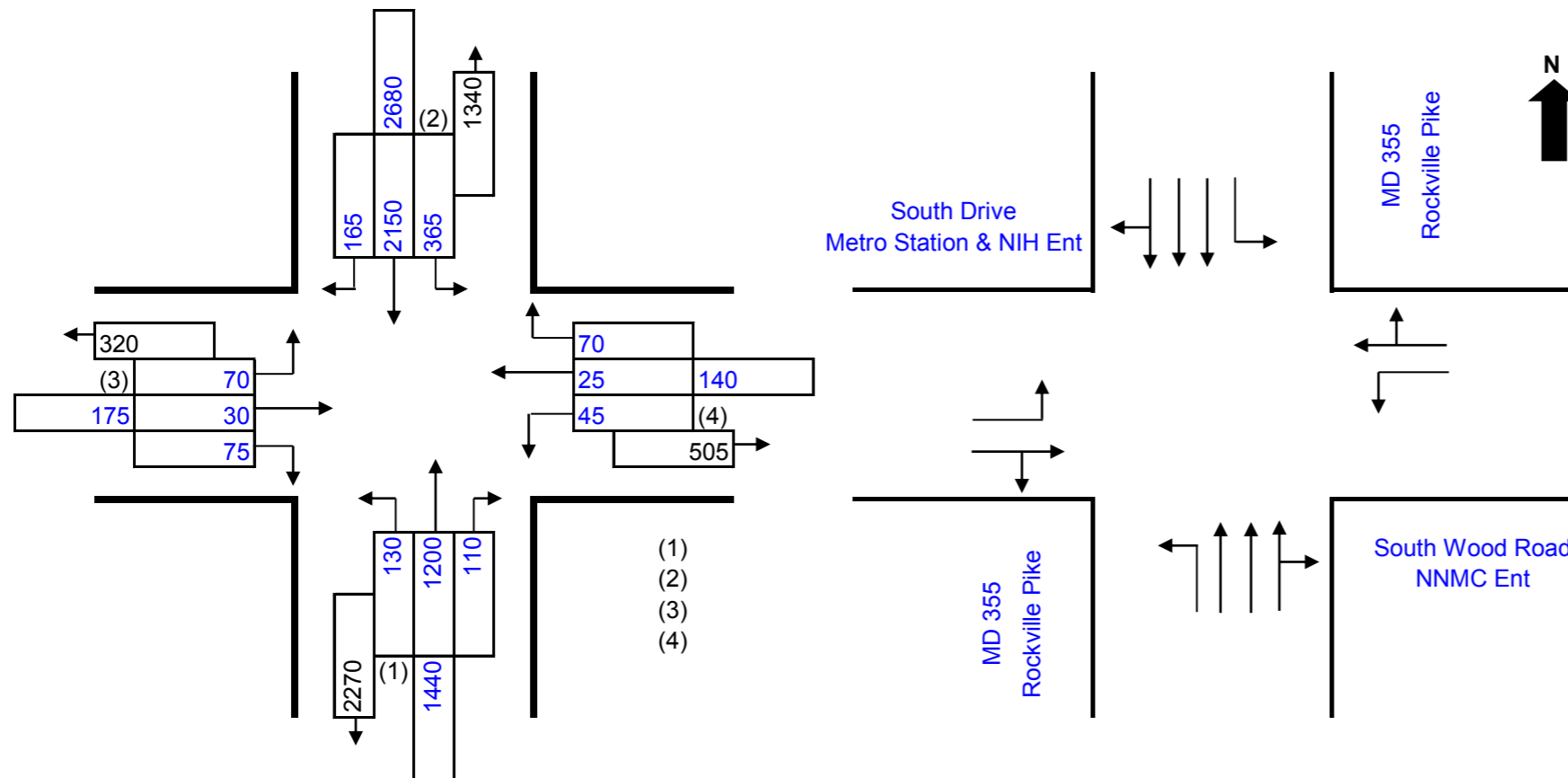
Turning Movement Summary and Level of Service

Count Date: _____
 Condition: Existing
 Design Year: 2009
 Computed by: RLT Date: 5/4/2010

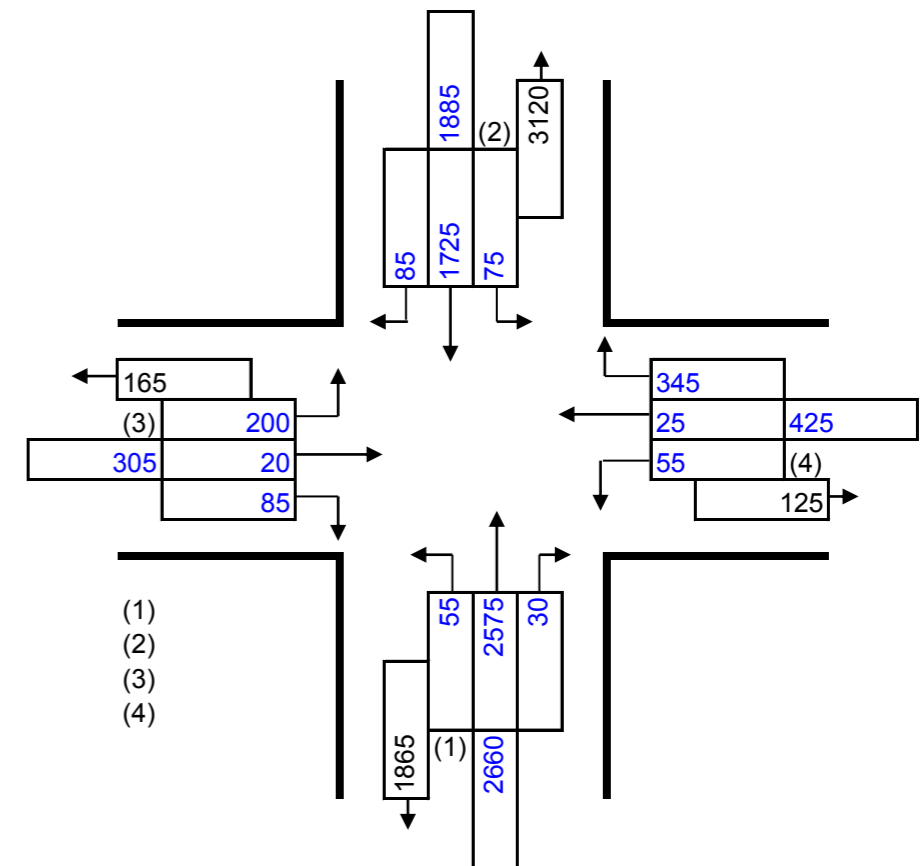
Location: MD 355 at South Wood Road /
South Drive
 Checked by: TAR Date: 6/4/2010

URS

AM PEAK HOUR:



PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
 Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBTR	1310	0.40	524	365	1.00	365	889			NBTR	2605	0.40	1042	75	1.00	75	1117	*
	SBTR	2315	0.40	926	130	1.00	130	1056	*		SBTR	1810	0.40	724	55	1.00	55	779	
	EBTR	105	1.00	105	45	1.00	45	150			EBTR	105	1.00	105	55	1.00	55	160	
	WBTR	95	1.00	95	70	1.00	70	165	*		WBTR	370	1.00	370	200	1.00	200	570	*

Remarks:

AM TOTAL

1221

v/c = 0.76

LOS

C

Remarks:

PM TOTAL

1687

v/c = 1.05

LOS

F

* Critical Volume.

* Critical Volume.

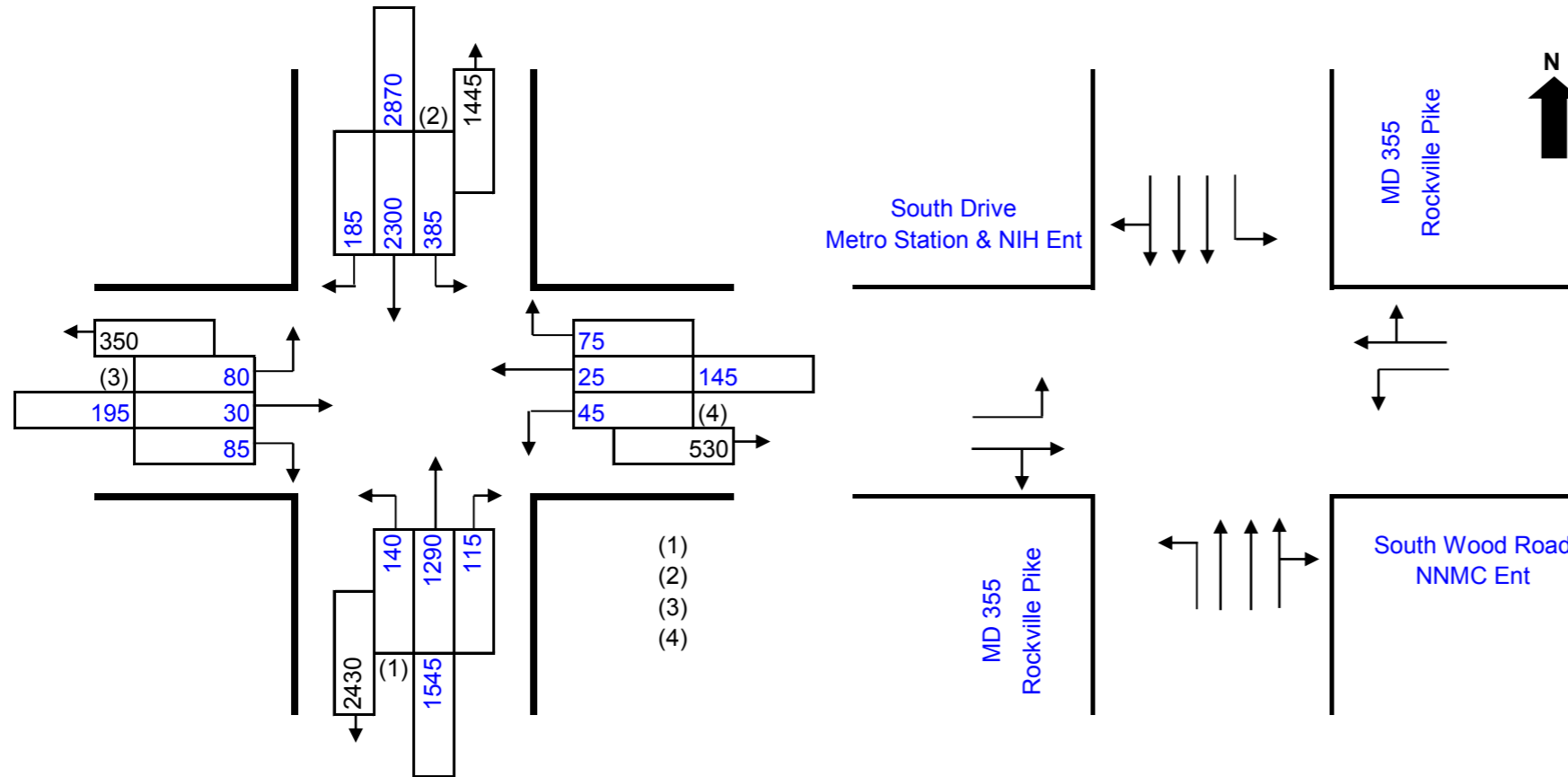
Turning Movement Summary and Level of Service

Count Date: _____
 Condition: No Build & Alt 2 (TSM)
 Design Year: 2030
 Computed by: RLT Date: 4/2/2010

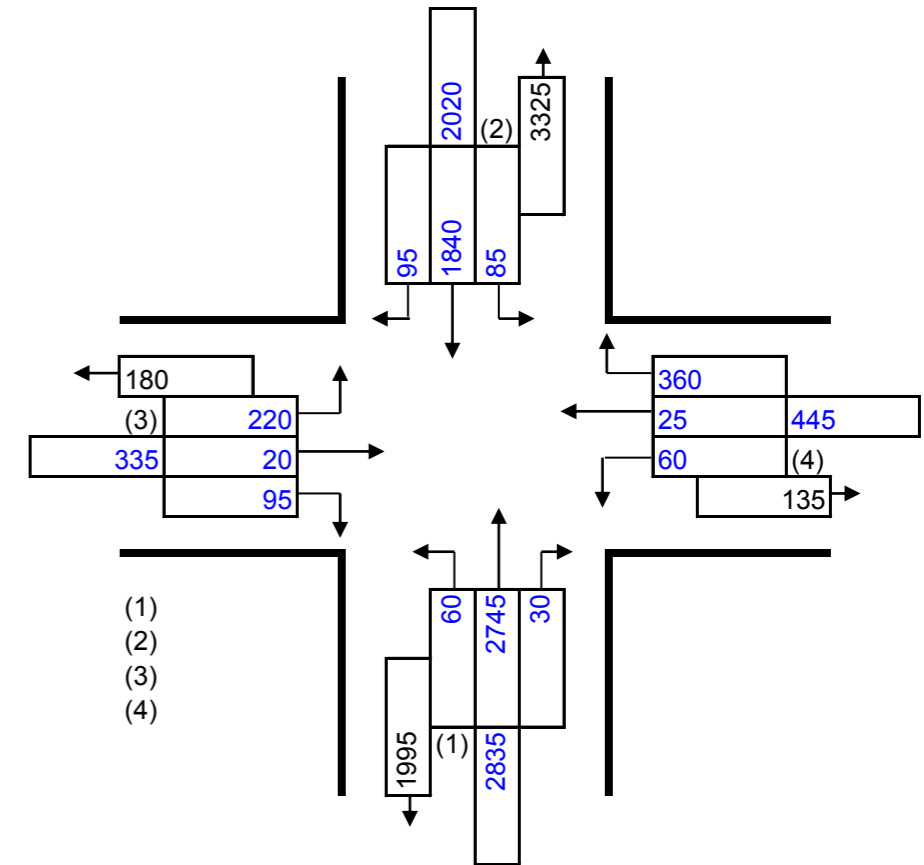
Location: MD 355 at South Wood Road /
South Drive
 Checked by: TAR Date: 6/3/2010

URS

AM PEAK HOUR:



PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
 Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBTR	1405	0.40	562	385	1.00	385	947			NBTR	2775	0.40	1110	85	1.00	85	1195	*
	SBTR	2485	0.40	994	140	1.00	140	1134	*		SBTR	1935	0.40	774	60	1.00	60	834	
	EBTR	115	1.00	115	45	1.00	45	160			EBTR	115	1.00	115	60	1.00	60	175	
	WBTR	100	1.00	100	80	1.00	80	180	*		WBTR	385	1.00	385	220	1.00	220	605	*

Remarks:

AM TOTAL

1314

v/c = 0.82

LOS

D

Remarks:

PM TOTAL

1800

v/c = 1.13

LOS

F

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service

Count Date: _____
 Condition: Alt 3
 Design Year: 2030
 Computed by: RLM Date: 6/3/2010

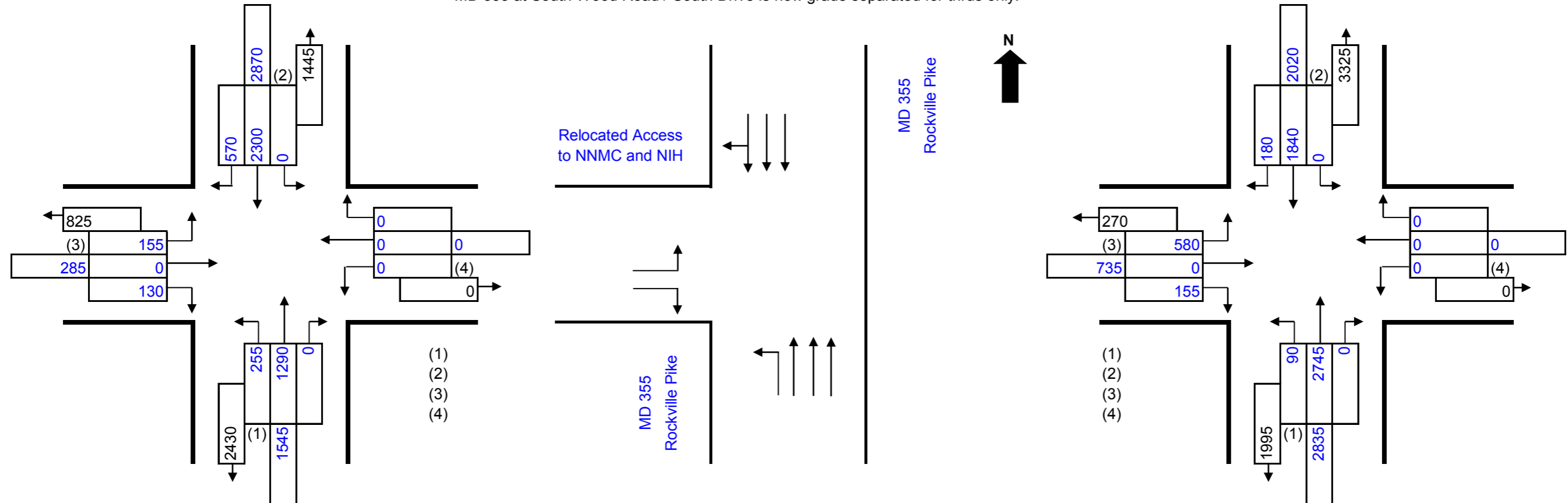
Location: MD 355 at South Wood Road /
South Drive
Relocated Access Point on MD 355
 Checked by: TAR Date: 6/3/2010

URS

AM PEAK HOUR:

Turning movements relocated to a new intersection north of South Wood Road / South Drive.
 A new intersection on South Drive, just west of the Kiss & Ride, completes the movements.
 MD 355 at South Wood Road / South Drive is now grade separated for thru only.

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
 Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBT	1290	0.40	516	0	1.00	0	516			NBT	2745	0.40	1098	0	1.00	0	1098	*
	SBTR	2870	0.40	1148	255	1.00	255	1403	*		SBTR	2020	0.40	808	90	1.00	90	898	
	EBL	155	1.00	155	0	1.00	0	155	*		EBL	580	1.00	580	0	1.00	0	580	*

Remarks:

AM TOTAL

1558

v/c = 0.97

LOS

E

Remarks:

PM TOTAL

1678

v/c = 1.05

LOS

F

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service

Count Date: _____
 Condition: Alt 3
 Design Year: 2030
 Computed by: RLM Date: 6/3/2010

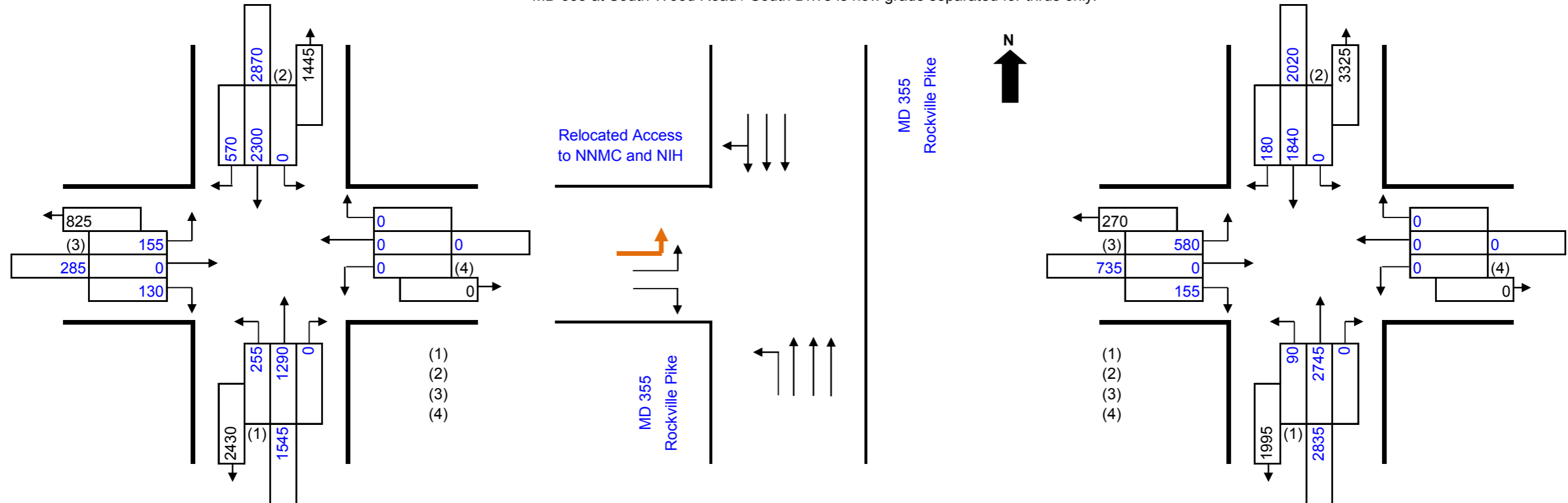
Location: MD 355 at South Wood Road /
South Drive
Relocated Access Point on MD 355
 Checked by: _____ Date: _____

URS

AM PEAK HOUR:

Turning movements relocated to a new intersection north of South Wood Road / South Drive.
 A new intersection on South Drive, just west of the Kiss & Ride, completes the movements.
 MD 355 at South Wood Road / South Drive is now grade separated for thru only.

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
 Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBT	1290	0.40	516	0	1.00	0	516			NBT	2745	0.40	1098	0	1.00	0	1098	*
	SBTR	2870	0.40	1148	255	1.00	255	1403	*		SBTR	2020	0.40	808	90	1.00	90	898	
	EBL	155	0.60	93	0	1.00	0	93	*		EBL	580	0.60	348	0	1.00	0	348	*

Remarks:

AM TOTAL 1496

v/c = 0.94

LOS E

Remarks:

PM TOTAL 1446

v/c = 0.90

LOS D

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service

Count Date: _____
 Condition: Alt 3
 Design Year: 2030
 Computed by: RLM Date: 6/3/2010

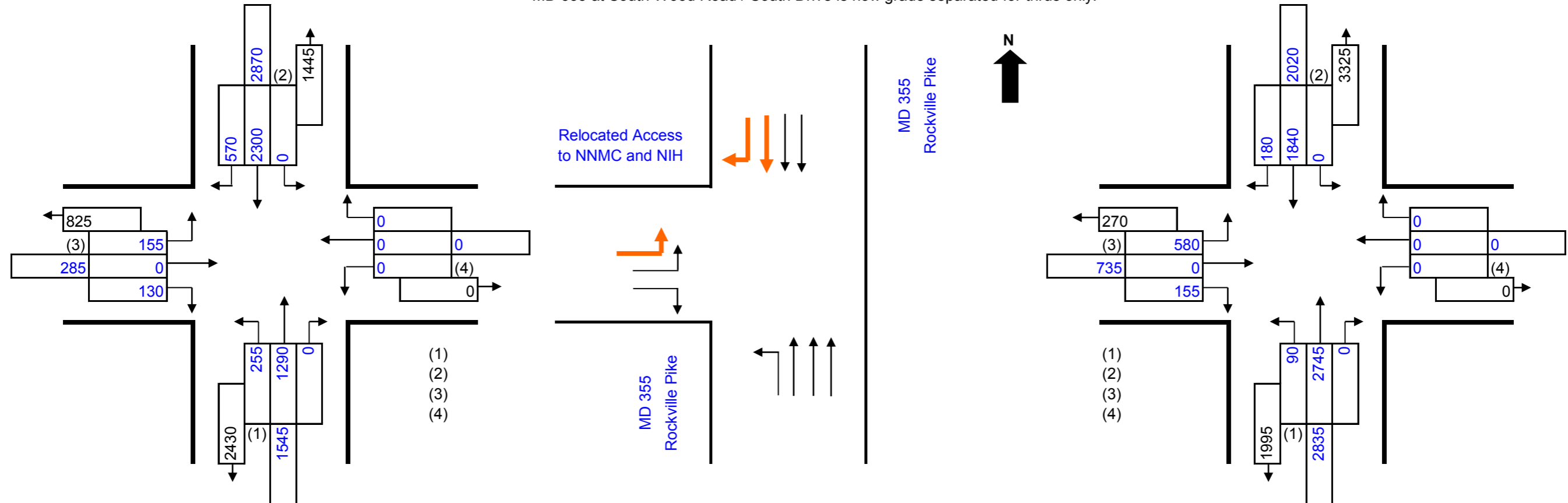
Location: MD 355 at South Wood Road /
South Drive
Relocated Access Point on MD 355
 Checked by: _____ Date: _____

URS

AM PEAK HOUR:

Turning movements relocated to a new intersection north of South Wood Road / South Drive.
 A new intersection on South Drive, just west of the Kiss & Ride, completes the movements.
 MD 355 at South Wood Road / South Drive is now grade separated for thru only.

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
 Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBT	1290	0.40	516	0	1.00	0	516			NBT	2745	0.40	1098	0	1.00	0	1098	*
	SBT	2300	0.40	920	255	1.00	255	1175	*		SBT	1840	0.40	736	90	1.00	90	826	
	EBL	155	0.60	93	0	1.00	0	93	*		EBL	580	0.60	348	0	1.00	0	348	*

Remarks:

AM TOTAL 1268

v/c = 0.79

LOS

C

Remarks:

PM TOTAL 1446

v/c = 0.90

LOS

D

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service

Count Date: _____
 Condition: Alt 3
 Design Year: 2030
 Computed by: RLM Date: 6/23/2010

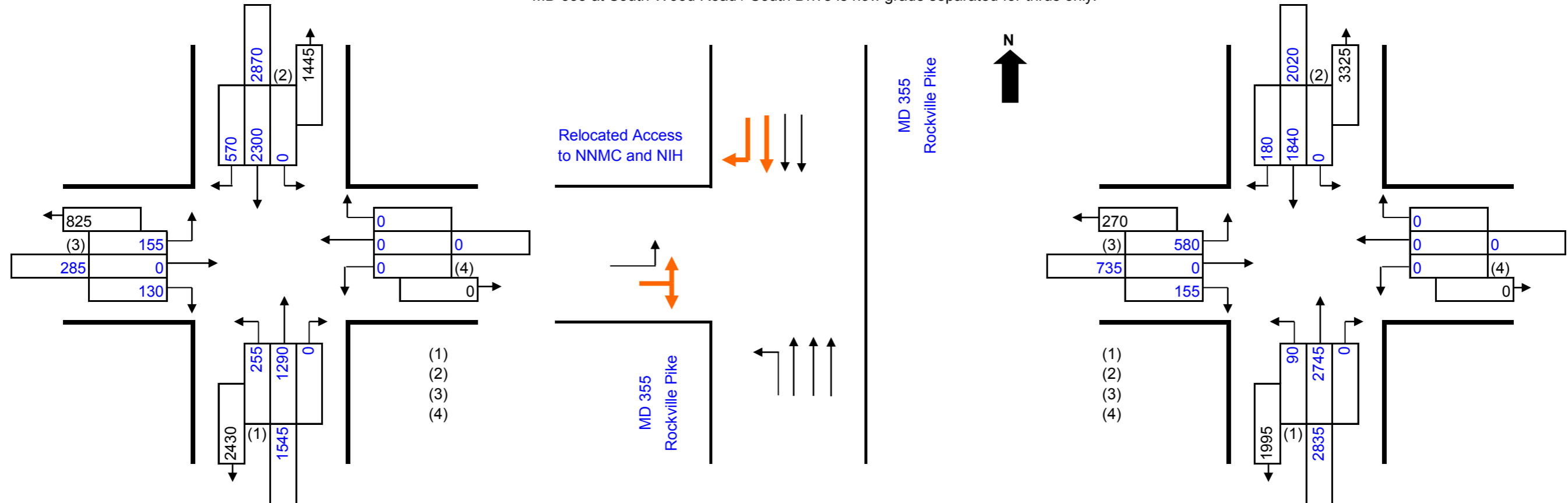
Location: MD 355 at South Wood Road /
South Drive
Relocated Access Point on MD 355
 Checked by: _____ Date: _____

URS

AM PEAK HOUR:

Turning movements relocated to a new intersection north of South Wood Road / South Drive.
 A new intersection on South Drive, just west of the Kiss & Ride, completes the movements.
 MD 355 at South Wood Road / South Drive is now grade separated for thru only.

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
 Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBT	1290	0.40	516	0	1.00	0	516			NBT	2745	0.40	1098	0	1.00	0	1098	*
	SBT	2300	0.40	920	255	1.00	255	1175	*		SBT	1840	0.40	736	90	1.00	90	826	
	EBLR	285	0.60	171	0	1.00	0	171	*		EBLR	735	0.60	441	0	1.00	0	441	*

Remarks:

AM TOTAL

1346

v/c = 0.84

LOS

D

Remarks:

PM TOTAL

1539

v/c = 0.96

LOS

E

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service

Count Date: _____
 Condition: Alt 3
 Design Year: 2030
 Computed by: RLM Date: 6/4/2010

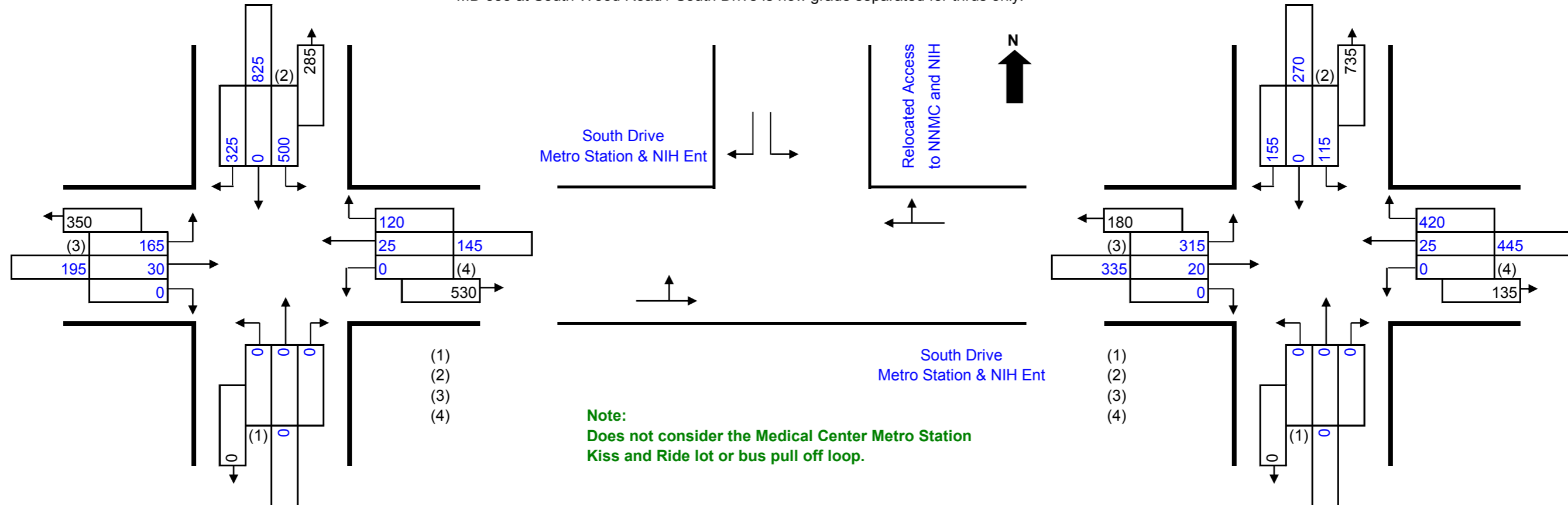
Location: MD 355 at South Wood Road /
South Drive
Relocated Access Point on South Drive
 Checked by: TAR Date: 6/7/2010

URS

AM PEAK HOUR:

Turning movements relocated to a new intersection north of South Wood Road / South Drive.
 A new intersection on South Drive, just west of the Kiss & Ride, completes the movements.
 MD 355 at South Wood Road / South Drive is now grade separated for thru only.

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
 Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	EBTL	212	1.00	212	0	1.00	0	212	*		EBTL	650	1.00	650	0	1.00	0	650	*
	WBTR	145	1.00	145	0	1.00	0	145			WBTR	445	1.00	445	0	1.00	0	445	
	SBL	500	1.00	500	0	1.00	0	500	*		SBL	115	1.00	115	0	1.00	0	115	*

Remarks:

$$EBTL = 30 + 165 * 1.1 = 212$$

* Critical Volume.

AM TOTAL

712

$$v/c = \underline{0.44}$$

LOS

A

Remarks:

$$EBTL = 20 + 315 * 2.0 = 650$$

$$SBR = 155 - 315 < 0$$

* Critical Volume.

PM TOTAL

765

$$v/c = \underline{0.48}$$

LOS

A

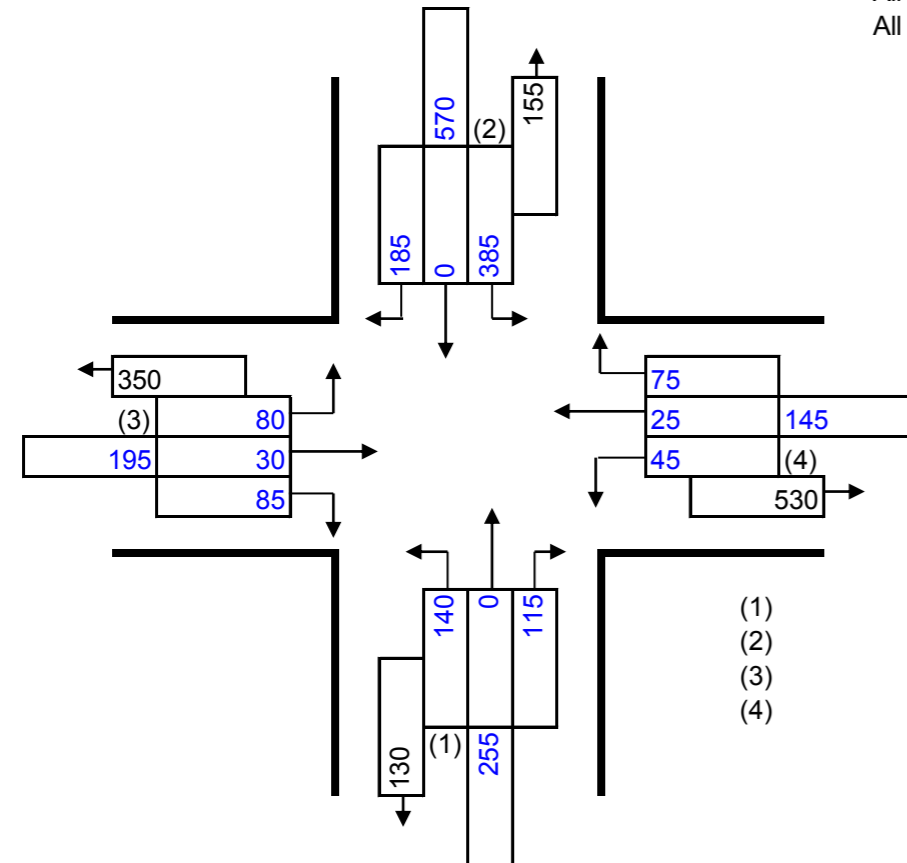
Turning Movement Summary and Level of Service

Count Date: _____
Condition: Alt 4
Design Year: 2030
Computed by: RLT Date: 6/8/2010

Location: MD 355 at South Wood Road /
South Drive
Checked by: TAR Date: 6/8/2010

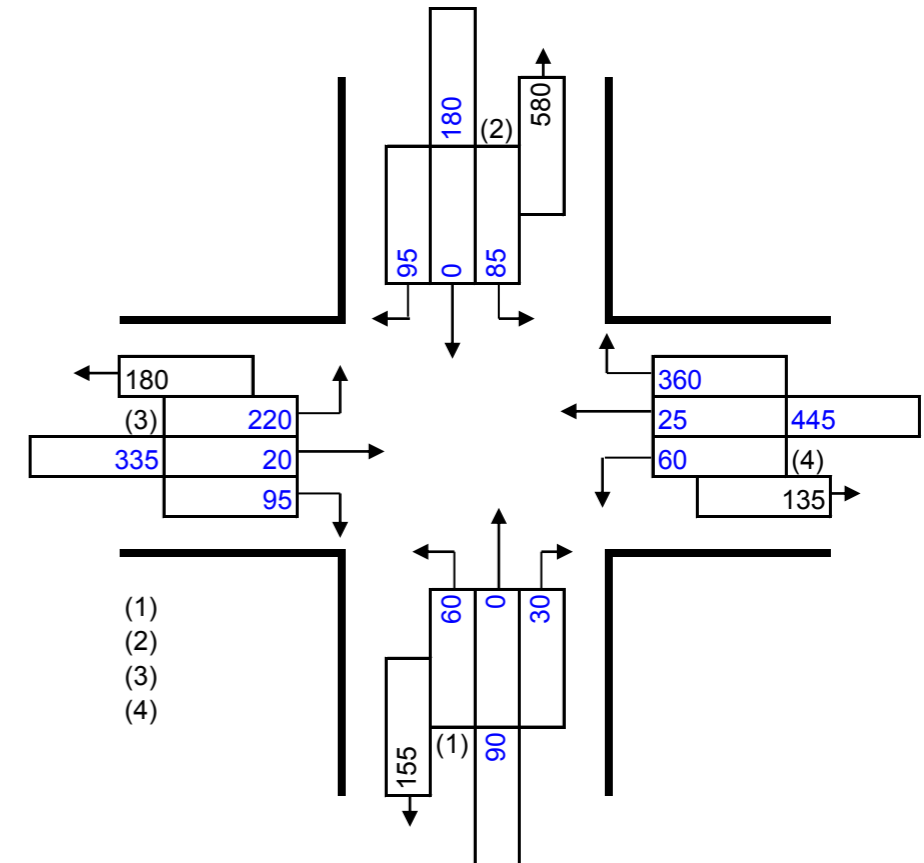
URS

AM PEAK HOUR:



Grade separate the MD 355 thru movements.
All other movements occur at a TUDI.
All approaches split phased.

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBLR	255	1.00	255	0	1.00	0	255	*		NBLR	90	1.00	90	0	1.00	0	90	*
	SBLR	570	1.00	570	0	1.00	0	570	*		SBLR	180	1.00	180	0	1.00	0	180	*
	EBTR	115	1.00	115	0	1.00	0	115	*		EBL	220	1.00	220	0	1.00	0	220	*
	WBTR	100	1.00	100	0	1.00	0	100	*		WBTR	385	1.00	385	0	1.00	0	385	*

Remarks:

AM TOTAL

1040

v/c = 0.65

LOS

B

Remarks:

PM TOTAL

875

v/c = 0.55

LOS

A

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service

Count Date: _____
 Condition: Alt 5
 Design Year: 2030
 Computed by: RLT Date: 6/3/2010

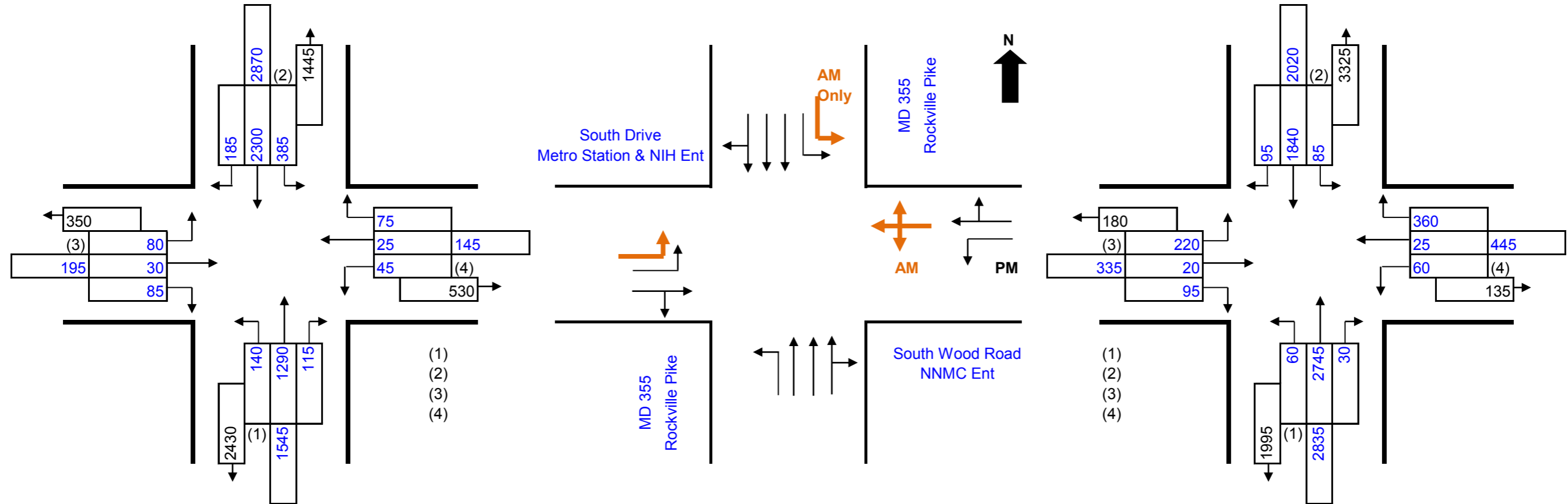
Location: MD 355 at South Wood Road /
South Drive
 Checked by: _____ Date: _____

URS

AM PEAK HOUR:

Contraflow lane on East approach

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
 Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBTR	1405	0.40	562	385	0.60	231	793			NBTR	2775	0.40	1110	85	1.00	85	1195	*
	SBTR	2485	0.40	994	140	1.00	140	1134	*		SBTR	1935	0.40	774	60	1.00	60	834	
	EBTR	115	1.00	115	45	1.00	45	160			EBTR	115	1.00	115	60	1.00	60	175	
	WBTRL	145	1.00	145	80	0.60	48	193	*		WBTR	385	1.00	385	220	0.60	132	517	*

Remarks:

AM TOTAL

1327

v/c = 0.83

LOS

D

Remarks:

PM TOTAL

1712

v/c = 1.07

LOS

F

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service

Count Date: _____
 Condition: Alt 5
 Design Year: 2030
 Computed by: RLM Date: 6/3/2010

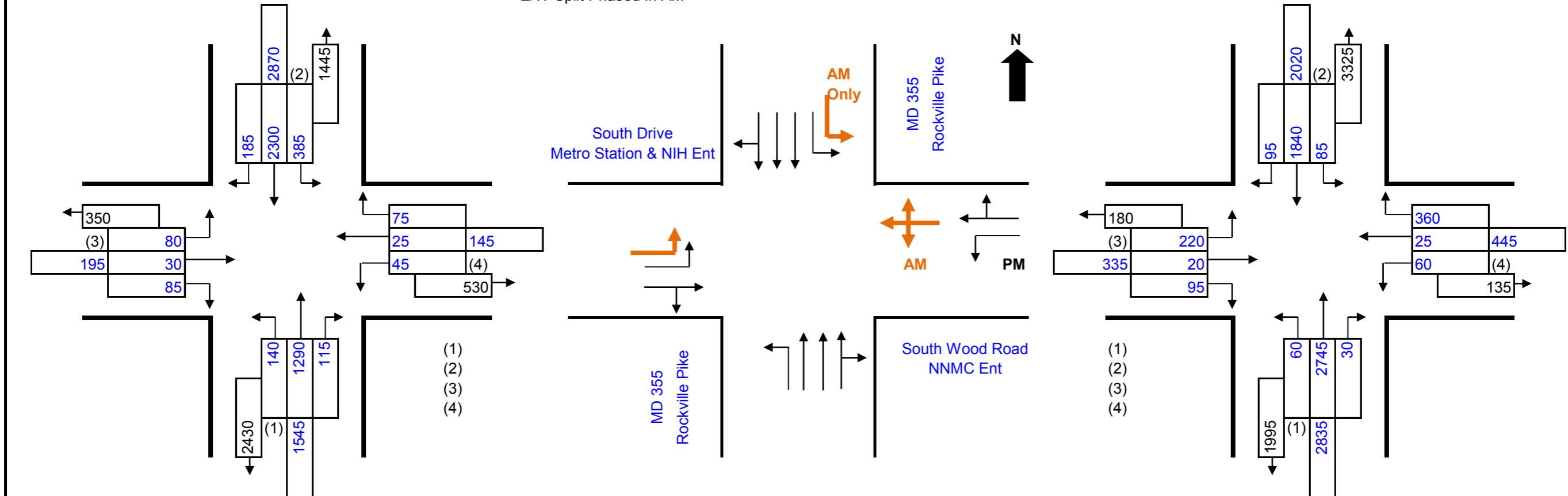
Location: MD 355 at South Wood Road /
South Drive
 Checked by: TAR Date: 6/3/2010

URS

AM PEAK HOUR:

Contraflow lane on East approach
 E/W Split Phased in AM

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
 Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBTR	1405	0.40	562	385	0.60	231	793			NBTR	2775	0.40	1110	85	1.00	85	1195	*
	SBTR	2485	0.40	994	140	1.00	140	1134	*		SBTR	1935	0.40	774	60	1.00	60	834	
	EBTR	115	1.00	115	0	1.00	0	115	*		EBTR	115	1.00	115	60	1.00	60	175	
	WBTRL	145	1.00	145	0	1.00	0	145	*		WBTR	385	1.00	385	220	0.60	132	517	*

Remarks:

AM TOTAL

1394

v/c = 0.87

LOS

D

Remarks:

PM TOTAL

1712

v/c = 1.07

LOS

F

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service

Count Date: _____
 Condition: Alt 6
 Design Year: 2030
 Computed by: RLM Date: 6/3/2010

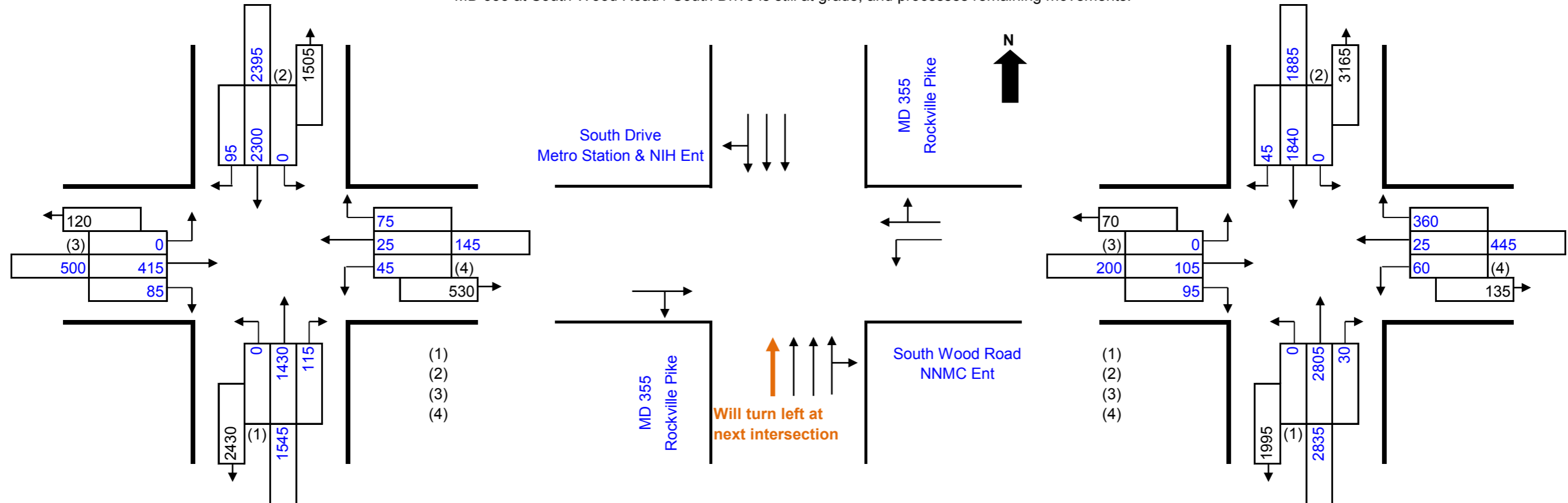
Location: MD 355 at South Wood Road /
South Drive
 Checked by: TAR Date: 6/3/2010

URS

AM PEAK HOUR:

NB, SB, and EB lefts relocated to a new intersection north of South Wood Road / South Drive.
 A new intersection on South Drive, just west of the Kiss & Ride, completes the movements.
 MD 355 at South Wood Road / South Drive is still at grade, and processes remaining movements.

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
 Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBTR	1545	0.30	464	0	1.00	0	464			NBTR	2835	0.30	851	0	1.00	0	851	
	NBTR	1405	0.40	562	0	1.00	0	562			NBTR	2775	0.40	1110	0	1.00	0	1110	*
	SBTR	2395	0.40	958	0	1.00	0	958	*		SBTR	1885	0.40	754	0	1.00	0	754	
	EBTR	500	1.00	500	45	1.00	45	545	*		EBTR	200	1.00	200	60	1.00	60	260	
	WBTR	100	1.00	100	0	1.00	0	100			WBTR	385	1.00	385	0	1.00	0	385	*

Remarks:

AM TOTAL

1503

v/c = 0.94

LOS

E

Remarks:

PM TOTAL

1495

v/c = 0.93

LOS

E

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service

Count Date: _____
Condition: Alt 6
Design Year: 2030
Computed by: RLM Date: 6/3/2010

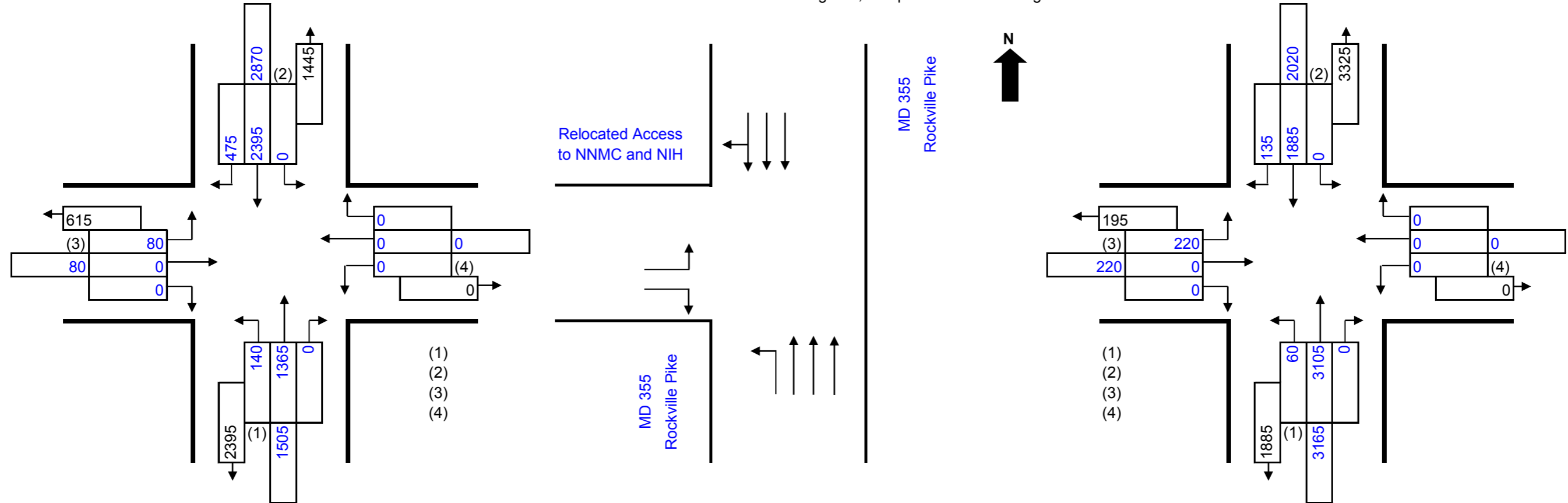
Location: MD 355 at South Wood Road /
South Drive
Relocated Access Point on MD 355
Checked by: TAR Date: 6/3/2010

URS

AM PEAK HOUR:

NB, SB, and EB lefts relocated to a new intersection north of South Wood Road / South Drive.
A new intersection on South Drive, just west of the Kiss & Ride, completes the movements.
MD 355 at South Wood Road / South Drive is still at grade, and processes remaining movements.

