Sabra, Wang & Associates, Inc.
Engineers · Planners · Analysts

MEMORANDUM

TO: Mr. Fred Lees, Acting Chief
Division of Traffic Engineering Operations

FROM: Woody Hood, TSOS, TOPS
Sabra, Wang & Associates, Inc.

SUBJECT: Wheaton Mixed Use Development Review
SWA Project No. 12-10.18

DATE: July 28, 2015

Per your request, we have completed a review of the traffic impact study for the Downtown Wheaton Mixed Use Development prepared by Wells & Associates, Inc. In addition, we have evaluated the impacts of this planned development on several additional intersections around the Wheaton Triangle area. A summary of our findings and recommendations is as follows:

The traffic signal timings in the Wheaton Triangle area were recently updated as part of the County's Pedestrian Initiative, so the first step in reviewing the Synchro files prepared by Wells was to input the correct signal timings. The Synchro files prepared by Wells utilized a 120 second cycle length during the AM and PM peak periods. The signal timings that were implemented as part of the Pedestrian Initiative utilized a new 150 second cycle length during the AM and PM peak periods. The Wells files were updated to reflect the current cycle length, splits, and offsets.

In addition to inputting the recently implemented signal timings, the following corrections were also made to the Wells files:

MD 193 - University Boulevard. at Grandview Avenue - corrected northbound lane configuration.
MD 586 - Veirs Mill Road at Reedie Drive - corrected traffic signal phasing to reflect lead-lag left turn operation currently in place.
MD 97 - Georgia Avenue at Reedie Drive - corrected storage bay length for westbound left turn movement.

A re-assignment of the traffic volumes was also made under the Reedie Drive One-way option. As originally shown in the Wells models, westbound traffic from Reedie Drive east of Georgia Avenue that was destined for the Wheaton Mall area was proposed to turn left onto southbound Georgia Avenue, right onto northbound Veirs Mill Road, and then access the Wheaton Plaza by turning left at the traffic signal at the Wheaton Plaza South/Metro Entrance. Due to the close proximity of the traffic signals at Georgia Avenue/Veirs Mill Road, and Veirs Mill Road/Wheaton Plaza South Entrance, and the skew of the two roadways, the channelized right turn access point from southbound Georgia Avenue onto northbound Veirs Mill Road enters Veirs Mill Road at approximately the mid-point in the left turn storage bay for Wheaton Plaza South. This would create the potential for a serious weaving situation, and potential blockages to northbound Veirs Mill Road. The left turn traffic volume projected to make this movement was re-assigned to pass through the traffic signal at Wheaton Plaza South/Metro Entrance, and access the Wheaton Plaza via the traffic signal at Wheaton Plaza North/Reedie Drive. The traffic signal timings and northbound storage bay length at this location are sufficient to accommodate the additional left turn demand.

The Synchro LOS and Delays were then recorded for each of the following options:

- Baseline Existing - Original Wells Synchro files
- Baseline Updated - Wells files updated with Pedestrian Initiative Timings
- Total Future Reedie One-way - Wells files updated with Pedestrian Initiative Timings
- Total Future Reedie Two-way - Wells files updated with Pedestrian Initiative Timings

Table 1: Synchro LOS and Delay Analysis

Intersection		Existing Volumes		Total Future	
		Baseline	Updated	One-Way	Two-Way
Georgia Ave. at Veirs Mill Rd.	**AM**	**C 34.5**	**C 22.2**	**C 25.6**	**C 24.1**
	PM	**B 19.9**	**B 18.7**	**C 20.3**	**B 19.1**
Georgia Ave. at Reedie Dr.	**AM**	**B 10.9**	**B 14.9**	**B 13.6**	**B 14.4**
	PM	**C 27.3**	**C 25.2**	**C 26.0**	**C 24.9**
Georgia Ave. at Univ. Blvd.	**AM**	**D 42.8**	**D 48.7**	**E 57.3(a)**	**D 52.6**
	PM	**D 45.1**	**D 44.8**	**D 52.9**	**D 54.1**
Veirs Mill Rd. at Wheaton Plaza	**AM**	**C 25.5**	**B 15.8**	**B 19.0**	**B 16.2**
	PM	**D 37.5**	**C 27.6**	**C 30.2**	**C 27.4**
Veirs Mill Rd. at Reedie Dr.	**AM**	**C 27.2**	**C 20.9**	**B 17.6**	**C 20.0**
	PM	**C 32.9**	**C 34.1**	**C 28.1**	**C 30.0**
Veirs Mill Rd. at Univ. Blvd.	**AM**	**D 49.6**	**E 55.2**	**E 61.5**	**E 60.2**
	PM	**D 51.8**	**E 67.9**	**E 78.2**	**E 77.7**
Univ. Blvd. at Grandview Dr.	**AM**	**B 16.2**	**B 17.7**	**C 21.4**	**C 20.2**
	PM	**B 13.0**	**C 25.3**	**E 72.4(b)**	**D 35.1**
(a) Split Adjustment Improves LOS to D 52.7					
(b) Split Adjustment Improves LOS to C 34.3					

