

**MD 355/Rockville Pike Crossing Project**  
**Final Purpose and Need Summary**  
*July 7, 2010*

**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.

**Need for the Project**

**1. Enhance/Improve Access to Mass Transit Facilities**

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 Base Realignment and Closure (BRAC) impacts. Improved access to the Medical Center Metrorail Station would likely increase the attractiveness of Metro as an alternate mode of travel.

In addition, ridership is anticipated to increase by 56 percent by 2020 with the National Naval Medical Center's (NNMC) commitment to increase employee transit mode usage from 11 percent to 30 percent by 2020 (Source: Washington Metropolitan Area Transit Authority's (WMATA) July 2009 "Medical Center Station Access Improvement Study"). 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.

**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**

The BRAC action will result in the relocation of up to 2,500 employees from the Walter Reed Army Medical Center to the NNMC by September 2011, increasing employee population to 10,500. BRAC related relocations are expected to also increase the number of NNMC 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 NNMC). The Medical Center Metrorail Station serves several thousand National Institutes of Health (NIH) and NNMC employees and visitors, plus serves a significant amount of local area commuters. Ridership is expected to increase in the future and NNMC and NIH employees are expected to comprise about 72 percent of the total

Medical Center Metrorail Station passengers by 2020 (Source: WMATA’s July 2009 “Medical Center Station Access Improvement Study”).

The NNMC BRAC 2005 Record of Decision (ROD) raises a concern regarding traffic conflict between pedestrians and vehicles at the intersection of Rockville Pike and South Wood Road/South Drive. An existing at-grade Rockville Pike crosswalk links NNMC to the Medical Center public transit station at South Wood Road. The current at-grade pedestrian crossing of MD 355 poses a safety concern and causes traffic delays in the morning peak period for vehicles turning east into NNMC's South Wood Road gate from northbound Rockville Pike. In the evening peak period, conflicts between pedestrians and vehicles cause delays and on-post backups for vehicles exiting 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 are making turning movements. In the afternoon peak period, this conflict results in safety concerns and traffic delays and backups on the NIH Campus.

Transit users (Metrorail, Metrobus, RideOn, Kiss & Ride, and NIH/NNMC shuttles) and pedestrians and bicyclists from the surrounding community 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 on MD 355, along with traffic turning into and out of NIH and NNMC. Today, 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. In addition to the Metrorail Station, there is bus service provided by RideOn and Metrobus, and NNMC and NIH shuttle stops. There is also a WMATA Kiss & Ride (drop off) area located at the Metrobus/Ride-On bus transfer area, closest to the NIH security gate. 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 Station Access Improvement Study”).

In addition, improvements to traffic operations at the MD 355/South Wood Road/South Drive intersection would help facilitate the movements of pedestrians, bicyclists, and vehicles accessing NNMC, NIH, and the Metro Medical Center Station. Today, this intersection operates at an overall Level of Service (LOS) C in the AM peak period and LOS F in the PM peak period. In 2030, this intersection is forecasted to operate at LOS D in the AM peak period and LOS F in the PM peak period.

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 this intersection, given in Level of Service (LOS) and delay at each intersection leg, as modeled with Synchro/SimTraffic software, are summarized in **Table 1:**

**Table 1: 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
<b>AM Peak Hour (Existing)</b>	D/37.9	C/23.0	D/49.7	C/31.5	E/75.7	F/80.6	E/78.1	E/71.2
<b>PM Peak Hour (Existing)</b>	A/7.6	C/28.5	D/37.1	B/17.7	F/-	E/72.7	E/71.7	F/204.0
<b>AM Peak Hour (2030)</b>	D/40.6	C/23.7	E/67.7	C/34.3	E/79.4	F/98.3	F/88.5	E/71.8
<b>PM Peak Hour (2030)</b>	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 following conditions are present at the MD 355/South Drive/South Wood Road intersection, which contribute to the operational challenges at this intersection:

- The approach to South Drive from southbound MD 355 contains relatively narrow lanes with restricting curb radii. These two factors make right turns into and out of the Medical Center Metrorail Station somewhat difficult for buses.
- Southbound buses making the turn from MD 355 into the Medical Center Metrorail Station frequently either swing 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 at the intersection.
- 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.
- 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.

**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 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

The following secondary goals and objectives are not central to the Purpose and Need, but are still important considerations. These attributes should not be used as the main factor in determining which alternatives should be analyzed or carried forward, but can be used in order 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 NNMC campuses.