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBT	1365	0.40	546	0	1.00	0	546			NBT	3105	0.40	1242	0	1.00	0	1242	*
	SBTR	2870	0.40	1148	140	1.00	140	1288	*		SBTR	2020	0.40	808	60	1.00	60	868	
	EBL	80	1.00	80	0	1.00	0	80	*		EBL	220	1.00	220	0	1.00	0	220	*

Remarks:

AM TOTAL

1368

v/c = 0.86

LOS

D

Remarks:

PM TOTAL

1462

v/c = 0.91

LOS

E

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service

Count Date: _____
Condition: Alt 6
Design Year: 2030
Computed by: RLM Date: 6/4/2010

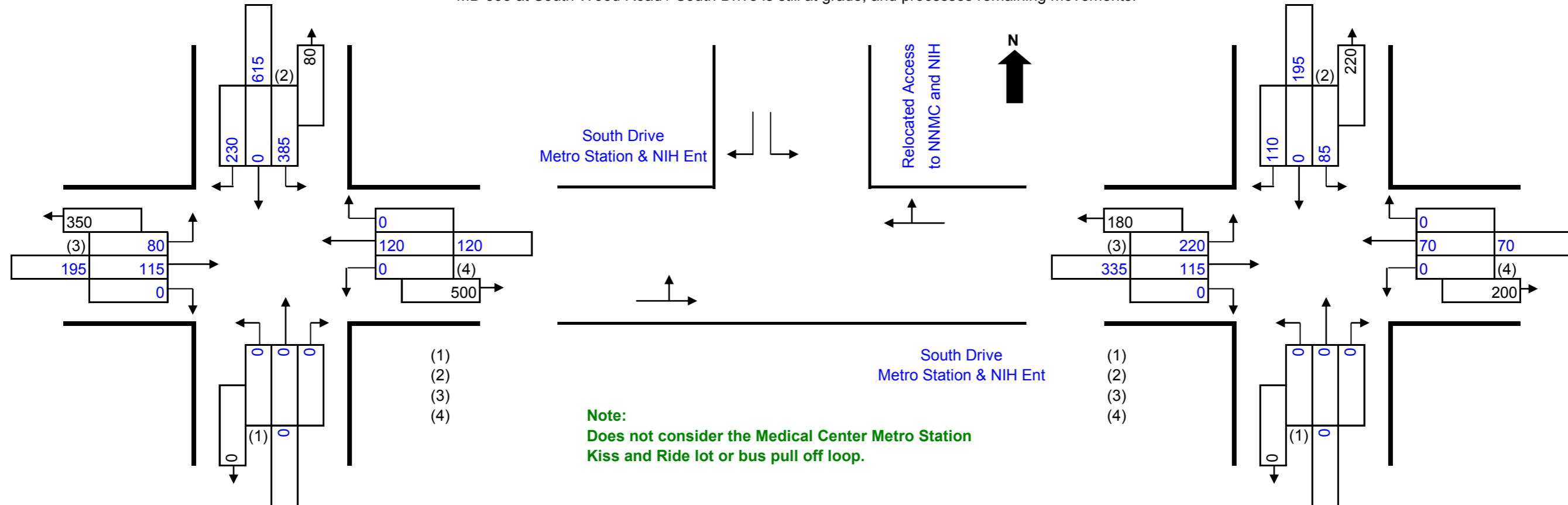
Location: MD 355 at South Wood Road /
South Drive
Relocated Access Point on South Drive
Checked by: TAR Date: 6/7/2010

URS

AM PEAK HOUR:

NB, SB, and EB lefts relocated to a new intersection north of South Wood Road / South Drive.
A new intersection on South Drive, just west of the Kiss & Ride, completes the movements.
MD 355 at South Wood Road / South Drive is still at grade, and processes remaining movements.

PM PEAK HOUR:



Note:
Does not consider the Medical Center Metro Station
Kiss and Ride lot or bus pull off loop.

Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	EBTL	203	1.00	203	0	1.00	0	203	*		EBTL	357	1.00	357	0	1.00	0	357	*
	WBTR	120	1.00	120	0	1.00	0	120			WBTR	70	1.00	70	0	1.00	0	70	
	SBL	385	1.00	385	0	1.00	0	385	*		SBL	85	1.00	85	0	1.00	0	85	*

Remarks:

$$EBTL = 115 + 80 \times 1.1 = 203$$

* Critical Volume.

AM TOTAL

588

v/c = 0.37

LOS

A

Remarks:

$$EBTL = 115 + 220 \times 1.1 = 357$$

$$SBR = 110 - 220 < 0$$

* Critical Volume.

PM TOTAL

442

v/c = 0.28

LOS

A

Turning Movement Summary and Level of Service

Count Date: _____
Condition: Alt 7
Design Year: 2030
Computed by: RLM Date: 6/3/2010

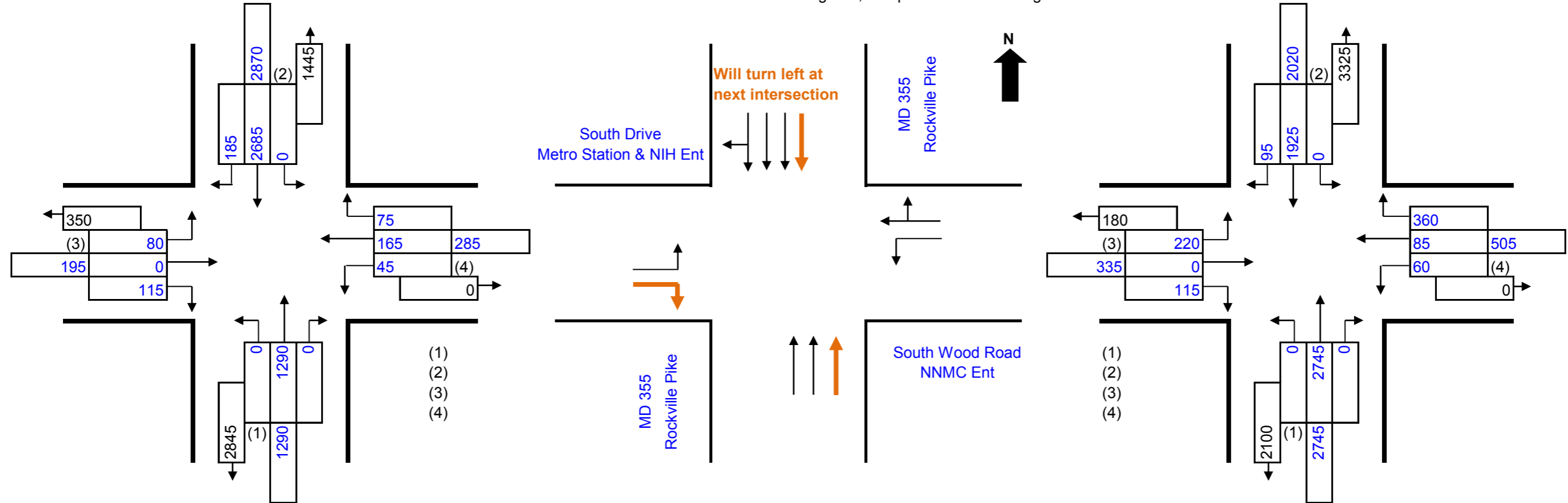
Location: MD 355 at South Wood Road /
South Drive
Checked by: TAR Date: 6/8/2010

URS

AM PEAK HOUR:

NBL, NBR, SBL, and EBT relocated to a new intersection south of South Wood Road / South Drive.
A new intersection on South Drive, just east of the MD 355, completes the movements.
MD 355 at South Wood Road / South Drive is still at grade, and processes remaining movements.

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600		

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBT	1290	0.40	516	0	1.00	0	516			NBT	2745	0.40	1098	0	1.00	0	1098	*
	SBTR	2870	0.30	861	0	1.00	0	861			SBTR	2020	0.30	606	0	1.00	0	606	
	SBTR	2485	0.40	994	0	1.00	0	994	*		SBTR	1935	0.40	774	0	1.00	0	774	
	EBR	115	1.00	115	45	1.00	45	160			EBR	115	1.00	115	60	1.00	60	175	
	WBTR	240	1.00	240	80	1.00	80	320	*		WBTR	445	1.00	445	220	1.00	220	665	*

Remarks:

AM TOTAL

1314

v/c = 0.82

LOS

D

Remarks:

PM TOTAL

1763

v/c = 1.10

LOS

F

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service

Count Date: _____
 Condition: Alt 7
 Design Year: 2030
 Computed by: RLM Date: 6/3/2010

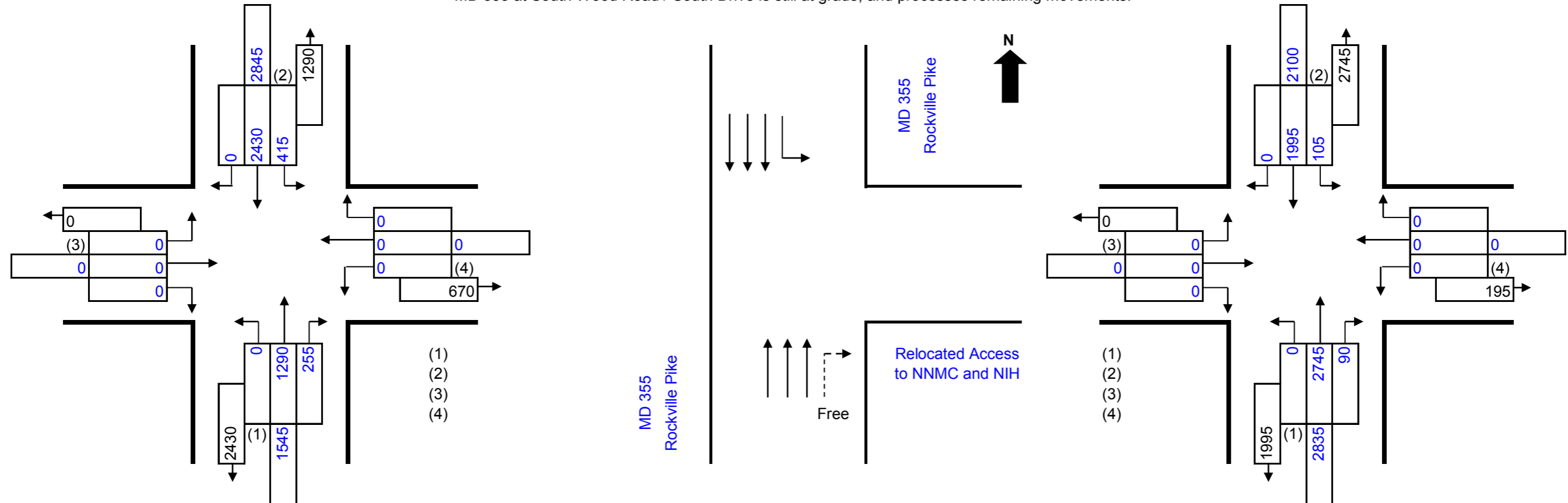
Location: MD 355 at South Wood Road /
South Drive
Relocated Access Point on MD 355
 Checked by: TAR Date: 6/3/2010

URS

AM PEAK HOUR:

NBL, NBR, SBL, and EBT relocated to a new intersection south of South Wood Road / South Drive.
 A new intersection on South Drive, just east of the MD 355, completes the movements.
 MD 355 at South Wood Road / South Drive is still at grade, and processes remaining movements.

PM PEAK HOUR:



Phasing (Φ)

1	2	3	4
5	6	7	8

Intersection Control Type:
 Signal X Stop _____ Ways _____

No. of Lanes	Lane Use Factor	Level of Service	Critical Lane Vol. Total	Opposing Volume (vph)	PCE
1	= 1.00	A	≤ 1000	≤ 199	1.1
2	= 0.55	B	≤ 1150	≤ 599	2.0
3	= 0.40	C	≤ 1300	≤ 799	3.0
4	= 0.30	D	≤ 1450	≤ 999	4.0
Dble. Left	= 0.60	E	≤ 1600	≤ 1000	5.0
Trpl. Left	= 0.45	F	> 1600	> 1000	

Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBT	1290	0.40	516	415	1.00	415	931			NBT	2745	0.40	1098	105	1.00	105	1203	*
	SBT	2430	0.40	972	0	1.00	0	972	*		SBT	1995	0.40	798	0	1.00	0	798	

Remarks:

AM TOTAL

972

v/c = 0.61

LOS

A

Remarks:

PM TOTAL

1203

v/c = 0.75

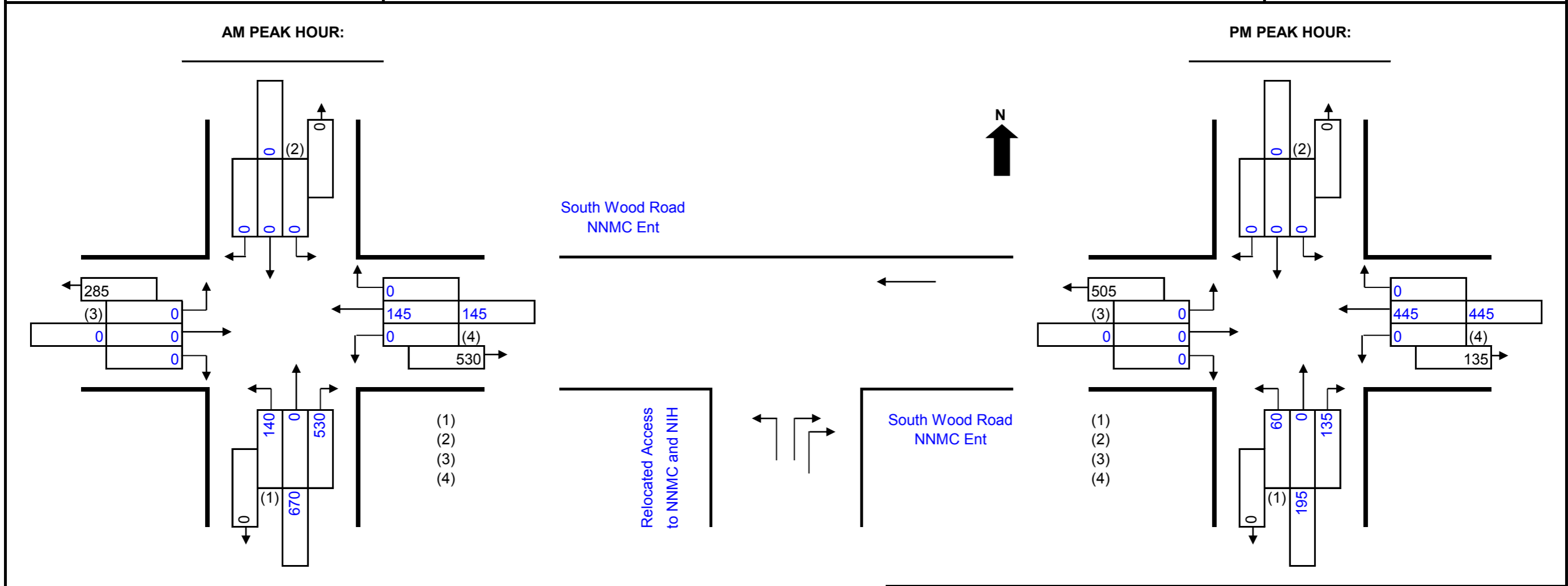
LOS

C

* Critical Volume.

* Critical Volume.

Turning Movement Summary and Level of Service	Count Date: _____	Location: <u>MD 355 at South Wood Road /</u>	URS
	Condition: <u>Alt 7</u>	<u>South Drive</u>	
	Design Year: <u>2030</u>	<u>Relocated Access Point on S Wood Rd</u>	
	Computed by: <u>RLM</u> Date: <u>6/4/2010</u>	Checked by: <u>TAR</u> Date: <u>6/7/2010</u>	



Phasing (Φ)				Intersection Control Type: Signal <u>X</u> Stop _____ Ways _____				No. of Lanes		Lane Use Factor		Level of Service		Critical Lane Vol. Total		Opposing Volume (vph)		PCE	
1	2	3	4																
5	6	7	8					1	=	1.00		A	≤	1000		≤	199	1.1	
								2	=	0.55		B	≤	1150		≤	599	2.0	
								3	=	0.40		C	≤	1300		≤	799	3.0	
								4	=	0.30		D	≤	1450		≤	999	4.0	
								Dble. Left	=	0.60		E	≤	1600		≤	1000	5.0	
								Trpl. Left	=	0.45		F	>	1600					
Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*	Φ	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lefts Lane Use Factor (5)	Left Volume (4)*(5)=(6)	Critical Lane Volume (3)+(6)	*
	NBR	530	0.60	318	0	1.00	0	318	*		NBR	135	0.60	81	0	1.00	0	81	*
	WBT	145	1.00	145	0	1.00	0	145	*		WBT	445	1.00	445	0	1.00	0	445	*
Remarks:								AM TOTAL	463	Remarks:								PM TOTAL	526
* Critical Volume.								v/c = <u>0.29</u>	LOS A	* Critical Volume.								v/c = <u>0.33</u>	LOS A

APPENDIX C – COST ESTIMATES

DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS		
TYPICAL SEC:	VARIES		
ALTERNATE:	2A - PEDESTRIAN/BICYCLE UNDERPASS AND TSM/TDM IMPROVEMENTS	PRJ LENGTH:	
PREPARED BY:	URS CORPORATION - JLC	DIVISION:	HIGHWAY DESIGN

TSM/TDM COSTS					
CATEGORY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	PRELIMINARY				\$ 135,500
2	GRADING				\$ 74,215
3	DRAINAGE				\$ 135,500
4	STRUCTURES				\$ -
5	PAVING				\$ 109,096
6	SHOULDERS				\$ 87,625
7	LANDSCAPING				\$ 24,375
8	SIGNALS AND LIGHTING				\$ 391,875
9	UTILITIES				\$ 264,750
Neat Construction Costs:				\$	1,223,000

PEDESTRIAN/BICYCLE UNDERPASS COSTS					
CATEGORY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	PRELIMINARY				\$ 1,013,331
2	GRADING				\$ 3,285,169
3	DRAINAGE				\$ 401,405
4	STRUCTURES				\$ 4,018,166
5	PAVING				\$ 56,595
6	SHOULDERS				\$ 202,781
7	LANDSCAPING				\$ 399,843
8	SIGNALS AND LIGHTING				\$ 212,219
9	UTILITIES				\$ 5,492,863
Neat Construction Costs:				\$	15,082,400

COMBINED COSTS					
CATEGORY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	PRELIMINARY				\$ 1,148,831
2	GRADING				\$ 3,359,384
3	DRAINAGE				\$ 536,905
4	STRUCTURES				\$ 4,018,166
5	PAVING				\$ 165,691
6	SHOULDERS				\$ 290,406
7	LANDSCAPING				\$ 424,218
8	SIGNALS AND LIGHTING				\$ 604,094
9	UTILITIES				\$ 5,757,613
Neat Construction Costs:				\$	16,305,400
RIGHT-OF-WAY COSTS				\$	4,892,600
20% PRELIMINARY ENGINEERING				\$	3,871,582
14.4% ADMINISTRATIVE OVERHEAD				\$	3,052,512

TOTAL COST	\$ 28,122,094
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DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS		
TYPICAL SEC:	VARIES		
ALTERNATE:	2A - TSM/TDM IMPROVEMENTS	PRJ LENGTH:	
PREPARED BY:	URS CORPORATION - JLC	DIVISION:	HIGHWAY DESIGN

CATEGORY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	PRELIMINARY			\$	135,500
2	GRADING			\$	74,215
3	DRAINAGE			\$	135,500
4	STRUCTURES			\$	-
5	PAVING			\$	109,096
6	SHOULDERS			\$	87,625
7	LANDSCAPING			\$	24,375
8	SIGNALS AND LIGHTING			\$	391,875
9	UTILITIES			\$	264,750
	NEAT CONSTRUCTION COSTS			\$	1,223,000
	14.4% ADMINISTRATIVE OVERHEAD			\$	176,103
				\$	1,399,103

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
100000	40% Categories 2, 4, 5, and 6 (Includes MOT)	1	LS	108,400.00	\$ 108,400
	CONTINGENCY		25%	\$	27,100

SUBTOTAL CATEGORY 1 COST \$ 135,500

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
200000	REMOVAL OF EXISTING MEDIAN	611	CY	85.00	\$ 51,935
200000	CLASS 1 EXCAVATION	201	CY	37.00	\$ 7,437
	CONTINGENCY		25%	\$	14,843

SUBTOTAL CATEGORY 2 COST \$ 74,215

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
300000	40% Categories 2, 4, 5, and 6	1	LS	108,400.00	\$ 108,400
	CONTINGENCY		25%	\$	27,100

SUBTOTAL CATEGORY 3 COST \$ 135,500

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
400000	NO STRUCTURES			\$	-
	CONTINGENCY		25%	\$	-

SUBTOTAL CATEGORY 4 COST \$ -

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
500000	HOT MIX ASPHALT SUPERPAVE FOR SURFACE (2")	145	TON	130.00	\$ 18,850
500000	HOT MIX ASPHALT SUPERPAVE FOR BASE (6")	305	TON	120.00	\$ 36,600
500000	12" GRADED AGGREGATE BASE COURSE (2 - 6" LIFTS)	1,574	SY	15.00	\$ 23,610
530100	GRINDING HMA 0" - 2"	337	SY	20.00	\$ 6,740
585405	5 INCH WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	257	LF	1.00	\$ 257
585407	5 INCH YELLOW LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	1,220	LF	1.00	\$ 1,220
	CONTINGENCY		25%	\$	21,819

SUBTOTAL CATEGORY 5 COST \$ 109,096

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
600000	8' HIKER/BIKER TRAIL	75	LF	48.00	\$ 3,600
600000	4 FT. MONOLITHIC CONCRETE MEDIAN	615	LF	100.00	\$ 61,500
634300	STD. TYPE A CONCRETE CURB AND GUTTER	125	LF	40.00	\$ 5,000
	CONTINGENCY		25%	\$	17,525

SUBTOTAL CATEGORY 6 COST \$ 87,625

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
700000	5% Categories 2, 4, 5, and 6	1	LS	15,000.00	\$ 15,000
700000	ROADSIDE TREE PLANTING (SOUTHBOUND)	750	LF	6.00	\$ 4,500
	CONTINGENCY		25%	\$	4,875

SUBTOTAL CATEGORY 7 COST \$ 24,375

DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS		
TYPICAL SEC:	VARIES		
ALTERNATE:	2A - TSM/TDM IMPROVEMENTS	PRJ LENGTH:	
PREPARED BY:	URS CORPORATION - JLC	DIVISION:	HIGHWAY DESIGN

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
800000	SIGNING (MEDIAN)	3	EA	500.00	\$ 1,500
800000	4-LEG INTERSECTION FULLY ACTUATED SIGNAL (MAST ARMS)	1	LS	220,000.00	\$ 220,000
800000	DETECTOR REPLACEMENT (NON-INVASIVE MICRO LOOP PROBE)	2	EA	6,000.00	\$ 12,000
800000	EMERGENCY VEHICLE PREEMPTION	1	LS	5,000.00	\$ 5,000
800000	CAMERA FOR VIDEO DETECTION	4	EA	7,500.00	\$ 30,000
800000	APS PEDESTRIAN SIGNALS	3	EA	15,000.00	\$ 45,000

CONTINGENCY	25%	\$ 78,375
SUBTOTAL CATEGORY 8 COST		\$ 391,875

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
900000	UNDERGROUND UTILITY RELOCATION (20% Categories 1-8)	1	LS	191,800.00	\$ 191,800
900000	UTILITY POLES	0	EA	12,000.00	\$ -
900000	SIGNING (NIH ENTRANCE SIGN RELOCATION)	1	EA	20,000.00	\$ 20,000

CONTINGENCY	25%	\$ 52,950
SUBTOTAL CATEGORY 9 COST		\$ 264,750

DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS	PRJ LENGTH:	
TYPICAL SEC:	VARIES	DIVISION:	HIGHWAY DESIGN
ALTERNATE:	2A - PEDESTRIAN/BICYCLE UNDERPASS		
PREPARED BY:	URS CORPORATION - JLC		

CATEGORY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	PRELIMINARY			\$	1,013,331
2	GRADING			\$	3,285,169
3	DRAINAGE			\$	401,405
4	STRUCTURES			\$	4,018,166
5	PAVING			\$	56,595
6	SHOULDERS			\$	202,781
7	LANDSCAPING			\$	399,843
8	SIGNALS AND LIGHTING			\$	212,219
9	UTILITIES			\$	5,492,863
	NEAT CONSTRUCTION COSTS			\$	15,082,400
	14.4% ADMINISTRATIVE OVERHEAD			\$	2,171,861

					\$	17,254,261
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
100000	10% Categories 2, 4, 5, and 6	1	LS	756,300.00	\$ 756,300
100000	MD-355 Roadway & Tunnel MOT/MOP (Traffic & Pedestrian Controls)	1	JOB	50,717.00	\$ 50,717
100000	NIH/West MOT & MOP (Traffic & Pedestrian Control)	1	JOB	110,844.00	\$ 110,844
100000	NMC/East MOT & MOP (Traffic & Pedestrian Control)	1	JOB	47,216.00	\$ 47,216

CONTINGENCY	5%	\$	48,254
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SUBTOTAL CATEGORY 1 COST		\$	1,013,331
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
200000	Normal Soil Excavation & Earthwork (Shallow Tunnel)	2,074	CY	50.00	\$ 103,700
200000	Decomposed Rock Excav & Hauling (Shallow Tunnel)	3,006	CY	454.00	\$ 1,364,724
200000	Excavation & Earthwks Support (Shallow Tunnel)	6,695	CY	55.00	\$ 368,225
200000	Normal Soil Excavation & Earthwork (East Escalator and Stairway)	555	CY	50.00	\$ 27,750
200000	Decomposed Rock Excav & Hauling (East Escalator and Stairway)	402	CY	487.00	\$ 195,774
200000	Escal/Stair Excav Support (East Escalator and Stairway)	2,100	SF	55.00	\$ 115,500
200000	Normal Soil Excavation & Earthwork (NIH/West Escalator and Stairway)	555	CY	50.00	\$ 27,750
200000	Decomposed Rock Excav & Hauling (NIH/West Escalator and Stairway)	402	CY	487.00	\$ 195,774
200000	Escal/Stair Excav Support (NIH/West Escalator and Stairway)	2,100	SF	55.00	\$ 115,500
200000	Normal Soil Excavation & Earthwork (East Side 2-Cab Elevator)	195	CY	44.00	\$ 8,580
200000	Decomposed Rock Excav & Hauling (East Side 2-Cab Elevator)	293	CY	461.00	\$ 135,073
200000	Hard Rock Excavation & Hauling (East Side 2-Cab Elevator)	38	CY	508.00	\$ 19,304
200000	Excavation & Earthwks Support (East Side 2-Cab Elevator)	2,325	SF	55.00	\$ 127,875
200000	Normal Soil Excavation & Earthwork (NIH West Side 2-Cab Elevator)	195	CY	44.00	\$ 8,580
200000	Decomposed Rock Excav & Hauling (NIH West Side 2-Cab Elevator)	293	CY	461.00	\$ 135,073
200000	Hard Rock Excavation & Hauling (NIH West Side 2-Cab Elevator)	38	CY	508.00	\$ 19,304
200000	Excavation & Earthwks Support (NIH West Side 2-Cab Elevator)	2,325	SF	55.00	\$ 127,875
200000	MD-355: Selective Demo & Removal (Exterior Sitework)	1	JOB	32,371.00	\$ 32,371

CONTINGENCY	5%	\$	156,437
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SUBTOTAL CATEGORY 2 COST		\$	3,285,169
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
300000	5% Categories 2, 4, 5, and 6	1	LS	378,150.00	\$ 378,150
300000	Escalator Conc. Trench/Drain (East Escalator and Stairway)	15	LF	138.00	\$ 2,070
300000	Escalator Conc. Trench/Drain (NIH/West Escalator and Stairway)	15	LF	138.00	\$ 2,070

CONTINGENCY	5%	\$	19,115
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SUBTOTAL CATEGORY 3 COST		\$	401,405
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DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS	PRJ LENGTH:	
TYPICAL SEC:	VARIES	DIVISION:	HIGHWAY DESIGN
ALTERNATE:	2A - PEDESTRIAN/BICYCLE UNDERPASS		
PREPARED BY:	URS CORPORATION - JLC		

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
400000	Concrete Slab on grade, 2' thk (Shallow Tunnel)	4,592	SF	34.00	\$ 156,128
400000	2' - 6" thk Concrete Walls (Shallow Tunnel)	6,695	SF	106.00	\$ 709,670
400000	Concrete Roof Slab, 2' thk (Shallow Tunnel)	4,592	SF	46.00	\$ 211,232
400000	Cut-and-Cover Decking (Shallow Tunnel)	7,107	SF	66.00	
400000	Concrete Slab on grade, 2' thk (East Escalator and Stairway)	210	SF	34.00	\$ 7,140
400000	Sloped Conc Slab on grade, 2' thk (East Escalator and Stairway)	880	SF	42.00	\$ 36,960
400000	Conc Stair Steps on grade, 7" hi (East Escalator and Stairway)	420	LF	49.00	\$ 20,580
400000	2' - 6" thk Concrete Walls (East Escalator and Stairway)	1,685	SF	112.00	\$ 188,720
400000	Sloped Conc. Roof slab, 2' thk (East Escalator and Stairway)	240	SF	61.00	\$ 14,640
400000	Concrete Slab on grade, 2' thk (NIH/West Escalator and Stairway)	210	SF	34.00	\$ 7,140
400000	Sloped Conc Slab on grade, 2' thk (NIH/West Escalator and Stairway)	880	SF	42.00	\$ 36,960
400000	Conc Stair Steps on grade, 7" hi (NIH/West Escalator and Stairway)	420	LF	49.00	\$ 20,580
400000	2' - 6" thk Concrete Walls (NIH/West Escalator and Stairway)	1,685	SF	112.00	\$ 188,720
400000	Sloped Conc. Roof slab, 2' thk (NIH/West Escalator and Stairway)	240	SF	61.00	\$ 14,640
400000	Elevator Shaft Exterior Walls (East Side 2-Cab Elevator)	1,891	SF	43.00	\$ 81,313
400000	Elevator Shaft Floor Slabs (East Side 2-Cab Elevator)	219	SF	36.00	\$ 7,884
400000	Elevator Storefront & Roof (East Side 2-Cab Elevator)	2	EA	34,945.00	\$ 69,890
400000	Elevator Shaft Exterior Walls (NIH West Side 2-Cab Elevator)	1,891	SF	43.00	\$ 81,313
400000	Elevator Shaft Floor Slabs (NIH West Side 2-Cab Elevator)	219	SF	36.00	\$ 7,884
400000	Entrance Canopy - NIH West (Canopies)	1	EA	879,734.00	\$ 879,734
400000	Entrance Canopy - East NMC (Canopies)	1	EA	879,734.00	\$ 879,734
400000	Suppt of West Utilities & Struct (Utilities & Structural Suppt)	1	JOB	137,075.00	\$ 137,075
400000	Suppt of East Utilities (Utilities & Structural Suppt)	1	JOB	23,026.00	\$ 23,026
400000	Suppt of Roadway Utilities (Utilities & Structural Suppt)	1	JOB	45,862.00	\$ 45,862

CONTINGENCY	5%	\$ 191,341
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SUBTOTAL CATEGORY 4 COST	\$ 4,018,166
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
500000	MD-355: New Drop-off Asph Paving (Exterior Sitework)	7,700	SF	7.00	\$ 53,900

CONTINGENCY	5%	\$ 2,695
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SUBTOTAL CATEGORY 5 COST	\$ 56,595
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
600000	MD-355 Concrete Sidewalks (Exterior Sitework)	7,344	SF	10.00	\$ 73,440
600000	MD-355 Curbs & Gutters (Exterior Sitework)	695	LF	24.00	\$ 16,680
600000	New & Relocated Metal Fence (Exterior Sitework)	315	LF	327.00	\$ 103,005

CONTINGENCY	5%	\$ 9,656
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SUBTOTAL CATEGORY 6 COST	\$ 202,781
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
700000	2% Categories 2, 4, 5, and 6	1	LS	152,000.00	\$ 152,000
700000	Precast Unit Pavers @ Elev/Escal (Exterior Sitework)	5,321	SF	43.00	\$ 228,803

CONTINGENCY	5%	\$ 19,040
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SUBTOTAL CATEGORY 7 COST	\$ 399,843
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
800000	General Finishes (Shallow Tunnel)	3,963	SF	51.00	\$ 202,113

CONTINGENCY	5%	\$ 10,106
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SUBTOTAL CATEGORY 8 COST	\$ 212,219
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DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS		
TYPICAL SEC:	VARIES		
ALTERNATE:	2A - PEDESTRIAN/BICYCLE UNDERPASS	PRJ LENGTH:	
PREPARED BY:	URS CORPORATION - JLC	DIVISION:	HIGHWAY DESIGN

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
900000	Mechanical, Electrical, & Plumbing (Shallow Tunnel)	1	JOB	472,000.00	\$ 472,000
900000	Escalator Machine Pit, 8' x 20' (East Escalator and Stairway)	1	EA	57,873.00	\$ 57,873
900000	Escalator Wall Ledger (East Escalator and Stairway)	54	LF	56.00	\$ 3,024
900000	Misc Stl Fabrication & Ornament (East Escalator and Stairway)	1	JOB	63,740.00	\$ 63,740
900000	Escalator/Stair Finishes (East Escalator and Stairway)	1	JOB	191,418.00	\$ 191,418
900000	Mezzanine to St. Level Escalator (East Escalator and Stairway)	1	EA	593,237.00	\$ 593,237
900000	Mechanical, Electrical, & Plumbing (East Escalator and Stairway)	1	JOB	289,392.00	\$ 289,392
900000	Escalator Machine Pit, 8' x 20' (NIH/West Escalator and Stairway)	1	EA	57,873.00	\$ 57,873
900000	Escalator Wall Ledger (NIH/West Escalator and Stairway)	54	LF	56.00	\$ 3,024
900000	Misc Stl Fabrication & Ornament (NIH/West Escalator and Stairway)	1	JOB	63,740.00	\$ 63,740
900000	Escalator/Stair Finishes (NIH/West Escalator and Stairway)	1	JOB	191,418.00	\$ 191,418
900000	Mezzanine to St. Level Escalator (NIH/West Escalator and Stairway)	1	EA	593,237.00	\$ 593,237
900000	Mechanical, Electrical, & Plumbing (NIH/West Escalator and Stairway)	1	JOB	289,392.00	\$ 289,392
900000	Waterproof @ Exterior conc walls (East Side 2-Cab Elevator)	1,891	SF	10.00	\$ 18,910
900000	Street-to-Mezz Elevators, 26' (East Side 2-Cab Elevator)	2	EA	357,787.00	\$ 715,574
900000	Mechanical, Electrical, & Plumbing (East Side 2-Cab Elevator)	1	JOB	353,242.00	\$ 353,242
900000	Waterproof @ Exterior conc walls (NIH West Side 2-Cab Elevator)	1,891	SF	10.00	\$ 18,910
900000	Street-to-Mezz Elevators, 26' (NIH West Side 2-Cab Elevator)	2	EA	392,732.00	\$ 785,464
900000	Mechanical, Electrical, & Plumbing (NIH West Side 2-Cab Elevator)	1	JOB	353,242.00	\$ 353,242
900000	Utilities Relocation (Exterior Sitework)	1	JOB	116,588.00	\$ 116,588
CONTINGENCY			5%		\$ 261,565
SUBTOTAL CATEGORY 9 COST					\$ 5,492,863

DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS		
TYPICAL SEC:	VARIES		
ALTERNATE:	2B - PEDESTRIAN/BICYCLE UNDERPASS, DEEP ELEVATORS, AND TSM/TDM IMPROVEMENTS	PRJ LENGTH:	
PREPARED BY:	URS CORPORATION - JLC	DIVISION:	HIGHWAY DESIGN

TSM/TDM COSTS					
CATEGORY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	PRELIMINARY			\$	135,500
2	GRADING			\$	74,215
3	DRAINAGE			\$	135,500
4	STRUCTURES			\$	-
5	PAVING			\$	109,096
6	SHOULDERS			\$	87,625
7	LANDSCAPING			\$	24,375
8	SIGNALS AND LIGHTING			\$	391,875
9	UTILITIES			\$	264,750
Neat Construction Costs:				\$	1,223,000

PEDESTRIAN/BICYCLE UNDERPASS AND DEEP ELEVATOR COSTS					
CATEGORY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	PRELIMINARY			\$	2,061,231
2	GRADING			\$	9,260,486
3	DRAINAGE			\$	925,355
4	STRUCTURES			\$	8,023,126
5	PAVING			\$	56,595
6	SHOULDERS			\$	202,781
7	LANDSCAPING			\$	622,756
8	SIGNALS AND LIGHTING			\$	298,755
9	UTILITIES			\$	11,663,405
Neat Construction Costs:				\$	33,114,500

COMBINED COSTS					
CATEGORY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	PRELIMINARY			\$	2,196,731
2	GRADING			\$	9,334,701
3	DRAINAGE			\$	1,060,855
4	STRUCTURES			\$	8,023,126
5	PAVING			\$	165,691
6	SHOULDERS			\$	290,406
7	LANDSCAPING			\$	647,131
8	SIGNALS AND LIGHTING			\$	690,630
9	UTILITIES			\$	11,928,155
Neat Construction Costs:				\$	34,337,500
RIGHT-OF-WAY COSTS				\$	4,949,600
20% PRELIMINARY ENGINEERING				\$	7,998,968
14.4% ADMINISTRATIVE OVERHEAD				\$	5,657,342

TOTAL COSTS	\$	52,943,411
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DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS	PRJ LENGTH:	
TYPICAL SEC:	VARIES	DIVISION:	HIGHWAY DESIGN
ALTERNATE:	2B - TSM/TDM IMPROVEMENTS		
PREPARED BY:	URS CORPORATION - JLC		

CATEGORY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	PRELIMINARY				\$ 135,500
2	GRADING				\$ 74,215
3	DRAINAGE				\$ 135,500
4	STRUCTURES				\$ -
5	PAVING				\$ 109,096
6	SHOULDERS				\$ 87,625
7	LANDSCAPING				\$ 24,375
8	SIGNALS AND LIGHTING				\$ 391,875
9	UTILITIES				\$ 264,750
	NEAT CONSTRUCTION COSTS				\$ 1,223,000
	14.4% ADMINISTRATIVE OVERHEAD				\$ 176,103
				TOTAL COSTS	\$ 1,399,103

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
100000	40% Categories 2, 4, 5, and 6 (Includes MOT)	1	LS	108,400.00	\$ 108,400
	CONTINGENCY		25%		\$ 27,100
	SUBTOTAL CATEGORY 1 COST				\$ 135,500

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
200000	REMOVAL OF EXISTING MEDIAN	611	CY	85.00	\$ 51,935
200000	CLASS 1 EXCAVATION	201	CY	37.00	\$ 7,437
	CONTINGENCY		25%		\$ 14,843
	SUBTOTAL CATEGORY 2 COST				\$ 74,215

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
300000	40% Categories 2, 4, 5, and 6	1	LS	108,400.00	\$ 108,400
	CONTINGENCY		25%		\$ 27,100
	SUBTOTAL CATEGORY 3 COST				\$ 135,500

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
400000	NO STRUCTURES				\$ -
	CONTINGENCY		25%		\$ -
	SUBTOTAL CATEGORY 4 COST				\$ -

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
500000	HOT MIX ASPHALT SUPERPAVE FOR SURFACE (2")	145	TON	130.00	\$ 18,850
500000	HOT MIX ASPHALT SUPERPAVE FOR BASE (6")	305	TON	120.00	\$ 36,600
500000	12" GRADED AGGREGATE BASE COURSE (2 - 6" LIFTS)	1,574	SY	15.00	\$ 23,610
530100	GRINDING HMA 0" - 2"	337	SY	20.00	\$ 6,740
585405	5 INCH WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	257	LF	1.00	\$ 257
585407	5 INCH YELLOW LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	1,220	LF	1.00	\$ 1,220
	CONTINGENCY		25%		\$ 21,819
	SUBTOTAL CATEGORY 5 COST				\$ 109,096

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
600000	8' HIKER/BIKER TRAIL	75	LF	48.00	\$ 3,600
600000	4 FT. MONOLITHIC CONCRETE MEDIAN	615	LF	100.00	\$ 61,500
634300	STD. TYPE A CONCRETE CURB AND GUTTER	125	LF	40.00	\$ 5,000
	CONTINGENCY		25%		\$ 17,525
	SUBTOTAL CATEGORY 6 COST				\$ 87,625

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
700000	5% Categories 2, 4, 5, and 6	1	LS	15,000.00	\$ 15,000
700000	ROADSIDE TREE PLANTING (SOUTHBOUND)	750	LF	6.00	\$ 4,500
	CONTINGENCY		25%		\$ 4,875
	SUBTOTAL CATEGORY 7 COST				\$ 24,375

DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS	PRJ LENGTH:	
TYPICAL SEC:	VARIES	DIVISION:	HIGHWAY DESIGN
ALTERNATE:	2B - TSM/TDM IMPROVEMENTS		
PREPARED BY:	URS CORPORATION - JLC		

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
800000	SIGNING (MEDIAN)	3	EA	500.00	\$ 1,500
800000	4-LEG INTERSECTION FULLY ACTUATED SIGNAL (MAST ARMS)	1	LS	220,000.00	\$ 220,000
800000	DETECTOR REPLACEMENT (NON-INVASIVE MICRO LOOP PROBE)	2	EA	6,000.00	\$ 12,000
800000	EMERGENCY VEHICLE PREEMPTION	1	LS	5,000.00	\$ 5,000
800000	CAMERA FOR VIDEO DETECTION	4	EA	7,500.00	\$ 30,000
800000	APS PEDESTRIAN SIGNALS	3	EA	15,000.00	\$ 45,000

CONTINGENCY	25%	\$ 78,375
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SUBTOTAL CATEGORY 8 COST	\$ 391,875
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
900000	UNDERGROUND UTILITY RELOCATION (20% Categories 1-8)	1	LS	191,800.00	\$ 191,800
900000	UTILITY POLES	0	EA	12,000.00	\$ -
900000	SIGNING (NIH ENTRANCE SIGN RELOCATION)	1	EA	20,000.00	\$ 20,000

CONTINGENCY	25%	\$ 52,950
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SUBTOTAL CATEGORY 9 COST	\$ 264,750
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DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS	PRJ LENGTH:	
TYPICAL SEC:	VARIES	DIVISION:	HIGHWAY DESIGN
ALTERNATE:	2B - PEDESTRIAN/BICYCLE UNDERPASS AND DEEP ELEVATORS		
PREPARED BY:	URS CORPORATION - JLC		

CATEGORY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	PRELIMINARY				\$ 2,061,231
2	GRADING				\$ 9,260,486
3	DRAINAGE				\$ 925,355
4	STRUCTURES				\$ 8,023,126
5	PAVING				\$ 56,595
6	SHOULDERS				\$ 202,781
7	LANDSCAPING				\$ 622,756
8	SIGNALS AND LIGHTING				\$ 298,755
9	UTILITIES				\$ 11,663,405
	NEAT CONSTRUCTION COSTS				\$ 33,114,500
	14.4% ADMINISTRATIVE OVERHEAD				\$ 4,768,486
				TOTAL COSTS	\$ 37,882,986

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
100000	10% Categories 2, 4, 5, and 6	1	LS	1,754,300.00	\$ 1,754,300
100000	MD-355 Roadway & Tunnel MOT/MOP (Traffic & Pedestrian Controls)	1	JOB	50,717.00	\$ 50,717
100000	NIH/West MOT & MOP (Traffic & Pedestrian Control)	1	JOB	110,844.00	\$ 110,844
100000	NMC/East MOT & MOP (Traffic & Pedestrian Control)	1	JOB	47,216.00	\$ 47,216
CONTINGENCY			5%		\$ 98,154

SUBTOTAL CATEGORY 1 COST \$ 2,061,231

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
200000	Normal Soil Excavation & Earthwork (3-Cab Deep Elevator/Stair Shaft)	1,246	CY	39.00	\$ 48,594
200000	Decomposed Rock Excav & Hauling (3-Cab Deep Elevator/Stair Shaft)	1,994	CY	456.00	\$ 909,264
200000	Hard Rock Excavation & Hauling (3-Cab Deep Elevator/Stair Shaft)	7,829	CY	508.00	\$ 3,977,132
200000	Excavation & Earthwks Support (3-Cab Deep Elevator/Stair Shaft)	6,448	SF	55.00	\$ 354,640
200000	Normal Soil Excavation & Earthwork (Underground Shallow Tunnel)	2,672	CY	50.00	\$ 133,600
200000	Decomposed Rock Excav & Hauling (Underground Shallow Tunnel)	3,874	CY	453.00	\$ 1,754,922
200000	Excavation & Earthwks Support (Underground Shallow Tunnel)	6,355	SF	55.00	\$ 349,525
200000	Normal Soil Excavation & Earthwork (East Escalator and Stairway)	555	CY	50.00	\$ 27,750
200000	Decomposed Rock Excav & Hauling (East Escalator and Stairway)	402	CY	487.00	\$ 195,774
200000	Escal/Stair Excav Support (East Escalator and Stairway)	2,100	SF	55.00	\$ 115,500
200000	Normal Soil Excavation & Earthwork (NIH/West Escalator and Stairway)	550	CY	50.00	\$ 27,500
200000	Decomposed Rock Excav & Hauling (NIH/West Escalator and Stairway)	402	CY	487.00	\$ 195,774
200000	Escal/Stair Excav Support (NIH/West Escalator and Stairway)	2,100	SF	55.00	\$ 115,500
200000	Normal Soil Excavation & Earthwork (East Side 2-Cab Elevator)	195	CY	44.00	\$ 8,580
200000	Decomposed Rock Excav & Hauling (East Side 2-Cab Elevator)	293	CY	461.00	\$ 135,073
200000	Hard Rock Excavation & Hauling (East Side 2-Cab Elevator)	38	CY	508.00	\$ 19,304
200000	Excavation & Earthwks Support (East Side 2-Cab Elevator)	2,325	SF	55.00	\$ 127,875
200000	Normal Soil Excavation & Earthwork (NIH West Side 2-Cab Elevator)	195	CY	44.00	\$ 8,580
200000	Decomposed Rock Excav & Hauling (NIH West Side 2-Cab Elevator)	293	CY	461.00	\$ 135,073
200000	Hard Rock Excavation & Hauling (NIH West Side 2-Cab Elevator)	38	CY	508.00	\$ 19,304
200000	Excavation & Earthwks Support (NIH West Side 2-Cab Elevator)	2,325	SF	55.00	\$ 127,875
200000	MD-355: Selective Demo & Removal (Exterior Sitework)	1	JOB	32,371.00	\$ 32,371
CONTINGENCY			5%		\$ 440,976

SUBTOTAL CATEGORY 2 COST \$ 9,260,486

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
300000	5% Categories 2, 4, 5, and 6	1	LS	877,150.00	\$ 877,150
300000	Escalator Conc. Trench/Drain (East Escalator and Stairway)	15	LF	138.00	\$ 2,070
300000	Escalator Conc. Trench/Drain (NIH/West Escalator and Stairway)	15	LF	138.00	\$ 2,070
CONTINGENCY			5%		\$ 44,065

SUBTOTAL CATEGORY 3 COST \$ 925,355

DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS	PRJ LENGTH:	
TYPICAL SEC:	VARIES	DIVISION:	HIGHWAY DESIGN
ALTERNATE:	2B - PEDESTRIAN/BICYCLE UNDERPASS AND DEEP ELEVATORS		
PREPARED BY:	URS CORPORATION - JLC		