Under the Reedie Drive One-way option, the intersection of Georgia Avenue at University Boulevard was projected to have a failing LOS during the AM peak period. With minor adjustment of the intersection splits the LOS at this intersection can be improved to LOS D, with an average intersection delay of 52.7 seconds. Also under the Reedie Drive One-way option, the intersection of University Boulevard. and Grandview Drive. was projected to have a failing LOS during the PM peak period. With minor adjustment of the intersection splits the LOS at this intersection can be improved to LOS C, with an average intersection delay of 34.3 seconds.

The intersection of University Boulevard at Veirs Mill Road currently has failing LOS (Synchro) during both the AM and PM peak periods, and is projected to continue to have failing LOS under either the

Reedie Dr. one-way, or two-way options. It is not possible to improve the failing LOS at this intersection through signal timing adjustments alone. It should be noted that the LOS calculated for this intersection using the "critical lane analysis technique" for all options are LOS "D" or better.

MD 97 (Georgia Avenue) at Reedie Drive

Under the Reedie Drive One-way Option, additional westbound left turn demand would be created at the intersection of Georgia Avenue/Reedie Drive. The westbound left turn storage bay at this location is only 150 feet in length, and would experience left turn "spill back", potentially blocking Reedie Drive. An option to split the side street movements at this location and create and optional westbound double left turn movement was evaluated (**Figure 1**). This intersection currently operates at acceptable Synchro LOS C or better, and would continue to do so even with split side street phasing. Level-of-service calculated using the critical lane analysis technique show this intersection is currently operating at LOS "A", and would remain at LOS "A" even with split side street phasing.