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
400000	Elevator/Stair Shaft Ext Walls (3-Cab Deep Elevator/Stair Shaft)	19,286	SF	35.00	\$ 675,010
400000	Shaft Shotcrete (3-Cab Deep Elevator/Stair Shaft)	14,872	SF	31.00	\$ 461,032
400000	Elevator/Stair Shaft Int Walls (3-Cab Deep Elevator/Stair Shaft)	10,666	SF	28.00	\$ 298,648
400000	Elev/Stair Shaft Floor Slabs (3-Cab Deep Elevator/Stair Shaft)	3,934	SF	35.00	\$ 137,690
400000	Cut-and-Cover Decking (Underground Shallow Tunnel)	8,723	SF	66.00	\$ 575,718
400000	Concrete Slab on grade, 2' thk (Underground Shallow Tunnel)	6,208	SF	34.00	\$ 211,072
400000	2' - 6" thk Concrete Walls (Underground Shallow Tunnel)	6,355	SF	106.00	\$ 673,630
400000	Concrete Roof Slab, 2' thk (Underground Shallow Tunnel)	6,208	SF	46.00	\$ 285,568
400000	Concrete Slab on grade, 2' thk (East Escalator and Stairway)	210	SF	34.00	\$ 7,140
400000	Sloped Conc Slab on grade, 2' thk (East Escalator and Stairway)	880	SF	42.00	\$ 36,960
400000	Conc Stair Steps on grade, 7" hi (East Escalator and Stairway)	420	LF	49.00	\$ 20,580
400000	2' - 6" thk Concrete Walls (East Escalator and Stairway)	1,685	SF	112.00	\$ 188,720
400000	Sloped Conc. Roof slab, 2' thk (East Escalator and Stairway)	240	SF	61.00	\$ 14,640
400000	Concrete Slab on grade, 2' thk (NIH/West Escalator and Stairway)	210	SF	34.00	\$ 7,140
400000	Sloped Conc Slab on grade, 2' thk (NIH/West Escalator and Stairway)	880	SF	42.00	\$ 36,960
400000	Conc Stair Steps on grade, 7" hi (NIH/West Escalator and Stairway)	420	LF	49.00	\$ 20,580
400000	2' - 6" thk Concrete Walls (NIH/West Escalator and Stairway)	1,685	SF	112.00	\$ 188,720
400000	Sloped Conc. Roof slab, 2' thk (NIH/West Escalator and Stairway)	240	SF	61.00	\$ 14,640
400000	Elevator Shaft Exterior Walls (East Side 2-Cab Elevator)	1,891	SF	43.00	\$ 81,313
400000	Elevator Shaft Floor Slabs (East Side 2-Cab Elevator)	219	SF	36.00	\$ 7,884
400000	Elevator Storefront & Roof (East Side 2-Cab Elevator)	2	EA	34,945.00	\$ 69,890
400000	Elevator Shaft Exterior Walls (NIH West Side 2-Cab Elevator)	1,891	SF	43.00	\$ 81,313
400000	Elevator Shaft Floor Slabs (NIH West Side 2-Cab Elevator)	219	SF	36.00	\$ 7,884
400000	Mezzanine Passageway (New Mezzanine Passageway)	1,149	SF	864.00	\$ 992,736
400000	Station/Passageway Connection (New Mezzanine Passageway)	1	JOB	580,173.00	\$ 580,173
400000	Entrance Canopy - NIH West (Canopies)	1	EA	879,734.00	\$ 879,734
400000	Entrance Canopy - East NMC (Canopies)	1	EA	879,734.00	\$ 879,734
400000	Suppt of West Utilities & Struct (Utilities & Structural Suppt)	1	JOB	137,075.00	\$ 137,075
400000	Suppt of East Utilities (Utilites & Structural Suppt)	1	JOB	23,026.00	\$ 23,026
400000	Suppt of Roadway Utilities (Utilities & Structural Suppt)	1	JOB	45,862.00	\$ 45,862

CONTINGENCY	5%	\$	382,054
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SUBTOTAL CATEGORY 4 COST	\$	8,023,126
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
500000	MD-355: New Drop-off Asph Paving (Exterior Sitework)	7,700	SF	7.00	\$ 53,900

CONTINGENCY	5%	\$	2,695
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SUBTOTAL CATEGORY 5 COST	\$	56,595
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
600000	MD-355 Concrete Sidewalks (Exterior Sitework)	7,344	SF	10.00	\$ 73,440
600000	MD-355 Curbs & Gutters (Exterior Sitework)	695	LF	24.00	\$ 16,680
600000	New & Relocated Metal Fence (Exterior Sitework)	315	LF	327.00	\$ 103,005

CONTINGENCY	5%	\$	9,656
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SUBTOTAL CATEGORY 6 COST	\$	202,781
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
700000	2% Categories 2, 4, 5, and 6	1	LS	352,000.00	\$ 352,000
700000	Precast Unit Pavers @ Elev/Escal (Exterior Sitework)	5,607	SF	43.00	\$ 241,101

CONTINGENCY	5%	\$	29,655
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SUBTOTAL CATEGORY 7 COST	\$	622,756
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
800000	General Finishes (Underground Shallow Tunnel)	5,579	SF	51.00	\$ 284,529

CONTINGENCY	5%	\$	14,226
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SUBTOTAL CATEGORY 8 COST	\$	298,755
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DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	INTERSECTION IMPROVEMENTS	PRJ LENGTH:	
TYPICAL SEC:	VARIES	DIVISION:	HIGHWAY DESIGN
ALTERNATE:	2B - PEDESTRIAN/BICYCLE UNDERPASS AND DEEP ELEVATORS		
PREPARED BY:	URS CORPORATION - JLC		

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
900000	Waterproof @ Exterior conc walls (3-Cab Deep Elevator/Stair Shaft)	19,286	SF	14.00	\$ 270,004
900000	Steel Emergency Stairs (3-Cab Deep Elevator/Stair Shaft)	119	VLF	2,045.00	\$ 243,355
900000	Street-to-Mezzanine Elevators (3-Cab Deep Elevator/Stair Shaft)	3	EA	842,844.00	\$ 2,528,532
900000	Stair Hatch and Vent Grating (3-Cab Deep Elevator/Stair Shaft)	2	EA	12,592.00	\$ 25,184
900000	Mechanical, Electrical, & Plumbing (3-Cab Deep Elevator/Stair Shaft)	1	JOB	842,212.00	\$ 842,212
900000	Mechanical, Electrical, & Plumbing (Underground Shallow Tunnel)	1	JOB	646,064.00	\$ 646,064
900000	Interior Mezzanine Modification (Station Mezz & Platform Mod)	1,151	SF	275.00	\$ 316,525
900000	New Platform Elev Misc Work (Station Mezz & Platform Mod)	1	EA	225,172.00	\$ 225,172
900000	Platform-Mezzanine Elevator (Station Mezz & Platform Mod)	1	EA	397,767.00	\$ 397,767
900000	10' Mezzanine to Platform Stairs (Station Mezz & Platform Mod)	1	JOB	301,839.00	\$ 301,839
900000	Platform HVAC/Plenum Modification (Station Mezz & Platform Mod)	1	JOB	435,588.00	\$ 435,588
900000	Relocate Station Equipment (Station Mezz & Platform Mod)	1	JOB	116,465.00	\$ 116,465
900000	Escalator Machine Pit, 8' x 20' (East Escalator and Stairway)	1	EA	57,873.00	\$ 57,873
900000	Escalator Wall Ledger (East Escalator and Stairway)	54	LF	56.00	\$ 3,024
900000	Misc Stl Fabrication & Ornament (East Escalator and Stairway)	1	JOB	63,740.00	\$ 63,740
900000	Escalator/Stair Finishes (East Escalator and Stairway)	1	JOB	191,418.00	\$ 191,418
900000	Mezzanine to St. Level Escalator (East Escalator and Stairway)	1	EA	593,237.00	\$ 593,237
900000	Mechanical, Electrical, & Plumbing (East Escalator and Stairway)	1	JOB	289,392.00	\$ 289,392
900000	Escalator Machine Pit, 8' x 20' (NIH/West Escalator and Stairway)	1	EA	57,873.00	\$ 57,873
900000	Escalator Wall Ledger (NIH/West Escalator and Stairway)	54	LF	56.00	\$ 3,024
900000	Misc Stl Fabrication & Ornament (NIH/West Escalator and Stairway)	1	JOB	63,740.00	\$ 63,740
900000	Escalator/Stair Finishes (NIH/West Escalator and Stairway)	1	JOB	191,418.00	\$ 191,418
900000	Mezzanine to St. Level Escalator (NIH/West Escalator and Stairway)	1	EA	593,237.00	\$ 593,237
900000	Mechanical, Electrical, & Plumbing (NIH/West Escalator and Stairway)	1	JOB	289,392.00	\$ 289,392
900000	Waterproof @ Exterior conc walls (East Side 2-Cab Elevator)	1,891	SF	10.00	\$ 18,910
900000	Street-to-Mezz Elevators, 26' (East Side 2-Cab Elevator)	2	EA	357,787.00	\$ 715,574
900000	Mechanical, Electrical, & Plumbing (East Side 2-Cab Elevator)	1	JOB	353,242.00	\$ 353,242
900000	Waterproof @ Exterior conc walls (NIH West Side 2-Cab Elevator)	1,891	SF	10.00	\$ 18,910
900000	Street-to-Mezz Elevators, 26' (NIH West Side 2-Cab Elevator)	2	EA	392,732.00	\$ 785,464
900000	Mechanical, Electrical, & Plumbing (NIH West Side 2-Cab Elevator)	1	JOB	353,242.00	\$ 353,242
900000	Utilities Relocation (Exterior Sitework)	1	JOB	116,588.00	\$ 116,588
CONTINGENCY			5%	\$	555,400
SUBTOTAL CATEGORY 9 COST					\$ 11,663,405

DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	GRADE SEPARATION		
TYPICAL SEC:	VARIES		
ALTERNATE:	3 - GRADE SEPARATION OF MD 355 UNDER SOUTH WOOD ROAD/SOUTH DRIVE	PRJ LENGTH:	
PREPARED BY:	URS CORPORATION - JLC	DIVISION:	HIGHWAY DESIGN

CATEGORY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	PRELIMINARY				\$ 6,196,000
2	GRADING				\$ 1,705,000
3	DRAINAGE				\$ 6,196,000
4	STRUCTURES				\$ 7,719,000
5	PAVING				\$ 1,696,675
6	SHOULDERS				\$ 1,270,688
7	LANDSCAPING				\$ 775,000
8	SIGNALS AND LIGHTING				\$ 605,000
9	UTILITIES				\$ 6,801,000
NEAT CONSTRUCTION COSTS					\$ 32,964,400
RIGHT-OF-WAY COSTS					\$ 19,022,200
20% PRELIMINARY ENGINEERING					\$ 7,542,254
14.4% ADMINISTRATIVE OVERHEAD					\$ 4,746,868
TOTAL COSTS					\$ 64,275,722

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
100000	40% Categories 2, 4, 5, and 6 (Includes MOT)	1	LS	4,956,800.00	\$ 4,956,800
CONTINGENCY				25%	\$ 1,239,200
SUBTOTAL CATEGORY 1 COST					\$ 6,196,000

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
200000	CLASS 1 EXCAVATION	62,000	CY	22.00	\$ 1,364,000
CONTINGENCY				25%	\$ 341,000
SUBTOTAL CATEGORY 2 COST					\$ 1,705,000

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
300000	40% Categories 2, 4, 5, and 6	1	LS	4,956,800.00	\$ 4,956,800
CONTINGENCY				25%	\$ 1,239,200
SUBTOTAL CATEGORY 3 COST					\$ 6,196,000

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
400000	RETAINING WALLS (NORTHBOUND AND SOUTHBOUND MD 355)	38,000	SF	125.00	\$ 4,750,000
400000	RETAINING WALL (KISS & RIDE LOT)	1,750	SF	125.00	\$ 218,750
400000	BRIDGE CARRYING SOUTH WOOD ROAD/SOUTH DRIVE OVER MD 355 UNDERPASS	5,745	SF	210.00	\$ 1,206,450
CONTINGENCY				25%	\$ 1,543,800
SUBTOTAL CATEGORY 4 COST					\$ 7,719,000

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
500000	HOT MIX ASPHALT SUPERPAVE FOR SURFACE (2")	2,551	TON	120.00	\$ 306,120
500000	HOT MIX ASPHALT SUPERPAVE FOR BASE (6")	6,410	TON	80.00	\$ 512,800
500000	6" GRADED AGGREGATE BASE COURSE (2 LIFTS)	33,020	SY	15.00	\$ 495,300
530100	GRINDING HMA 0" - 2"	3,201	SY	10.00	\$ 32,010
585405	5 INCH WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	6,607	LF	1.00	\$ 6,607
585407	5 INCH YELLOW LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	4,503	LF	1.00	\$ 4,503
CONTINGENCY				25%	\$ 339,335
SUBTOTAL CATEGORY 5 COST					\$ 1,696,675

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
600000	5' SIDEWALK	11,310	SF	6.50	\$ 73,515
600000	8' HIKER/BIKER TRAIL	1,265	LF	48.00	\$ 60,720
600000	6 FT. MONOLITHIC CONCRETE MEDIAN	1,080	LF	125.00	\$ 135,000
634300	STD. TYPE A CONCRETE CURB AND GUTTER	5,250	LF	25.00	\$ 131,250
600000	NNMC FENCE RELOCATION	1,445	LF	327.00	\$ 472,515
600000	NIH FENCE RELOCATION	815	LF	170.00	\$ 138,550
600000	6' CHAIN LINK FENCE (ACROSS BRIDGE)	200	LF	25.00	\$ 5,000
CONTINGENCY				25%	\$ 254,138
SUBTOTAL CATEGORY 6 COST					\$ 1,270,688

DATE:	July 16, 2010	CONTRACT #:	
ROUTE:	MD 355 AT SOUTH WOOD ROAD/SOUTH DRIVE	FEDERAL #:	
JOB DESCRP:	MD 355/ROCKVILLE PIKE CROSSING PROJECT	PDMS:	
		COUNTY:	MONTGOMERY
IMPROV TYPE:	GRADE SEPARATION	PRJ LENGTH:	
TYPICAL SEC:	VARIES	DIVISION:	HIGHWAY DESIGN
ALTERNATE:	3 - GRADE SEPARATION OF MD 355 UNDER SOUTH WOOD ROAD/SOUTH DRIVE		
PREPARED BY:	URS CORPORATION - JLC		

CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
700000	5% Categories 2, 4, 5, and 6	1	LS	620,000.00	\$ 620,000

CONTINGENCY	25%	\$ 155,000
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SUBTOTAL CATEGORY 7 COST	\$ 775,000
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
800000	SIGNING (MEDIAN AND ROADSIDE)	15	EA	500.00	\$ 7,500
800000	REMOVAL OF EXISTING SIGNAL	1	LS	20,000.00	\$ 20,000
800000	T-INTERSECTION FULLY ACTUATED SIGNAL (MAST ARMS)	1	LS	120,000.00	\$ 120,000
800000	DETECTOR REPLACEMENT (NON-INVASIVE MICRO LOOP PROBE)	2	EA	6,000.00	\$ 12,000
800000	EMERGENCY VEHICLE PREEMPTION	1	LS	5,000.00	\$ 5,000
800000	CAMERA FOR VIDEO DETECTION	3	EA	7,500.00	\$ 22,500
800000	APS PEDESTRIAN SIGNALS	1	EA	15,000.00	\$ 15,000
800000	4-LEG INTERSECTION FULLY ACTUATED SIGNAL (MAST ARMS)	1	LS	220,000.00	\$ 220,000
800000	DETECTOR REPLACEMENT (NON-INVASIVE MICRO LOOP PROBE)	2	EA	6,000.00	\$ 12,000
800000	EMERGENCY VEHICLE PREEMPTION	1	LS	5,000.00	\$ 5,000
800000	CAMERA FOR VIDEO DETECTION	4	EA	7,500.00	\$ 30,000
800000	APS PEDESTRIAN SIGNALS	1	EA	15,000.00	\$ 15,000

CONTINGENCY	25%	\$ 121,000
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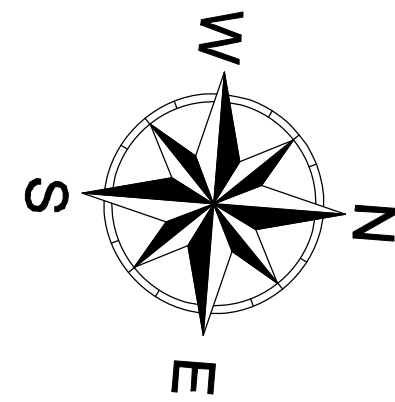
SUBTOTAL CATEGORY 8 COST	\$ 605,000
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CAT. CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
900000	UNDERGROUND UTILITY RELOCATION (20% Categories 1-8)	1	LS	5,232,800.00	\$ 5,232,800
900000	UTILITY POLES	14	EA	12,000.00	\$ 168,000
900000	SIGNING (NIH ENTRANCE SIGN RELOCATION)	1	EA	20,000.00	\$ 20,000
900000	SIGNING (NNMC ENTRANCE SIGN RELOCATION)	1	EA	20,000.00	\$ 20,000

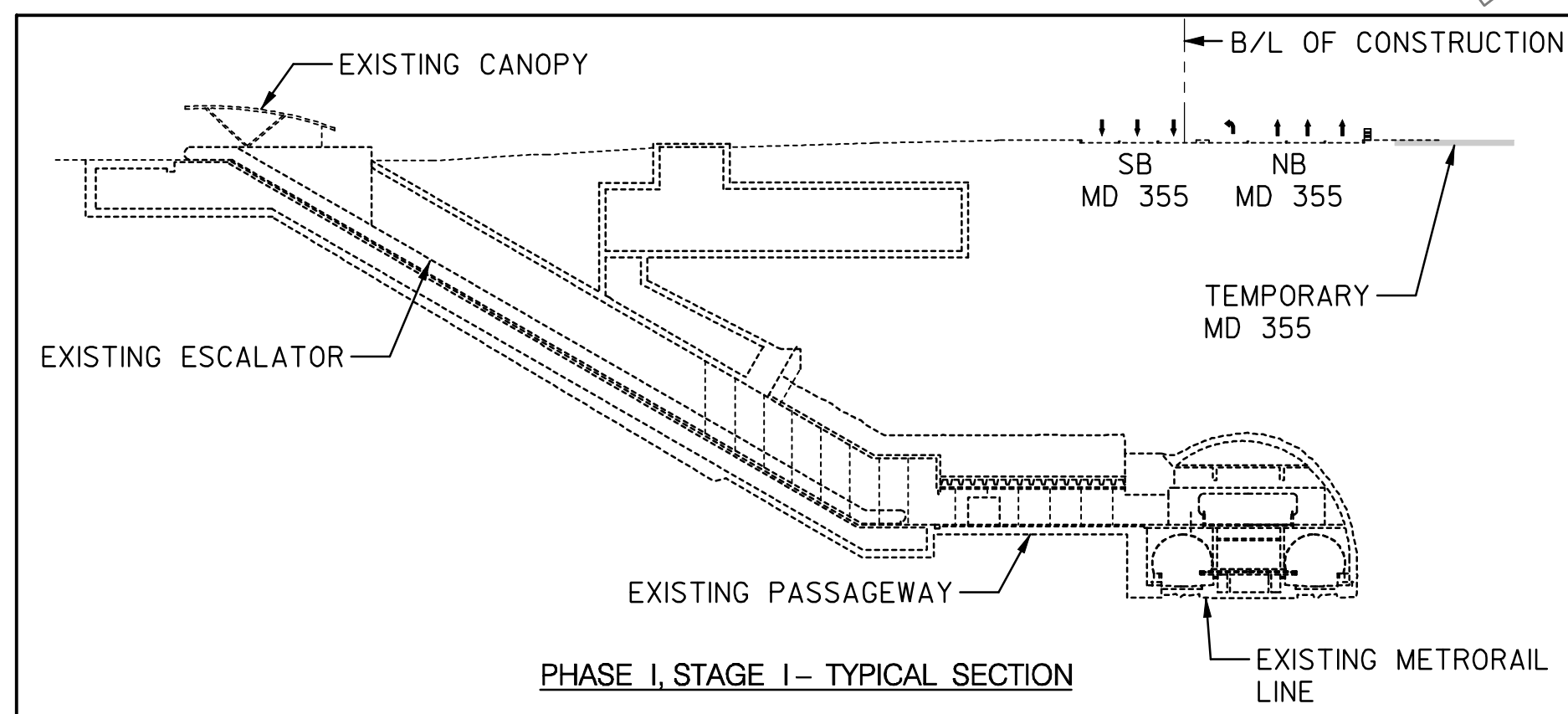
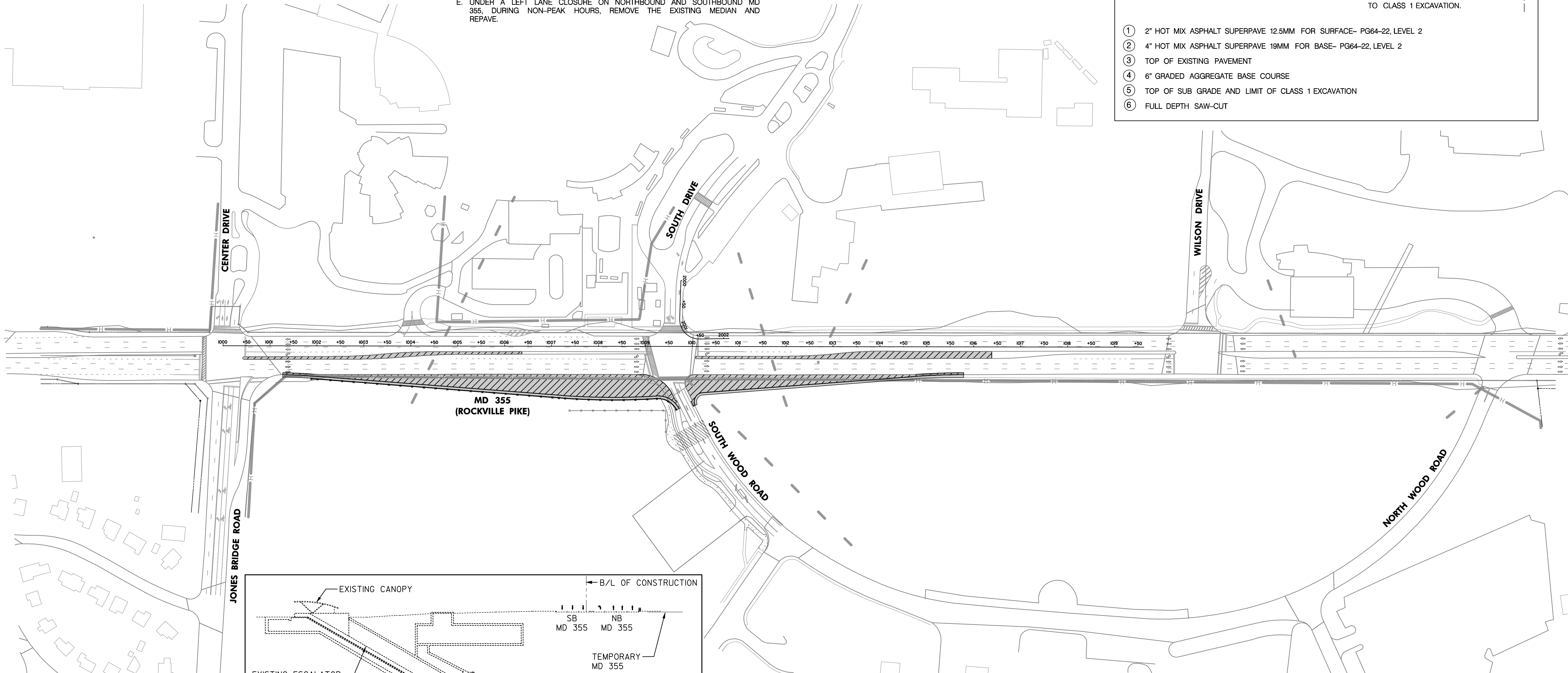
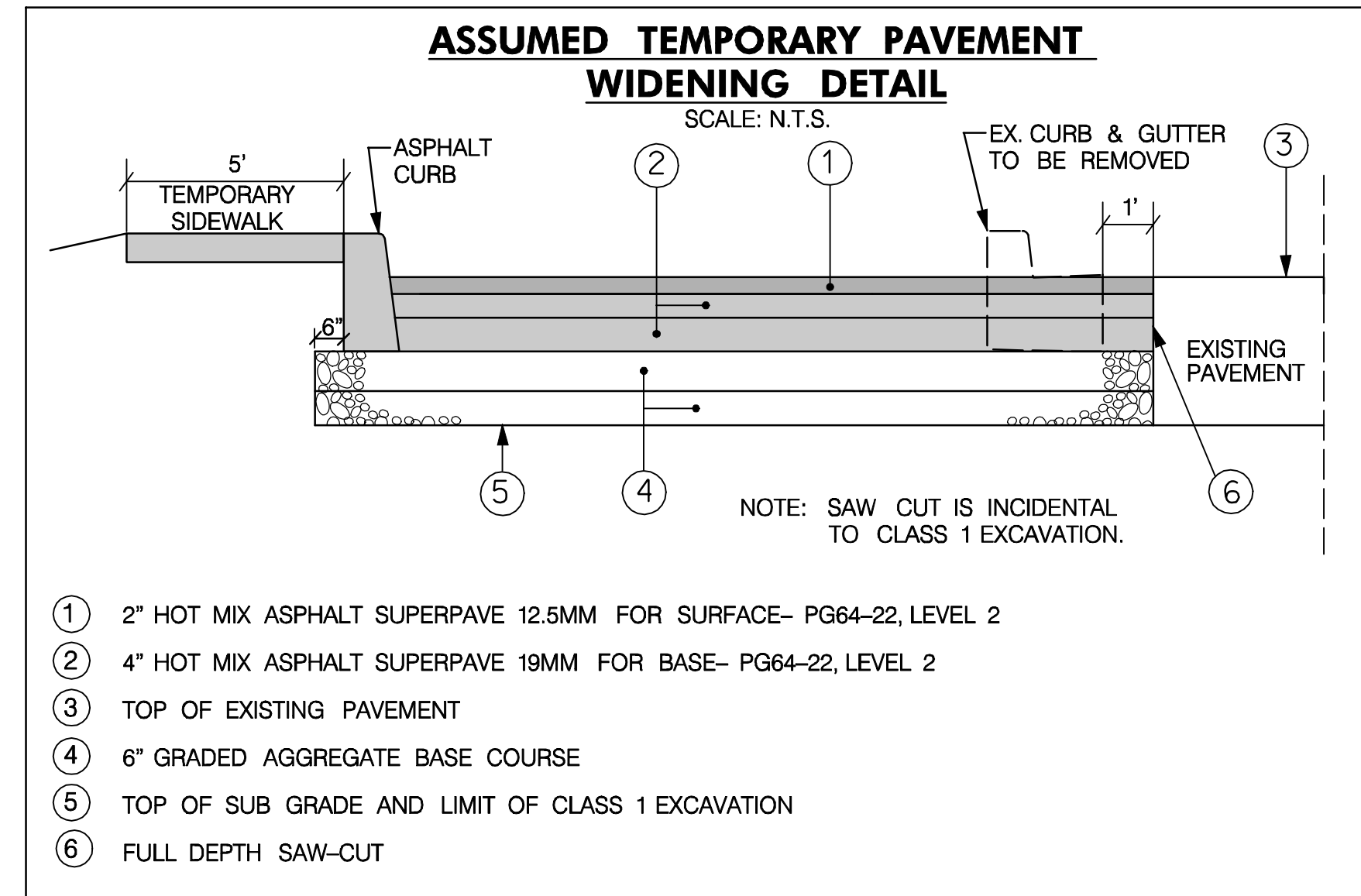
CONTINGENCY	25%	\$ 1,360,200
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SUBTOTAL CATEGORY 9 COST	\$ 6,801,000
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APPENDIX D – PRELIMINARY MAINTENANCE OF TRAFFIC SUMMARY



- SEQUENCE OF CONSTRUCTION-PHASE I
THIS PHASE OF WORK CONSISTS OF CONSTRUCTING A TEMPORARY ROADWAY, DEEP AND SHALLOW TUNNELS, AND THE ENTRANCE TO THE MEDICAL CENTER METRO STATION USING THE CUT AND COVER METHOD.
- STAGE I
- CONSTRUCT TEMPORARY NORTHBOUND MD 355 ADJACENT TO THE EXISTING NORTHBOUND MD 355 ON THE EAST SIDE AND REALIGN THE SIDEWALK/TRAIL AND FENCE ADJACENT TO THE TEMPORARY NORTHBOUND MD 355 ROADWAY.
 - PERFORM WORK ADJACENT TO THE EXISTING ROADWAY UNDER A SHOULDER CLOSURE ON NORTHBOUND MD 355. CLOSE RIGHT LANE AS NECESSARY DURING OFF-PEAK HOURS.
 - WHEN WORKING ON NORTHBOUND TEMPORARY ROADWAY NEAR SOUTH WOOD ROAD, CLOSE ONE LANE ON SOUTH WOOD ROAD, LEAVING ONE LANE IN EACH DIRECTION.
 - CONSTRUCT TEMPORARY SIGNAL AT THE RELOCATED MD 355 AT SOUTH DRIVESOUTH WOOD ROAD INTERSECTION.
 - UNDER A LEFT LANE CLOSURE ON NORTHBOUND AND SOUTHBOUND MD 355, DURING NON-PEAK HOURS, REMOVE THE EXISTING MEDIAN AND REPAVE.

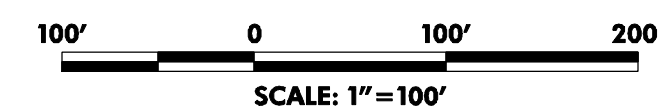


- NOTES:
- ALL EXISTING TRAVEL LANES SHALL BE MAINTAINED DURING THE WEEKDAY PEAK HOURS ON MD 355. ADDITIONAL LANES MAY BE CLOSED DURING OFF-PEAK HOURS AS NECESSARY TO PERFORM WORK ADJACENT TO THE TRAVEL LANE.
 - DURING CONSTRUCTION, THE SPEED LIMIT ON MD 355 SHALL BE REDUCED TO 30 MPH, TO MAINTAIN MINIMUM TAPER LENGTH OF L2.
 - IN ORDER TO MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES, IT MAY BE NECESSARY TO MOVE THE CROSSWALK TO THE NORTH LEG OF MD 355 AT THE SOUTH DRIVESOUTH WOOD ROAD INTERSECTION.

SYMBOL LEGEND	
	WORK ZONE
	TEMPORARY PAVEMENT
	PAVEMENT REMOVAL
	LANE USE

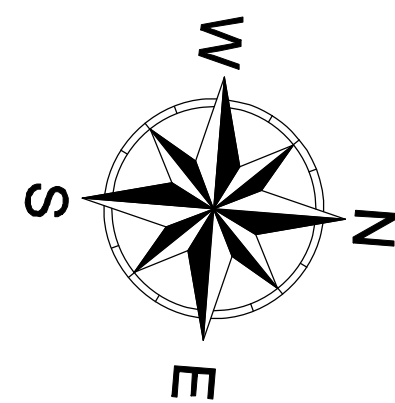


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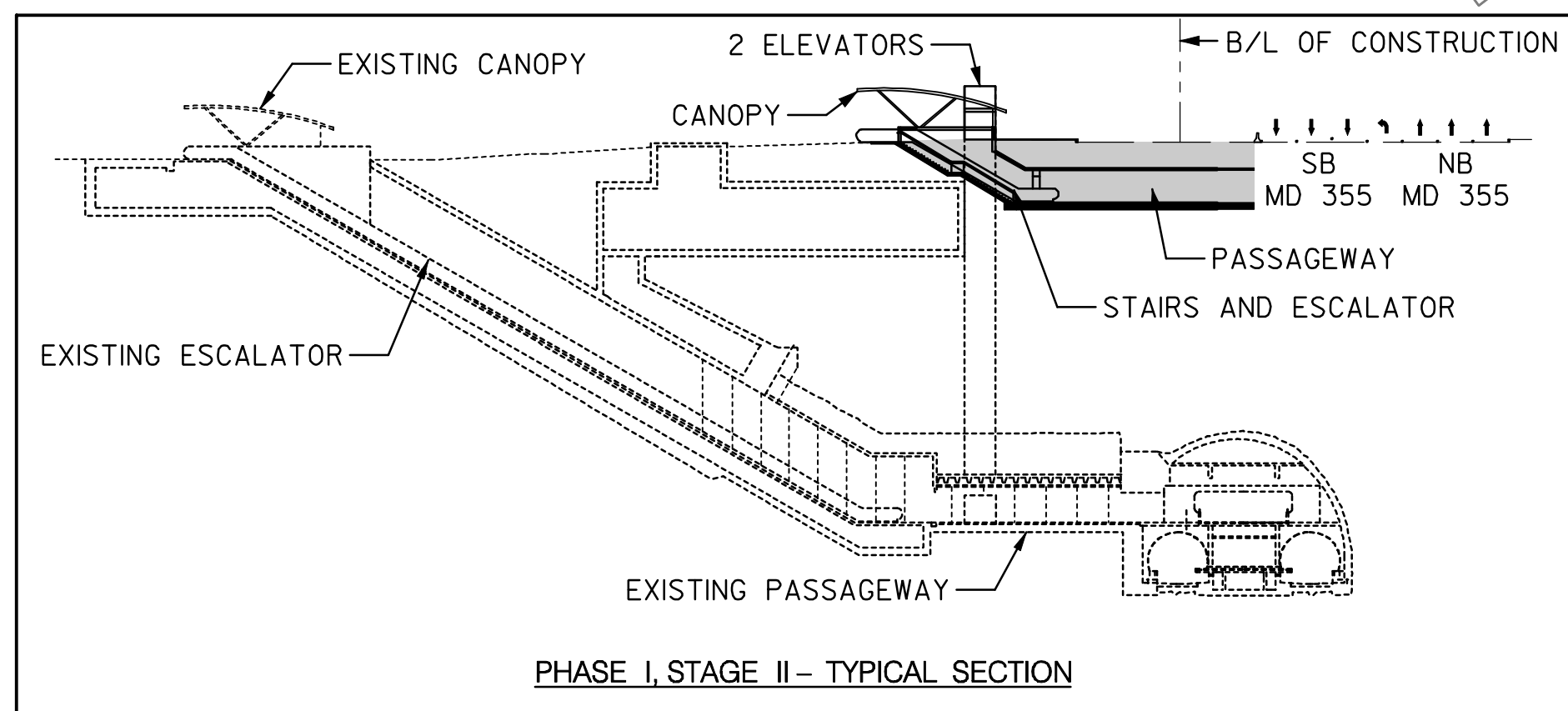
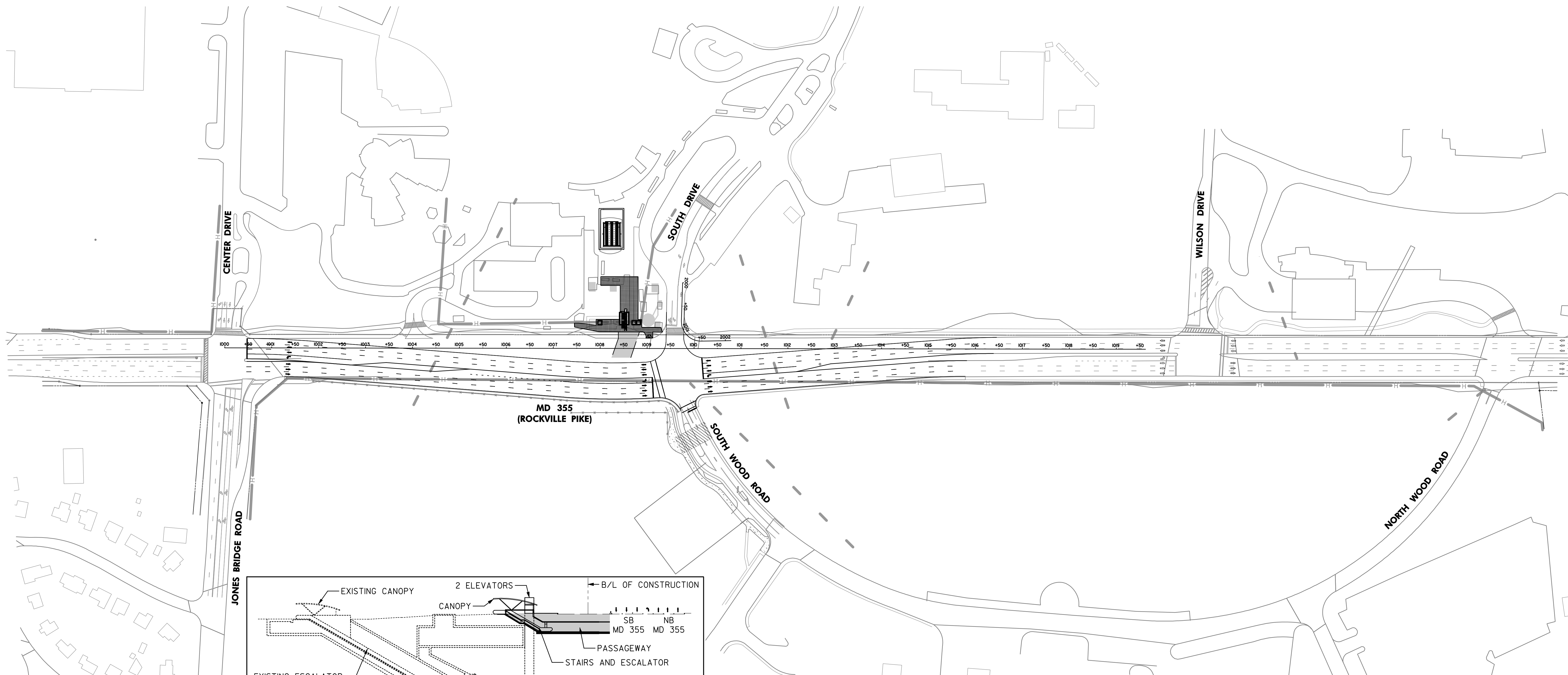


MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Transportation Planning and Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by: SHN	Drawn by: SHN
Checked by: JS	

PHASE I, STAGE I	
MD 355 UNDERPASS FEASIBILITY STUDY	
MAINTENANCE OF TRAFFIC CONCEPT PLAN ALTERNATIVE 2B: TSM/ DEEP AND SHALLOW TUNNEL	
SCALE: 1"=100'	DATE: 07/2010
Project No. : —	SHEET 1 of 6



- STAGE II
- RESTRIPE AND SHIFT NORTHBOUND MD 355 TRAFFIC TO THE TEMPORARY ROAD AND SOUTHBOUND MD 355 ONTO THE EXISTING NORTHBOUND MD 355 ROADWAY.
 - RELOCATE EXISTING UTILITIES AND CONSTRUCT RETAINING WALL ALONG EXISTING SOUTHBOUND MD 355.
 - EXCAVATE EXISTING SOUTHBOUND MD 355.
 - CONSTRUCT PASSAGEWAY, ELEVATORS, VENTS, STAIRS, ESCALATOR, AND CANOPY UNDER MD 355 AND TO THE WEST OF MD 355.
 - REPLACE UTILITIES, BACKFILL FOR PERMANENT ROADWAY, AND RECONSTRUCT SOUTHBOUND MD 355.



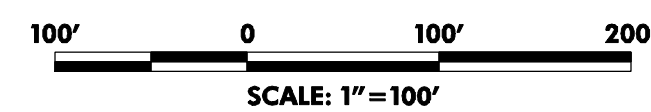
PHASE I, STAGE II - TYPICAL SECTION

NOTES:

- ALL EXISTING TRAVEL LANES SHALL BE MAINTAINED DURING THE WEEKDAY PEAK HOURS ON MD 355. ADDITIONAL LANES MAY BE CLOSED DURING OFF-PEAK HOURS AS NECESSARY TO PERFORM WORK ADJACENT TO THE TRAVEL LANE.
- DURING CONSTRUCTION, THE SPEED LIMIT ON MD 355 SHALL BE REDUCED TO 30 MPH, TO MAINTAIN MINIMUM TAPER LENGTH OF 1/2.
- IN ORDER TO MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES, IT MAY BE NECESSARY TO MOVE THE CROSSWALK TO THE NORTH LEG OF MD 355 AT THE SOUTH DRIVE/SOUTH WOOD ROAD INTERSECTION.

SYMBOL LEGEND

- WORK ZONE
- TEMPORARY PAVEMENT
- PAVEMENT REMOVAL
- LANE USE



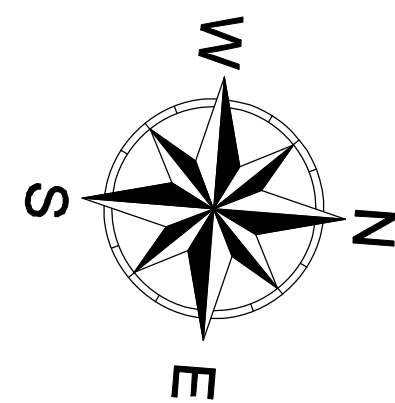
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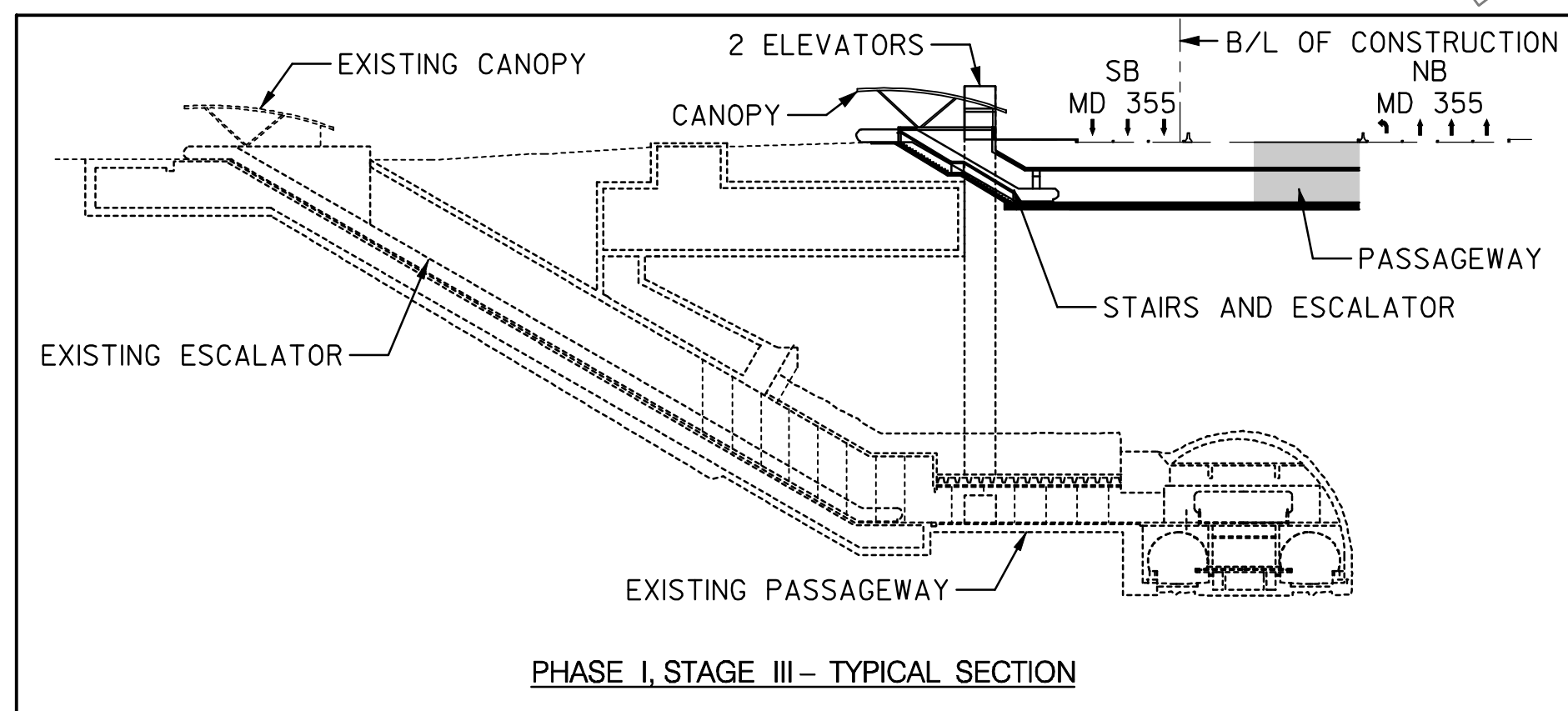
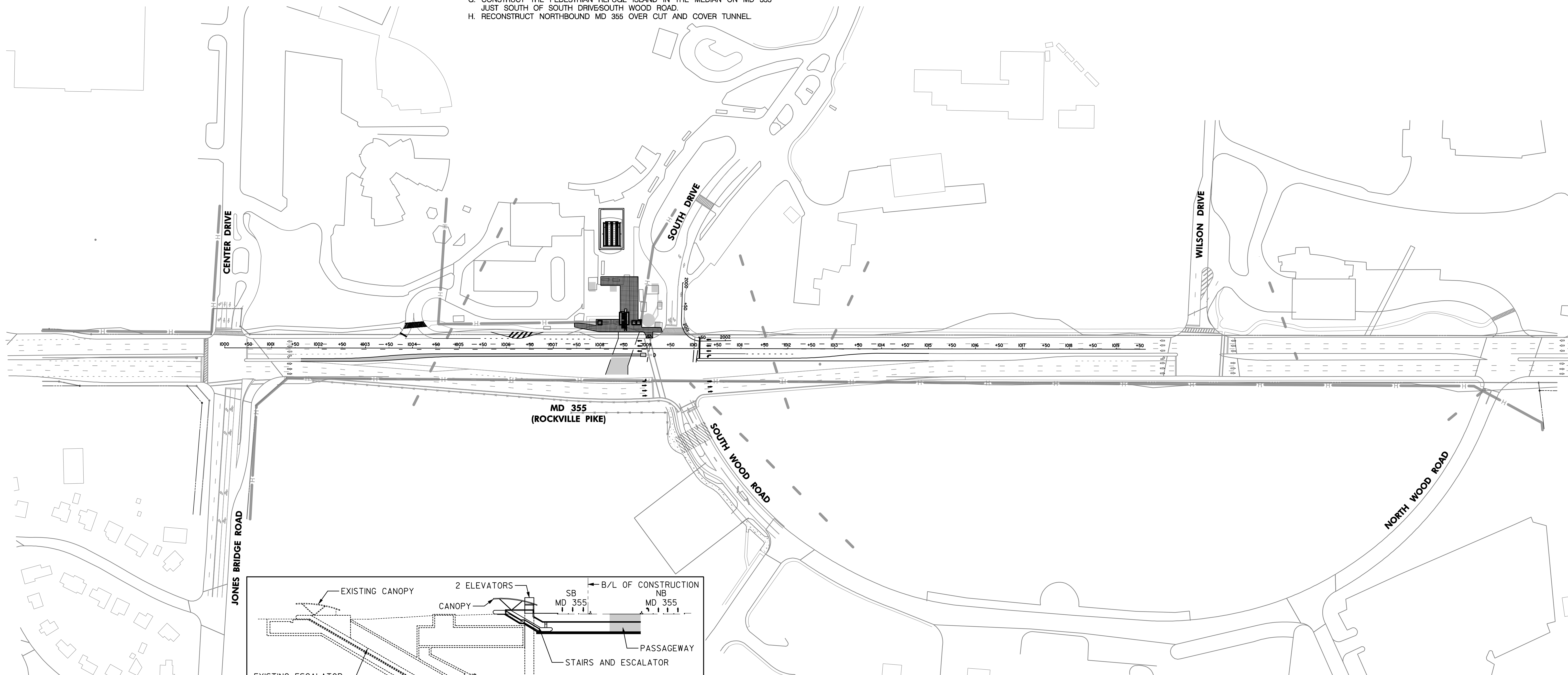
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Chief, Transportation Planning and Design Section	Date
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Chief, Division of Transportation Engineering	Date
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Checked by: JS	

PHASE I, STAGE II	
MD 355 UNDERPASS FEASIBILITY STUDY	
MAINTENANCE OF TRAFFIC CONCEPT PLAN ALTERNATIVE 2B: TSM/ DEEP AND SHALLOW TUNNEL	
SCALE: 1"=100'	DATE: 07/2010
Project No. : —	SHEET 2 of 6



- STAGE III
- A. SHIFT SOUTHBOUND MD 355 TRAFFIC BACK TO EXISTING SOUTHBOUND MD 355. MAKE TEMPORARY SIGNAL ADJUSTMENTS.
 - B. RELOCATE EXISTING UTILITIES AND CONSTRUCT RETAINING WALLS ALONG THE EXISTING NORTHBOUND MD 355.
 - C. RECONSTRUCT PORTION OF THE EXISTING MEDIANS ALONG MD 355 THAT WERE REMOVED IN STAGE I AND RESTRIPE.
 - D. EXCAVATE THE PORTION OF THE TUNNEL UNDER EXISTING NORTHBOUND MD 355.
 - E. CONSTRUCT PASSAGEWAY UNDER NORTHBOUND MD 355.
 - F. REPLACE UTILITIES, BACKFILL FOR PERMANENT ROADWAY, AND RECONSTRUCT NORTHBOUND MD 355.
 - G. CONSTRUCT THE PEDESTRIAN REFUGE ISLAND IN THE MEDIAN ON MD 355 JUST SOUTH OF SOUTH DRIVE/SOUTH WOOD ROAD.
 - H. RECONSTRUCT NORTHBOUND MD 355 OVER CUT AND COVER TUNNEL.



- NOTES:
1. ALL EXISTING TRAVEL LANES SHALL BE MAINTAINED DURING THE WEEKDAY PEAK HOURS ON MD 355. ADDITIONAL LANES MAY BE CLOSED DURING OFF-PEAK HOURS AS NECESSARY TO PERFORM WORK ADJACENT TO THE TRAVEL LANE.
 2. DURING CONSTRUCTION, THE SPEED LIMIT ON MD 355 SHALL BE REDUCED TO 30 MPH, TO MAINTAIN MINIMUM TAPER LENGTH OF 1/2.
 3. IN ORDER TO MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES, IT MAY BE NECESSARY TO MOVE THE CROSSWALK TO THE NORTH LEG OF MD 355 AT THE SOUTH DRIVE/SOUTH WOOD ROAD INTERSECTION.

SYMBOL LEGEND

- WORK ZONE
- TEMPORARY PAVEMENT
- PAVEMENT REMOVAL
- LANE USE

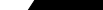
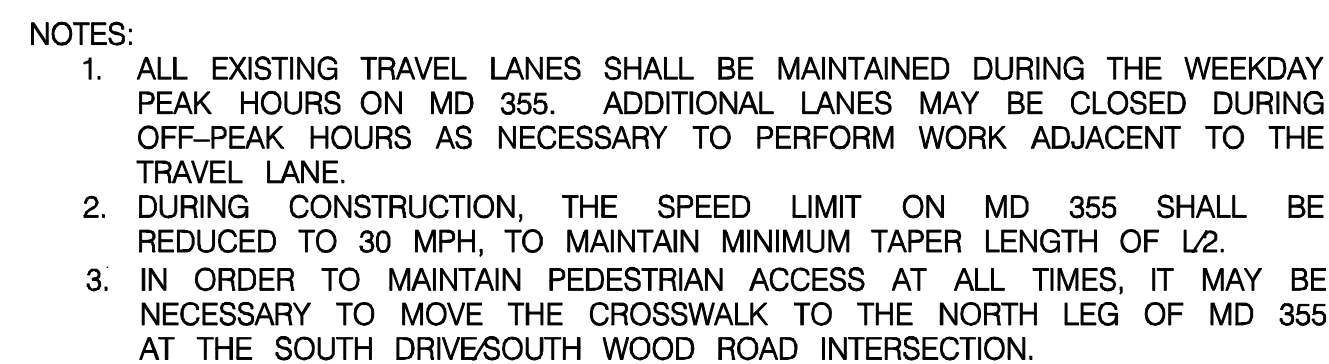
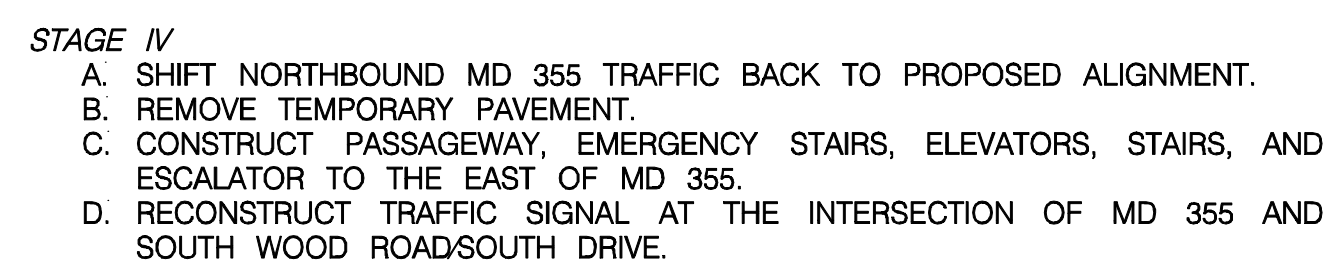
100' 0 100' 200'
SCALE: 1"=100'



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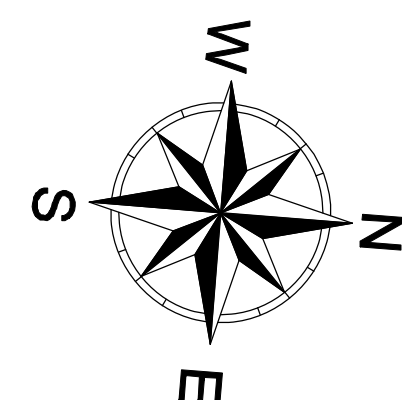
MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Transportation Planning and Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
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Checked by: JS	

PHASE I, STAGE III	
MD 355 UNDERPASS FEASIBILITY STUDY	
MAINTENANCE OF TRAFFIC CONCEPT PLAN ALTERNATIVE 2B: TSM/ DEEP AND SHALLOW TUNNEL	
SCALE: 1"=100'	DATE: 07/2010
Project No. : —	SHEET 3 of 6

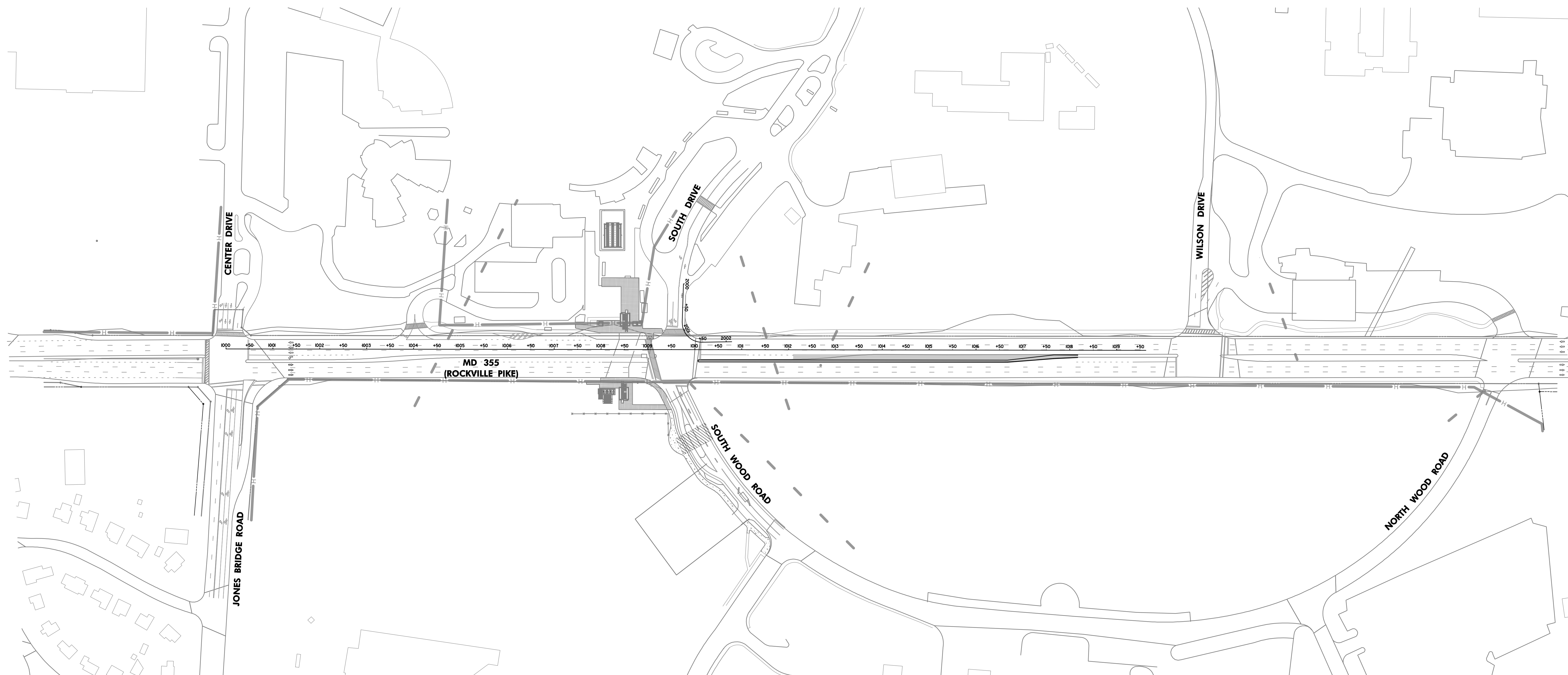


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MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND			MD 355 UNDERPASS FEASIBILITY STUDY		
RECOMMENDED FOR APPROVAL _____ Chief, Transportation Planning and Design Section APPROVED			MAINTENANCE OF TRAFFIC CONCEPT PLAN ALTERNATIVE 2B: TSM/ DEEP AND SHALLOW TUNNEL SCALE :1"=100'		
_____ Chief, Division of Transportation Engineering			DATE 07/2010		
Designed by: SHN	Drawn by: SHN	Checked by: JS	Project No. : —	SHEET 4	of 6



SEQUENCE OF CONSTRUCTION-PHASE II
THIS PHASE OF WORK CONSISTS OF MODIFYING THE EXISTING MEDIAN TO
EXTEND THE LEFT TURN LANE.
A. INSTALL ADVANCED WARNING SIGNS, TEMPORARY PAVEMENT MARKINGS,
AND CHANNELIZATION DEVICES.
B. UNDER A LEFT LANE CLOSURE, DURING OFF-PEAK HOUR, PERFORM WORK
IN THE MEDIAN AREA, ADJACENT TO THE TRAVEL LANE.

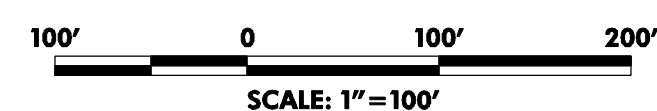


SYMBOL LEGEND

- WORK ZONE
- TEMPORARY PAVEMENT
- PAVEMENT REMOVAL
- LANE USE

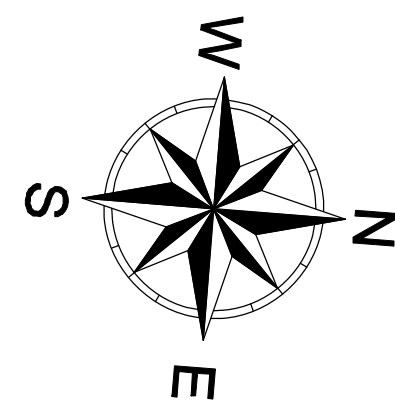
- NOTES:
- ALL EXISTING TRAVEL LANES SHALL BE MAINTAINED DURING THE WEEKDAY PEAK HOURS ON MD 355. ADDITIONAL LANES MAY BE CLOSED DURING OFF-PEAK HOURS AS NECESSARY TO PERFORM WORK ADJACENT TO THE TRAVEL LANE.
 - DURING CONSTRUCTION, THE SPEED LIMIT ON MD 355 SHALL BE REDUCED TO 30 MPH, TO MAINTAIN MINIMUM TAPER LENGTH OF 1/2.
 - IN ORDER TO MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES, IT MAY BE NECESSARY TO MOVE THE CROSSWALK TO THE NORTH LEG OF MD 355 AT THE SOUTH DRIVESOUTH WOOD ROAD INTERSECTION.

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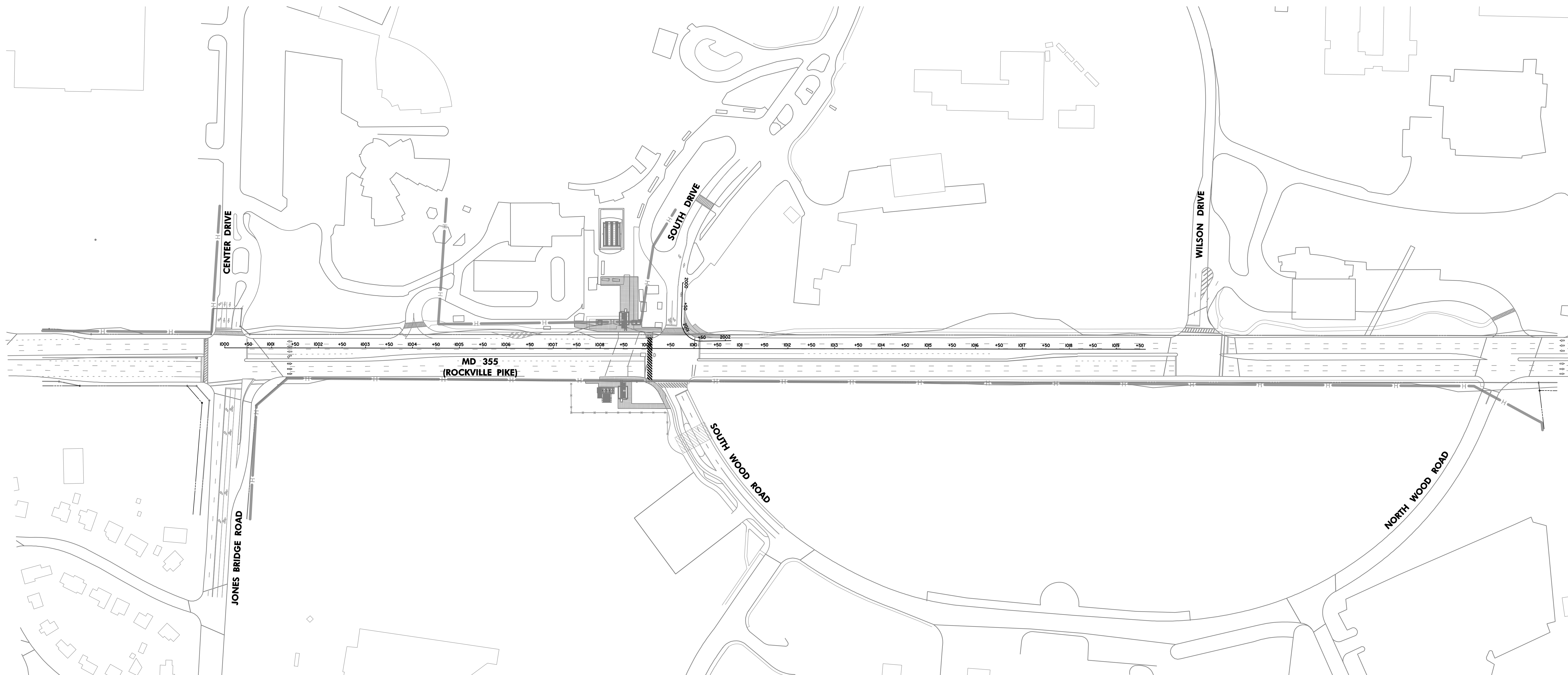


MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND	
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Chief, Transportation Planning and Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by: SHN	Drawn by: SHN
Checked by: JS	

PHASE II	
MD 355 UNDERPASS FEASIBILITY STUDY	
MAINTENANCE OF TRAFFIC CONCEPT PLAN	
ALTERNATIVE 2B: TSM/ DEEP AND SHALLOW TUNNEL	
SCALE : 1"=100'	DATE 07/2010
Project No. : —	SHEET 5 of 6



SEQUENCE OF CONSTRUCTION-PHASE III
THIS PHASE OF WORK SHALL BE DONE DURING OFF-PEAK HOURS AND SHALL INCLUDE WIDENING THE CURB RADIUS AND REALIGNING THE SIDEWALK LOCATED AT THE NORTHWEST CORNER OF MD 355 AND SOUTH DRIVE.
A. RESTRIPE SOUTH DRIVE TO REDUCE ALL THREE (3) LANES TO 10'.
B. CLOSE THE RIGHT LANE ON MD 355 DURING OFF PEAK HOUR.



- NOTES:
1. ALL EXISTING TRAVEL LANES SHALL BE MAINTAINED DURING THE WEEKDAY PEAK HOURS ON MD 355. ADDITIONAL LANES MAY BE CLOSED DURING OFF-PEAK HOURS AS NECESSARY TO PERFORM WORK ADJACENT TO THE TRAVEL LANE.
 2. DURING CONSTRUCTION, THE SPEED LIMIT ON MD 355 SHALL BE REDUCED TO 30 MPH, TO MAINTAIN MINIMUM TAPER LENGTH OF 1/2.
 3. IN ORDER TO MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES, IT MAY BE NECESSARY TO MOVE THE CROSSWALK TO THE NORTH LEG OF MD 355 AT THE SOUTH DRIVE/SOUTH WOOD ROAD INTERSECTION.

SYMBOL LEGEND

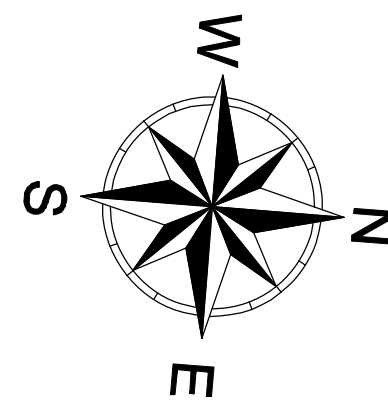
- WORK ZONE
- TEMPORARY PAVEMENT
- PAVEMENT REMOVAL
- LANE USE

100' 0 100' 200'
SCALE: 1"=100'



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MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND		PHASE III
RECOMMENDED FOR APPROVAL		MD 355 UNDERPASS FEASIBILITY STUDY
Chief, Transportation Planning and Design Section	Date	MAINTENANCE OF TRAFFIC CONCEPT PLAN ALTERNATIVE 2B: TSM/ DEEP AND SHALLOW TUNNEL
Chief, Division of Transportation Engineering	Date	SCALE : 1"=100' DATE 07/2010
Designed by: SHN	Drawn by: SHN	Checked by: JS
Project No. : —		SHEET 6 of 6

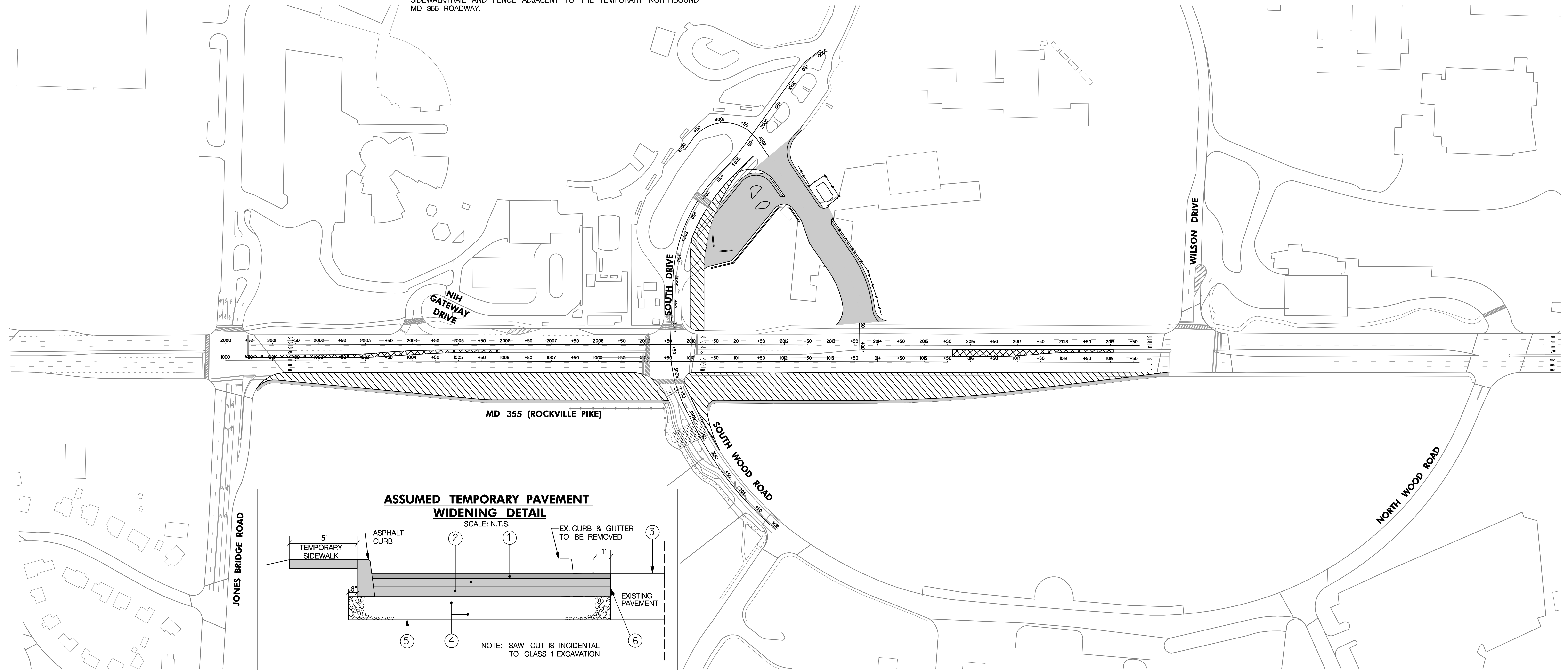


SEQUENCE OF CONSTRUCTION-PHASE I
THIS PHASE OF WORK CONSISTS OF CONSTRUCTING THE NEW CONNECTOR ROAD TO CONNECT MD 355 TO SOUTH DRIVE, THE RECONFIGURED KISS AND RIDE LOT, TEMPORARY NORTHBOUND MD 355 ADJACENT TO EXISTING MD 355 ROADWAY, TEMPORARY SOUTH WOOD ROAD AND SOUTH DRIVE, REMOVING AND REPAVING EXISTING MEDIANS ALONG MD 355, AND MODIFYING CHANNELIZED ISLAND ON NORTHEAST QUADRANT OF MD 355 AND JONES BRIDGE ROAD INTERSECTION.

- CONSTRUCT THE NEW CONNECTOR ROAD TO CONNECT MD 355 TO SOUTH DRIVE OUTSIDE OF THE EDGE OF THE EXISTING ROAD.
- CONSTRUCT THE RECONFIGURED KISS AND RIDE LOT AND TEMPORARY SOUTH DRIVE TO TEMPORARILY RELOCATE MD 355 AND SOUTH DRIVE/SOUTH WOOD ROAD INTERSECTION IN PHASE II.
- CONSTRUCT TEMPORARY NORTHBOUND MD 355 ADJACENT TO THE EXISTING NORTHBOUND MD 355 ON THE EASTSIDE AND REALIGN THE SIDEWALK/TRAIL AND FENCE ADJACENT TO THE TEMPORARY NORTHBOUND MD 355 ROADWAY.

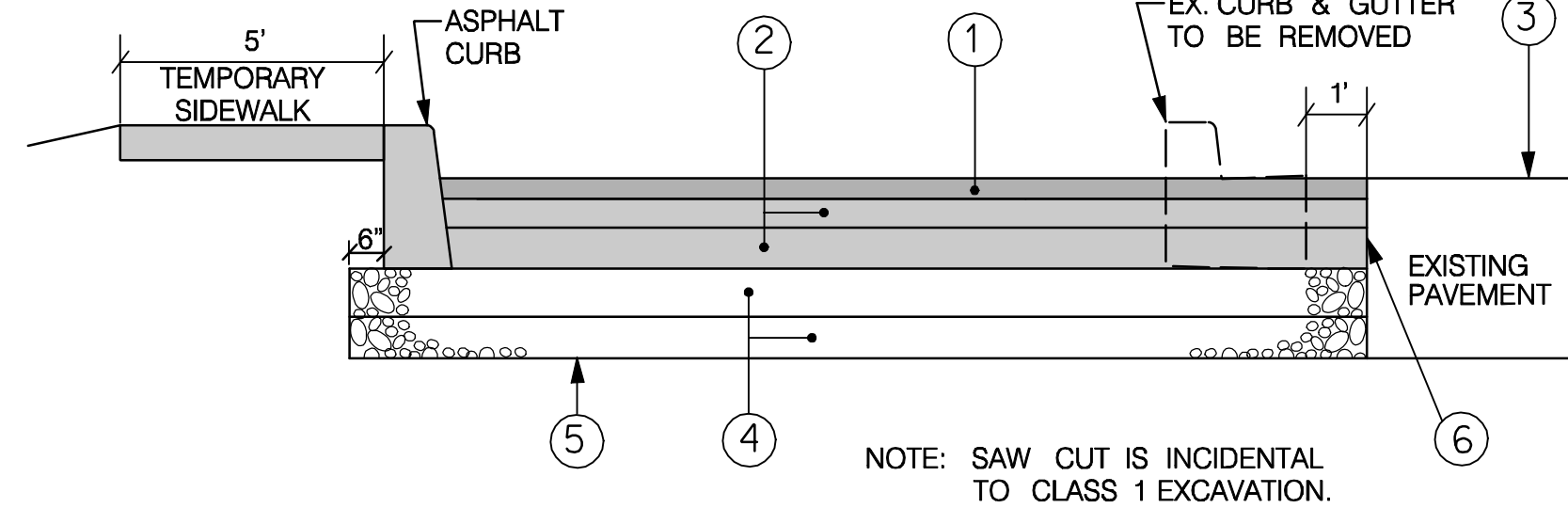
SEQUENCE OF CONSTRUCTION CONTINUED-PHASE I

- PERFORM WORK ADJACENT TO THE EXISTING ROADWAY UNDER A RIGHT LANE CLOSURE ON NORTHBOUND MD 355.
- CLOSE ONE TURN LANE ON SOUTH WOOD ROAD, LEAVING ONE LANE OPEN IN EACH DIRECTION. PERFORM WORK TO TEMPORARILY RELOCATE MD 355 AT SOUTH DRIVE/SOUTH WOOD ROAD INTERSECTION.
- UNDER A LEFT LANE CLOSURE ON NORTHBOUND AND SOUTHBOUND MD 355, DURING NON-PEAK HOURS, REMOVE EXISTING MEDIANS AND REPAVE.
- UNDER A RIGHT LANE CLOSURE ON NORTHBOUND MD 355 AND JONES BRIDGE ROAD, DURING NON-PEAK HOURS, REMOVE AND REPAVE EXISTING CHANNELIZED RIGHT TURN ISLAND PARTIALLY.
- CONSTRUCT TEMPORARY SIGNAL AT THE RELOCATED MD 355 AT SOUTH DRIVE/SOUTH WOOD ROAD INTERSECTION.



ASSUMED TEMPORARY PAVEMENT WIDENING DETAIL

SCALE: N.T.S.



- 2" HOT MIX ASPHALT SUPERPAVE 12.5MM FOR SURFACE- PG64-22, LEVEL 2
- 4" HOT MIX ASPHALT SUPERPAVE 19MM FOR BASE- PG64-22, LEVEL 2
- TOP OF EXISTING PAVEMENT
- 6" GRADED AGGREGATE BASE COURSE
- TOP OF SUB GRADE AND LIMIT OF CLASS 1 EXCAVATION
- FULL DEPTH SAW-CUT

NOTES:

- ALL EXISTING TRAVEL LANES SHALL BE MAINTAINED DURING THE WEEKDAY PEAK HOURS ON MD 355. ADDITIONAL LANES MAY BE CLOSED DURING OFF-PEAK HOURS AS NECESSARY TO PERFORM WORK ADJACENT TO THE TRAVEL LANE.
- DURING CONSTRUCTION, THE SPEED LIMIT ON MD 355 SHALL BE REDUCED TO 30 MPH, TO MAINTAIN MINIMUM TAPER LENGTH OF L/2.

SYMBOL LEGEND

- WORK ZONE
- TEMPORARY PAVEMENT OR STRUCTURE
- PAVEMENT REMOVAL
- LANE USE

100' 0 100' 200'
SCALE: 1"=100'



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PHASE I

MD 355 UNDERPASS FEASIBILITY STUDY

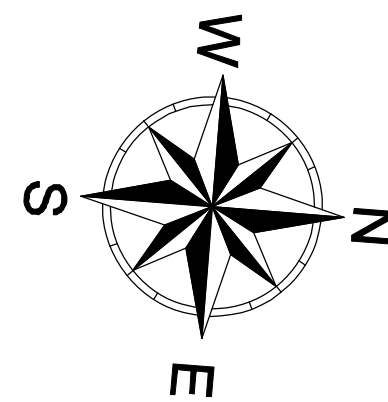
MAINTENANCE OF TRAFFIC CONCEPT PLAN
ALTERNATIVE 3:
GRADE SEPARATION

SCALE : 1"=100'

DATE 07/2010

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND	
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Chief, Transportation Planning and Design Section	Date
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Chief, Division of Transportation Engineering	Date
Designed by: HM	Drawn by: HM
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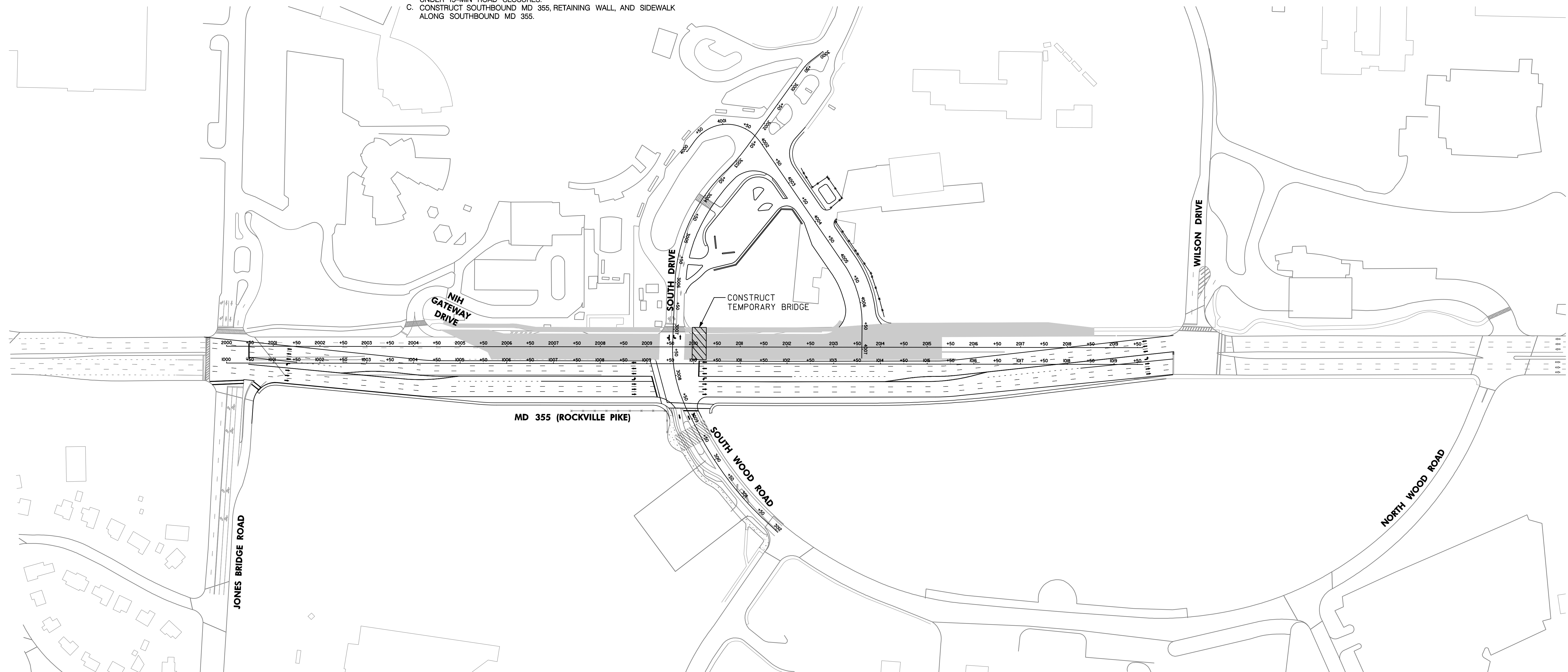
Project No. : SHEET 1 of 6



SEQUENCE OF CONSTRUCTION-PHASE II
THIS PHASE OF WORK CONSISTS OF CONSTRUCTING PROPOSED MD 355, THE PROPOSED CONNECTOR ROAD, SIGNALIZED INTERSECTION, TEMPORARY BRIDGE DECK, TEMPORARY SIGNAL, RECONSTRUCTING MEDIANS, AND REMOVING THE TEMPORARY BRIDGE AND TEMPORARY ROADWAY.

STAGE I

- RESTRIPE AND SHIFT NORTHBOUND MD 355 TO THE TEMPORARY ROADWAY AND SOUTHBOUND MD 355 TRAFFIC TO THE EXISTING NORTHBOUND MD 355 ROADWAY.
- CONSTRUCT TEMPORARY BRIDGE AND INSTALL TEMPORARY BRIDGE DECK UNDER 15-MIN ROAD CLOSURES.
- CONSTRUCT SOUTHBOUND MD 355, RETAINING WALL, AND SIDEWALK ALONG SOUTHBOUND MD 355.



NOTES:

- ALL EXISTING TRAVEL LANES SHALL BE MAINTAINED DURING THE WEEKDAY PEAK HOURS ON MD 355. ADDITIONAL LANES MAY BE CLOSED DURING OFF-PEAK HOURS AS NECESSARY TO PERFORM WORK ADJACENT TO THE TRAVEL LANE.
- DURING CONSTRUCTION, THE SPEED LIMIT ON MD 355 SHALL BE REDUCED TO 30 MPH, TO MAINTAIN MINIMUM TAPER LENGTH OF L/2.

SYMBOL LEGEND

- WORK ZONE
- TEMPORARY PAVEMENT OR STRUCTURE
- PAVEMENT REMOVAL
- LANE USE

100' 0 100' 200'
SCALE: 1"=100'



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PHASE II, STAGE 1

MD 355 UNDERPASS FEASIBILITY STUDY

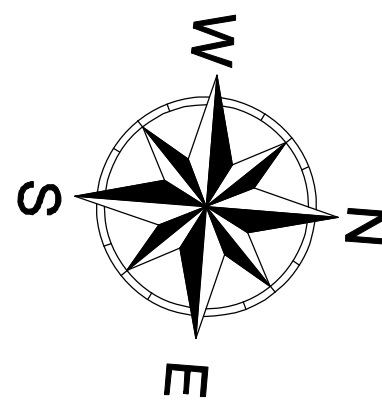
MAINTENANCE OF TRAFFIC CONCEPT PLAN
ALTERNATIVE 3:
GRADE SEPARATION

SCALE : 1"=100'

DATE 07/2010

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND	
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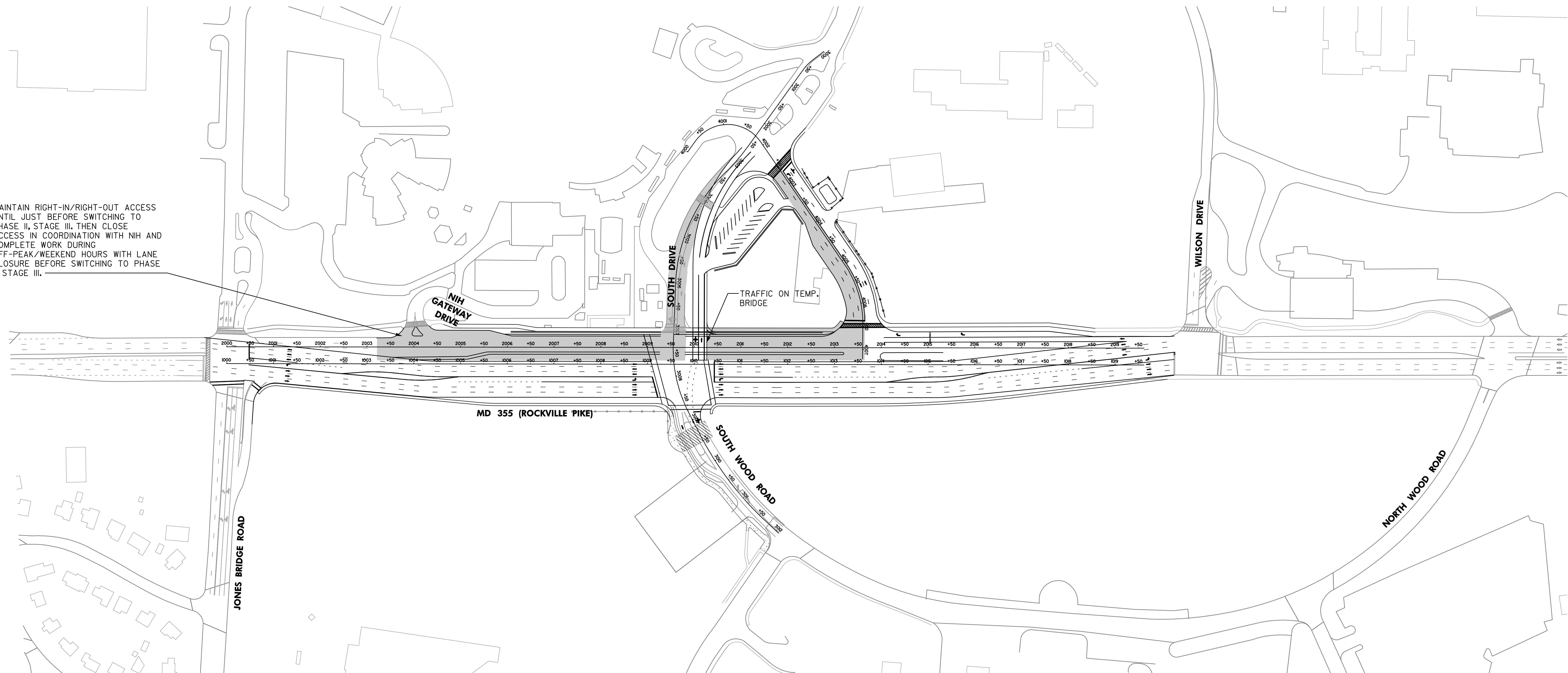
Project No. : SHEET 2 of 6



STAGE II

- RELOCATE MD 355 AT SOUTH WOOD ROAD SOUTH DRIVE INTERSECTION TO THE TEMPORARY BRIDGE CONSTRUCTED IN PHASE II, STAGE I.
- PROHIBIT SOUTHBOUND RIGHT TURN FROM MD 355 TO SOUTH DRIVE AND RELOCATE TO NEW CONNECTOR ROAD.
- CLOSE AND RECONSTRUCT EXISTING SOUTH DRIVE.
- CONTINUE WITH THE CONSTRUCTION ON SOUTHBOUND MD 355 AND EASTBOUND CONNECTOR ROAD.

MAINTAIN RIGHT-IN/RIGHT-OUT ACCESS UNTIL JUST BEFORE SWITCHING TO PHASE II, STAGE III. THEN CLOSE ACCESS IN COORDINATION WITH NIH AND COMPLETE WORK DURING OFF-PEAK/WEEKEND HOURS WITH LANE CLOSURE BEFORE SWITCHING TO PHASE II, STAGE III.



NOTES:

- ALL EXISTING TRAVEL LANES SHALL BE MAINTAINED DURING THE WEEKDAY PEAK HOURS ON MD 355. ADDITIONAL LANES MAY BE CLOSED DURING OFF-PEAK HOURS AS NECESSARY TO PERFORM WORK ADJACENT TO THE TRAVEL LANE.
- DURING CONSTRUCTION, THE SPEED LIMIT ON MD 355 SHALL BE REDUCED TO 30 MPH, TO MAINTAIN MINIMUM TAPER LENGTH OF L/2.

SYMBOL LEGEND

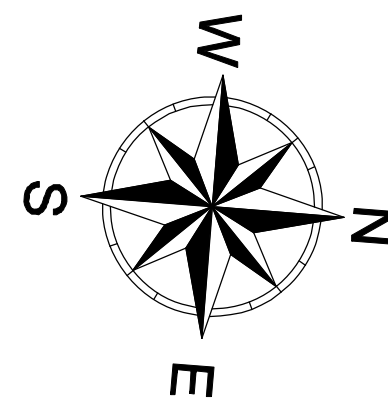
- WORK ZONE
- TEMPORARY PAVEMENT OR STRUCTURE
- PAVEMENT REMOVAL
- LANE USE

100' 0 100' 200'
SCALE: 1"=100'

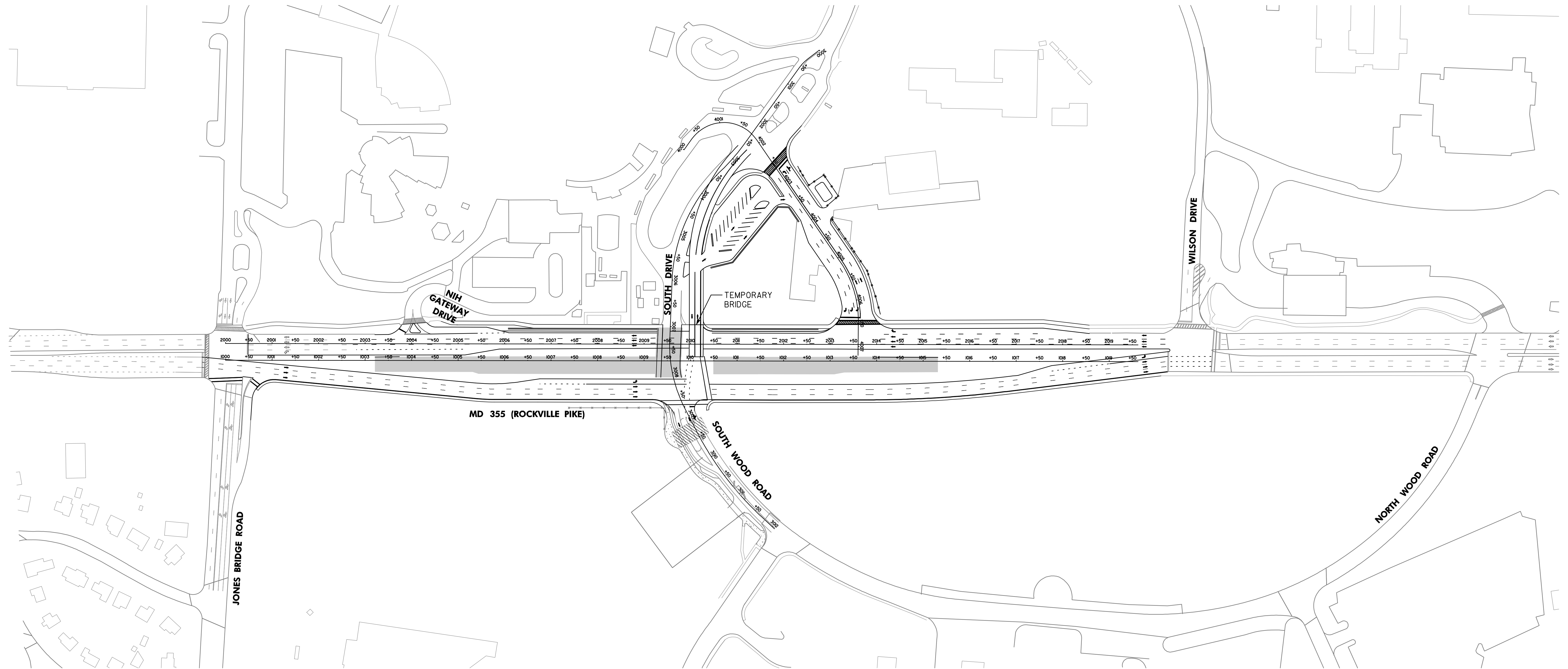


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MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND		PHASE II, STAGE II	
RECOMMENDED FOR APPROVAL		MD 355 UNDERPASS FEASIBILITY STUDY	
Chief, Transportation Planning and Design Section		MAINTENANCE OF TRAFFIC CONCEPT PLAN	
APPROVED		ALTERNATIVE 3: GRADE SEPARATION	
Chief, Division of Transportation Engineering		SCALE : 1"=100'	
Designed by: HM		DATE 07/2010	
Drawn by: HM		Project No. : —	
Checked by: JS		SHEET 3 of 6	



- STAGE III
- A. SHIFT SOUTHBOUND MD 355 TRAFFIC ONTO COMPLETED SOUTHBOUND UNDERPASS.
 - B. INSTALL TEMPORARY SIGNAL AT INTERSECTION OF SOUTHBOUND MD 355 AND CONNECTOR ROAD.
 - C. PROHIBIT LEFT TURNS FROM SOUTH WOOD ROAD TO SOUTHBOUND MD 355 AND RIGHT TURNS FROM SOUTH DRIVE TO SOUTHBOUND MD 355 AND REDIRECT THEM TO THE NEW RIGHT TURN MOVMENT FROM THE CONNECTION ROAD TO SOUTHBOUND MD 355.
 - D. MAINTAIN TEMPORARY SIGNAL AT INTERSECTION OF NORTHBOUND MD 355 WITH SOUTH WOOD ROAD /SOUTH DRIVE.
 - E. BEGIN EXCAVATION FOR PROPOSED NORTHBOUND MD 355 ROADWAY WHERE SHOWN.
 - F. CONSTRUCT PROPOSED SOUTH DRIVE /SOUTH WOOD ROAD BRIDGE OVER MD 355.



- NOTES:
- 1. ALL EXISTING TRAVEL LANES SHALL BE MAINTAINED DURING THE WEEKDAY PEAK HOURS ON MD 355. ADDITIONAL LANES MAY BE CLOSED DURING OFF-PEAK HOURS AS NECESSARY TO PERFORM WORK ADJACENT TO THE TRAVEL LANE.
 - 2. DURING CONSTRUCTION, THE SPEED LIMIT ON MD 355 SHALL BE REDUCED TO 30 MPH, TO MAINTAIN MINIMUM TAPER LENGTH OF L/2.

SYMBOL LEGEND

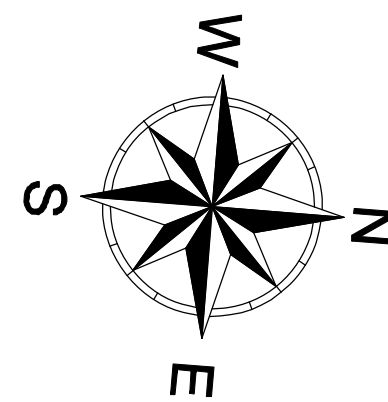
- WORK ZONE
- TEMPORARY PAVEMENT OR STRUCTURE
- PAVEMENT REMOVAL
- LANE USE

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SCALE: 1"=100'

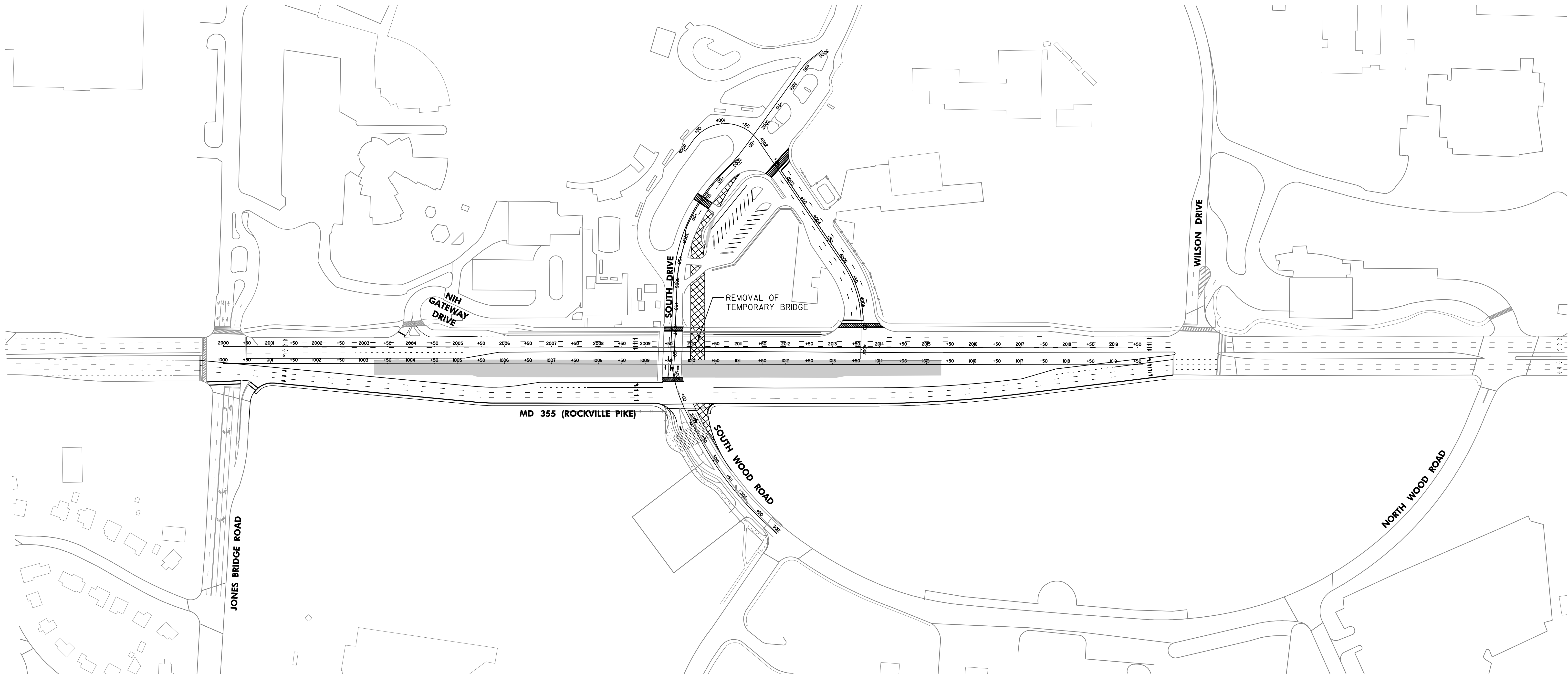


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MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND		PHASE II, STAGE III	
RECOMMENDED FOR APPROVAL		MD 355 UNDERPASS FEASIBILITY STUDY	
Chief, Transportation Planning and Design Section	Date	MAINTENANCE OF TRAFFIC CONCEPT PLAN	
APPROVED		ALTERNATIVE 3: GRADE SEPARATION	
Chief, Division of Transportation Engineering	Date	SCALE : 1"=100'	
DESIGNED BY: HM	DRAWN BY: HM	CHECKED BY: JS	DATE 07/2010
Project No. : —		SHEET 4 of 6	



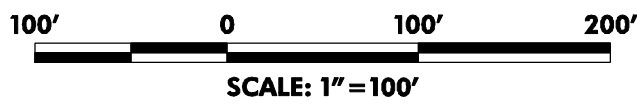
- STAGE IV
- A. SHIFT SOUTHBOUND ROAD /SOUTH DRIVE TRAFFIC ONTO COMPLETE BRIDGE.
 - B. CONTINUE TO MAINTAIN TEMPORARY SIGNALS AT SOUTHBOUND MD355 /CONNECTOR ROAD AND NORTHBOUND MD 355 /SOUTH WOOD ROAD /SOUTH DRIVE.
 - C. REMOVE TEMPORARY ROAD AND TEMPORARY BRIDGE
 - D. COMPLETE EXCAVATION AND CONSTRUCTION OF NORTHBOUND MD 355 UNDERPASS.



- NOTES:
- 1. ALL EXISTING TRAVEL LANES SHALL BE MAINTAINED DURING THE WEEKDAY PEAK HOURS ON MD 355. ADDITIONAL LANES MAY BE CLOSED DURING OFF-PEAK HOURS AS NECESSARY TO PERFORM WORK ADJACENT TO THE TRAVEL LANE.
 - 2. DURING CONSTRUCTION, THE SPEED LIMIT ON MD 355 SHALL BE REDUCED TO 30 MPH, TO MAINTAIN MINIMUM TAPER LENGTH OF L/2.