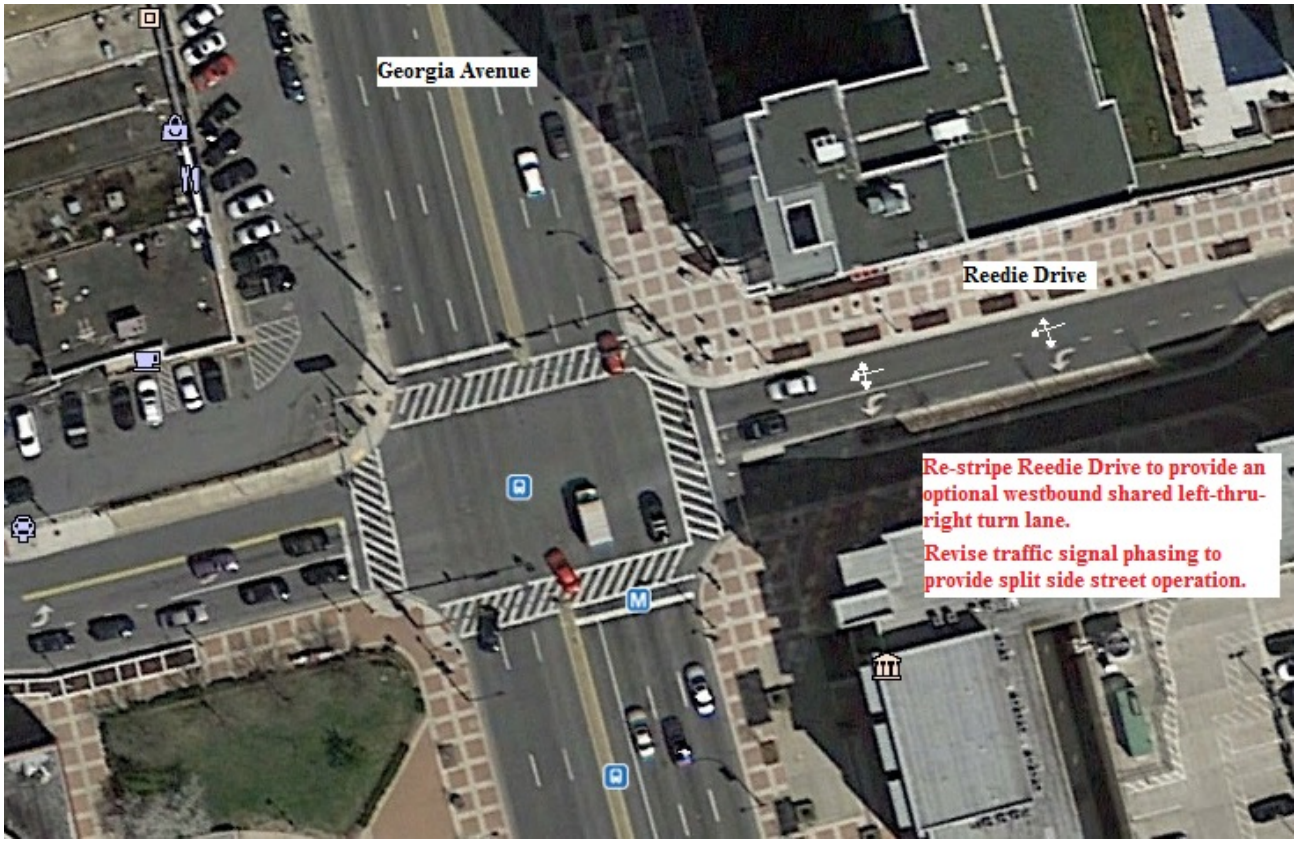

Figure 1: Georgia Avenue at Reedie Drive with optional westbound shared LTR lane.

MD 586 at Wheaton Mall South/Wheaton Metro Entrance

Due to the close proximity of the traffic signals at Georgia Avenue/Veirs Mill Road and Veirs Mill Road/Wheaton Plaza South Entrance, and the skew of the two roadways, the right turn access point from southbound Georgia Avenue onto northbound Veirs Mill Road enters Veirs Mill Road at

approximately the mid-point in the left turn storage bay for Wheaton Plaza South. This would create the potential for a serious weaving situation, and potential blockages to northbound Veirs Mill Road. The traffic volume projected to make this movement was re-assigned to pass through the traffic signal at Wheaton Plaza South/Metro Entrance, and access the Wheaton Plaza via the traffic signal at Wheaton Plaza North/Reedie Drive. The traffic signal timings and northbound storage bay length at this location are sufficient to accommodate the additional left turn demand. If the Reedie Drive One-way Option is selected, it is strongly recommended that a concrete median be constructed that would prevent vehicles turning right from southbound Georgia Avenue from accessing the left turn bay at the Wheaton Plaza South Entrance (**Figure 2**).