SYMBOL LEGEND

- WORK ZONE
- TEMPORARY PAVEMENT OR STRUCTURE
- PAVEMENT REMOVAL
- LANE USE



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MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Transportation Planning and Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by: HM	Drawn by: HM
Checked by: JS	

PHASE II, STAGE IV

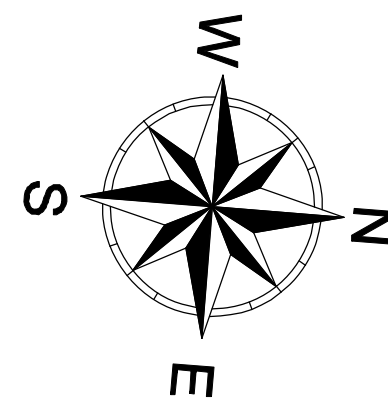
MD 355 UNDERPASS FEASIBILITY STUDY

MAINTENANCE OF TRAFFIC CONCEPT PLAN
**ALTERNATIVE 3:
GRADE SEPARATION**

SCALE : 1"=100'

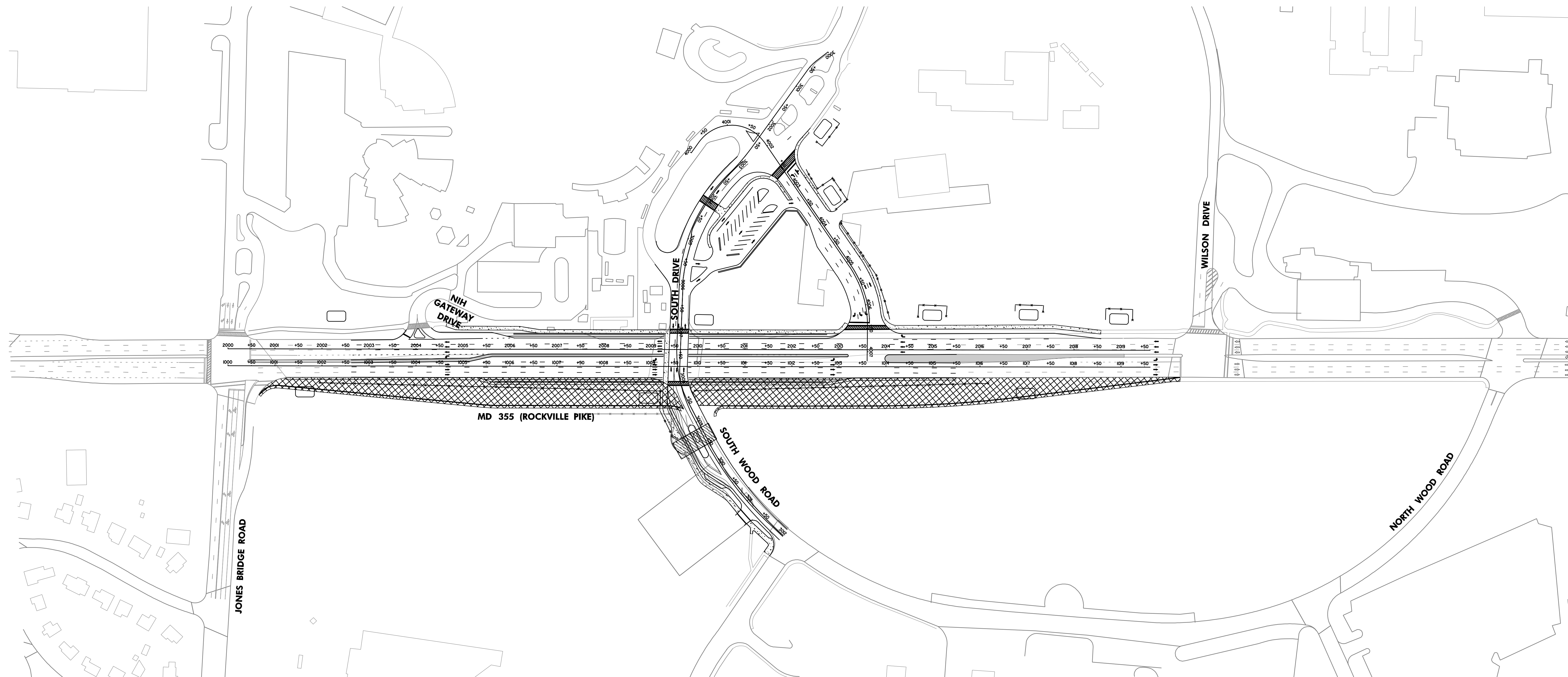
DATE 07/2010

Project No. : SHEET 5 of 6



STAGE V

- INSTALL FINAL TRAFFIC SIGNAL AT MD 355 /CONNECTOR ROAD AND SHIFT ALL TRAFFIC TO THIS INTERSECTION.
- SHIFT NORTHBOUND MD 355 ONTO NEW UNDERPASS.
- REMOVE THE TEMPORARY NORTHBOUND MD 355 CONSTRUCTED IN PHASE I.
- CONSTRUCT THE PROPOSED SIDEWALK ALONG NORTHBOUND MD 355.
- RECONSTRUCT EXISTING MEDIANS REMOVED IN PHASE I.



NOTES:

- ALL EXISTING TRAVEL LANES SHALL BE MAINTAINED DURING THE WEEKDAY PEAK HOURS ON MD 355. ADDITIONAL LANES MAY BE CLOSED DURING OFF-PEAK HOURS AS NECESSARY TO PERFORM WORK ADJACENT TO THE TRAVEL LANE.
- DURING CONSTRUCTION, THE SPEED LIMIT ON MD 355 SHALL BE REDUCED TO 30 MPH, TO MAINTAIN MINIMUM TAPER LENGTH OF L/2.

SYMBOL LEGEND

- WORK ZONE
- TEMPORARY PAVEMENT OR STRUCTURE
- PAVEMENT REMOVAL
- LANE USE

100' 0 100' 200'
SCALE: 1"=100'



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MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION ROCKVILLE, MARYLAND	
RECOMMENDED FOR APPROVAL	
Chief, Transportation Planning and Design Section	Date
APPROVED	
Chief, Division of Transportation Engineering	Date
Designed by: HM	Drawn by: HM
Checked by: JS	

PHASE II, STAGE V	
MD 355 UNDERPASS FEASIBILITY STUDY	
MAINTENANCE OF TRAFFIC CONCEPT PLAN	
ALTERNATIVE 3: GRADE SEPARATION	
SCALE : 1"=100'	DATE 07/2010
Project No. : —	SHEET 6 of 6

APPENDIX E – CATEGORICAL EXCLUSION DOCUMENT

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor



Beverley K. Swain-Staley, Secretary
Neil J. Pedersen, Administrator

04/06/2011

RE: Project No. C.I.P. No. 500722
Project: MD 355/Rockville Pike Crossing Project
Project Type: Pedestrian Access Improvements
Montgomery County, Maryland

Mr. Hassan Raza, Division Administrator
Delmar Division
Federal Highway Administration
City Crescent Building
10 South Howard Street, Suite 2450
Baltimore MD 21201

Attention: Ms. Keilyn Perez, Assistant Area Engineer

Dear Mr. Raza:

In accordance with the CEQ Regulations and 23 CFR 771, the Maryland State Highway Administration (SHA) on behalf of Montgomery County recommends that the proposed project be classified as a Categorical Exclusion (CE) with a de minimis and temporary use determination. This latter request is consistent with 23 CFR 774.

Based on the information and conclusions presented for this project we believe that this project will not involve any significant environmental impacts to socio-economic or natural resources. It will not induce significant foreseeable alterations in land use or affect planned growth. As such, we request your concurrence in classifying this project as a Categorical Exclusion (CE) with a de minimis and temporary use determination.

If you agree with this determination, please indicate your approval below. Your signature will also constitute Location Approval for the proposed project.

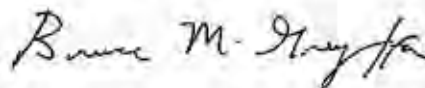
My telephone number/toll-free number is 410.545.8500
Maryland Relay Service for Impaired Hearing or Speech 1.800.735.2258 Statewide Toll Free

Street Address: 707 North Calvert Street - Baltimore, Maryland 21202 - Phone 410.545.0300 - www.roads.maryland.gov

Sincerely,

Neil J. Pedersen
Administrator

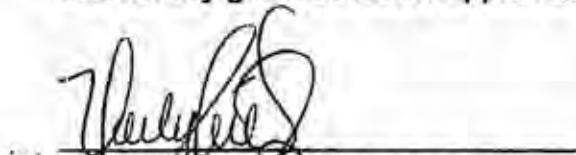
By:



Gregory I. Slater, Director
Office of Planning and
Preliminary Engineering

Digitally signed by Bruce M. Grey
DN: cn=Bruce M. Grey, o=SHA, ou=EPLD,
email=bgrey@sha.state.md.us, c=US
Date: 2011.04.06 14:10:53 -04'00'

**We concur with your determination that the project meets the criteria for a
and hereby grant Location Approval.**


for Federal Highway Administration
Division Administrator

May 13, 2011
Date

Attachments

cc: Mr. Guy Talerico, Chief, Federal Aid Programming Section, SHA (w/Attachments)
Mr. Thomas Hinchliffe, Chief, Program Coordination Division, Office of Real Estate, SHA
Ms. Lynn Carroll, Administrative Assistant, Environmental Planning Division (w/Attachments)
Ms. Jennifer Martin, Environmental Manager, Environmental Planning Division, SHA
Mr. Edgar Gonzalez, Montgomery County Department of Transportation (MCDOT)
Mr. Holger Serrano, Montgomery County Department of Transportation (MCDOT)
Mr. Ken Kendall, Montgomery County Department of Transportation (MCDOT)

Categorical Exclusion
MD 355/Rockville Pike Crossing Project
Montgomery County, Maryland

This request for environmental classification and location approval concerns the proposed improvements at the MD 355/Rockville Pike Crossing in Montgomery County. It details that no significant environmental impacts to socioeconomic, natural or cultural resources will occur as a result of this project. Furthermore, we request your concurrence that the requirements of Section 4(f) do not apply to the temporary uses of property within a historic district and a *de minimis* impact finding with respect to minor permanent impacts to a historic resource complies with the requirements of Section 4(f).

Existing Conditions/Project Purpose and Need

The project is located at the intersection of MD 355 and South Wood Road/South Drive in Montgomery County (**Attachment 1**). Currently, South Drive provides access to the Medical Center Metrorail Station Kiss & Ride lot, the National Institutes of Health (NIH) South Drive Gate, and a bus loop for Metrobuses and Ride On buses. Similarly, South Wood Road provides access to Naval Support Activity (NSA) Bethesda (formerly referred to as the National Naval Medical Center or NNMC throughout this study) and is the only gate that allows entry 24 hours per day. More detailed background information on the existing conditions, future no-build forecasts, and traffic operational analyses is documented in the *MD 355/Rockville Pike Crossing Study Purpose and Need Statement (2010)*, which was shared with and approved by the project stakeholders and summarized below.

a. Project Background

The MD 355/Rockville Pike Crossing Project is located in Bethesda, Maryland, a densely populated and developed area inside the Capital Beltway (I-495), and adjacent to NIH and NSA Bethesda. The area is comprised of a vibrant urban district and established residential neighborhoods. The study area limits extend along MD 355 from Cedar Lane South to Jones Bridge Road. The focus of the proposed improvements is on the intersection of MD 355/Rockville Pike and South Wood Road/South Drive. MD 355/Rockville Pike is classified by the Maryland State Highway Administration (SHA) Highway Location Reference as a primary arterial with curbed median, no access control, and a posted speed limit of 35 miles per hour (mph).

This study and the associated improvements focus on the South Wood Road/South Drive Metrorail access and are conducted in conjunction with 2005 Base Realignment and Closure Act (BRAC) actions. BRAC is the congressionally authorized process that the U.S. Department of Defense (DOD) has used to reorganize and consolidate its base structure to more efficiently and effectively support the military. In November 2005, Congress voted to approve the final recommendations of the BRAC Commission and Maryland benefited by gaining additional military and civilian positions.

b. Purpose of the Project

The purpose of the MD 355/Rockville Pike Crossing Project is to improve the movement of the traveling public between the west and east sides of MD 355/Rockville Pike at its intersection with South Wood Road and South Drive in Bethesda, Maryland. This transportation project is intended to: (1) enhance/improve access to mass transit facilities; (2) improve the mobility and safety of pedestrians and bicyclists crossing MD 355/Rockville Pike, and (3) improve traffic operations at the existing intersection of South Wood Road, South Drive, and MD 355.

c. Project Needs

Currently, transit users, pedestrians, and bicyclists wishing to cross MD 355 to get to NSA Bethesda from the Medical Center Metrorail Station or NIH must compete with very high volumes of traffic traveling between South Wood Road, South Drive, and MD 355. This project is needed to improve the mobility, traffic operations, and safety for all facility users within the project area by reducing the existing conflicts between pedestrians and vehicles.

d. Goals and Objectives

Improved connectivity between rail, bus, car/vanpool, and pedestrian/bicycle commuters would also be integrated in the project. Increasing transit usage is part of the approach to mitigate forecasted congestion levels in this area of Montgomery County associated with the BRAC action impacts. The following primary goals and objectives related to the purpose and need were identified for this project:

- Improve pedestrian mobility between NSA Bethesda, NIH, and Medical Center Metrorail Station facilities through improved crossing of MD 355,
- Improve pedestrian safety within the project area by minimizing conflicts with vehicular traffic, and
- Improve traffic operations to and from NSA Bethesda and NIH/Medical Center Metrorail Station at the MD 355, South Wood Road, and South Drive intersection.

The following secondary goals and objectives are not central to the purpose and need, but are still important considerations. These goals and objectives were not used as the main factors in determining which alternatives should be analyzed or carried forward, but were used to support selection of a preferred alternative:

- Promote alternative modes of transportation such as rail, bus, car/vanpools, pedestrians and bicycle commuting
- Improve efficiency with which emergency and transit vehicles move between the NIH and NSA Bethesda campuses.

Alternatives Considered

a. Summary of Alternatives Considered

The study team developed a set of preliminary alternatives that could potentially meet the project purpose (**Attachments 2-8**). In addition, the study team developed five options based on the concepts developed as part of the Washington Metropolitan Area Transit Authority (WMATA) study completed in July 2009. These options were combined with Alternatives 5, 6, and 7 to better meet the project purpose and need. The following is a list of the alternatives and options developed as part of this study.

- Alternative 1: No-Build
- Alternative 2: Transportation System Management and Transportation Demand Management (TSM/TDM) Alternative
- Alternative 3: Interchange with MD 355 Under South Wood Road/South Drive
- Alternative 4: Diamond Interchange
- Alternative 5: Double Left Turns
- Alternative 6: Southbound Jug Handle
- Alternative 7: Northbound Jug Handle
- Option A: TSM/TDM Bicycle/Pedestrian At-Grade Crossing
- Option B: WMATA Deep Elevators
- Option C: WMATA Shallow Tunnel
- Option D: WMATA Deep Elevators/Shallow Tunnel
- Option E: WMATA Pedestrian Bridge.

Based on the needs documented in the Purpose and Need Statement, comments received from project stakeholders, and the screening criteria developed by the project stakeholders, the study team determined which alternatives to retain for detailed study (ARDS). The study team conducted detailed analyses related to each criterion to assess the ARDS. As the study progressed, this set of criteria was used to determine the Preferred Alternative for this project. The *MD 355/Rockville Pike Crossing Study ARDS Package* dated September 2010 contains further detail regarding the alternatives dropped and carried forward throughout the study.

b. Alternatives Not Retained for Detailed Study

The study team applied the goals, objectives and screening criteria to all of the preliminary alternatives and determined that four of seven preliminary alternatives, including three of the pedestrian/bicycle crossing options, would not fully address the purpose and thus were dropped from further consideration. The following are the alternatives not retained for detailed study:

- Alternative 4: Tight Urban Diamond Interchange
- Alternative 5: Double Left Turns
- Alternative 6: Southbound Jug Handle
- Alternative 7: Northbound Jug Handle
- Option A: TSM Bicycle/Pedestrian At-Grade Crossing (Signal Phase Enhancement and Kiss & Ride Elements Only)
- Option E: WMATA Pedestrian Bridge.

c. Alternatives Retained for Detailed Study

The following is a list of the alternatives retained for detailed study. Maps of the build alternatives are in **Attachments 9-11**. A description of each alternative is located in the *MD 355/Rockville Pike Crossing Study ARDS Package* dated September 2010, which was provided to the project stakeholders during the study.

- Alternative 1: No-Build
- Alternative 2A: Pedestrian/Bicycle Underpass with At-Grade TSM Improvements
- Alternative 2B: Pedestrian/Bicycle Underpass and Deep Elevators with At-Grade TSM Improvements
- Alternative 3: Grade Separation of MD 355 under South Wood Road/South Drive.

d. Montgomery County Department of Transportation Preferred Alternative

A Stakeholder Recommendation Meeting was conducted on November 23, 2010 (**Attachment 12**) to determine which of the ARDS would be identified as the team's preferred alternative for approval by the Federal Highway Administration (FHWA). Representatives from the following agencies participated:

- Montgomery County Department of Transportation (MCDOT)
- Maryland-National Capital Park and Planning Commission (M-NCPPC)
- Naval Support Activity Bethesda
- National Institutes of Health
- FHWA DelMar Division
- Defense Access Roads (DAR)
- Maryland State Highway Administration
- Washington Metropolitan Area Transit Authority.

Each agency was asked for its current thinking on which alternative should be advanced as the preferred alternative. All of the agencies expressed support for Alternative 2B: Pedestrian Bicycle Underpass and Deep Elevators, along with TSM/TDM improvements as the preferred alternative. Alternative 2B is regarded as the most effective choice, consistent with the DAR certification, and able to most effectively separate pedestrian and vehicular traffic. All represented agencies stated they would support this alternative as the preferred alternative recommendation to FHWA. Alternative 2B consists of the following components:

- Deep elevators on the east side of MD 355 (118 feet below grade), providing direct access to the Metrorail station.
- A pedestrian and bicycle underpass between 10 and 30 feet below MD 355 to provide a fully separated crossing for pedestrians and bicyclists. Access to the underpass provided via elevators, escalators, and stairs.
- Extension of the southbound MD 355 left turn lane in the existing median of MD 355 to improve queuing for vehicles turning left onto South Wood Road
- Expansion of the existing curb radius at the northwest corner of South Drive and MD 355 to improve geometrics (particularly for buses turning right into the Metrorail Station).

A small-scale canopy is included in the preferred alternative at the southeast corner of South Wood Road and MD 355 for NSA Bethesda pedestrian underpass access to Metrorail. Small-scale elevator enclosures, three on the NSA Bethesda side and two on the NIH side, are also included in the preferred alternative. The existing elevator enclosure on the NIH side will remain and serve as a model for these new structures. A cross section of Alternative 2B is included as **Attachment 13**.

e. Coordination with SHA Improvements

Independent of this MD 355/Rockville Pike Crossing Project, SHA is currently designing roadway improvements at the intersection of MD 355 and Jones Bridge Road. The Medical Center Metro station, bus stops and entrances to NIH and NSA Bethesda are all located at or adjacent to the MD 355, South Drive, and South Wood Road intersection, which is the northern limit of SHA's proposed improvements. SHA has proposed resurfacing, signal and pedestrian upgrades at the MD 355 and Jones Bridge Road intersection that would extend north to the South Drive and South Wood Road intersection. These proposed improvements would overlap with MCDOT's Preferred Alternative. The SHA project will be advertised and constructed under its own separate contract; however, at the time of publication of this document, SHA did not have completed construction plans for its MD 355 and Jones Bridge Road project.

While project compatibility and coordination will be a continuous effort between agencies, without an SHA project in place at Jones Bridge Road, the extent of project overlap is not entirely known at this time. Regardless, project plans are being shared between SHA and MCDOT, and SHA, as a project stakeholder, has provided comments at several milestones during project development for the MD 355/Rockville Pike Crossing Study. SHA and MCDOT will work together to reduce or eliminate any duplication of effort/construction and work to coordinate improvements in their ultimate configuration/location.

The two projects serve separate users and are on different schedules. The project under consideration by MCDOT focuses on improving access to mass transit facilities, pedestrian/bicycle mobility and traffic operations at MD 355 and South Drive and South Wood Road, while SHA's project intends to address vehicular traffic safety and service at the MD 355 and Jones Bridge Road intersection. Additionally, while construction schedules have not been established for either project, it is expected (based on the current project status and scope of work) that SHA's improvements will be in place much sooner than MCDOT's improvements. In that regard, the proposed pedestrian amenities, such as audible and countdown pedestrian signals (APS/CPS), Americans with Disabilities Act (ADA) upgrades, and hiker/biker trail improvements may be realized through SHA's project before MCDOT's project can be constructed.

Public Involvement

The study team conducted public outreach efforts such as participation at three monthly BRAC Implementation Committee (BIC) meetings and uploads to the Montgomery County BRAC website, as well as a project-specific public workshop meeting. The target audience for the

outreach efforts included the adjacent communities, employees, visitors, patients at NSA Bethesda and NIH, current or potential WMATA transit users, and travelers along MD 355.

MCDOT presented study information at three BIC meetings: January 19, 2010, May 11, 2010, and December 21, 2010. Each meeting included a study and schedule update. In addition, all of the study materials presented at these meetings were uploaded onto the County's BRAC website so those who did not attend the meeting could review them. Comments from the BIC meeting attendees and all who viewed the website were encouraged. At each meeting, the team took questions from the BIC members and others in attendance and provided immediate feedback to questions. A majority of the questions received at the BIC meetings focused on how the proposed improvements would benefit the surrounding communities and how they would enhance existing transit and pedestrian facilities. Below is a summary of the comments received at each meeting. For more detail, summaries of the three BIC meetings are included in **Attachment 14**.

a. BIC Meeting – January 19, 2010

The purpose of the January 19, 2010 meeting was to introduce the study to members of the BIC committee and interested members of the community and provide an overview of the NEPA process, the public involvement plan, the Draft Purpose and Need Summary, and the study scope and schedule. In general, there was a general sense of support for the project, with many comments focused on defining the purpose and need so that appropriate solutions could be developed. At this first meeting, there was concern from some participants that the County had already selected an interchange concept that was submitted as part of the TIGER Grant Application. The Director of the Montgomery County DOT assured the members that the NEPA study would consist of an evaluation of all reasonable and feasible alternatives that could meet the Purpose and Need. Other concerns about reallocating funding from other projects to this project were also expressed, and again the County DOT Director assured the audience that this was not the case. There was also strong support to include improvements to pedestrian safety and accessibility as components of this project.

b. BIC Meeting – May 11, 2010

The purpose of the May 11, 2010 meeting was to review the detailed Purpose and Need Statement, project goals and objectives, preliminary alternatives, next steps, and solicit feedback from attendees. Comments consisted of clarifying portions of the seven preliminary alternatives. In general, the BIC members and members of the public who attended the meeting were supportive of the alternatives under study. No formal opposition was expressed.

c. BIC Meeting – December 21, 2010

The purpose of the December 21, 2010 meeting was to provide project background, a detailed description of each of the four proposed ARDS, and a summary of the ARDS evaluation results. Details of the primary and secondary evaluation criteria were shared with the BIC members and members of the public who were in attendance.

d. Public Workshop – July 20, 2010

A public workshop was held on July 20, 2010 at Bethesda-Chevy Chase High School in Bethesda, Maryland. The meeting notice, comment card, and summary are included in **Attachment 14**. Approximately 85 people attended the meeting. The purpose of the public meeting was to present the elements of the study, including the project's purpose and need, goals and objectives, potential solutions, and to obtain input from the community. Many comments related to the alternatives components, traffic, transit enhancements, and other miscellaneous project concerns were received, tabulated, and submitted to stakeholders for consideration. Several refinements, such as the proposed shallow pedestrian underpass, the relocation of existing bus stops, recommended double-sided elevator designs, and placing more emphasis on providing improvements that would serve pedestrians and bicyclists have been incorporated into the preferred alternative based on input received from the public.

Environmental Effects

The study team conducted an environmental inventory and initiated coordination with various resource agencies to identify natural, socio-economic, and cultural resources that exist in the study area (**Attachment 15**). For the ARDS and the MCDOT Preferred Alternative, a series of environmental technical studies were conducted to identify potential contaminated hazardous sites, assess impacts on air quality, identify impacts of highway noise on noise sensitive areas, and assess the indirect and cumulative effects of the project.

a. Socio-Economic Resources

i. Right-of-Way and Easement Requirements

The construction of a pedestrian and bicycle underpass and deep elevator will extend beyond the existing right-of-way. A total of 1.13 acres of right-of-way will be required to construct the proposed improvements. The right-of-way required will be obtained from two property owners: NIH (0.60 acre) and NSA Bethesda (0.53 acre). In addition, 0.60 acre of temporary easements will be required from NSA Bethesda Historic District to construct the project. All right-of-way would be acquired following approval of the CE from the FHWA and prior to commencing with construction activities.

ii. Pedestrian and Bicycle Access

Pedestrian and bicycle access facilities will be maintained during and after construction for the preferred alternative, in configurations similar to existing conditions.

iii. Smart Growth

Smart Growth is characterized by compact, transit-oriented, bicycle-friendly land use, with neighborhood schools, walkable streets, mixed use development and a wide range of housing choices. Subsequent to the 1992 Planning Act, Maryland established the Priority Funding Act (1997) to direct state funded growth-related projects to areas designated by local jurisdictions as

Priority Funding Areas (PFAs). The project study area, located inside the Capital Beltway, is within the PFA, and is therefore consistent with Maryland's Smart Growth legislation. The current PFA encapsulates the entire Washington D.C metro area within the Capital Beltway, including NIH and NSA Bethesda.

iv. Conformance with Local/Regional Plans

The preferred alternative will improve access to mass transit facilities and encourage the use of transit to mitigate forecasted congestion levels in this area of Montgomery County associated with BRAC impacts. The project is consistent with *Montgomery County's General Plan* (1993).

v. Environmental Justice

In compliance with Executive Order (EO) 12898 "Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations," Montgomery County is taking steps to avoid disproportionate high and adverse effects on minority and low income communities. Both NSA Bethesda's 2008 BRAC Environmental Impact Statement (EIS)/Record of Decision (ROD) and NIH's Final EIS for the Master Plan 2003 Update (March 2005) determined that based on the population diversity and average incomes in the census tracts surrounding the NSA Bethesda and the NIH, the area does not contain an identifiable minority or low income community. Disproportionate impacts to such communities are therefore not anticipated with the preferred alternative.

vi. Indirect and Cumulative Effects

In accordance with the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations (40CFR 1508.25), the indirect and cumulative effects of this study were evaluated. The preferred alternative will not increase roadway capacity overall in the corridor and therefore does not provide a means to encourage new development in the study area. No indirect effects are anticipated on natural, cultural, or social resources with the preferred alternative.

The following planned projects in the study area are intended to enhance and improve access to mass transit facilities, improve pedestrian and bicyclist mobility and safety, and improve traffic operation.

The MD 355/Rockville Pike Crossing Project stands alone from these other projects:

- WMATA Medical Center Metrorail Station Access Improvement Study
- Maryland State Highway Administration (SHA) MD 355 Intersection Improvement Projects at Jones Bridge Road and Cedar Lane
- NSA Bethesda Gate Improvement Projects
- Montgomery County Facilities Study
- Maryland Transit Administration (MTA) Purple Line Study.

This project will address safety and capacity issues for those who access NSA Bethesda and NIH from the Metrorail station and the community.

b. Cultural Resources

Within the study's area of potential effects (APE), there are two historic resources. The first historic resource, "The Stone House," also known as the George Freeland Peter Estate (M: 35-9-1), is located within the 0.25 mile APE on the grounds of NIH. The George Freeland Peter Estate was determined eligible for listing in the NRHP in 1985. The property has been designated a "Master Plan Historic Individual Site" by the Montgomery County M-NCPPC. The historic site's boundaries include the south side of South Drive and the west side of Wisconsin Avenue, MD 355. The second historic resource, the NSA Bethesda Historic District, consists of 18 contributing buildings situated on 131 acres of land. This historic district was listed in the NRHP in 1998. The district's landscape fronts MD 355 and is identified in the NRHP nomination form as contributing to the historic character of the property.

Total direct impacts to the NSA Bethesda Historic District are 0.53 acre and 0.60 acre of temporary easement. There will be no direct impacts to the Stone House. On February 17, 2011, the Maryland Historical Trust (MHT) concurred that the preferred alternative will have no adverse effect on archeological and historic resources (**Attachment 16**). Although the impacts will involve relocating a portion of a fence surrounding NSA Bethesda, minor roadway improvements, and the construction of stairs, escalator, and elevators with a small-scale canopy, the MHT concurred that the impacts could be avoided through careful design. In addition, the areas on the Alternative 2B concept plan identified as potential sites for stormwater management facilities are not in the location that was identified as having any medium to high potential for archaeological resources.

The following consulting parties were copied on the MHT letter: SHA, NIH, NSA Bethesda, Montgomery County Historic Preservation Commission, and Montgomery Preservation, Inc. No comments were received from these parties.

c. Natural Environmental Resources

i. Wetlands and Waters of the U.S.

No impacts to Waters of the United States (WUS), including wetlands, would occur with the preferred alternative.

ii. Floodplains

No impacts to Federal Emergency Management Agency (FEMA) designated 100-year floodplains would occur with the preferred alternative.

iii. Section 4(f)

There are no publicly-owned parklands, recreation areas, wildlife and/or waterfowl refuges present in the study area.

There are two historic resources within the project area, which are considered Section 4(f) resources:

- “The Stone House,” also known as the George Freeland Peter Estate (M: 35-9-1), is located on the grounds of NIH. The historic site’s boundaries include the south side of South Drive and the west side of MD 355.
- NSA Bethesda Historic District, consisting of 18 contributing buildings situated on 131 acres of land. The district’s landscape fronts MD 355.

Total direct impacts to the NSA Bethesda Historic District are 0.53 acre. There will be no direct impacts to the Stone House (M: 35-9-1). On February 17, 2011, the Maryland Historical Trust (MHT) concurred that the preferred alternative will have no adverse effect on archeological and historic resources (**Attachment 16**). Additional information regarding these historic resources can be found in Section b., Cultural Resources.

This project meets the requirements for a *de minimis* impact finding for historic resource impacts based on the following criteria:

- The SHPO, as part of the Section 106 process, determined that the project would have no adverse effect on historic properties (**Attachment 16**).
- The SHPO has been informed of FHWA’s intent to make a *de minimis* impact finding based on their written concurrence in the Section 106 determination.
- The views of the consulting parties participating in the Section 106 consultation have been considered.

In addition, 0.60 acre of temporary easements will be required from NSA Bethesda Historic District to construct the project. In accordance with 23 CFR 774.13(d) and given that the improvements would occur by temporary occupancy only, the requirements of Section 4(f) would not apply in this instance based on the following criteria:

- The duration of the impact will be temporary, i.e., less than the time needed for construction of the project.
- There will be no change in ownership of the land.
- The scope of work will be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) resource are minimal.
- There are no anticipated permanent adverse physical effects.
- The land being used will be fully restored, i.e., the resource will be returned to a condition, which is at least as good as that which existed prior to the project.

On February 17, 2011, MHT concurred that the use of the NSA Bethesda Historic District meets the Section 4(f) criteria of temporary use (**Attachment 16**).

iv. Forest Conservation and Specimen Trees

Significant and specimen trees have been identified in the project area. Significant trees are those having a diameter at breast height (DBH) of 24 inches or greater and specimen trees are those having a DBH of 30 inches or greater. The preferred alternative will affect nine significant trees and eight specimen trees. Any unavoidable impacts to trees within the publicly-owned right-of-way will require a Roadside Tree Permit from the Maryland Department of Natural Resources (MDNR) Forest Service. Land development in the project area is also subject to Forest Conservation Act (FCA) approval administered by M-NCPPC. Both FCA and Roadside Tree Permit authorizations will be obtained by the project owner.

v. Rare, Threatened, and Endangered Species

According to the US Fish and Wildlife Service (USFWS) (letter dated January 27, 2010) and the MDNR Natural Heritage Division (letter dated January 13, 2009), there are no known occurrences of federal or state listed rare, threatened, and endangered species in the project area. Copies of the letters from the USFWS and MDNR are included as **Attachments 17 and 18**.

Table 1 summarizes the potential natural environmental impacts for the preferred alternative.

Table 1: Natural Environmental Impacts

Features	Preferred Alternative 2B
Wetlands (acres)	0
Streams (linear feet)	0
Floodplains (acres)	0
Parks (acres)	0
Significant Trees (number)	9 ¹
Specimen Trees (number)	8 ¹

¹ Impacts to trees may be further reduced in final design because of more detailed engineering

d. Noise and Air Quality

Noise and air analyses are not warranted since the proposed project does not result in any significant capacity improvements. In addition, there are no noise sensitive areas located in the project area. This project is exempt from the requirement that a conformity determination be made (U.S. EPA Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans, Programs or Projects-Final Rule).

This project will not result in any meaningful changes in traffic volumes, vehicular mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the No-Build Alternative. As such, this project will generate minimal air quality impacts for the Clean Air Act criteria pollutants and has not been linked with any special Mobile Source Air Toxics (MSAT) concern. Consequently, this project is exempt from an analysis for MSATs. The project identification number found in the Constrained Long Range Plan (CLRP) is No. 2817.

Moreover, the EPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years. Even after accounting for a 64 percent increase in vehicle miles traveled (VMT), FHWA predicts MSATs will decline in the range of 57 percent to 87 percent, from 2000 to 2020, based on regulations now in effect, even with a projected 64 percent increase in VMT. This will both reduce the background level of MSATs as well as the possibility of even minor MSAT emissions from this project.

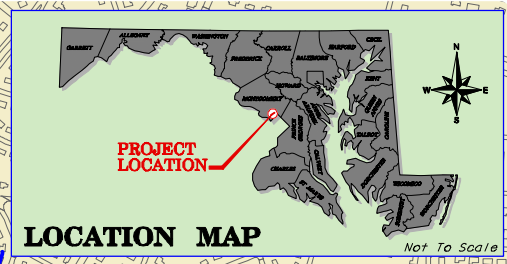
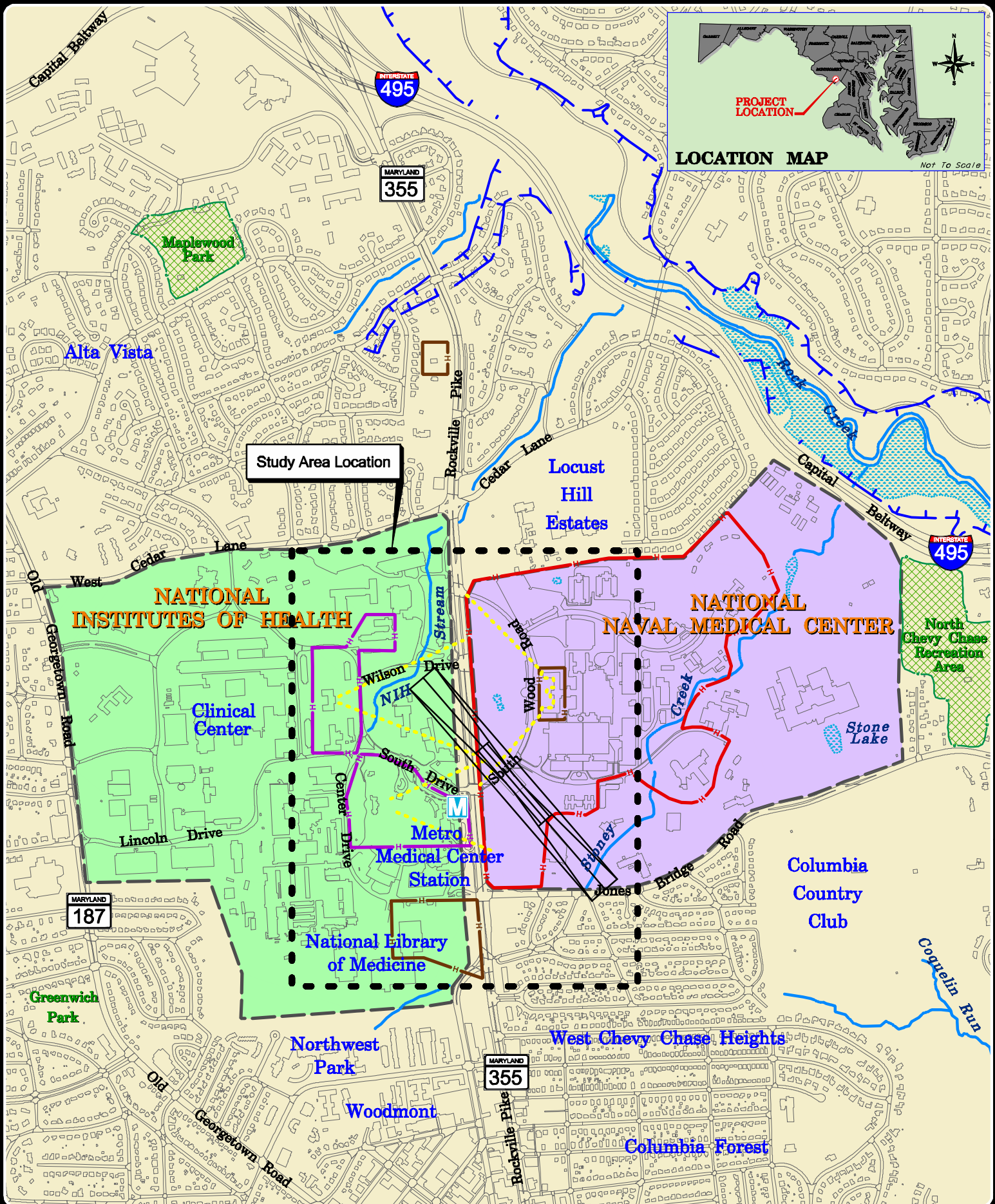
Projects which are exempt from project level conformity are also exempt from the PM_{2.5} project level conformity determination requirements, in accordance with 40 CFR 93.126. Exempt projects are listed in 40 CFR 93.126 in Table 2 and the proposed project is an example of a Safety-Railroad/highway crossing project. This project will improve safety and will not increase through traffic capacity.

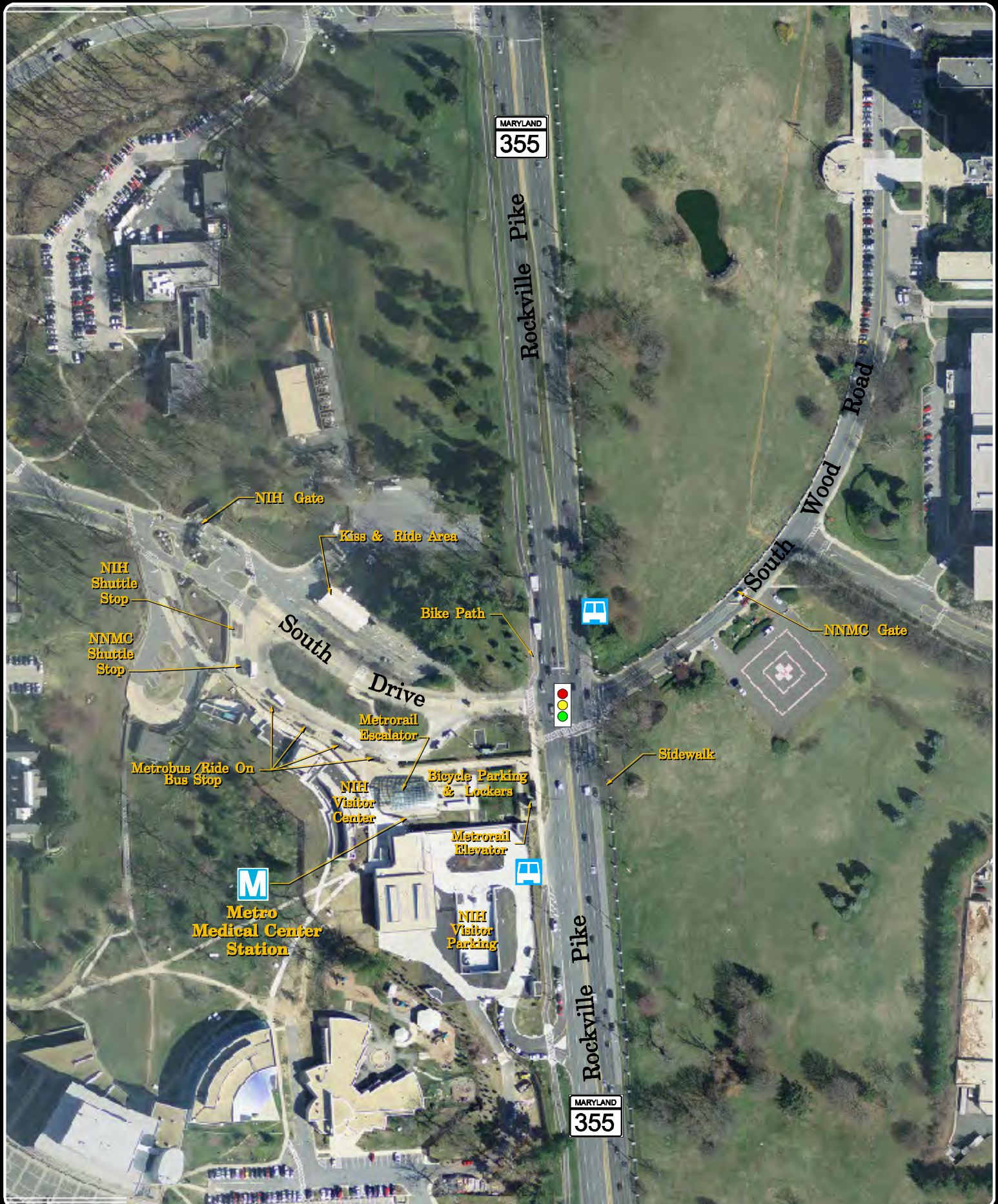
e. Hazardous Materials

A Hazardous Materials Screening Assessment was completed for the preferred alternative. The assessment identified properties of concern based on a database search of regulatory files for potentially contaminated sites in and around the project area. A review of the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list revealed that there is one CERCLIS site within approximately 0.5 mile of NSA Bethesda. A review of the Resource Conservation and Recovery Act Corrective Action Activity (CORRACTS) list revealed that there are two CORRACTS sites within approximately one mile of NIH and NSA Bethesda. There are also two Resource Conservation and Recovery Act treatment, storage and disposal facilities (RCRA-TSDF) sites within approximately 0.5 mile of the project area. Within approximately 0.25 mile of NIH and NSA Bethesda, there are two RCRA-Large quantity generator (LQG) sites. There is one open case monitored by the Oil Control Program (OCCASES) and one Land Restoration Program (LRP) site within 0.5 mile of NIH. One Underground Storage Tank (UST) is also located within approximately 0.25 mile of NIH. None of these sites would be impacted by the project.

f. Long-Term Maintenance Commitments

Mechanical elements, such as escalators and elevators would require regular maintenance by the facility owners for the preferred alternative. Ownership and maintenance responsibilities will be determined before the project proceeds through the design and construction phases.





Legend

-  Metro Station
-  Existing Signal
-  Bus Stop



DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



Montgomery County
Department of Transportation



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

Date
January 2011

URS

Attachment
2

Alternative 2

Transportation System Management (TSM) /
Transportation Demand Management (TDM)



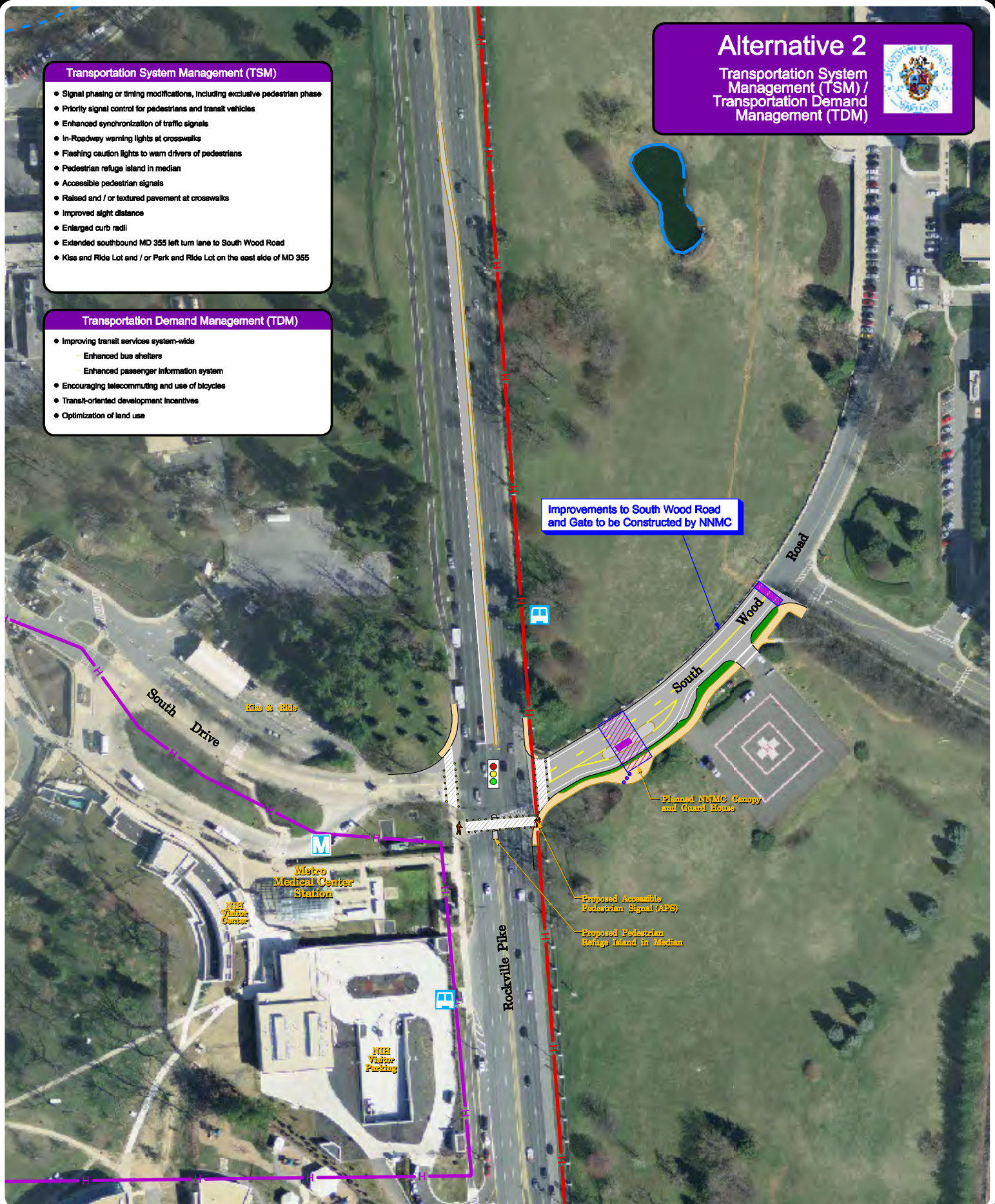
Transportation System Management (TSM)

- Signal phasing or timing modifications, including exclusive pedestrian phase
- Priority signal control for pedestrians and transit vehicles
- Enhanced synchronization of traffic signals
- In-Roadway warning lights at crosswalks
- Flashing caution lights to warn drivers of pedestrians
- Pedestrian refuge island in median
- Accessible pedestrian signals
- Raised and / or textured pavement at crosswalks
- Improved sight distance
- Enlarged curb radii
- Extended southbound MD 355 left turn lane to South Wood Road
- Kiss and Ride Lot and / or Park and Ride Lot on the east side of MD 355

Transportation Demand Management (TDM)

- Improving transit services system-wide
 - Enhanced bus shelters
 - Enhanced passenger information system
- Encouraging telecommuting and use of bicycles
- Transit-oriented development incentives
- Optimization of land use

Improvements to South Wood Road
and Gate to be Constructed by NNMC



Legend

- Metro Station
- Bus Stop
- Existing Signal
- Proposed Signal
- Stormwater Facility

- Proposed Pavement Resurface
- Proposed Full-Depth Pavement
- Proposed Underpass
- Proposed Overpass
- Proposed Sidewalk & Bikeway
- Proposed Median

- Streams / Waters of the U.S.
- Proposed Fence
- Historic District Boundary
- National Register List
- National Register Eligible
- Proposed Crosswalk

0 160' 320' N
SCALE: 1"=160'

DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



Montgomery County
Department of Transportation

MD 355 (Rockville Pike) Crossing Study
Alternative 2

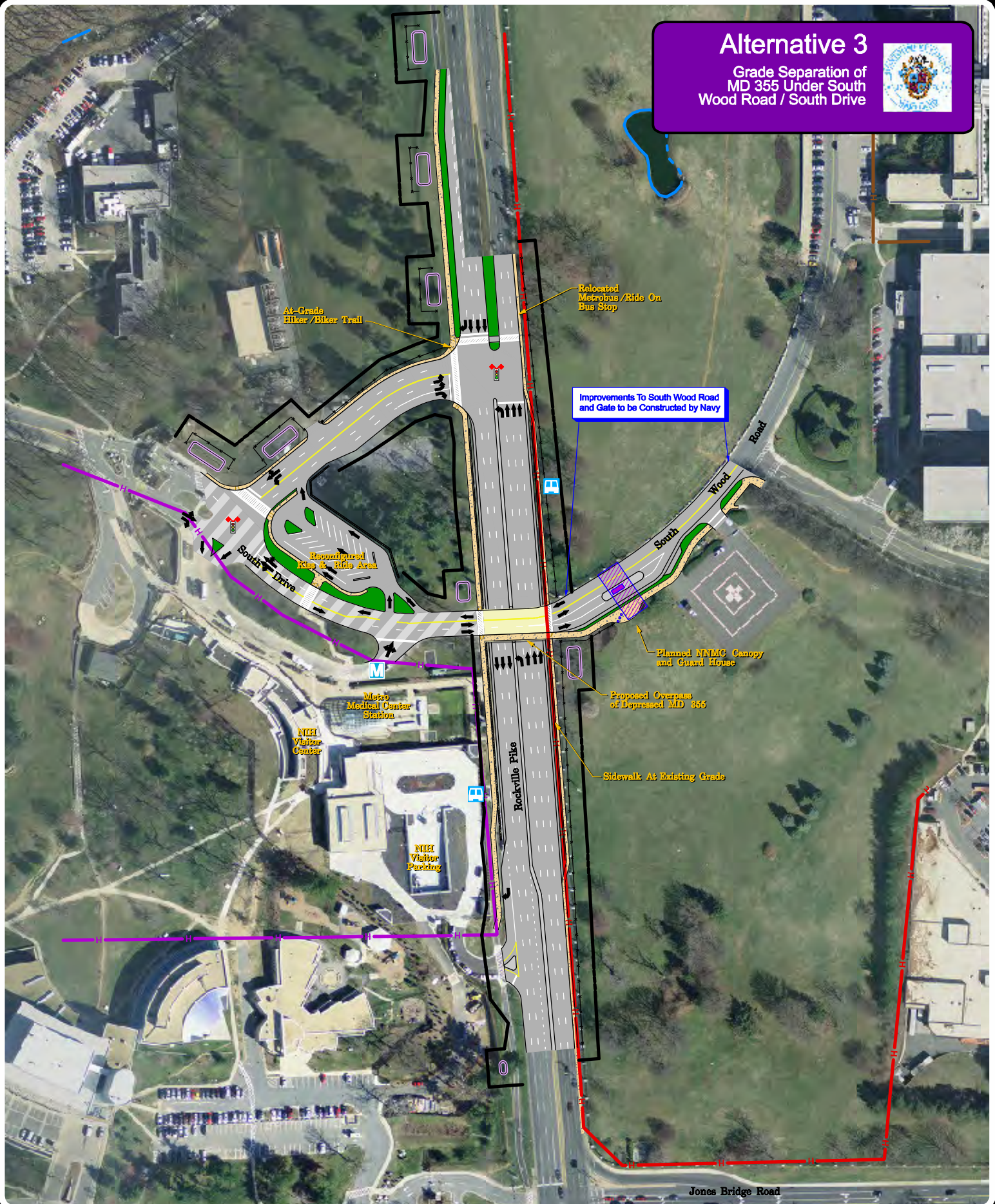
Date
January 2011

URS

Attachment
3

Alternative 3

Grade Separation of
MD 355 Under South
Wood Road / South Drive



Legend

- Metro Station
- Bus Stop
- Existing Signal
- Proposed Signal
- Stormwater Facility

- Proposed Pavement Resurface
- Proposed Full-Depth Pavement
- Proposed Crosswalk
- Proposed Overpass
- Proposed Sidewalk & Bikepath
- Proposed Median

- Streams / Waters of the U.S.
- Proposed Fence
- Historic District Boundary
- National Register List
- National Register Eligible
- Proposed Right-of-Way

0 200' 400'

SCALE: 1"=200'

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CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



Montgomery County
Department of Transportation

MD 355 (Rockville Pike) Crossing Study
Alternative 3

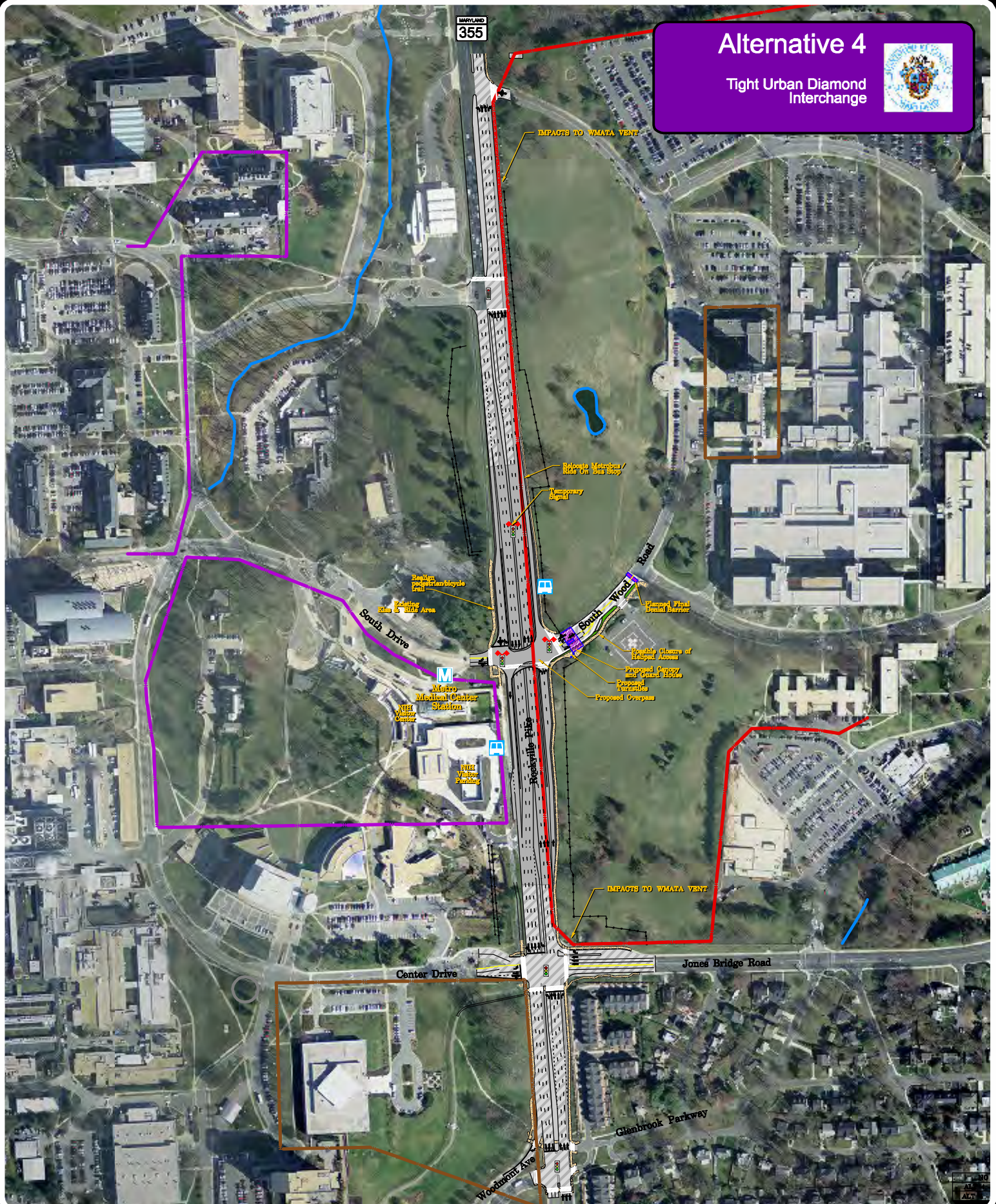
Date
January 2011

URS

Attachment
4

Alternative 4

Tight Urban Diamond Interchange



Legend

- | | | | |
|--|------------------------------|--|--|
| | Proposed Pavement Resurface | | |
| | Proposed Full-Depth Pavement | | |
| | Proposed Underpass | | |
| | Proposed Overpass | | |
| | Proposed Median | | |

0 380' 760' N
SCALE: 1"=380'

DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



Montgomery County
Department of Transportation



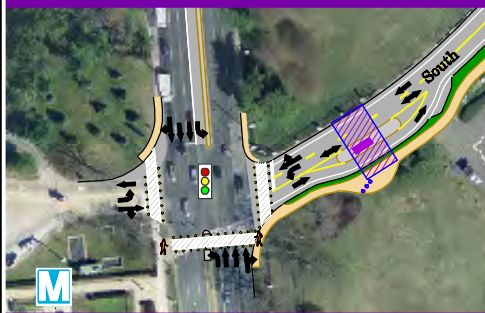
MD 355 (Rockville Pike) Crossing Study
Alternative 4

Date
January 2011

URS

Attachment
5

TSM At-Grade Enhancements



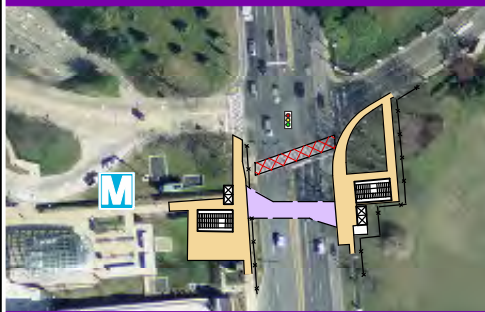
Does not reduce the pedestrian / vehicle conflict points and is not recommended for further consideration.

Deep Tunnel with Elevators



Reduces pedestrian / vehicle conflict points, but only serves Metrorail riders. As a stand alone option is not recommended for further consideration, but is being studied along with the pedestrian/bicycle underpass option.

Pedestrian / Bicycle Underpass



Reduces pedestrian / vehicle conflict points and is being recommended for further study.

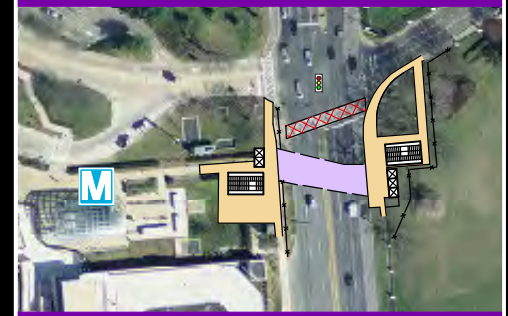


Alternative 5

Double Left Turns with
Pedestrian Crossing

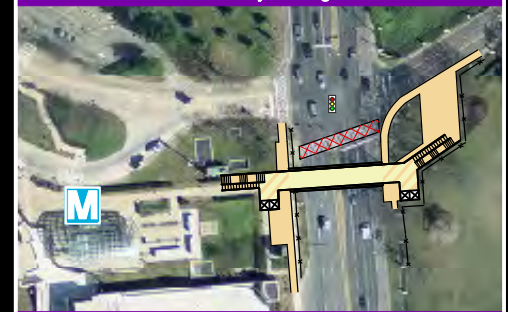


Deep Elevators and Pedestrian / Bicycle Underpass



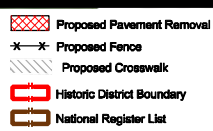
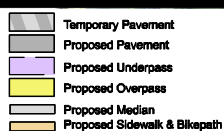
Reduces pedestrian / vehicle conflict points and is being recommended for further study.

Pedestrian / Bicycle Bridge



Reduces pedestrian / vehicle conflict points, does not provide convenient access to pedestrians and bicyclists and is not recommended for further study.

Legend



NOT TO SCALE

DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



Montgomery County
Department of Transportation



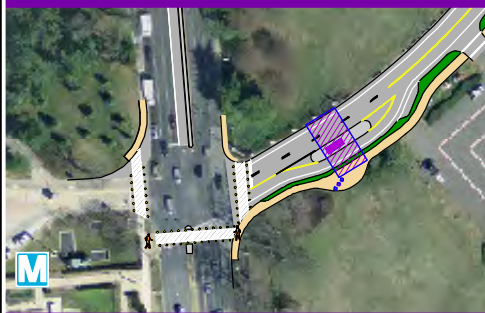
MD 355 (Rockville Pike) Crossing Study
Alternative 5

Date
January 2011

URS

Attachment
6

TSM At-Grade Enhancements



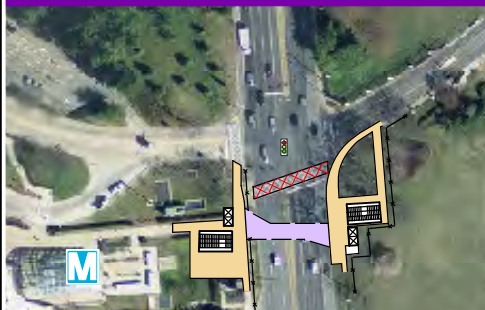
Does not reduce the pedestrian / vehicle conflict points and is not recommended for further consideration.

Deep Tunnel with Elevators

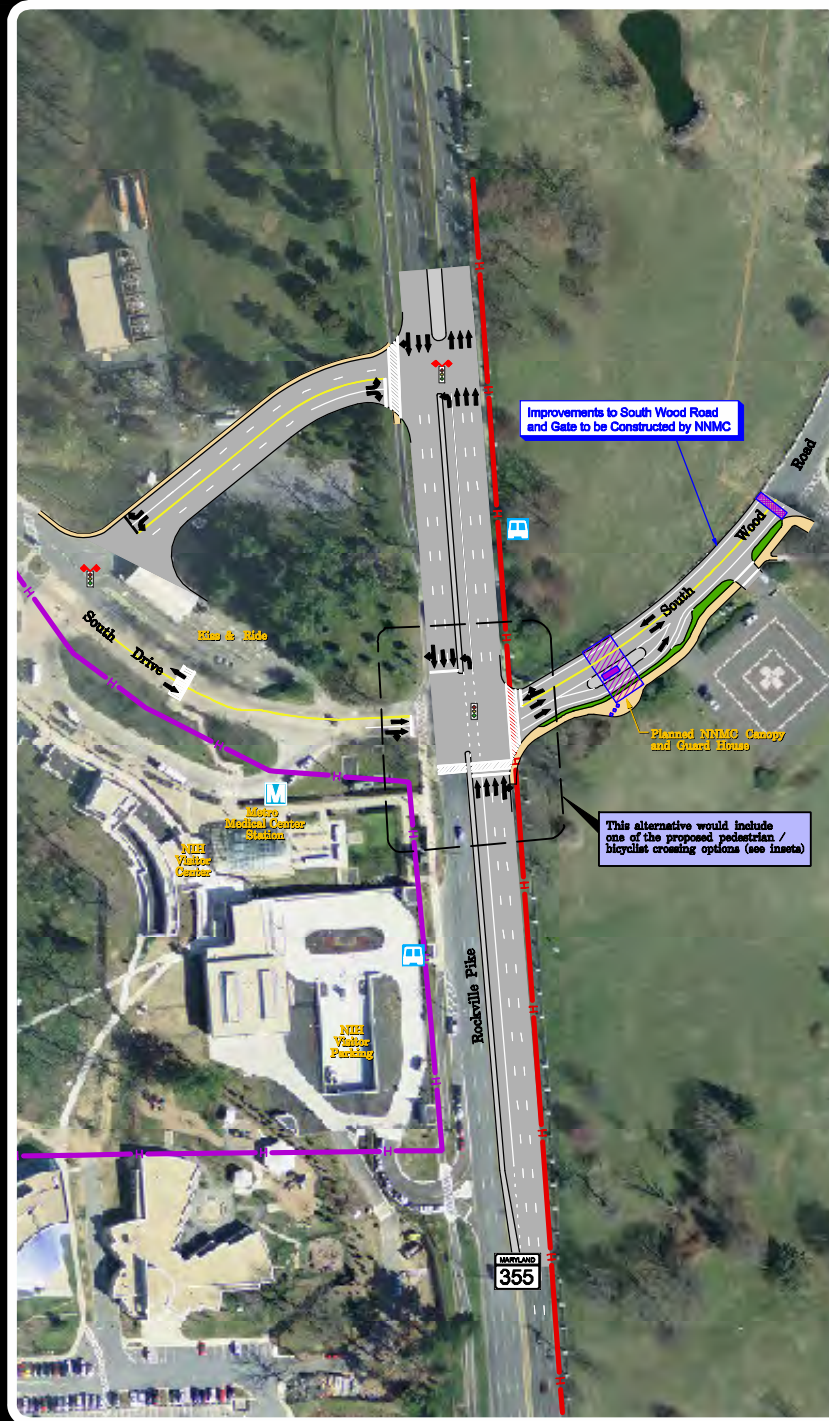


Reduces pedestrian / vehicle conflict points, but only serves Metrorail riders. As a stand alone option is not recommended for further consideration, but is being studied along with the pedestrian/bicycle underpass option.

Pedestrian / Bicycle Underpass



Reduces pedestrian / vehicle conflict points and is being recommended for further study.



Alternative 6

NIH Jug Handle with Pedestrian Crossing

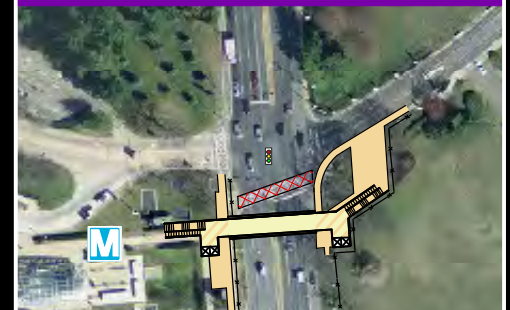


Deep Elevators and Pedestrian / Bicycle Underpass



Reduces pedestrian / vehicle conflict points and is being recommended for further study.

Pedestrian / Bicycle Bridge



Reduces pedestrian / vehicle conflict points, does not provide convenient access to pedestrians and bicyclists and is not recommended for further study.

Legend

Metro Station	Temporary Pavement	Proposed Pavement Removal	National Register Eligible
Bus Stop	Proposed Pavement	Proposed Fence	Streams / Waters of the U.S.
Existing Signal	Proposed Underpass	Proposed Crosswalk	
Proposed Signal	Proposed Overpass	Historic District Boundary	
	Proposed Median	National Register List	
	Proposed Sidewalk & Bikeway		

NOT TO SCALE

DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



Montgomery County
Department of Transportation

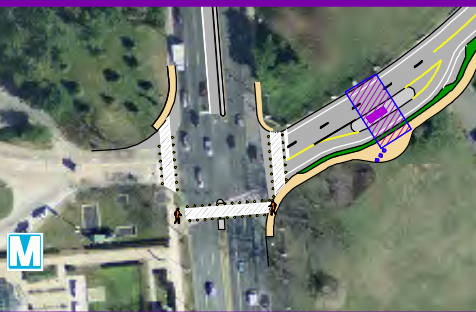


MD 355 (Rockville Pike) Crossing Study
Alternative 6

Date
January 2011

URS
Attachment
7

TSM At-Grade Enhancements



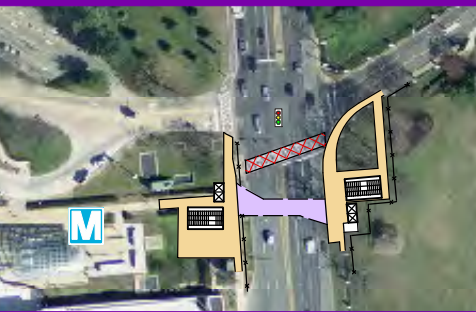
Does not reduce the pedestrian / vehicle conflict points and is not recommended for further consideration.

Deep Tunnel with Elevators

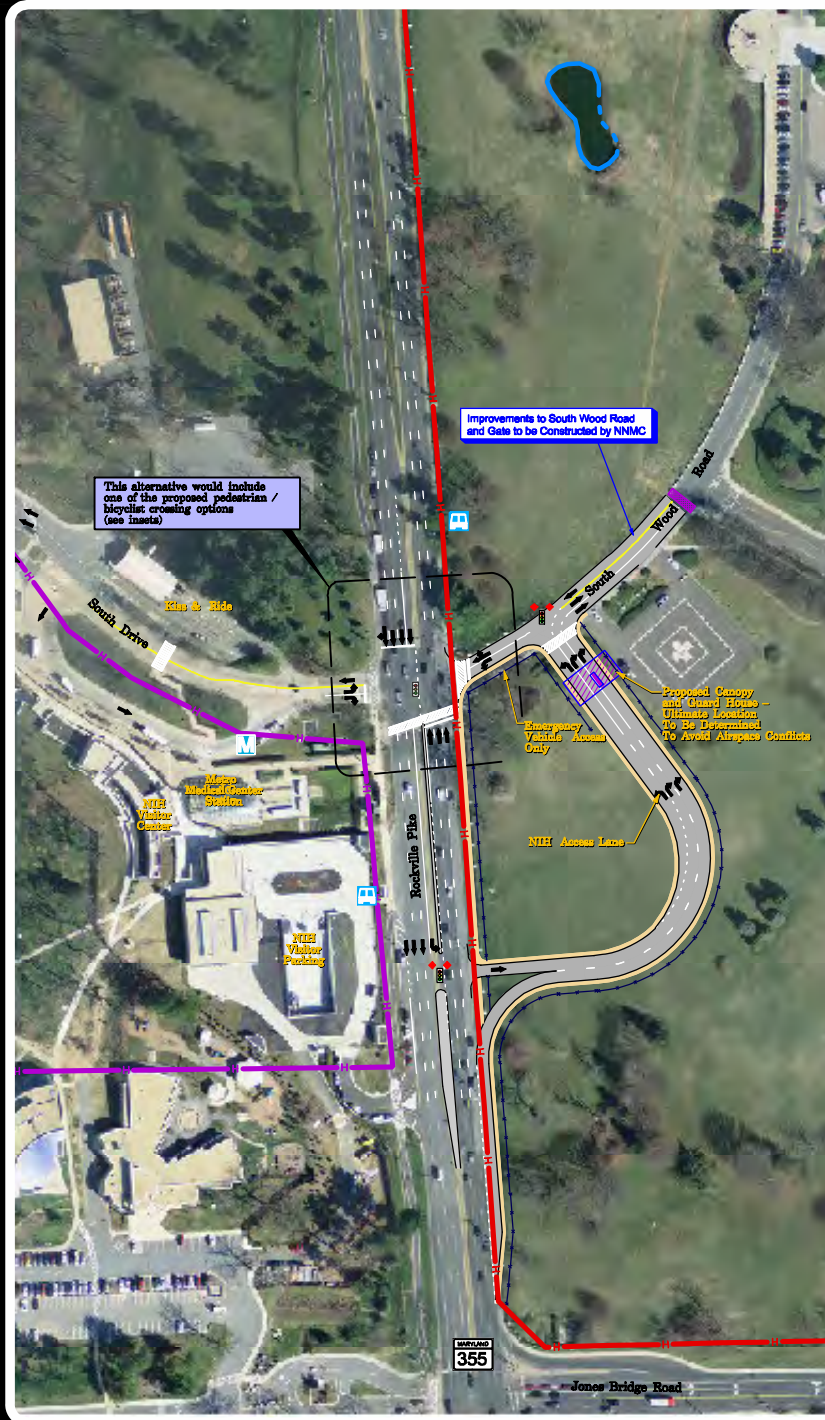


Reduces pedestrian / vehicle conflict points, but only serves Metrorail riders. As a stand alone option is not recommended for further consideration, but is being studied along with the pedestrian/bicycle underpass option.

Pedestrian / Bicycle Underpass



Reduces pedestrian / vehicle conflict points and is being recommended for further study.

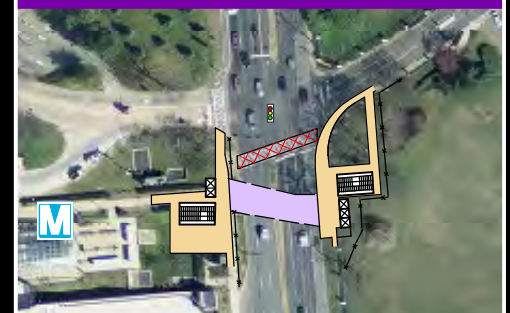


Alternative 7

NNMC Jug Handle with Pedestrian Crossing

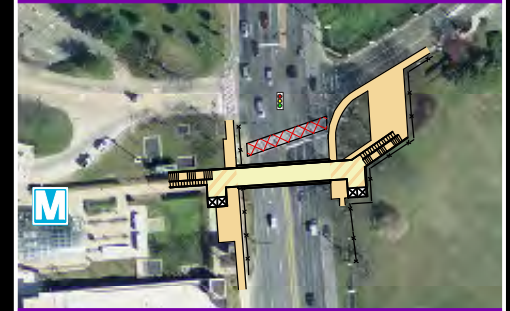


Deep Elevators and Pedestrian / Bicycle Underpass



Reduces pedestrian / vehicle conflict points and is being recommended for further study.

Pedestrian / Bicycle Bridge



Reduces pedestrian / vehicle conflict points, does not provide convenient access to pedestrians and bicyclists and is not recommended for further study.

Legend

Metro Station	Temporary Pavement	Proposed Pavement Removal	National Register Eligible
Bus Stop	Proposed Pavement	Proposed Fence	Streams / Waters of the U.S.
Existing Signal	Proposed Underpass	Proposed Crosswalk	
Proposed Signal	Proposed Overpass	Historic District Boundary	
	Proposed Median	National Register List	
	Proposed Sidewalk & Bikeway		

NOT TO SCALE

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CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



Montgomery County Department of Transportation	
MD 355 (Rockville Pike) Crossing Study Alternative 7	
Date January 2011	Attachment 8

Alternative 2A

Pedestrian / Bicycle Underpass
and TSM / TDM
Improvements



Existing of left turn lane in
existing median

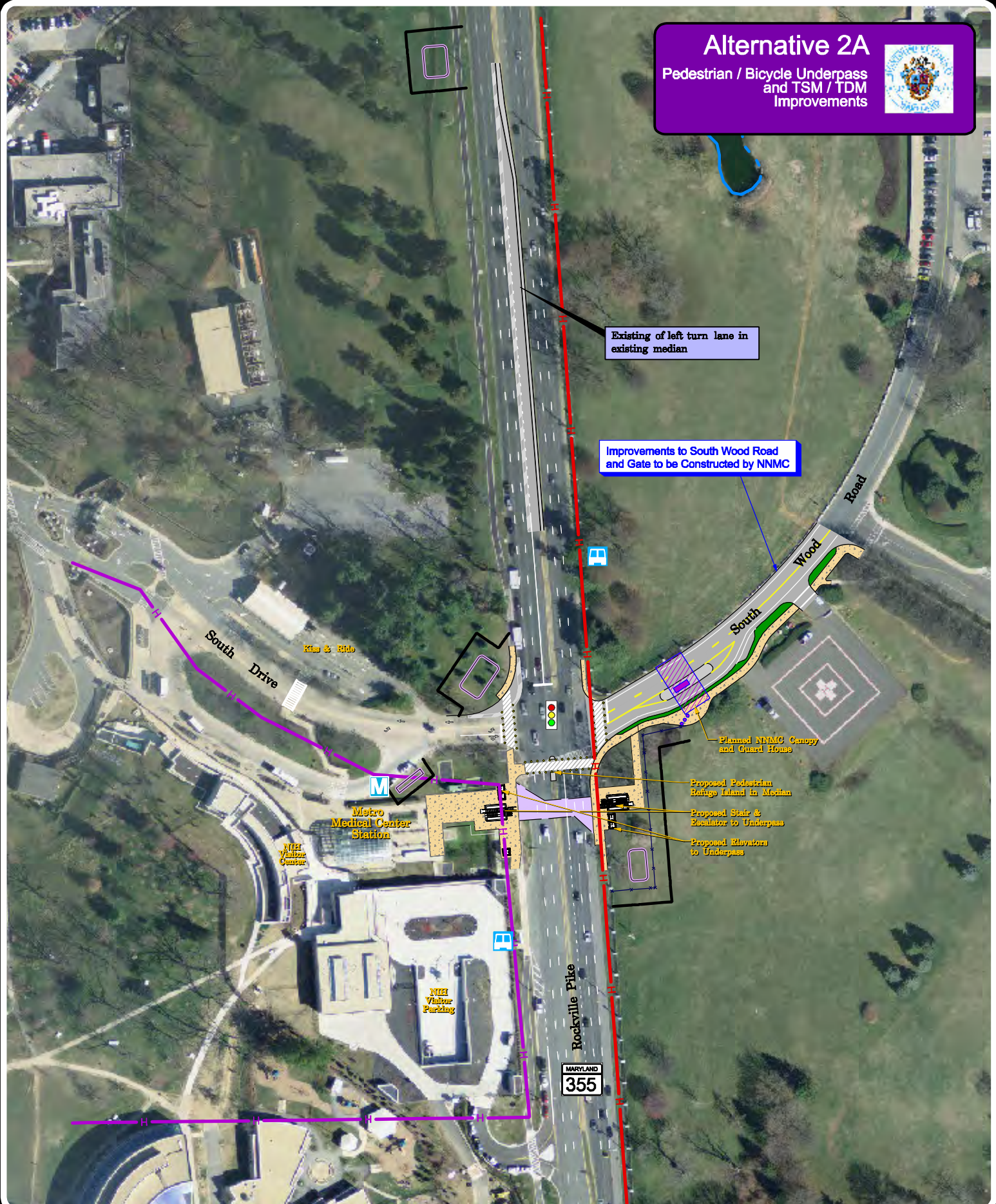
Improvements to South Wood Road
and Gate to be Constructed by NNMC

Planned NNMC Canopy
and Guard House

Proposed Pedestrian
Range Island in Median

Proposed Stair &
Escalator to Underpass

Proposed Elevators
to Underpass



Legend

- | | | |
|---------------------|------------------------------|------------------------------|
| Metro Station | Proposed Pavement Resurface | Streams / Waters of the U.S. |
| Bus Stop | Proposed Full-Depth Pavement | Proposed Fence |
| Existing Signal | Proposed Underpass | Historic District Boundary |
| Proposed Signal | Proposed Overpass | National Register List |
| Stormwater Facility | Proposed Sidewalk & Bikepath | National Register Eligible |
| | Proposed Median | Proposed Crosswalk |

0 160' 320' N
SCALE: 1"=160'

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CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



Montgomery County
Department of Transportation

MD 355 (Rockville Pike) Crossing Study
Alternative 2A

Date
January 2011

URS

Attachment
9

Alternative 2B

Pedestrian / Bicycle Underpass,
Deep Elevators, and
TSM / TDM Improvements



Legend

- | | | |
|---------------------------------|------------------------------|------------------------------|
| Metro Station | Proposed Pavement Resurface | Streams / Waters of the U.S. |
| Bus Stop | Proposed Full-Depth Pavement | Proposed Fence |
| Existing Signal | Proposed Underpass | Historic District Boundary |
| Proposed Roadside Tree Planting | Proposed Crosswalk | National Register List |
| Stormwater Facility | Proposed Sidewalk & Bikepath | National Register Eligible |
| | Proposed Median | Proposed Right-of-Way |

0 100' 200'
SCALE: 1"=100'



Montgomery County
Department of Transportation



MD 355 (Rockville Pike) Crossing Study
Alternative 2B

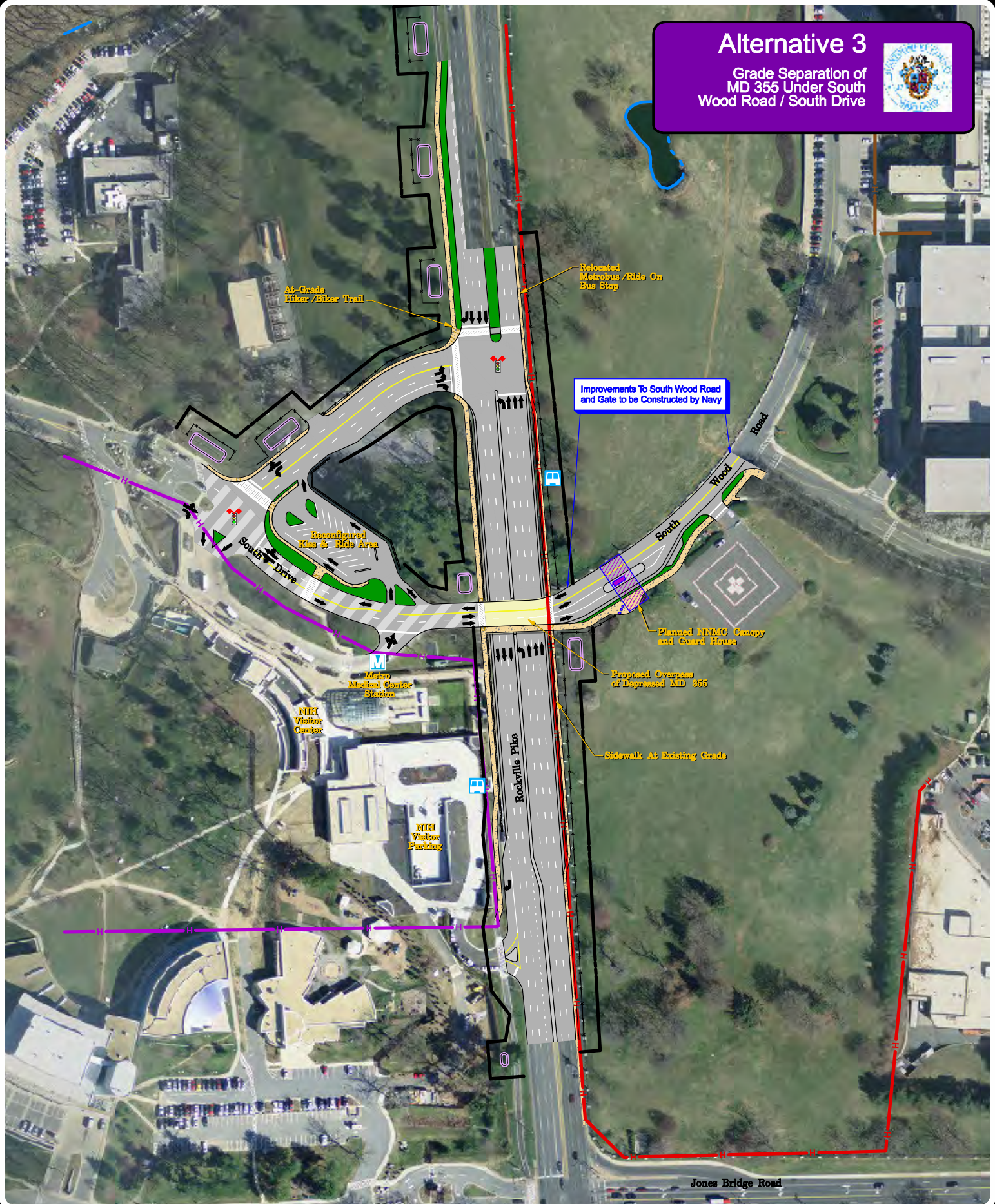
Date
March 2011

URS

Attachment
10

Alternative 3

Grade Separation of
MD 355 Under South
Wood Road / South Drive



Legend

- Metro Station
- Bus Stop
- Existing Signal
- Proposed Signal
- Stormwater Facility

- Proposed Pavement Resurface
- Proposed Full-Depth Pavement
- Proposed Crosswalk
- Proposed Overpass
- Proposed Sidewalk & Bikepath
- Proposed Median

- Streams / Waters of the U.S.
- Proposed Fence
- Historic District Boundary
- National Register List
- National Register Eligible
- Proposed Right-of-Way

0 130' 260'

SCALE: 1"=130'

DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



Montgomery County
Department of Transportation

MD 355 (Rockville Pike) Crossing Study
Alternative 3

Date
January 2011

URS

Attachment
11

Meeting Summary
MD 355/Rockville Pike Crossing Study
Montgomery County, Maryland
Stakeholder Recommendation Meeting
November 23, 2010, 1:30 PM - 4:00 PM

Attendees:

Montgomery County Department of Transportation (MCDOT)

Edgar Gonzalez

Holger Serrano

Bruce Johnston

Ken Kendall

Bruce Mangum

Fred Lees

Sogand Seirafi

Phil Alpers (County Executive's Office/BRAC Coordinator)

Maryland-National Capital Park and Planning Commission (M-NCPPC)

Dan Hardy

Larry Cole

David Anspacher

National Naval Medical Center (NMNC)

Jeff Miller

John Lamberton

William Sadlon

National Institutes of Health (NIH)

Susan Hinton

Tom Hayden

Phillip Neuberg

Susan Pedersen*

Federal Highway Administration (FHWA) DelMar Division

Keilyn Perez*

Denise King*

Darcel Collins*

Eric Savage*

Keanette Mar*

Defense Access Roads (DAR)

Andrea Green-Orr

Brian Hillis*

Maryland State Highway Administration

Bradley Smith*

Christina Minkler*

Washington Metropolitan Area Transit Authority (WMATA)

Sara Benson*

URS Corporation

Janie Tiedeman

Alan Straus

Brian Lange

Rebecca Myrick

*Participated via Webex/conference call

The purpose of this meeting was to determine which of the Alternatives Retained for Detailed Study (ARDS) would be identified as the team's recommended alternative for approval by the Federal Highway Administration.

Agenda Items:

Project Updates

- The Environmental Classification request that the project's environmental documentation be a Categorical Exclusion Letter (CE) was approved by FHWA
- A public meeting was held July 20, 2010. The team received mixed feedback regarding which alternative was most favored from the public attendees; many are in support of this project, but others were looking for additional transit system enhancements (a summary of the meeting and comments received from the public was provided to the stakeholder team)
- Final ARDS package, which described the steps taken to identify the alternatives retained for detailed study, was distributed to stakeholder team in early October
- Results of additional ARDS analyses the study team conducted in response to stakeholder inquiries was provided for review in early October
- Section 106 Coordination meeting was held with Maryland Historical Trust (MHT) on October 12, 2010:
 - MHT determined that Alternative 3 would potentially cause adverse effects on the NNMC historic property that could not be avoided and that Alternatives 2A and 2B would have direct and indirect impacts that could be avoided through careful design
 - MHT also acknowledged the potential presence of archeological resources within the study area, but they determined that additional investigations would only be warranted if construction limits were to extend beyond previously disturbed limits.

Current Thinking on Alternatives Review/Recommendation – Montgomery County asked each Stakeholder agency representative to highlight his or her agency's current thinking on the preferred alternative:

- Montgomery County DOT
 - Alternative 2B provided the best combination of pedestrian safety, connectivity, and overall operations.
 - Alternative 3 was determined to be too impactful, and while it did provide the best pedestrian safety enhancements, its overall negative affects on traffic operations is a major detractor.
 - Alternative 2A provided adequate pedestrian safety and connectivity enhancements, but lacked the important direct connection between NNMC and the Metro Station.
- Maryland-National Capital Park and Planning Commission
 - Alternative 2B is the most effective of the three ARDS.
 - MNCPPC questioned which element(s) were more valuable: the pedestrian underpass or the deep elevators.

- Edgar noted that once an alternative was approved by FHWA, decisions on funding, design, and construction details would be determined as part of the next phase of the project.
- Defense Access Roads (DAR)
 - Andrea noted all three ARDS met the DAR criteria for funding
- National Navy Medical Center
 - All options retained for detailed study de-conflict pedestrian and vehicular traffic
 - The Navy was in support of any option that meets the interests of all parties (including the Community) and does not adversely affect the installation.
 - The Navy's desire is to have a long term PM traffic signal at MD 355/North Wood Road as they believe it will be crucial to vehicular egress from campus.
- Montgomery County Executive's Office (Phil Alperson, BRAC Coordinator) –
 - The County Executive's Office would support any alternative collectively selected by the stakeholder team.
- National Institutes of Health
 - NIH noted that the cost estimate for Alternative 3 would be reduced if the ROW was donated, as it will be for the SHA intersections, and that the cost would then be more in line with Alternative 2B
 - NIH would be comfortable supporting either Alternatives 2B or 3.
 - Alternative 3 would provide the most direct connection between NIH and NNMC, specifically for emergency response vehicle connectivity and would also completely eliminate pedestrian/vehicle conflicts at the intersection. Alternative 2 would allow people to choose to cross at-grade
 - NIH would support Alternative 2B if it were selected by other stakeholder agencies and if it could be modified so that the shallow underpass elevators could be sized to accommodate gurneys for emergency transport of patients to NNMC, which would be an acceptable, although less desirable method compared to Alternative 3.
 - After this meeting, NIH also asked that consideration be given during the project design phase for emergency ramps to be added to provide access into the shallow tunnel, in case the elevators are not working during an emergency.
 - NIH asked for an explanation as to how the NNMC gate operations would affect traffic congestion, and how the additional gate queue lengths afforded under Alternative 3 would be more beneficial to the corridor. The team responded that the extended left turn lane proposed as part of Alternatives 2A and 2B would be sufficient to handle any "overflow" that stemmed from operational issues at the NNMC gate.
- State Highway Administration
 - SHA was concerned about the negative affect Alternative 3 would have on traffic operations on MD 355 and the extensive effort needed to relocate utilities and the close proximity of the temporary road to the Navy's South Gate entrance for both Alternative 3 and Alternative 2 underpass options.
 - SHA suggested Alternative 2B Modified, which would only include the deep elevator portion of the alternative

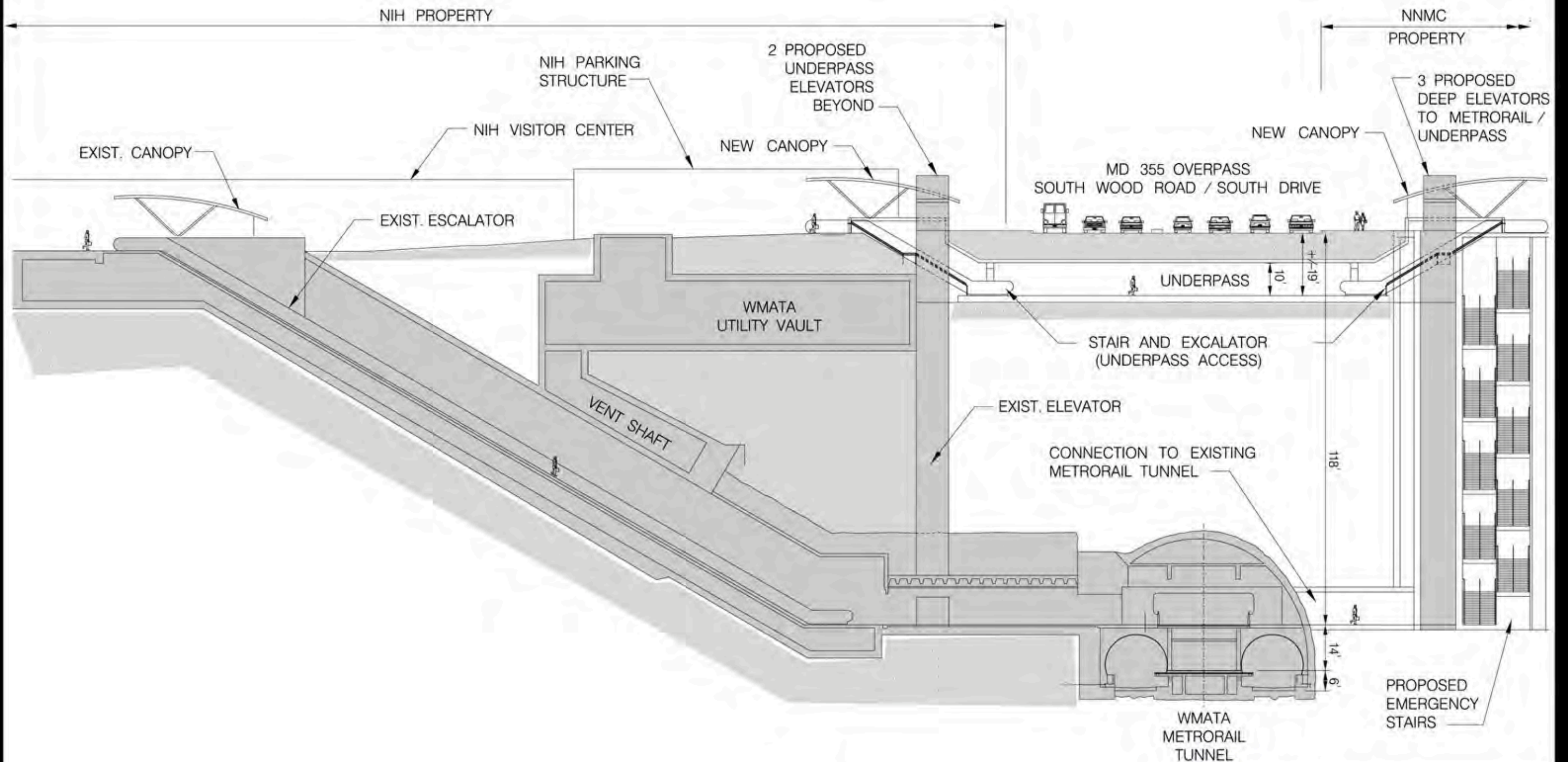
- SHA stated that it would support either Alternative 2A or 2B for the pedestrian underpass as long as it could be proven reasonable in terms of constructability and maintenance of traffic
 - There are other intersections in the corridor in greater need of traffic congestion relief than South Drive/South Wood Road.
- Washington Metropolitan Area Transit Authority
 - WMATA supported the Alternative 2 options A and B, but would prefer 2B if it were financially reasonable.
 - Alternative 3 would negatively impact bus routes and associated travel times.
 - WMATA was also concerned with the MD 355 northbound and southbound bus stop relocation required as part of Alternative 3.

Team Recommendation

- The team agreed to recommend Alternative 2B – Pedestrian/Bicycle Underpass, Deep Elevators, and TSM/TDM Improvements as the Recommended Alternative

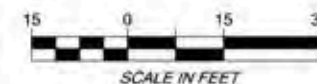
Next Steps



- Finalize Team Recommendation Documentation (Meeting Summary)
- Upload presentation to the FTP site for all stakeholders to access
- Presentation to the Planning Board on December 6, 2010
- Present Team Recommendation at the BIC meeting on December 21, 2010
- Finalize MHT/Section 106 Coordination
- Complete Environmental Document



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

SCALE: 1" = 30'



Montgomery County Department of Transportation	
	MD 355 (Rockville Pike) Crossing Study Alternative 2B Section View
	Date March 2011  Attachment 13

**Public Meeting Summary
MD 355 Crossing NEPA Study
Montgomery County, Maryland
January 19, 2010, 6:30-7:30 PM**

The first public meeting for the MD 355 Crossing NEPA Study was held on Tuesday, January 19, 2010, from 6:30 PM to 7:30 PM in the Bethesda Chevy Chase Regional Services Center. Mr. Arthur Holmes Jr., Director of the Montgomery County Department of Transportation (DOT), Mr. Edgar Gonzalez, Deputy Director of Transportation Policy of the Montgomery County DOT, and Ms. Janie Tiedeman, Consultant Project Manager from URS Corporation, conducted the presentation and facilitated the question and answer portion of the meeting summarized below.

Introduction

Deputy Director Edgar Gonzalez provided an introduction to the study and the purpose of the meeting. Mr. Gonzalez emphasized that the meeting was intended to introduce the study process, scope, and schedule, and to address some of the misinformation that has been circulating regarding unsolicited plans and grant applications.

Mr. Gonzalez noted that the current National Environmental Policy Act (NEPA) study is being funded by Montgomery County. He added that later phases of the project, if a build alternative is selected, could be funded by any or all of the following funding mechanisms; Defense Access Road funds, Transportation Investment Generating Economic Recovery (TIGER) grant, or money allocated as part of the 2010 Defense Appropriation Bill. A final decision on funding availability is expected in the next several months.

Mr. Gonzalez addressed the “Direct Access Study” conducted by Maryland State Highway Administration (SHA) for a potential direct access ramp from I-495 to the National Naval Medical Center (NNMC) campus and emphasized that it was conducted in response to the community’s request for information about such a connection. As a result of that investigation, the SHA reiterated that they have no plans to widen the Capital Beltway or construct a new interchange to provide direct access to the NNMC. Mr. Holmes, stressed that the current NEPA study will not include the consideration of any improvements involving I-495 and will not use funds already allocated to other projects.

Overview of National Environmental Policy Act (NEPA) Process

Mr. Gonzalez explained that before any design or construction could begin, NEPA procedures, documentation, and approval is required. The NEPA process is required to be completed and approved by FHWA, the lead federal agency for this study, before federal funding can be used on the project. Future phases are dependent upon the results of the NEPA study and the availability of funding.

Ms. Tiedeman next explained that there are three stages of a NEPA study; Project Scoping, Alternatives Development and Evaluation, and Decision-Making and Final Documentation. Currently this project is in Stage 1, Project Scoping, and the team is working on developing a draft Purpose and Need Statement which includes collecting and evaluating environmental and engineering data of existing features and facilities in the study area. Stage one also includes introducing the project to interested stakeholders, such as the public, and it opens channels for dialogue for potential solutions.

Ms. Tiedeman reviewed the details of Stage 2 and 3 which include developing and evaluating all feasible alternatives, presenting and receiving public input on the alternatives, and ultimately documenting and requesting approval on the study conclusions.

Ms. Tiedeman emphasized that the study team will review a full array of potential options including previously studied concepts, new concepts generated by the study team, and new concepts from public and stakeholder agency input.

Summary of the Public Involvement Plan

Ms. Tiedeman presented an overview of the Public Involvement Plan created for the project. She noted that public outreach and interaction will occur throughout the study process and that public comment will be solicited and considered in all stages of the study. The plan will feature:

- Regular updates at BRAC Implementation Committee (BIC) Meetings
- Public Alternates Workshop
- Updates on the County's BRAC web page
- Community meetings as requested
- Elected official and other briefings as requested.

Review of Draft Purpose and Need Summary

Ms. Tiedeman then introduced the draft purpose and need summary developed by the study team for the project. The study is intended to improve the mobility and safety of motorists, pedestrians, and bicyclists crossing MD 355 (Rockville Pike) in Bethesda, and to enhance/improve access to mass transit facilities. A copy of the draft summary was later uploaded onto the County's BRAC webpage for public review and comment.

Preliminary Study Schedule and Milestones Overview

Ms. Tiedeman presented a preliminary study schedule which is subject to change as the project progresses:

- Begin NEPA study – December 2009
- Develop Purpose and Need Statement summary – January 2010
- Scope preliminary alternatives – January / February 2010
- Evaluate shortlist of alternatives – March / April 2010
- Conduct public workshop to review detailed study – April / May / 2010
- Identify selected alternative – May 2010
- Complete environmental documentation – June 2010

Summary of Comments Received from Audience Members

Comment: A representative from the Action Committee for Transit (ACT) commented that he was disturbed by the process and feels that it is misleading the public, citing the June 2008 study conducted by SHA to provide a direct access ramp from I-495 to NNMC campus. He contended that the public was not notified of the details of the connection study and it was not coordinated with Metro or other transit services. He also noted that the use of the term multi-modal predetermines that the project will serve mostly motor vehicles. He requested that that study be focused on pedestrian only alternatives but cautions that alternatives be considered that are not

less appealing to pedestrians than the current at-grade crossing. He further noted that ACT endorses the deep elevator option developed by WMATA as part of a previous study at this location.

Response: The I-495 study conducted by SHA will not be considered as part of this study. In addition, the NEPA study will include consideration of many alternatives, including the WMATA study alternatives.

Comment: funding currently allocated to other pedestrian/bicycle/transit-related projects will be used to build this crossing and the many pedestrian/bicycle/transit projects that currently need funding and should be maintained.

Response: The funding was solely allocated for this project and was not taken or borrowed from any other current studies.

Comment: The project has not been properly thought-out and should be reassessed to focus on pedestrians/bicycles/transit rather than single occupant vehicles. The CIP number for this project is for the North County Depot and there is no information on this project. A grade separation will not work to deter pedestrians from crossing at-grade if they are not physically prevented from doing so.

Response: The CIP number will be investigated.

Comment: What does the team feel the biggest challenge facing the study as part of the efforts to receive NEPA approval?

Response: Based on very preliminary data collection so far, it appears that archeological and historic resources are present and will need to be evaluated.

Comment: Can the project be limited to pedestrians and bicyclist only?

Response: Certain vehicles are currently being considered based on the conclusions of a 2004 study coordinated between NIH/NNMC/Suburban Hospital that found that a connection between the facilities was desired for emergency service connection. However, a wide range of alternatives will be considered. An employee of NIH further responded that there has been talk for a long time about creating a connection between NIH, NNMC, and Suburban Hospital to provide fast and direct access for emergency services stemming from their respective clinical operations. The employee also noted that the connection would be particularly useful during large scale catastrophic events. A connection would be vital to preparedness efforts for providing direct routes of access, unaffected by potential gridlock traffic.

Comment: Why were portions of the TIGER grant application redacted from the publicly released document? And is the TIGER grant money required to be used for a multi-modal crossing, or could it be used for a pedestrian only bridge or tunnel?

Response: The engineering plans used for the TIGER grant application came from an unsolicited bid from Clark Construction, and because the plans are proprietary to Clark it had to be redacted from public dissemination. The engineering plans developed by Clark will not be used for this project. In addition, the funds from the TIGER grant could be used for any alternative that is selected and approved during the NEPA process. It could be any number of different configurations that will be studied.

Comment: Where does the Purpose and Need Statement stand and when will it be provided for review?

Response: The Draft Purpose and Need Summary will be posted on the web site for public review and comment. The public will be notified when the document is posted.

Comment: Does Clark Construction have a competitive advantage for the project since they submitted plans for a roadway crossing?

Response: No, everyone bidding on an eventual project, if one is identified through the NEPA process and funded, will all have to go through the same procurement process. He also noted that Montgomery County DOT has received other unsolicited plans for a crossing, none of which will receive special treatment.

Comment: Is there \$5 million to be used for pedestrian and bicycle facility improvements in the area?

Response: Yes, the County Executive has set aside money for pedestrian and bicycle improvements that could be used for improvements/new facilities that connect to a potential crossing. This funding is for other facilities and will not be used for this study.

Comment: Will additional right-of-way be purchased for future rail, trolley, and or transit projects?

Response: No additional right-of-way would be purchased at this time.

Comment: It was requested that the existing at-grade crossing be removed completely to prevent pedestrians from conflicting with traffic.

Response: This option will be investigated along with all other alternatives.

Comment: Will anti-terrorist efforts be implemented?

Response: Yes, coordination with NIH/Metro/NNMC on safety and force protection measures will occur during the development of alternatives.

Comment: How many pedestrians are currently crossing at this location?

Response: The study conducted by WMATA in July 2009 estimated that there are approximately 3,000 pedestrians crossing today and is expected to increase to 6,700 pedestrians by 2020.

Written Comments Received Following the Presentation

Montgomery County provided comment cards at the meeting for members of the audience to provide additional written comments on the project. Three written comments were received and are attached to this summary.

- The president of the Action Committee for Transit provided his detailed comments that he read during the meeting.
- A member of the NIH Bike Club provided written comments requesting a crossing for pedestrians and bicycles that is separate and protected from motor vehicle traffic. The NIH Bicycle Commuter Club estimates that between 600 and 1,000 cyclists are in the study area,

based on their bike counts and event registration data. Emergency vehicles have other options for the few times they need to move between campuses. Please don't use all resources on this project, keep some funding for completing the Bethesda Trolley Trail and other resources in the regional plan for bikeways.

- A member of the Action Committee for Transit provided his detailed comments which included concerns regarding the use of the term "multimodal" to describe the project. The written comments also include concerns regarding the unsolicited proposal and how it will be used for emergency services that occur only a few times each week and that the funds proposed for a pedestrian/bicycle crossing will instead be used for a roadway. The comment also included concerns that the roadway connection is going to be part of a bigger plan to connect both NIH and NNMC directly to I-270 and I-495.

Meeting Summary
MD 355/Rockville Pike Crossing Study
Montgomery County, Maryland
BRAC Implementation Committee (BIC) Meeting, May 11, 2010, 7:30 PM - 9:30 PM

Attendees:

Edgar Gonzalez	Montgomery County Department of Transportation (MCDOT)
Holger Serrano	Montgomery County Department of Transportation (MCDOT)
Ken Kendall	Montgomery County Department of Transportation (MCDOT)
Bruce Mangum	Montgomery County Department of Transportation (MCDOT)
Phil Alperson	Montgomery County BRAC Coordinator
Jeff Miller	National Naval Medical Center (MNMC)
Susan Hinton	National Institutes of Health (NIH)
Susan Pedersen	National Institutes of Health (NIH)
Keilyn Perez	Federal Highway Administration (FHWA) DelMar Division
Janie Tiedeman	URS Corporation
Brian Lange	URS Corporation
Rebecca Myrick	URS Corporation
Josh Crunkleton	URS Corporation

BIC Presentation:

Phil Alperson began the meeting with a quick funding update, noting that the Department of Defense has not yet finalized their allocation of the earmarked funds.

Jeff Miller provided an update on bus shelter enhancements, noting that the necessary permits have been obtained and contractors are pouring pad sites north of South Wood Drive and are preparing to install the shared use path between South Wood Drive and Jones Bridge Road.

Edgar Gonzalez provided an introduction and background on the MD 355/Rockville Pike Crossing Study and then turned the presentation over to Janie Tiedeman who reviewed the following:

- Purpose of the Meeting – present Purpose and Need Summary, review project goals and objectives, present preliminary alternatives, review next steps, and solicit feedback from attendees.
- Janie reviewed the project history, study area, related studies and Stakeholder Team members.
- Janie described the purpose of the project and summarized the goals and objectives as determined by the Stakeholder Team.
- Janie then reviewed the elements of need for the project, citing safety issues for pedestrians crossing MD 355 and traffic operational concerns at the South Wood Road/South Drive/MD 355 intersection.
- Janie presented the range of preliminary alternatives being considered, which are currently focused on at-grade intersection improvements, Transportation System Management/Transportation Demand Management solutions, and grade separated crossings.
- Janie, Edgar, and Brian Lange then provided an overview description of each of the six build preliminary alternatives.

- It was noted that cost estimates, impacts, and traffic operations had not yet been determined for the preliminary alternatives and would be done for the alternatives retained for detailed study as the project progressed.

Following the formal presentation, attendees were invited to review the preliminary alternatives presented by MCDOT staff on large-scale display boards as part of a workshop-style event. MCDOT staff was on hand at each of the display boards to answer questions.

A comment form was also provided for attendees to give written comments on each of the six preliminary alternatives.

Summary of Public Comments:

- A North Bethesda neighborhood association representative really appreciated the displays but asked that the study team provide a photograph of a similar type of interchange to give people an idea of how the interchange alternatives would look.
- Several attendees voiced concerns regarding costs, impacts, and construction schedules.

Next Steps:

- Complete Purpose and Need Statement – Spring 2010
- Evaluate Alternatives Retained for Detailed Study – Summer 2010
- Conduct public workshop to review detailed study – Summer 2010
- Identify Preferred Alternative – Summer 2010
- Complete environmental documentation – Fall 2010



Montgomery County Department of Transportation

MD 355 / Rockville Pike Crossing Project

December 21, 2010

Purpose of the Project

The purpose of the project is to:

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



MD 355 / Rockville Pike Crossing Project

Project Goals and Objectives

Primary Goals:

- Improve pedestrian mobility between NNMC, NIH, and Medical Center Metrorail Station facilities through improved crossing of MD 355
- Improve pedestrian safety within the project area by minimizing conflicts with vehicular traffic
- Improve traffic operations to and from NNMC and NIH / Medical Center Metrorail Station at the MD 355 / South Wood Road / South Drive intersection



MD 355 / Rockville Pike Crossing Project

Project Goals and Objectives

Secondary Goals:

- Promote alternative modes of transportation such as rail, bus, car / vanpool, pedestrian, and bicycle commuting
- Improve efficiency with which emergency and transit vehicles move between the NIH and NNMC campuses



MD 355 / Rockville Pike Crossing Project

Preliminary Alternatives

- Alternative 1 – No-Build
- Alternative 2 - TSM/TDM
- Alternative 3 – Grade Separation of MD 355 Under South Wood Road / South Drive
- Alternative 4 - Diamond Interchange
- Alternative 5 - Double Left Turns with Pedestrian/Bicyclist Crossing Options
- Alternative 6 - Southbound Jug Handle with Pedestrian/Bicyclist Crossing Options
- Alternative 7 - Northbound Jug Handle with Pedestrian/Bicyclist Crossing Options



MD 355 / Rockville Pike Crossing Project

Alternatives Retained for Detailed Study

- Alternative 1 – No-Build
- Alternative 2A – Pedestrian / Bicycle Underpass with At-Grade TSM Improvements
- Alternative 2B – Pedestrian / Bicycle Underpass and Deep Elevators with At-Grade TSM Improvements
- Alternative 3 – Grade Separation of MD 355 Under South Wood Road / South Drive

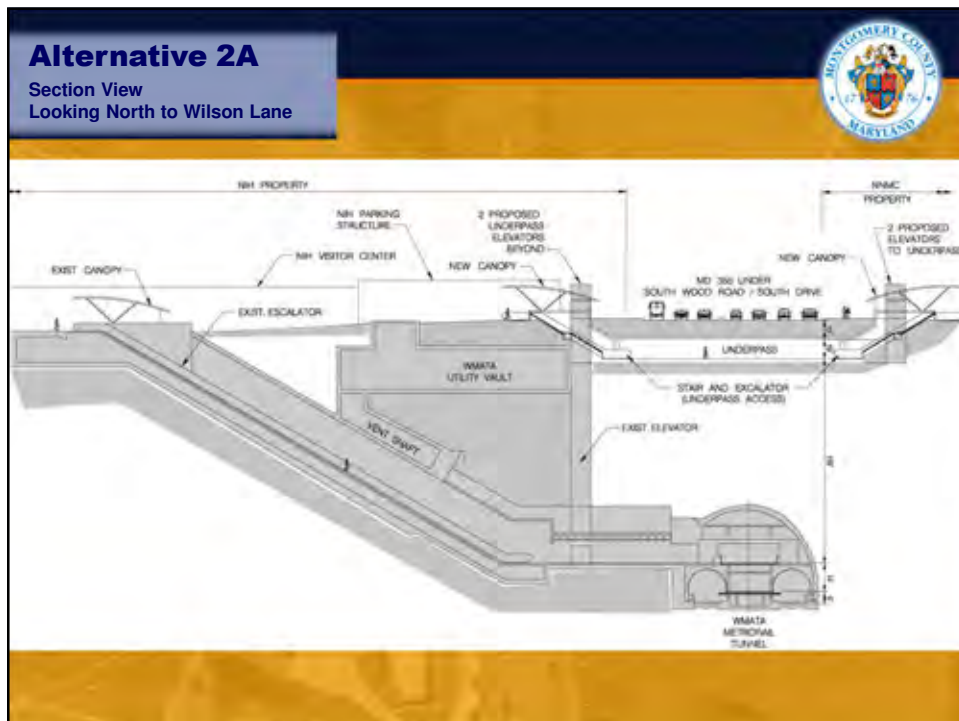


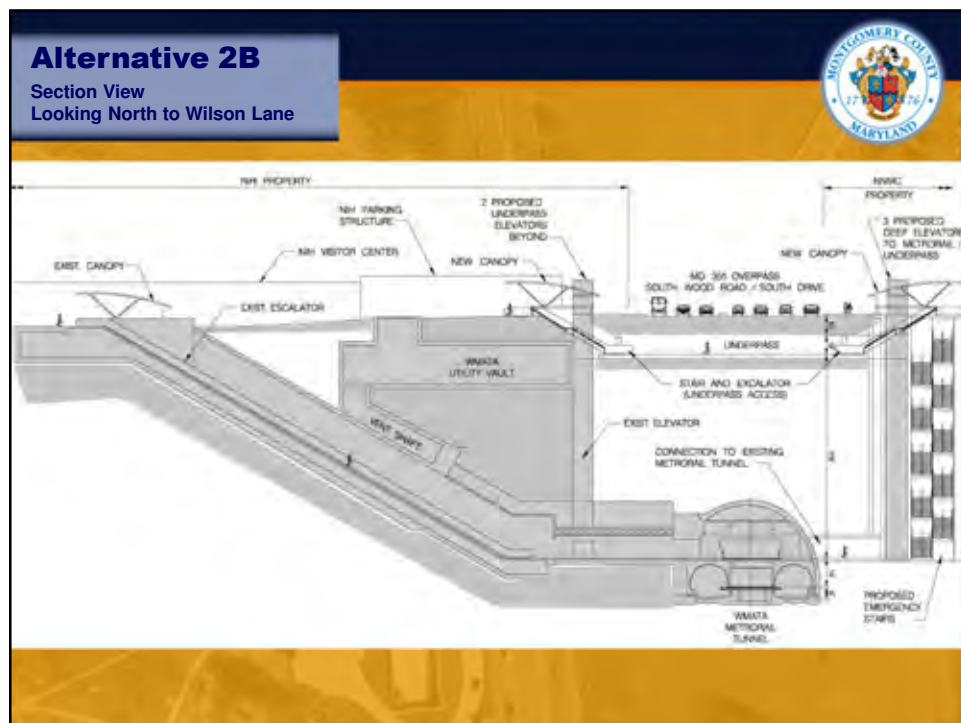
MD 355 / Rockville Pike Crossing Project

Pedestrian / Bicycle Underpass and TSM / TDM Improvements



**Section View
Looking North to Wilson Lane**







Evaluation Criteria

Primary Goals

- Pedestrian / Bicyclist Efficiency
- Pedestrian / Bicyclist Safety
- Traffic Operations
- Bus Operations
- Emergency Vehicle Operations

Impacts and Costs

- Adjacent Projects
- NNMC Gate
- Construction Impacts
- Natural Environment
- Cultural Resources
- Cost

Secondary Goals

- Alternative modes of travel would be more attractive to travelers
- Emergency vehicle and bus travel between NIH and NNMC would be more efficient



MD 355 / Rockville Pike Crossing Project

Primary Goals



MD 355 / Rockville Pike Crossing Project

Efficiency of Pedestrian and Bicycle Movements Summary

Alternative 2A

- Decreases travel time for underpass users (68% of 7,530 total users) by 34 seconds
- **Total travel time saved = 48.4 hours per day compared to the No-Build (11% improvement)**
- Improves access to/from mass transit facility

Alternative 2B

- Improves travel time for underpass and deep elevator users
- Decreases travel time for Metrorail users (78% of 7,530) by over 2 minutes (139 seconds)
- **Total travel time saved = 237.4 hours per day compared to the No-Build (52% improvement)**
- Provides the shortest average travel time (deep elevator route)
- Improves access to/from mass transit facility

Alternative 3

- Decreases travel time for overpass (all) users (100% of 7,530) by 68 seconds
- **Total travel time saved = 142.2 hours per day compared to the No-Build (31% improvement)**
- Improves access to/from mass transit facility
- Improves travel time for non-Metro pedestrians crossing MD 355



MD 355 / Rockville Pike Crossing Project

Pedestrian / Bicyclist Safety Summary

Alternatives 2A and 2B

- Decreases pedestrian crossing volumes for those using at-grade crosswalk
- Provides opportunity for 100% avoidance of pedestrian/vehicular conflicts
- Reduces number of conflicts between pedestrians and vehicles at the intersection
- Maintains some conflicts with vehicles and wait times for remaining at-grade crossing users (could be safer if at-grade crossing was eliminated)
- Increases safety for underpass and deep elevator users
- Includes additional safety measures such as lighting, video surveillance, and emergency call boxes in the underpass

Alternative 3

- Provides opportunity for 100% avoidance of pedestrian/vehicular conflicts
- Completely eliminates conflict points for pedestrians crossing MD 355 at South Wood Road / South Drive
- Creates new crosswalks at each end of the proposed jug handle
- Increases safety for pedestrians crossing South Wood Road / South Drive over MD 355



MD 355 / Rockville Pike Crossing Project

Traffic Operations Summary

Alternatives 2A & 2B

- Minor capacity enhancements provide a slight improvement over No-Build delay conditions
- Reducing the number of pedestrians crossing MD 355 at-grade would reduce intersection delay during the AM peak
- At-grade pedestrian crossings would prevent the optimal signal timing enhancements needed to improve overall LOS
- Overall peak hour network delays will be slightly higher than the No-Build condition



MD 355 / Rockville Pike Crossing Project

Traffic Operations Summary

Alternative 3

- LOS and delay for both AM and PM peak periods will improve compared to 2030 No-Build and Alternatives 2A and 2B
- Improving South Wood Road / South Drive traffic operations may impact the network and nearby cross streets.
- Congestion and associated operational issues would be “redistributed,” providing relief for some movements, but potentially worsening others.
- Overall peak hour network delays are projected to increase approximately 10 percent due to the redistribution of traffic patterns.



MD 355 / Rockville Pike Crossing Project

Compatibility with Bus Operations Summary

Alternative 2A / 2B

- Shuttle routes remain the same as the No-Build condition
- Trips from the north experience slightly higher travel times compared to No-Build
- Trips from the south experience slightly lower travel times compared to No-Build
- East/west trips experience slightly lower travel times compared to No-Build except for the PM period

Alternative 3

- Routes to and from Medical Center Metro Station are different from No-Build
- Reduction in travel time for buses is due to the removal of pedestrian and bicycle movements
- Trips from the north experience shorter travel time compared to No-Build
- Trips from the south experience longer travel time compared to No-Build
- East/west trips experience significant decreases in travel times compared to No-Build except for PM congestion from the east



MD 355 / Rockville Pike Crossing Project

Emergency Vehicle Operations Summary

Alternatives 2A and 2B

- Routes and travel times same as No-Build

Alternative 3

- Decreases travel time from the north
- Increases travel time from the south



MD 355 / Rockville Pike Crossing Project

Impacts and Costs



MD 355 / Rockville Pike Crossing Project

Compatibility with Adjacent Projects Summary

Coordination with the following project teams will need to continue for the duration of the project:

State Highway Administration Intersection Improvement Projects:

- MD 355 (Rockville Pike) and Cedar Lane
 - All build alternatives are compatible with the proposed improvements at the intersection
- MD 355 (Rockville Pike) and Jones Bridge Road
 - Alternative 2A/2B: Requires minor limited disruptions associated with MOT and temporary reconstruction of the MD 355 median
 - Alternative 3: Requires a temporary reconstruction of the channelized right-turn lane proposed by SHA

Montgomery County Facilities Study:

- Pedestrian / Bicycle and Transit Stop Enhancements
 - All build alternatives require temporary relocation and reconstruction of pedestrian facilities along the east side of MD 355



MD 355 / Rockville Pike Crossing Project

Compatibility with NNMC Gate Operations Summary

- Storage provided under existing conditions is insufficient to meet demand
- Storage provided for processing with Alternatives 2A and 2B is insufficient
- Storage provided for processing with Alternative 3 is sufficient
- Alternatives 2A and 2B operate the same as the No-Build when the MD 355/South Wood Road/South Drive intersection is considered in isolation
- Alternative 3 performs better than the No-Build when the new intersections (MD 355/Jug handle and South Drive/Jug handle) are analyzed in isolation
- The network delay is increased with all alternatives compared to No-Build



MD 355 / Rockville Pike Crossing Project

Compatibility with NNMC Gate Operations – Results

Required Storage Analysis

- Current Gate Location (Existing)
 - Guard house is approximately 285 feet from the MD 355/South Wood Road intersection
 - Single lane approach to guard house in AM and PM peak period
 - Observed traffic queues from the gate to the MD 355/South Wood Road intersection
 - Observed southbound MD 355 left turning vehicles sometimes queuing into the southbound MD 355 through lanes during the AM peak period
- Proposed Gate Location (2030 No-Build)
 - Guard house will be approximately 125 feet from the MD 355/South Wood Road intersection
 - Two lanes approaching guard house in AM peak period only
 - Available queue storage would decrease below the already insufficient approach to the gate
 - Creating two service lanes approaching NNMC gate may present operational issues between southbound left turning and northbound right turning vehicles

Scenario	Gate Location	# of Lanes	Storage Provided (Feet per Lane)	Calculated Storage Required (Feet per Lane)		% of Required Storage Provided	
				All Traffic Using NNMC Gate	SB Lefts Using NNMC Gate	All Traffic Using NNMC Gate	SB Lefts Using NNMC Gate
2010	Existing	1	285	884	639	32	45
	Relocated	2	125	486	351	26	36
2030 No-Build	Relocated	2	125	510	371	25	34



MD 355 / Rockville Pike Crossing Project

Compatibility with NNMC Gate Operations – Results

Required Storage Analysis

- Proposed Gate Location (Alternatives 2A and 2B)
 - Guard house will be approximately 125 feet from the MD 355/South Wood Road intersection
 - Two lanes approaching guard house in AM peak period only
 - Available queue storage would decrease below the already insufficient approach to the gate
 - Creating two service lanes approaching NNMC gate may present operational issues between southbound left turning and northbound right turning vehicles
- Proposed Gate Location (Alternative 3)
 - Guard house will be approximately 675 feet from the proposed South Drive intersection with the jughandle
 - Two lanes approaching guard house in both AM and PM peak periods
 - Available queue storage approaching the gate would increase
 - Creating two dedicated service lanes approaching NNMC gate does not present additional operational issues

Scenario	Gate Location	# of Lanes	Storage Provided (Feet per Lane)	Calculated Storage Required (Feet per Lane)		% of Required Storage Provided	
				All Traffic Using NNMC Gate	SB Lefts Using NNMC Gate	All Traffic Using NNMC Gate	SB Lefts Using NNMC Gate
2030 No-Build	Relocated	2	125	510	371	25	34
2030 Alts. 2A/2B	Relocated	2	125	510	371	25	34
2030 Alt. 3	Relocated	2	450 *	510	N/A	110	N/A

* After 450 feet with two lanes, one lane is provided for an additional 225 feet



MD 355 / Rockville Pike Crossing Project

Construction Impacts Summary

Alternatives 2A, 2B, and 3

- All existing travel lanes will be maintained during weekday peak hours on MD 355 (some lane closures during off-peak hours would be necessary)
- Compliance with design requirements (including ADA) will be maintained throughout construction
- Efforts will be made to relocate existing bus stops disturbed during construction
- No gate closures are proposed at any time during any construction phase
- Alternatives 2A and 2B require a smaller construction footprint than Alternative 3
- Alternative 3 will require a temporary bridge to be constructed
- MOT costs range from:
 - \$1-2M (Alternative 2A)
 - \$2-3M (Alternative 2B)
 - \$6-7M (Alternative 3)



MD 355 / Rockville Pike Crossing Project

Environmental Impacts Summary

- Natural environment
 - No impacts to wetlands, streams, floodplains, or parks
 - All alternatives cause impacts to trees
- Cultural resources
 - Alternatives 2A and 2B have 0.8 acres of historic property impacts (likely No Adverse Effect)
 - Alternative 3 has 1.3 acres of historic property impacts (could result in an Adverse Effect)



MD 355 / Rockville Pike Crossing Project

ROW Impacts and Cost Estimates – Summary

- No displacements, relocations, or impacts to residential or commercial properties anticipated
- Costs include property acquisition, damages, and contingencies to cover unforeseen future costs
- Costs include final design, roadway construction, right-of-way, maintenance of traffic, and utility relocation costs
- Costs do not include operations and maintenance costs
- Pedestrian underpass and elevator construction costs based on July 2009 WMATA Medical Center Metrorail Station Access Improvement Study



MD 355 / Rockville Pike Crossing Project

ROW Impacts and Cost Estimates – Results

Feature		Alternative 2A	Alternative 2B	Alternative 3
Right-of-Way Impacts				
NIH Right-of-Way (acres)		0.60	0.60	3.14
NNMC Right-of-Way (acres)		0.52	0.53	1.23
Total Right-of-Way (acres)		1.12	1.13	4.37
Cost (2010 dollars)				
Design Cost (millions)		\$4 – 6	\$8 – 10	\$8 – 10
Right-of-Way Cost (millions) ^A	NIH	\$1 – 4	\$1 – 4	\$10 – 20
	NNMC	\$1 – 4	\$1 – 4	\$3 – 7
	Total	\$4 – 8	\$4 – 8	\$15 – 25
Construction Cost (millions)		\$16 – 20	\$38 – 42	\$36 – 40
Total Cost (millions)		\$25 – 31	\$48 – 58	\$58 – 70



MD 355 / Rockville Pike Crossing Project

Secondary Goals



MD 355 / Rockville Pike Crossing Project

Accommodating Alternative Modes of Transportation Summary

Alternative 2A

- Decreases travel time for Metrorail users, pedestrians, and bicyclists crossing MD 355
- Improves access to/from mass transit facility
- Reducing the number of pedestrians crossing MD 355 at-grade would reduce intersection delay during the AM peak

Alternative 2B

- Significantly decreases travel time for Metrorail users crossing MD 355
- Decreases travel time for pedestrians and bicyclists
- Improves access to/from mass transit facility
- Reducing the number of pedestrians crossing MD 355 at-grade would reduce intersection delay during the AM peak

Alternative 3

- Decreases travel time for Metrorail users, pedestrians, and bicyclists crossing MD 355
- Improves access to/from mass transit facility
- Completely eliminating conflicts between pedestrians and vehicles would reduce intersection delay



MD 355 / Rockville Pike Crossing Project

Connectivity Summary

Alternatives 2A and 2B

- Proposed improvements are similar to the No-Build condition

Alternative 3

- Proposed improvement creates a direct connection between NIH and NNMC



MD 355 / Rockville Pike Crossing Project

Next Steps

- Finalize MHT/Section 106 Coordination
- Complete Environmental Document and submit to FHWA in February 2011
- Determine lead agency for design/build and development of an MOU for implementation



MD 355 / Rockville Pike Crossing Project



Attachment 13

Isiah Leggett
County Executive

Arthur Holmes, Jr.
Director

INVITATION FOR PUBLIC MEETING

DEPARTMENT OF TRANSPORTATION

MD 355/Rockville Pike Crossing Project
CIP PROJECT NO. 500522

Purpose of Public Meeting

*To present the elements of the study, including potential solutions,
and obtain input from the community*

Project Location

Rockville Pike, MD 355

*Crossing between the Medical Center Metro Station and
National Naval Medical Center*

Public Meeting Date and Time

Tuesday, July 20, 2010 at 7:00 p.m.

Public Meeting Location

Bethesda-Chevy Chase High School
4301 East-West Highway, Bethesda, Maryland

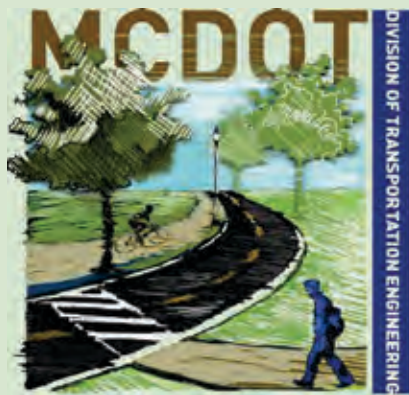
***For more information
and to forward written comments contact***

Ken Kendall, P.E., Project Manager
Transportation Planning and Design Section

Division of Transportation Engineering

Telephone: 240-777-7267

100 Edison Park Drive, Fourth Floor, Gaithersburg, Maryland 20878



ISIAH LEGGETT
Montgomery County Executive

MD 355/Rockville Pike Crossing Study

*Your input is
important!*

Please provide your
comments for this study by:

August 3, 2010

Montgomery County
Department of Transportation
DIVISION OF
TRANSPORTATION
ENGINEERING
100 Edison Park Drive, 4th Floor
Gaithersburg, Maryland 20878

Project Manager:
Ken Kendall

P: 240. 777. 7267

F: 240. 777. 7277

Email: Kenneth.Kendall@montgomerycountymd.gov

For alternative formats of this
Comment Form, please contact
the Division of Transportation

Engineering at:
240. 777. 7220 (voice).
TTY users call MD Relay.

Comments Form

ARTHUR HOLMES, JR. - Director
Department of Transportation

PUBLIC COMMENTS FORM - MCDOT Welcomes your Feedback!

Public input is the key to an effective study process, as it allows MCDOT to understand the concerns of the community. We encourage you to complete the form below.

Name

Address

Phone

E-mail

Your Comments

July 2010

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Attention: Ken Kendall, Project Manager

MEMORANDUM

DATE: September 24, 2010

TO: Mr. Ken Kendall, PE, Senior Engineer
Montgomery County Department of Transportation
Division of Transportation Engineering
100 Edison Park Drive, 4th floor
Gaithersburg, Maryland 20874

FROM: Janie Tiedeman, PE, URS Project Manager

REFERENCE: MD 355/Rockville Pike Crossing Study July 20, 2010 Public Meeting Summary

The second public meeting for the MD 355/Rockville Pike Crossing Study was held on Tuesday, July 20, 2010, from 7:00 PM to 9:00 PM at Bethesda-Chevy Chase High School in Bethesda, Maryland.

Approximately 20,000 NIH staff and 750 community members (including civic, business, Bethesda-Chevy Chase Regional Services Center, and neighborhood association leaders who presumably forwarded the invitation to others) were invited to the public meeting and the public meeting notice was posted on the Montgomery County BRAC Implementation Committee (BIC) website. Approximately 85 people attended the public meeting.

Purpose of the Meeting

The purpose of the public meeting was to present the elements of the study, including the project's Purpose and Need, goals and objectives, potential solutions, and to obtain input from the community.

Information Presented

Four staffed stations were setup with display boards in order to present project information. These displays are also available on the Montgomery County BIC website: <http://www.montgomerycountymd.gov/brcmpl.asp> and described below.

Station 1 - Project Purpose and Need

- Project Study Area Map
- Purpose and Need
- Elements of Need: Transit Ridership, Pedestrians/Bicyclists, and Safety
- Elements of Need: Traffic Operations
- Related Studies

Station 2 – Preliminary Alternatives Considered

- Screening of Preliminary Alternatives
- Alternative 2 – Transportation System Management (TSM)/Transportation Demand Management (TDM)
- Alternative 3 – Grade Separation of MD 355 Under South Wood Road/South Drive
- Alternative 4 – Diamond Interchange
- Alternative 5 – Double Left Turns with Pedestrian Crossing
- Alternative 6 – NIH Jug Handle with Pedestrian Crossing
- Alternative 7 – NNMJ Jug Handle with Pedestrian Crossing
- Summary of Preliminary Alternatives Screening

Station 3 – Alternatives Retained For Detailed Study

- Alternative 2A – Pedestrian/Bicycle Underpass and TSM/TDM Improvements
- Alternative 2B – Pedestrian/Bicycle Underpass, Deep Elevators, and TSM/TDM Improvements
- Alternative 3 – Grade Separation of MD 355 Under South Wood Road/South Drive
- Comparison of Environmental Impacts and Costs

Station 4 – Project Schedule and Next Steps

- Project Scoping: January 2010 to May 2010
- Detailed Study: June 2010 through August 2010
- The Decision-Making Stage is expected to occur from August 2010 to October 2010:
 - Identify the Preferred Alternative
 - Coordinate with federal and state stakeholder agencies
 - Prepare environmental documentation
 - Receive final planning study approvals

Summary of Comments Received

Comment cards were provided at the public meeting and written comments were accepted by Mr. Ken Kendall through August 3, 2010. A total of 28 written comments were received. The Montgomery County Department of Transportation will provide responses and consider and incorporate public comments into the project. The following is a summary of the comments:

Comments on Alternatives

- Support for Alternative 2B
- Support for Alternative 3

- Alternative 3 does not provide the optimal pedestrian crossing, but it is the best option due to the inclusion of roadway improvements
- Combine the aspects of Alternatives 2B and 3, mainly adding deep elevators on the east side of MD 355 to Alternative 3
- Include a dedicated northbound right turn lane (or lanes) to MD 355 for vehicles traveling to NNMC
- Opposition to reconstructing MD 355
- Construct overpasses during construction in order to avoid prolonged closure of MD 355.
- Wide curb radii are bad for pedestrians
- Physical barriers directing pedestrians to a specific travel route indicate a design that is inconvenient to or poorly designed for pedestrians
- Bus stops along MD 355 need to be strategically placed so that bus riders can access the pedestrian crossing
- A bus pull over, similar to that on the west side of MD 355, should be examined on the east side of MD 355
- Pedestrian underpasses are preferable to pedestrian bridges for people suffering from fear of heights
- Cost should also include long-term operating and maintenance costs.

Comments on Traffic

- For Alternative 3, requiring vehicles travelling northbound on MD 355 to turn left onto NIH property and travel through the Metrorail station area seems to double the traffic into the Metrorail station and clog southbound traffic on MD 355
- For Alternative 3, provide a clear analysis of how a signalized intersection at the jughandle relates to traffic at Wilson Drive coming out of NIH and how having more traffic stacked up on MD 355 from the new signal south to Jones Bridge Road and Woodmont Avenue would affect the overall flow through that very constricted area
- Look at the likelihood of any traffic backup due to left turns from northbound MD 355 into this multi-modal station.
- What is the relative inducement to use transit related to the alternatives selected?
- What is the effect on traffic from the different alternatives?
- What effect on traffic speed will occur at the intersections to the north and south of the study intersection among the various alternatives? Will pedestrian safety suffer as a result of some alternatives by speeding non-rush hour traffic?

Miscellaneous Comments

- The Purple Line should be routed down Jones Mill Road or along I-495 and must come into play, specifically for NIH and NNMC employees who currently drive from Silver Spring and Prince George's County.
- Create a new Metro station in the middle of the Naval Base.
- Link Suburban Hospital to NIH and NNMC with a direct connection.
- NNMC gate diversions should be utilized to control the traffic flowing into and out of specific gates locations.
- Create a bike path on the east side of MD 355.
- Maximize bike lanes on both sides of MD 355.
- Enhance the public transportation system (buses, cable cars, etc.)
- Fast-track the SHA improvements to the intersection of MD 355 and Cedar Lane.
- Fix the pedestrian crossing light at the crossing of Jones Bridge Road at the NNMC Exchange entrance.
- Increase parking area at the NIH Metro Station.
- Improve/enhance the platform at the Medical Center Metrorail Station.

Additional comments from the public meeting communicated to staff:

- Elevators should be designed so that they contain double doors where riders enter on one side and exit from the other side.
- Due to the alignment of the existing bike path, it is difficult for southbound vehicles turning right into the NIH inspection area to see pedestrians and bicyclists.
- Would Alternative 3 be compatible with future bus rapid transit (BRT) in the area?
- Implement traffic calming measures along MD 355 and leave pedestrian movements at-grade (see White Flint as an example).
- The Navy's goal of 30 percent transit usage will never happen and previous initiatives to assist with the goal have not worked. The Study Team is under-predicting the traffic volumes that will actually go in and out of NNMC.



*Maryland Department of Planning
Maryland Historical Trust*

*Martin O'Malley
Governor*

*Anthony G. Brown
Lt. Governor*

*Richard Eberhart Hall
Secretary*

*Matthew J. Power
Deputy Secretary*

February 17, 2011

Holger Serrano, P.E.
Montgomery County Department of Transportation
Division of Transportation Engineering
100 Edison Park Drive, 4th Floor
Gaithersburg, MD 20878

Re: MD 355/Rockville Pike Crossing Study
CIP Project No. 500522
Montgomery County, Maryland

Dear Mr. Serrano,

Thank you for providing the Maryland Historical Trust (Trust), a division of the Maryland Department of Planning, with additional information regarding the recommended alternative for the above-referenced undertaking. The Trust previously provided comments on four alternatives retained for detailed study on 30 August 2010. We are writing in accordance with Section 106 of the National Historic Preservation Act, as amended, to assess the effects of the recommended alternative (Alternative 2B) on historic properties.

We understand that the purpose of the project is to improve the movement of the traveling public between the east and west sides of the MD 355/Rockville Pike Intersection. The project is intended to improve access to mass transit facilities, enhance safety of pedestrians and bicyclists, and improve traffic operations at the intersection of MD 355 with South Wood Road and South Drive. After holding public and agency stakeholder meetings, the project team identified Alternative 2B: Pedestrian Bicycle Underpass and Deep Elevators, along with Transportation System Management (TSM) and Transportation Demand Management (TDM) improvements as the preferred alternative.

Previous consultation with our office identified above-ground historic resources and provided an assessment of archeological potential. Given the revised assessment of archeological potential included in your submittal, the Trust agrees that the area of potential effects (APE) for Alternative 2B is unlikely to contain National Register eligible archeological sites.

The above-ground historic resources within the APE for Alternative 2B include the National Naval Medical Center (MHIP No. M:35-098), with the Bethesda Naval Tower Hospital (MHIP No. M: 35-008), and the George Freeland Peter House (Stone Cottage at NHI) (MHIP No. M: 35-009-1). As noted in our previous correspondence, Alternative 2B will have no adverse effect on historic properties provided that vistas to and from historic structures are maintained through careful design of new project elements. We understand that the project team will continue to consult with our office regarding the design of the overhead canopies and the relocation of the medical center fence. We greatly appreciate the project team's selection of the alternative which will have the least impact on historic structures. We look forward to continuing consultation as the project design develops.

Assessment of Effect: Based on the information provided, we concur that Alternative 2B will have *no adverse effect* on historic properties, including archeological sites. We acknowledge and agree with FHWA's intent to make a de minimis impact finding and we also agree that the use of the historic property meets the Section 4(f) criteria of temporary use.

Holger Serrano, P.E.
MD 355 Rockville Pike Crossing Study
Montgomery County, Maryland
Page 2 of 2

We look forward to reviewing the proposed design for the overhead canopies and fence relocation when plans are available. If you have questions or require additional information, please contact me (for archeology) at 410-514-7631 / bcyle@mdp.state.md.us or Tim Tamburrino (for the historic built environment) at 410-514-7637 / ttamburrino@mdp.state.md.us. Thank you for providing us this opportunity to comment.

Sincerely,



Beth Cole
Administrator, Project Review & Compliance

EJCCTF 201100077

Cc: Bradley Smith (SHA)
Susan Hinton (NHI)
Jeff Miller (NNMC)
Brian Hillis (NNMC)
Scott Whipple (Montgomery County HPC)
Loraine Pearsall (Montgomery Preservation Inc.)



Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Eric Schwab, Deputy Secretary

January 13, 2009

Mr. Bruce M. Grey
Maryland Department of Transportation
State Highway Administration
707 North Calvert Street
Baltimore, MD 21202

RE: Environmental Review for Project No. MO593A21, Bethesda BRAC Intersections Improvements, Montgomery County, Maryland.

Dear Mr. Grey:

For the intersections of MD 355 at West Cedar Lane, MD 355 at Jones Bridge Road, MD 187 at West Cedar Lane and MD 185 at Jones Bridge Road, the Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2008.2492.mo
Cc: G. Golden, DNR

Attachment 17



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 21401
<http://www.fws.gov/chesapeakebay>



January 27, 2010

URS Corporation
4 North Park Drive, suite 300
Hunt Valley, MD 21030

RE: C.I.P. Project No 500722 MD 355 Multimodal Crossing Project Montgomery County MD

Dear: Warren Gray

This responds to your letter, received January 12, 2010, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

Effective August 8, 2007, under the authority of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service (Service) removed (delist) the bald eagle in the lower 48 States of the United States from the Federal List of Endangered and Threatened Wildlife. However, the bald eagle will still be protected by the Bald and Golden Eagle Protection Act, Lacey Act and the Migratory Bird Treaty Act. As a result, starting on August 8, 2007, if your project may cause "disturbance" to the bald eagle, please consult the "National Bald Eagle Management Guidelines" dated May 2007.

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If any planned or ongoing activities cannot be conducted in compliance with the National Bald Eagle Management Guidelines (Eagle Management Guidelines), please contact the Chesapeake State Highway Administration

Maryland Department of Transportation
707 North Calvert Street
Baltimore, MD 21202

Bay Ecological Services Field Office at 410-573-4573 for technical assistance. The Eagle Management Guidelines can be found at:

<http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf>.

In the future, if your project can not avoid disturbance to the bald eagle by complying with the Eagle Management Guidelines, you will be able to apply for a permit that authorizes the take of bald and golden eagles under the Bald and Golden Eagle Protection Act, generally where the take to be authorized is associated with otherwise lawful activities. This proposed permit process will not be available until the Service issues a final rule for the issuance of these take permits under the Bald and Golden Eagle Protection Act.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Devin Ray at (410) 573-4531.

Sincerely,



Leopoldo Miranda
Field Supervisor

APPENDIX F – REQUEST FOR ENVIRONMENTAL CLASSIFICATION LETTER



DEPARTMENT OF TRANSPORTATION

September 9, 2010

Isiah Leggett
County Executive

Arthur Holmes, Jr.
Director

Mr. Nelson Castellanos, Division Administrator
Federal Highway Administration
City Crescent Building
10 S. Howard Street, Suite 2450
Baltimore, Maryland 21201

Attention: Ms. Keilyn Perez, Assistant Area Engineer

Re: MD 355/Rockville Pike Crossing Study, C.I.P. No. 500722
Request for Environmental Classification

Dear Mr. Castellanos:

In accordance with CEQ regulations and 23 CFR 771, the Montgomery County Department of Transportation (MCDOT), in cooperation with the National Institutes of Health (NIH) and National Naval Medical Center (NNMC), recommends that improvements proposed in conjunction with the MD 355/Rockville Pike Crossing Study be classified as a Categorical Exclusion (CE) with a Section 4(f) Evaluation.

PROJECT BACKGROUND

MCDOT and lead Federal agency, the Federal Highway Administration, have initiated a project planning study to improve the movement of the traveling public between the east and west sides of MD 355/Rockville Pike in the vicinity of the Medical Center Metrorail Station and the NNMC in Bethesda, Maryland. With the expected influx of activity in and around the NNMC associated with the Base Realignment and Closure (BRAC) initiative, vehicular, transit and pedestrian volumes are expected to increase. Improving the connection between the Medical Center Metro Station and these two vital national resources has been studied in the past, both by the NIH and NNMC in 2008, and by the Washington Metropolitan Area Transit Authority (WMATA) in 2009.

The MD 355/Rockville Pike Crossing Project is located in Bethesda, Maryland, a densely populated and developed area inside the Capital Beltway (I-495), and adjacent to NIH and NNMC. The area is comprised of a vibrant urban district, and established residential neighborhoods. The study area limits extend along MD 355 from Cedar Lane south to Jones Bridge Road (see the attached **Environmental Features Map**). The focus of the proposed improvements is on the intersection of MD 355/Rockville Pike and South Wood Road/South Drive. In the project area, MD 355/Rockville Pike is classified by the MD SHA Highway Location Reference as a Primary Arterial with curbed median, no access control, with a posted speed limit of 35 mph.

Division of Transportation Engineering

PURPOSE AND NEED

The purpose of the MD 355/Rockville Pike Crossing Project is to improve the movement of the traveling public between the west and east sides of MD 355/Rockville Pike at its intersection with South Wood Road and South Drive in Bethesda, Maryland. This project is intended to: (1) enhance/improve access to mass transit facilities; and (2) improve the mobility and safety of pedestrians and bicyclists crossing MD 355/Rockville Pike and improve traffic operations at the existing intersection of South Wood Road/South Drive/MD 355.

Currently, transit users, pedestrians, and bicyclists wishing to cross MD 355 to get to NNMC from the Medical Center Metrorail Station or NIH must compete with very high volumes of traffic traveling between South Wood Road, South Drive, and MD 355. This project is needed to improve the mobility and safety of pedestrians and bicyclists crossing MD 355/Rockville Pike and improve traffic operations at the intersection of South Wood Road/South Drive/MD 355 by reducing existing conflicts between pedestrians and vehicles.

Consistent with the Bethesda/Chevy Chase Master Plan and safety concerns in the project area associated with pedestrian and vehicular traffic, the proposed project supports the need for improved access to mass transit facilities, improved mobility and safety of pedestrians and bicyclists crossing MD 355, and improved traffic operations at the intersection of MD 355 and South Drive/South Wood Road.

The MD 355/Rockville Pike Crossing Project would improve access to mass transit facilities in one of the most congested areas in the region. It would better integrate connectivity between rail, bus, car/vanpool, and pedestrian/bicycle commuters. Increasing transit usage is part of the approach to mitigate forecasted congestion levels in this area of Montgomery County associated with BRAC impacts.

The MD 355/Rockville Pike Crossing Project will:

- Accommodate the existing and future transit riders who visit, live, or work in the study area;
- Provide a safe and efficient crossing of MD 355/Rockville Pike at South Wood Road/South Drive for all pedestrians and bicyclists;
- Improve traffic flow into and out of NIH and NNMC at the intersection of South Wood Road/South Drive/MD 355.

ALTERNATIVES RETAINED FOR DETAILED STUDY (ARDS)

The following description and attached mapping of the ARDS defines the action currently under consideration. The concept level mapping that accompanies this package includes the existing conditions study area map which represents the No-Build Alternative

(Alternative 1), and three Build Alternatives (Alternatives 2A, 2B, and 3). A map of each alternative described below is provided in the **Alternatives Mapping** attachment.

Alternative 1: No-Build is being retained to provide a point of comparison with existing conditions. This alternative assumes no substantial improvements beyond those in the County's Capital Improvement Plan (CIP) or Metropolitan Washington Council of Governments (MWCOG) Constrained Long Range Transportation Plan (CLRP) for 2035. This alternative does not address impacts of BRAC on the study area.

Alternative 2A: Pedestrian/Bicycle Underpass with TSM/TDM improvements includes combining the below grade pedestrian/bicycle crossing originally proposed by WMATA with lower cost improvements such as signal phasing or timing modifications, traffic calming measures, transit station improvements aimed at encouraging the use of bicycles and telecommuting. Physical changes to the area under consideration for this alternative include:

- Extending the southbound MD 355 left turn lane for vehicles turning left onto South Wood Road.
- Constructing a pedestrian and bicycle underpass approximately 30 feet below MD 355 to provide a fully separated crossing for pedestrians and bicyclists. Access to the underpass will be provided via elevators, escalators, and stairs.

Alternative 2B: Pedestrian/Bicycle Underpass and Deep Elevators with TSM/TDM improvements incorporates all of the features of Alternative 2A with the addition of deep elevators on the east side of MD 355 that provide direct access, 118 feet below grade, to the Metrorail station. The deep elevators will give employees and visitors to NNMC direct access from the Metrorail station platform to the South Wood Road entrance without having to cross MD 355 at grade.

Alternative 3: Grade Separation of MD 355 under South Wood Road/South Drive involves lowering MD 355 to cross under South Wood Road and South Drive. South Wood Road and South Drive would be reconstructed to provide through movements only (without a signal) for vehicles, pedestrians and bicycles at its existing grade. Vehicle access to MD 355 would be provided via a relocated at-grade intersection 400 feet north of the South Wood Road/South Drive crossing. An exit/entrance "jug handle" would be located between the new intersection and the north side of the NIH "Kiss and Ride," connecting to South Drive.

PUBLIC INVOLVEMENT

Because of the relatively small size of the study area, previous studies, and public interest in the area, the study team developed a public involvement plan for the project. The plan includes using regular ongoing public outreach measures such as monthly BRAC Implementation Committee meetings and the project website, as well as some unique events and publications for this project. The target audience for the public outreach includes the adjacent communities, employees, visitors and patients at the NNMC and NIH, current or potential WMATA transit users, and travelers along MD 355. Public activities this year included a public

meeting that was held in January 2010 at the Bethesda Chevy Chase Regional Services Center and a presentation to the BRAC Implementation Committee in May 2010. A public workshop was held on July 20, 2010 at Bethesda-Chevy Chase High School.

ENVIRONMENTAL CONSIDERATIONS

An environmental inventory and assessment of the project area has been completed to identify socio-economic, cultural, and natural environmental resources within the project area. A preliminary assessment of potential impacts is included in Tables 1, 2 and 3.

SOCIO-ECONOMIC RESOURCES

Right-of-Way and Displacements

Depending on the alternative chosen, approximately 0.3 acres to 3.1 acres of right-of-way from the NIH would be required and approximately 0.5 to 1.2 acres of right-of-way would be required from the NNMC. No displacement or relocation of residences and businesses are anticipated for this project. Right-of-way impacts are shown in **Table 1** below.

Table 1: Right-of-Way and Displacements

Features	Alternative 2A	Alternative 2B	Alternative 3
Number of Residential Properties Affected	0	0	0
Number of Commercial Properties Affected	0	0	0
Number of Displacements	0	0	0
NIH Right-of-Way (acres)	0.60	0.60	3.14
NNMC Right-of-Way (acres)	0.52	0.53	1.23
Total Right-of-Way (acres)	1.12	1.13	4.37

Pedestrian and Bicycle Access

For each of the proposed alternatives, pedestrian and bicycle access facilities will be maintained during and after construction, in configurations similar to existing conditions. The project team has solicited comments regarding impacts related to Alternative 3, and has not received documented concerns regarding impacts to pedestrian/bicycle facilities.

Smart Growth

Smart growth is characterized by compact, transit-oriented, bicycle-friendly land use, with neighborhood schools, walkable streets, mixed use development and a wide range of housing choices.

The study area is located one mile north of downtown Bethesda. North of the NNMC and NIH campuses, land use consists of single-family residential communities. South of Jones Bridge Road land use consists of medium to high density residential and commercial development. Specific nearby facilities include a country club, the Stone Ridge School of the Sacred Heart, and several parks. The Uniformed Services University (USU) of the Health Sciences is a military institution and medical school located on the NNMC campus on Jones Bridge Road. Land in close proximity to the NNMC and NIH is either fully developed or protected as parkland, historic resources, or federal institutions.

Subsequent to the 1992 Planning Act, Maryland established the Priority Funding Act (1997) to direct State funded growth-related projects to areas designated by local jurisdictions as Priority Funding Areas (PFAs). The study area is located inside the Capital Beltway and is within the Priority Funding Area (PFA).

Conformance with Local/Regional Plans

Land use in Bethesda follows Montgomery County's General Plan development of Wedges and Corridors, which was established in 1964. This development plan focuses development along major radial transportation corridors that originate in Washington, D.C., and preserves wedges of open and agricultural land in between. The major radial corridor within the vicinity of this study is I-270/MD 355. Improved access to mass transit facilities will encourage planned growth along this corridor. Increasing transit usage is also part of the approach to mitigate forecasted congestion levels in this area of Montgomery County associated with BRAC impacts.

Environmental Justice

In compliance with Executive Order (EO) 12898 "Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations," Montgomery County is taking steps to avoid disproportionate high and adverse effects on minority and low income communities.

The population of the Bethesda Census Designated Place is 58,936 and roughly 19 percent is minority. The population is 80.7 percent White, 9.1 percent Asian, 5.5 percent Hispanic, 2.6 percent Black or African American, 1.8 percent Two or More Races, 0.1 percent Some Other Race, and zero percent Hawaiian Native or Pacific Islander.

The NIH Final EIS for the Master Plan 2003 Update (March 2005) determined that based on the population diversity and average incomes in the census tracts surrounding the NNMC and the NIH, the area does not contain an identifiable minority or low income community and disproportionate impacts to such communities are therefore not anticipated.

Indirect and Cumulative Effects

In accordance with NEPA and Council on Environmental Quality (CEQ) regulations (40CFR 1508.25), the indirect and cumulative effects of the MD 355/Multimodal Crossing project were evaluated.

Indirect Effects

The MD 355/Rockville Pike Crossing Project is intended to improve access to mass transit facilities in one of the most congested areas in the region. This project will not increase roadway capacity overall in the corridor and therefore does not provide a means to encourage new development within the study area. Therefore, there should be no indirect effect caused by the project on natural, cultural, or social resources in the vicinity of the project.

Cumulative Effects

Several projects in the study area are also planned to enhance/improve access to mass transit facilities, improve pedestrian and bicyclist mobility and safety, and improve traffic operations.

The WMATA Medical Center Metrorail Station Access Improvement Study (July 2009), by Washington Metropolitan Area Transit Authority (WMATA), in collaboration with the Maryland Department of Transportation (MDOT) examined access improvements for the Medical Center Metrorail Station by assessing existing station access for all travel modes, including pedestrian, bicycle, bus, and personal automobile, as well as the station's ability to accommodate both general and BRAC-related growth in the immediate area.

For the Maryland State Highway Administration (SHA) Intersections Improvement Project, SHA is implementing intersection improvement projects that are focused on maintaining the existing or slightly improved Level of Service. These projects include capacity improvements at the intersections to accommodate the increases of BRAC-related traffic and include upgrades to adjoining bicycle and pedestrian paths. The design phase is in progress with scheduled project completion in late 2011.

The four major intersections of the SHA Intersections Improvement Project are:

- MD 355 (Rockville Pike) and Cedar Lane
- MD 187 (Old Georgetown Road) and Cedar Lane
- MD 355 (Rockville Pike) and Jones Bridge Road
- MD 185 (Connecticut Avenue) and Jones Bridge Road.

Montgomery County is conducting a Facilities Study for the construction of new and renovated pedestrian and bicycle paths in the area surrounding NNMC to accommodate BRAC-related growth. Reconstruction of the MD 355 bike path is underway and other improvements are being designed for East Cedar Lane, West Cedar Lane, Battery Lane and Glenbrook Parkway, and Jones Bridge Road. All projects are scheduled for construction completion by September 2011.

The Maryland Transit Administration (MTA) Purple Line is a 16-mile east-west, high capacity, rapid transit way extending from Bethesda in Montgomery County to New Carrollton in Prince George's County. If constructed, the Purple Line would enhance transportation to the Medical Center Metrorail Station by connecting it to communities in Prince George's and Montgomery counties.

The MD 355/Rockville Pike Crossing Project stands alone from these other area projects and will address safety and capacity issues for those who access NNMC and NIH from the Metrorail station and the community. The limits of the study are centered on the intersection of MD 355 with South Wood Road and South Drive because of its proximity to the Medical Center Metro Station and high volumes of pedestrians and bicyclists crossing MD 355 at that location.

CULTURAL RESOURCES

Above-Ground Resources

NIH Resources

The NIH undertook a cultural resource inventory of its property and determined twenty (20) buildings are eligible for listing in the National Register of Historic Places (NRHP), either individually or as contributing resources to a historic district. Two of these buildings are located within the project area; "The Stone House," and the Caretaker's Cottage, and are known as the George Freeland Peter Estate (M: 35-9-1). In 1985, the Maryland Historical Trust determined the Peters Estate is eligible for listing in the National Register, but the documentation does not clearly define it as a Historic District. The Peter Estate consisted of the following contributing resources; the Main House (or "Stone House"), the Caretaker's Cottage, the formal garden off the south axis, the rounded stone wall and fountain and the terraced walls on the hill below the primary facade. The MHT documentation considers the south side of South Drive and the west side of Rockville Pike as a contributing landscape resource that is included within M: 35-9-1.

NNMC Resources

The proposed build alternatives would encroach on the NNMC Historic District, which was listed in the NRHP in 1998 and consists of 131 acres and eighteen (18) contributing buildings. The historic district's landscape fronts Rockville Pike and is identified in the NRHP nomination form as contributing to the historic character of the property. The nomination defines the significance of the landscaped semi-circular area in front of building 1 (Bethesda Naval Hospital Tower) as "An integral part of Building 1 ... its front landscape area and monumental flagpole set directly on center with the main tower." The formal landscape immediately west of Building 1 is semicircular in appearance, shaped by the formal semi-circular drive (Wood Road) that leads visitors into the site from the north and from the south." The nomination emphasizes the role the landscape plays in defining the architectural experience of the building: "the extensive greensward surrounding the monument remains much as it appeared after its initial development. The experience, therefore, of entering a prominent and distinguished naval facility is clear and one is compelled to acknowledge and admire that which remains of its architectural character." The landscaped grounds south of South Wood Road, east

of MD-355 and north of Jones Bridge Road are also considered a contributing resource in the NNMC NRHP district.

Archaeological Sites

Research identified sixteen (16) documented archaeological sites within the one-mile study area. Of these sites, eleven (11) are prehistoric and five (5) are multicomponent sites that exhibit evidence of both prehistoric and historic occupation. The prehistoric sites date from the Paleoindian Period (10,000 BC to 7,500 BC) through the Late Woodland (AD 900 to AD 1650) and consist of short-term resource procurement and seasonal occupation camps with many of the sites represented by lithic scatters. The historic sites date from the late 18th century through the early 20th century and represent the occupation of owners before the development of the NIH and NNMC.

None of the recorded sites on either the NIH or NNMC properties are located within the immediate area of ground disturbance for this proposed undertaking and would not be affected by the project. The archeological site nearest the project area is 18MO35, a prehistoric site of undetermined temporal association with materials suggesting long-term occupation from the Paleoindian (10,000 BC to 7,500 BC) to the Woodland Period (1,000 BC to AD 1600). The site is located approximately 2,640 feet (800 meters) due west of the project area in the NIH property. It was first documented in 1971 and has not been evaluated for NRHP eligibility.

Many of the prehistoric sites located on both NIH and NNMC have been formally evaluated for eligibility for listing in the NRHP and were determined not eligible due to disturbed context from previous disturbance or lack of diagnostic cultural materials.

In NIH's 2003 Master Plan Update, an area of archaeological sensitivity is identified on NIH property between the Power Plant parking lot and MD 355, just northeast of the Metrobus "Park and Ride".¹ The area was designated as sensitive for archaeology based on the lack of prior surveys and its location on the lightly developed periphery of NIH.

While the project vicinity has a moderate potential for containing archaeological sites, prior disturbance within the Archaeological Areas of Potential Effect (APEs) significantly reduces that potential. The Archaeological APE for Alternative 2 (A and B) includes areas within and immediately adjacent to existing MD 355 and South Wood Road. It is unlikely that any portion of the APE retains integrity.

The Archaeological APE for Alternative 3 likewise includes areas primarily within and immediately adjacent to existing roadways. New construction includes installation of a new exit/entrance road connecting MD 355 to South Drive to the west of MD 355 (on NIH property). This proposed "jug handle" road passes through the southern end of the archaeologically sensitive area noted in the NIH master plan. The proposed road, however, follows active and

¹ NIH Master Plan 2003 Update, Chapter 4, Section 6.2 Archeological Sites. Pg. 51.

former parking lots. Previous disturbance of this area has likely compromised potential archaeological integrity.

Effects on NRHP Properties

The build alternatives have the potential to directly and indirectly affect historic properties. Alternative 1 (No Build) would have no impact on historic properties.

Alternatives 2A & 2B Pedestrian/Bicycle Underpass, Deep Elevators, and TSM/TDM Improvements

Above-Ground Historic Properties

The effects of Alternatives 2A and 2B would result in both minor direct and indirect effects on the above-ground historic properties and archaeological resources. Relocating the NNMC fence along MD 355 is a direct effect, but could be accomplished in a manner that is sympathetic to the NNMC Historic District and be considered minor; subtly angling the fence eastward to allow for the widening of MD 355 could retain the fence's delineation of the significant semi-circular shaped lawn in front of the NNMC tower.²

Consideration of this as a minor direct effect would be conditional on review of the final design. Currently, much of the semi-circular lawn area is a paved construction-staging zone for the relocation of the former Walter Reed Army Medical Center facilities to the NNMC campus. A section of this fence has been removed to provide for a paved construction access road off MD 355. The completion of this major construction project is scheduled for 2011 and the restoration of the lawn may present an opportunity to sensitively re-align this fence, if needed.

Additional direct effects associated with this alternative with deep elevators (Alternative 2B) include construction of glass kiosk-like structures to house the two new elevators on the NIH side and the two new elevators on the NNMC side. In addition to additional at-grade paving on both sides, a small-scale canopy for Metrorail access will be constructed on the NNMC side sheltering the stairs and escalator to the mezzanine level of the Metrorail station. These structures would have a direct effect on the Peters Estate property and the NNMC Historic District.

As noted previously, the Peters Estate landscape on the NIH side of this intersection was compromised when the Metrorail stop was constructed. Additional structures of like or smaller scale would not significantly decrease the integrity of this already-compromised setting. Additional structures on the NNMC side under this alternative would not affect the semi-circular lawn area in front of the Art Deco style NNMC tower.

² This alternative would include a minor relocation of the fence. The NRHP nomination form identifies the existing fence as a later addition, noting that an original "sheep fence" was a part of the landscape. The nomination does maintain, however, the current fence evidences the simplicity, character and feeling of the original fence. NRHP Registration Form, M: 35-98, National Naval Medical Center Historic District, Section 8 Pg. 49.

The landscape south of the South Wood Road is also considered a contributing resource in the NNMC NRHP Historic District and this area would be physically changed. The project area is a relatively dense built environment and within this context the proposed elevator structures and canopy are small in scale. Although this corner is a very public portion of the 131 acre NNMC Historic District, the proposed additional structures in this area may not be considered a substantial enough change to the landscape to require the landscape to be considered a non-contributing resource in the historic district. In other words, given the limited scale of proposed construction, the densely built character of the project area, and the character and size of the 131 acre historic district; the kiosks, canopy, and the additional pavement may not be considered an adverse effect to the NNMC historic district. Final location of these structures will determine viewshed impacts, which will further determine this alternative's impact to the above ground historic resources.

Other physical changes represented by this alternative are more minor in scale. They consist of widening a curb on property that is not historic, changing the texture of pedestrian crossings that currently exist, and building a raised pedestrian refuge island in an existing crosswalk. The scale and nature of these proposed actions are similar to the MD 355 Rockville Pike improvement projects at the intersections of Old Georgetown Road and Jones Bridge Road.

Archaeological Resources

It is anticipated that all ground disturbance associated with Alternative 2 will take place within areas of substantial prior disturbance. Therefore, significant archaeological sites are not likely to be present or affected.

Alternative 3– Grade Separation of MD 355 under South Wood Road/ South Drive

Above-Ground Historic Properties

Substantial construction activity would be required for lowering MD 355 below grade and provide a “jug handle” exit/entrance drive to NIH's South Drive. Long-term effects on the NRHP property's character-defining features in the 0.5 mile Above-Ground APE would result.

Lowering the MD 355 roadbed would include the construction of significant below-grade retaining walls. The front lawn area of the NNMC Historic District is a defining feature of the district and would be blocked from view for motorists on MD 355. In addition, the current metal and masonry pier fencing around the NNMC Historic District, which the nomination states is not historic but does contribute to the setting, would not be seen by motorists along this lowered segment of MD 355.

Although the NNMC landscape would not be viewable from the lowered section of MD 355, character-defining features of the significant landscape would not be changed to the extent that the landscape would no longer be considered a contributing resource of the NRHP Historic District.

Other elements of this alternative, including the relocation of a bus stop, realignment of the Hiker Bike Trail, and sidewalk improvements are small in scale and would have little

potential to change the character-defining features of NRHP properties in the Above-Ground APE.

Archaeological Resources

It is anticipated that most ground disturbance associated with Alternative 3 would take place within areas of substantial prior disturbance, including the existing alignment of MD 355, South Woods Road, and current and former parking lots. If portions of undisturbed land are affected by the addition of a road between MD 355 and South Drive, a Phase I identification survey may be required. These areas are expected to be small and isolated.

Once the location of proposed stormwater management facilities and staging areas is known, the potential effect of these facilities on archaeological resources will be assessed. Placement of stormwater management facilities and/or staging areas within undisturbed portions of the NIH archaeological sensitivity area may require a Phase I identification survey to determine if potentially significant archaeological sites are present that and/or affected.

Table 2 lists the NRHP and NRHP eligible impacts for the three build alternatives. It should be noted, however, that the impacts in the table reflect the total area of the proposed right-of-way that the improvements are within. The actual footprint of the improvements on the landscape will be less.

Table 2: Estimated Historic Property Impacts (Acres)

Features	Alternative 2A	Alternative 2B	Alternative 3
NNMC Fence and Landscape (Contributing Resource to the NNMC Historic District)	0.5	0.5	1.2
East Lawn between Stone House and MD 355 (Contributing Resource to Peter Estate)	0.3	0.3	0.1

NATURAL ENVIRONMENTAL RESOURCES

Wetlands and Waters of the U.S.

Lake Eleanor is located in the lawn area of the NNMC between MD 355 and the Naval Hospital Tower (Palustrine Open-Water). No wetlands are associated with the existing stream system (Stoney Creek) which is located beyond the study area (Wetland Investigation Report, NNMC FEIS). No wetlands are present on the NIH campus and the NIH stream is located to the west of the study area (NIH Master Plan 2003 Update, March 2005). No impacts to Waters of the United States (U.S.), including wetlands, would occur under any of the proposed alternatives.

Floodplains

The 100-year floodplain of Stoney Creek is located on the NNMC facility beyond the project area. The floodplain associated with the NIH stream is also located beyond the project area. No impacts to designated 100-year floodplains are anticipated for this project.

Section 4(f)

There are no publicly-owned parklands, recreation areas, wildlife and/or waterfowl refuges present in the study area. Archeological and historic resources are present in the study area, and they are the only potential Section 4(f) resources in the study area. MCDOT has initiated formal consultation with the Maryland Historical Trust, and MCDOT will be conducting a Section 4(f) Evaluation to evaluate the impact of the project alternatives on Section 4(f) properties.

Forest Conservation and Specimen Trees

According to previous studies, no forest resources are present in the project area. Five of Montgomery County's champion trees are located on the NIH campus; however, they are beyond the project area. Vegetation on the NNMC property along MD 355 consists of "formal plantings found around developed areas." Wooded areas are located along the eastern portion of the property beyond the study area. According to available resources, the wooded areas on the NIH campus are maintained tree lawns and do not meet the definition of forest established by Montgomery County and the Maryland Department of Natural Resources (MDNR). Alternative 3 would impact approximately 0.6 acres of tree lawn area.

Roadside trees are located within the publicly-owned right-of-way along MD 355 and on the NIH and NNMC properties in the project area. Significant trees, those having a diameter at breast height (DBH) of 24 inches or greater, and specimen trees, those having a DBH of 30 inches or greater, were identified in the field. The number of significant or specimen trees that would be impacted by the proposed alternatives is shown in Table 3. Any unavoidable impacts to trees within the publicly-owned right-of-way will require a Roadside Tree Permit from MDNR Forest Service. Land development in the project area is also subject to Forest Conservation Act (FCA) approval administered by M-NCPPC. Both FCA and Roadside Tree Permit authorizations will be obtained for the Selected Alternative.

Rare, Threatened, and Endangered Species

According to the US Fish and Wildlife Service (USFWS) (letter dated January 27, 2010) and the MDNR Natural Heritage Division (letter dated January 13, 2010); there are no known occurrences of federal or State listed rare, threatened, or endangered species in the project area. None of the proposed alternatives would affect any known Federal or State listed rare, threatened, or endangered species or their habitat. Copies of the letters from the USFWS and MDNR are included in the **Trilogy Letter** attachment. **Table 3** summarizes potential natural environmental impacts for the build alternatives.

Table 3: Natural Environmental Impacts¹

Features	Alternative 2A	Alternative 2B	Alternative 3
Wetlands (acres)	0	0	0
Streams (LF)	0	0	0
Floodplains (acres)	0	0	0
Parks (acres)	0	0	0
Trees DBH - 24" and Larger (number)	17	17	27

Impacts may be further reduced in final design as a result of more detailed engineering

AIR QUALITY

The MD 355/Rockville Pike Crossing Project involves modifications to the built environment within an urban setting and will not add significant roadway capacity. The proposed improvements will connect the existing north-south bike path along the west side MD 355 with the sidewalk on the east side, providing mobility choices (pedestrian, bicycle and transit), with the potential to reduce use of single occupancy vehicles through this area.

The MD 355/Rockville Pike Crossing Project is not predicted to cause or exacerbate a violation of the national air quality standards and is not expected to measurably increase regional emission burdens or Maryland state levels. The MD 355/Rockville Pike Crossing Project is also not expected to violate the PM_{2.5} standard.

This project is included in the Transportation Improvement Program (TIP) for the Metropolitan Washington Region, 2010-2015 as part of the BRAC intersection improvements near NNMC. TIP ID 5423 provides for the design and construction of intersection improvements at key locations along access routes to the NNMC, and includes bicycle and pedestrian facilities.

BRAC activities at the NNMC are included in the Maryland Department of Transportation 2010 Statewide Transportation Improvement Program. Tasks specified in the TIP include a feasibility study for the Medical Center Metrorail Station entrance, with an emphasis on transit improvements in a "heavily urbanized setting."

NOISE

The project will affect a small amount of linear right-of-way along MD 355. Noise analysis is not planned due to the absence of noise sensitive areas within this section of MD 355. Furthermore, this project will not improve roadway capacity beyond the study limits and therefore will not affect traffic volumes.

HAZARDOUS MATERIALS

A Hazardous Materials Screening Assessment was completed for the project area. The assessment identifies potential properties of concern based on a database search of regulatory

files for potentially contaminated sites in and around the project area. The geographically based regulatory database and historic document searches were performed by Environmental Data Resources, Inc. (EDR) and covered a study area extending approximately one half mile from the project site.

Federal CERCLIS list

CERCLIS: The Comprehensive Environmental Response, Compensation and Liability Information System contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the CERCLIS list, as provided by EDR, and dated 01/29/2010 has revealed that there is 1 CERCLIS site within approximately 0.5 miles of the target property, specifically, NNMC.

Federal RCRA CORRACTS facilities list

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 03/25/2010 has revealed that there are two CORRACTS sites within approximately one mile of the target property, specifically, NIH and NNMC.

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-TSDF list, as provided by EDR, and dated 02/17/2010 has revealed that there are two RCRA-TSDF sites within approximately 0.5 miles of the target property, specifically, NNMC and NIH.

Federal RCRA generators list

RCRA-LQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as

defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

A review of the RCRA-LQG list, as provided by EDR, and dated 02/17/2010 has revealed that there are two RCRA-LQG sites within approximately 0.25 miles of the target property, specifically, NIH and NNMCM.

State and tribal leaking storage tank lists

OCPCASES: Cases monitored by the Oil Control Program.

A review of the OCPCASES list, as provided by EDR, and dated 04/12/2010 has revealed that there is one open OCPCASES site within approximately 0.5 miles of the target property, specifically, NIH.

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of the Environment's Listing of Underground Storage Tanks Reported in Maryland.

A review of the UST list, as provided by EDR, and dated 05/03/2010 has revealed that there is one UST site within approximately 0.25 miles of the target property, specifically, NIH.

Other Ascertainable Records

LRP: A listing of Land Restoration Program sites. Site types included in the database are: Voluntary Cleanup Program, National Priority List, Brownfields, Site Assessment, Formerly Used Defense Site, State Master List, Non Master List, Groundwater Investigation and Federal Facility.

A review of the LRP list, as provided by EDR, and dated 03/15/2010 has revealed that there is one LRP site within approximately 0.5 miles of the target property, specifically, NIH.

LONG-TERM MAINTENANCE COMMITMENTS

For Alternatives 2A and 2B, there would be mechanical elements, such as escalators and elevators that would require regular maintenance by the facility owners. The proposed roadway and underpass improvements that are included with Alternative 3 would require standard inspections and maintenance to ensure pavement and structure integrity.

CONCLUSION

Based on the information presented, we recommend that this project be appropriately classified a Categorical Exclusion with Section 4(f) Evaluation. If you agree, please indicate

Mr. Nelson Castellanos
September 9, 2010
Page 16 of 16

your concurrence on the signature line below. If you have any questions regarding this project please call Ken Kendall, at 240-777-7267 or Janie Tiedeman, at 410-891-9287.

Sincerely,



Holger Serrano, P.E.
Engineering Services Specialist

Concurrence:

Division Administrator
Federal Highway Administration

Date

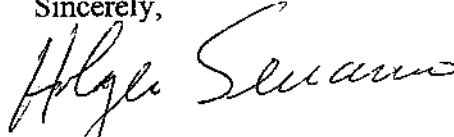
Enclosures:

cc: Mr. Edgar Gonzalez, MCDOT
Mr. Ken Kendall, MCDOT
Mr. Jeff Miller, NNMC
Ms. Susan Hinton, NIH
Mr. Bradley Smith, Maryland State Highway Administration (OPPE)
Ms. Janie Tiedeman, URS Corporation

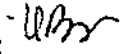
Mr. Nelson Castellanos
September 9, 2010
Page 16 of 16

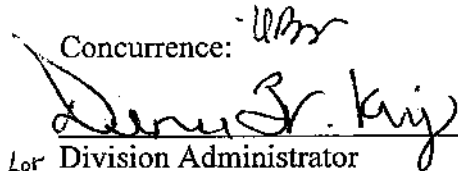
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Sincerely,



Holger Serrano, P.E.
Engineering Services Specialist

Concurrence: 

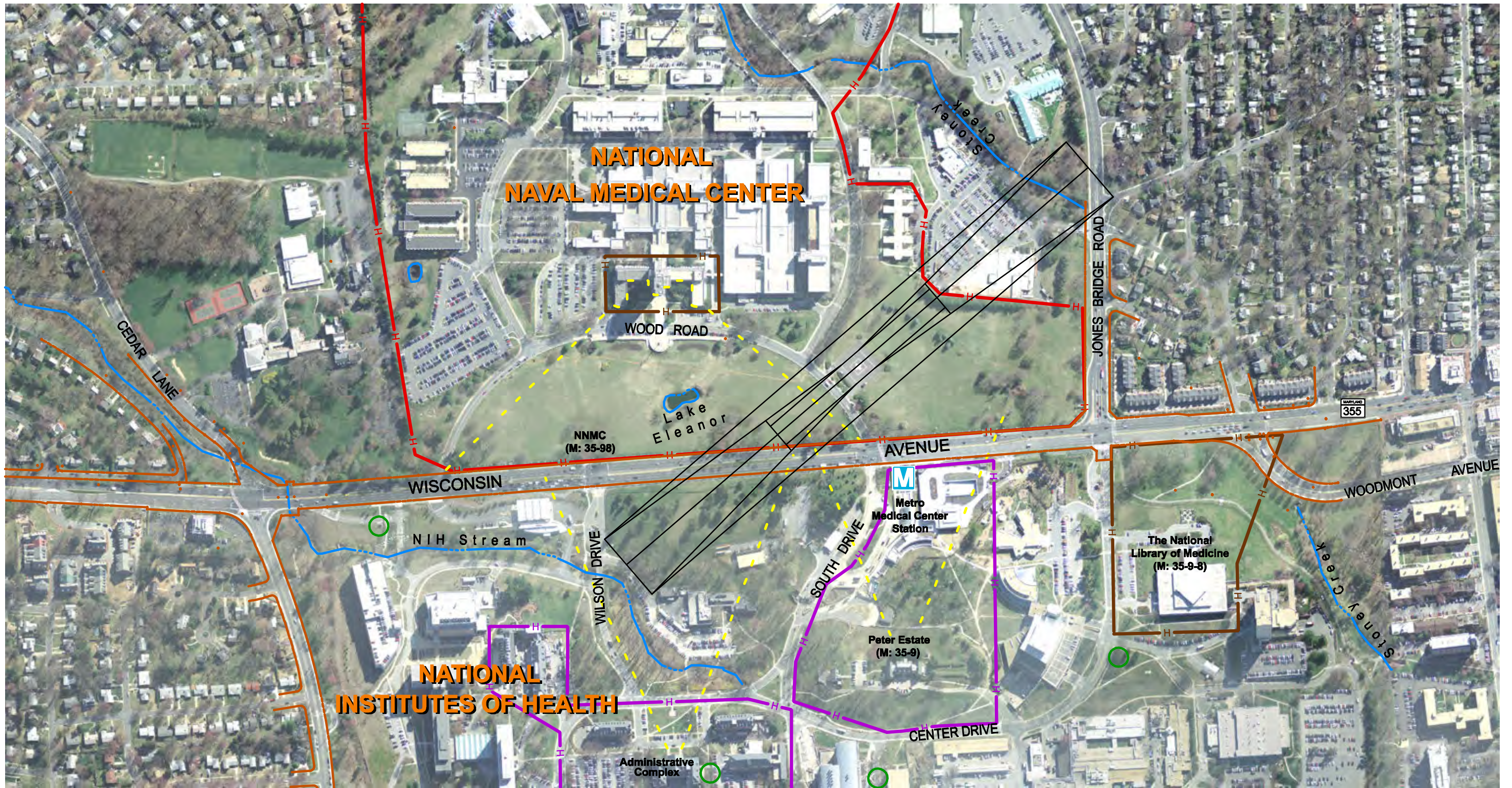

for Division Administrator
Federal Highway Administration

Date

9/15/10

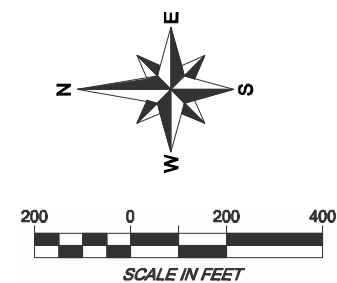
Enclosures:

cc: Mr. Edgar Gonzalez, MCDOT
Mr. Ken Kendall, MCDOT
Mr. Jeff Miller, NNMC
Ms. Susan Hinton, NIH
Mr. Bradley Smith, Maryland State Highway Administration (OPPE)
Ms. Janie Tiedeman, URS Corporation



Legend

- | | |
|--|------------------------------|
| Historic District Boundary | Streams / Waters of the U.S. |
| National Register List | County Champion Tree |
| National Register Eligible | Metro Station |
| Protected Open Space and Historic Resource Viewsheds | Existing Right-of-Way |
| | Airspace Restrictions |



Montgomery County
Department of Transportation

MD 355 Multimodal Crossing Study
Environmental Features

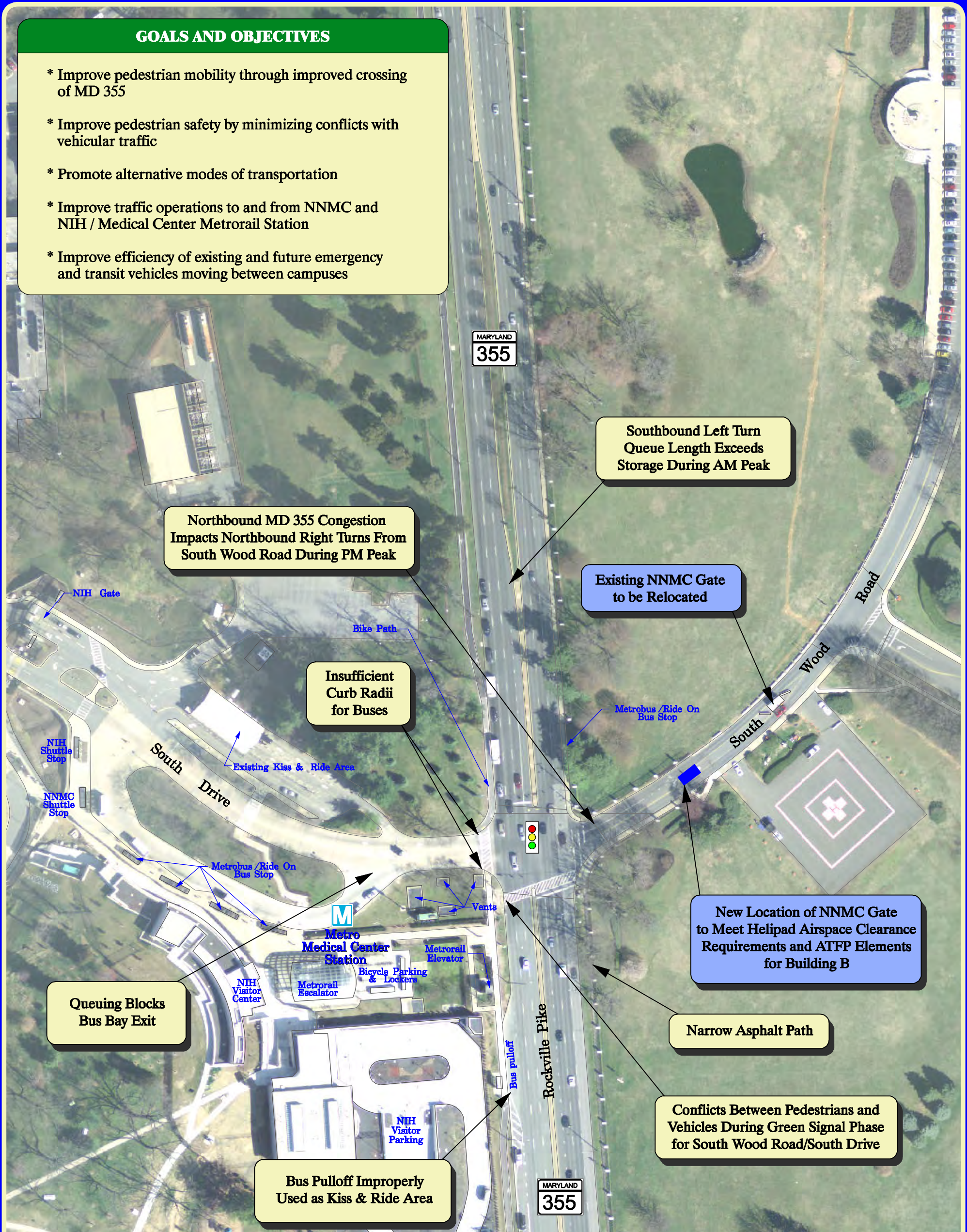
URS

January 2010

GOALS AND OBJECTIVES

- * Improve pedestrian mobility through improved crossing of MD 355**
- * Improve pedestrian safety by minimizing conflicts with vehicular traffic**
- * Promote alternative modes of transportation**
- * Improve traffic operations to and from NNMCC and NIH / Medical Center Metrorail Station**
- * Improve efficiency of existing and future emergency and transit vehicles moving between campuses**

- * Improve pedestrian mobility through improved crossing of MD 355**
- * Improve pedestrian safety by minimizing conflicts with vehicular traffic**
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- * Improve traffic operations to and from NNMC and NIH / Medical Center Metrorail Station**
- * Improve efficiency of existing and future emergency and transit vehicles moving between campuses**

 Metro Station

Metro Station



Existing Signal



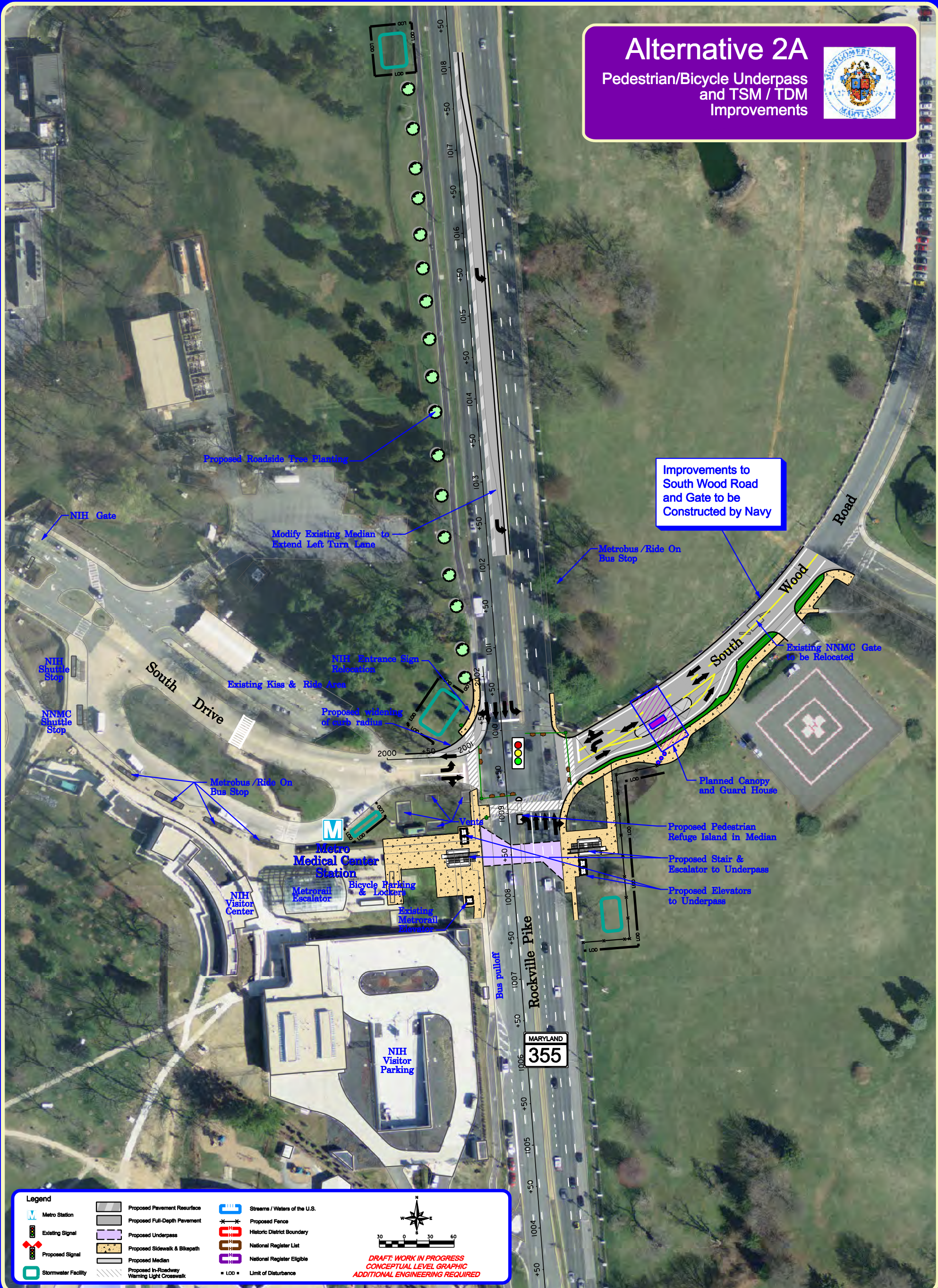
DRAFT: WORK IN PROGRESS

MD 355/Rockville Pike Crossing Project
Alternative 1 - No-Build

June 2010

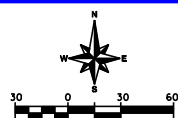
Alternative 2A

Pedestrian/Bicycle Underpass
and TSM / TDM
Improvements



Legend

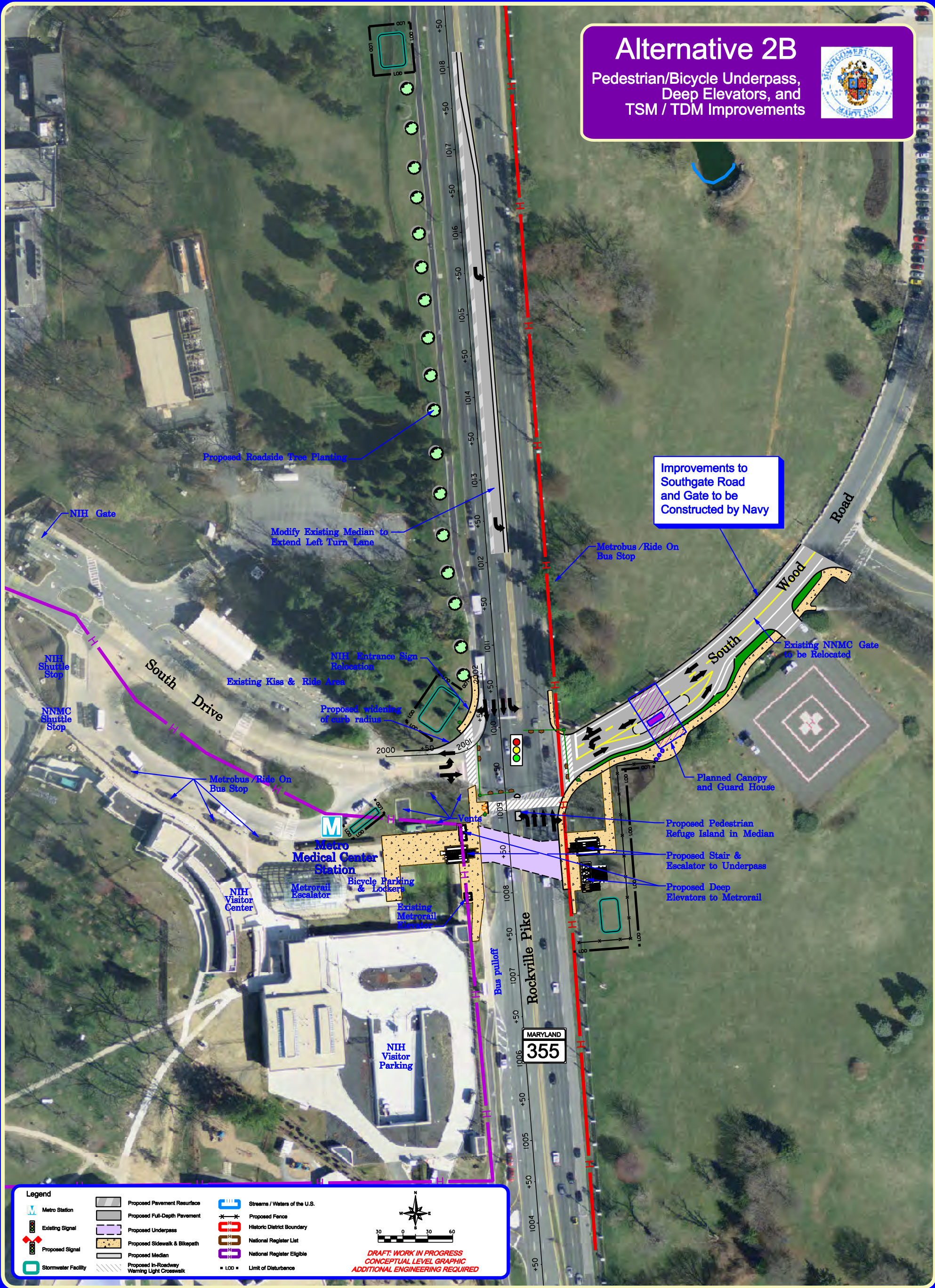
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|--|---------------------|--|---|--|------------------------------|
| | Metro Station | | Proposed Pavement Resurface | | Streams / Waters of the U.S. |
| | Existing Signal | | Proposed Full-Depth Pavement | | Proposed Fence |
| | Proposed Signal | | Proposed Underpass | | Historic District Boundary |
| | Stormwater Facility | | Proposed Sidewalk & Bikepath | | National Register List |
| | | | Proposed Median | | National Register Eligible |
| | | | Proposed In-Roadway Warning Light Crosswalk | | Limit of Disturbance |



DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED

Alternative 2B

Pedestrian/Bicycle Underpass,
Deep Elevators, and
TSM / TDM Improvements



Legend

Metro Station

Existing Signal

Proposed Signal

Stormwater Facility

Proposed Pavement Resurface

Proposed Full-Depth Pavement

Proposed Underpass

Proposed Sidewalk & Bikepath

Proposed Median

Proposed In-Roadway Warning Light Crosswalk

Streams / Waters of the U.S.

Proposed Fence

Historic District Boundary

National Register List

National Register Eligible

Limit of Disturbance

30 0 30 60

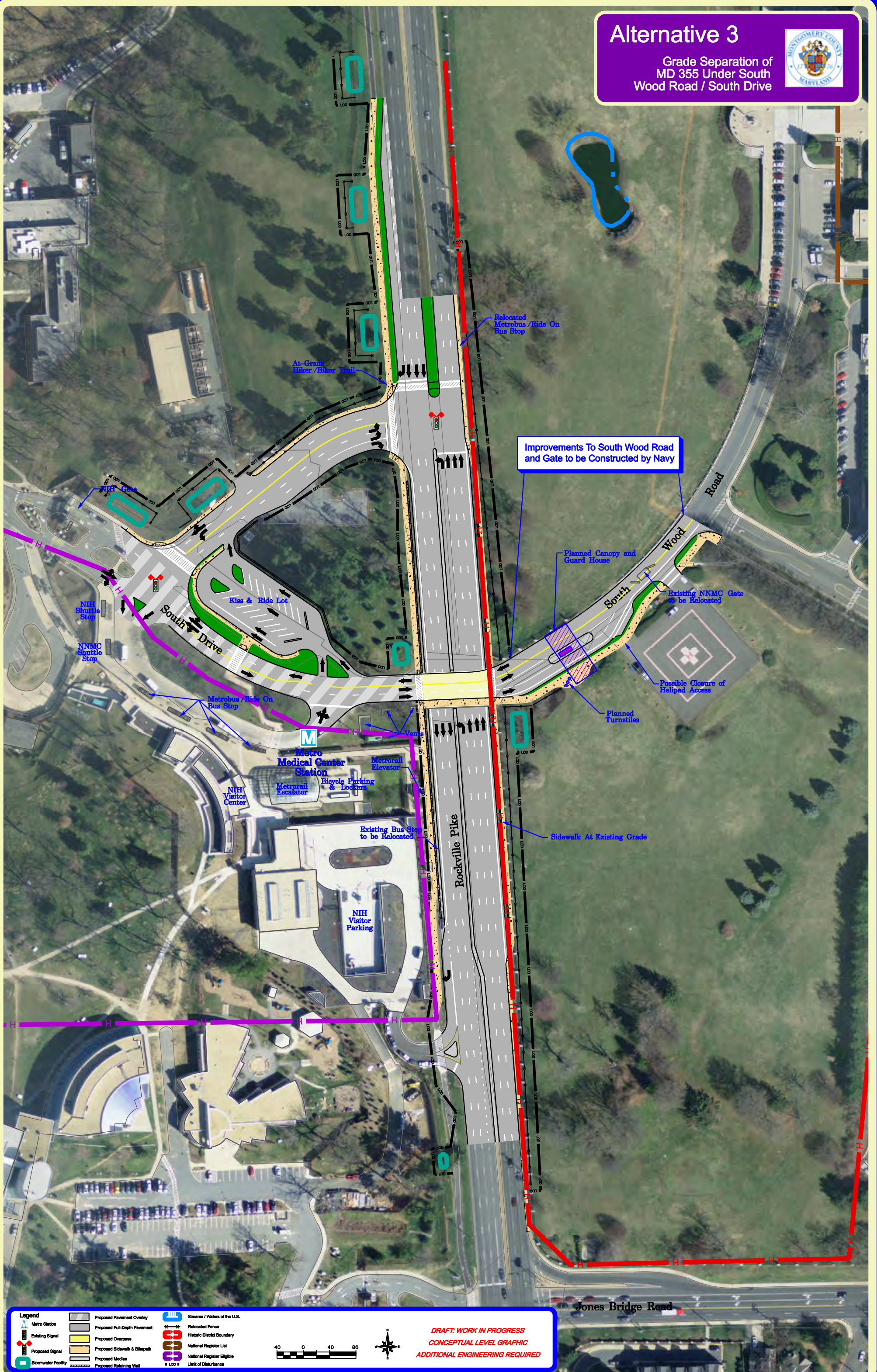
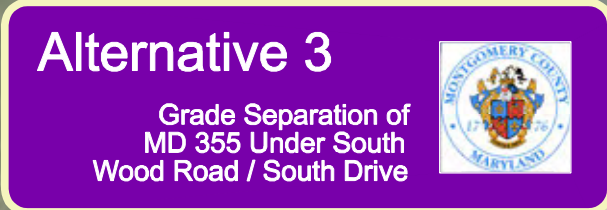
DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED

Alternative 3









Grade Separation of MD 355 Under South Wood Road / South Drive

Alternative 3

Grade Separation of MD 355 Under South Wood Road / South Drive



Legend

	Metro Station		Streams / Waters of the U.S.
	Existing Signal		Relocated Fence
	Proposed Signal		Historic District Boundary
	Proposed Pavement Overlay		National Register List
	Proposed Full-Depth Pavement		National Register Eligible
	Proposed Overpass		
	Proposed Sidewalk & Bikepath		
	Proposed Median		

DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED

DRAFT: WORK IN PROGRESS
CONCEPTUAL LEVEL GRAPHIC
ADDITIONAL ENGINEERING REQUIRED



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 21401
<http://www.fws.gov/chesapeakebay>

January 27, 2010

URS Corporation
4 North Park Drive, suite 300
Hunt Valley, MD 21030

RE: C.I.P. Project No 500722 MD 355 Multimodal Crossing Project Montgomery County MD

Dear: Warren Gray

This responds to your letter, received January 12, 2010, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

Effective August 8, 2007, under the authority of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service (Service) removed (delist) the bald eagle in the lower 48 States of the United States from the Federal List of Endangered and Threatened Wildlife. However, the bald eagle will still be protected by the Bald and Golden Eagle Protection Act, Lacey Act and the Migratory Bird Treaty Act. As a result, starting on August 8, 2007, if your project may cause "disturbance" to the bald eagle, please consult the "National Bald Eagle Management Guidelines" dated May 2007.



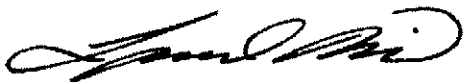
If any planned or ongoing activities cannot be conducted in compliance with the National Bald Eagle Management Guidelines (Eagle Management Guidelines), please contact the Chesapeake State Highway Administration
Maryland Department of Transportation
707 North Calvert Street
Baltimore, MD 21202
Bay Ecological Services Field Office at 410-573-4573 for technical assistance. The Eagle Management Guidelines can be found at:
<http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf>.

In the future, if your project can not avoid disturbance to the bald eagle by complying with the Eagle Management Guidelines, you will be able to apply for a permit that authorizes the take of bald and golden eagles under the Bald and Golden Eagle Protection Act, generally where the take to be authorized is associated with otherwise lawful activities. This proposed permit process will not be available until the Service issues a final rule for the issuance of these take permits under the Bald and Golden Eagle Protection Act.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Devin Ray at (410) 573-4531.

Sincerely,



Leopoldo Miranda
Field Supervisor



MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Eric Schwaab, Deputy Secretary

January 13, 2009

Mr. Bruce M. Grey
Maryland Department of Transportation
State Highway Administration
707 North Calvert Street
Baltimore, MD 21202

RE: Environmental Review for Project No. MO593A21, Bethesda BRAC Intersections Improvements, Montgomery County, Maryland.

Dear Mr. Grey:

For the intersections of MD 355 at West Cedar Lane, MD 355 at Jones Bridge Road, MD 187 at West Cedar Lane and MD 185 at Jones Bridge Road, the Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2008.2492.mo
Cc: G. Golden, DNR



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410/573-4575



January 7, 2009

State Highway Administration
Maryland Department of Transportation
707 North Calvert Street
Baltimore, MD 21202

20090107 14:22:22

RE: Project No. MO593A21 Bethesda BRAC Intersections Improvements Montgomery County

Dear: Bruce M. Grey

This responds to your letter, received December 10, 2008, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

Effective August 8, 2007, under the authority of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service (Service) removed (delist) the bald eagle in the lower 48 States of the United States from the Federal List of Endangered and Threatened Wildlife. However, the bald eagle will still be protected by the Bald and Golden Eagle Protection Act, Lacey Act and the Migratory Bird Treaty Act. As a result, starting on August 8, 2007, if your project may cause "disturbance" to the bald eagle, please consult the "National Bald Eagle Management Guidelines" dated May 2007.

If any planned or ongoing activities cannot be conducted in compliance with the National Bald Eagle Management Guidelines (Eagle Management Guidelines), please contact the Chesapeake Bay Ecological Services Field Office at 410-573-4573 for technical assistance. The Eagle Management Guidelines can be found at:

<http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf>.

In the future, if your project can not avoid disturbance to the bald eagle by complying with the Eagle Management Guidelines, you will be able to apply for a permit that authorizes the take of bald and golden eagles under the Bald and Golden Eagle Protection Act, generally where the take to be authorized is associated with otherwise lawful activities. This proposed permit process will not be available until the Service issues a final rule for the issuance of these take permits under the Bald and Golden Eagle Protection Act.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Devin Ray at (410) 573-4531.

Sincerely,

A handwritten signature in black ink, appearing to read "Leopoldo Miranda Castro", written in a cursive style.

Leopoldo Miranda Castro
Field Supervisor



prepared by:

URS