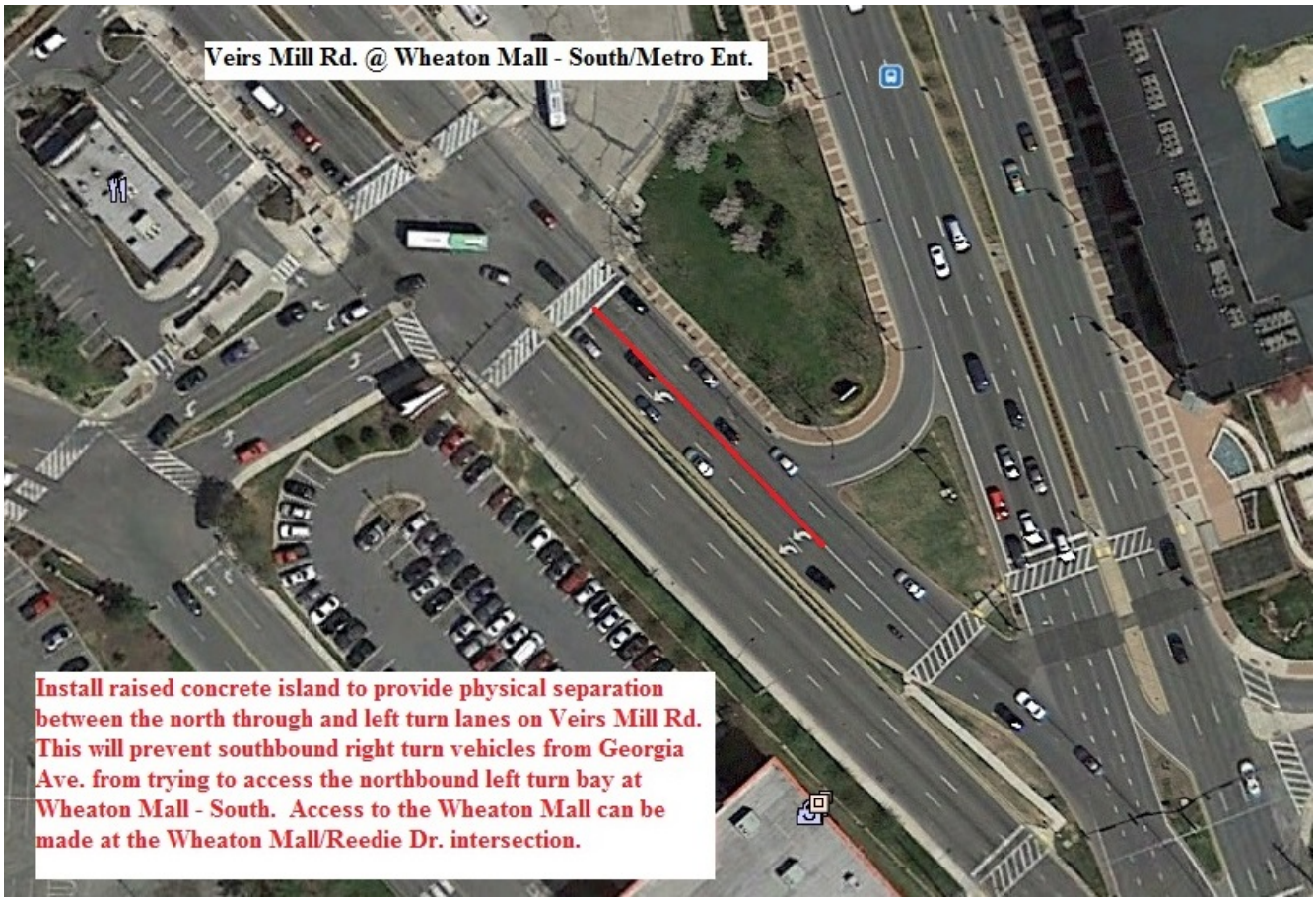

Figure 2: Veirs Mill Road at Wheaton Plaza South/Metro Entrance - proposed channelization - northbound left turn bay.

MD 97 at Blueridge Drive

The intersection of Georgia Avenue at Blueridge Drive was not analyzed as part of the Downtown Wheaton Mixed Use Development. However, significant impacts to this intersection may occur if additional traffic volume, especially transit vehicles, is diverted to this intersection. This intersection was analyzed using volumes collected as part of the Pedestrian Initiative. Based on critical lane analysis of existing traffic volumes this intersection currently operates at LOS "B" during both the AM and PM peak periods. During the PM peak period, the eastbound left turn volume is approx. 425 vehicles. Blueridge Drive intersects Grandview Drive approximately 250 feet west of Georgia Avenue,

which limits the storage area for the eastbound left turn movement to approx. 210 feet. Any increase in this left turn volume will most likely result in additional queuing and delays on this approach, with queues extending into and blocking the intersection at Blueridge Drive/Grandview Drive. It is possible to provide additional green time for this movement however this approach will continue to operate inefficiently due to the limited storage area for eastbound traffic. The eastbound approach currently consists of two lanes: a left turn only lane and a shared left-thru-right turn lane. As shown in **Figure 3**, consideration should be given to constructing an additional eastbound approach lane on Blueridge Drive, which would allow for two exclusive left turn only lanes and a shared thru-right turn lane. This improvement would provide approximately 30% more storage capacity for the eastbound approach.

Figure 3: Georgia Ave. at Blueridge Dr. – with additional eastbound left turn lane.

Blueridge Drive at Grandview Drive

The intersection of Blueridge Drive at Grandview Drive was not analyzed as part of the Downtown Wheaton Mixed Use Development. However, significant impacts to this intersection may occur if additional traffic volume, especially transit vehicles, is diverted to this intersection. This intersection was analyzed using volumes peak hour traffic volumes collected on July 14th, 2015. This is an all-way stop controlled intersection and was analyzed using Synchro/HCM. This intersection is currently operating at LOS "A" (9.2 sec. delay/veh.) during the AM peak period and LOS "B" (11.3 sec. delay/veh.) during the PM peak period. At this time, no improvements or modifications are recommended for this intersection however it should be re-evaluated once build-out of the Downtown Wheaton Mixed Use Development has been completed.

If queue spillback along Blueridge Drive from the intersection at Georgia Avenue impacts operations at this intersection, consideration should be given to installing queue detection on Blueridge Drive immediately east of Grandview Drive. The queue detection should be tied into the traffic signal controller at Georgia Avenue and Blueridge Drive, and used to modify the split timings (Split Demand) at that intersection if/when queues along Blueridge Drive begin to impact operations at the intersection with Grandview Drive.

CONCLUSION:

In conclusion, either option (Reedie Drive one-way or two-way) would be workable, with very similar LOS. The Reedie Drive one-way option would require additional modifications such as lane assignment changes and the splitting of the side street approaches at Georgia Avenue/Reedie Drive, and the construction of a raised concrete dividing island between the northbound left turn lanes and adjacent northbound through lanes on Veirs Mill Road at Wheaton Plaza South/Metro Entrance.

The capacity and efficiency of the eastbound approach of Blueridge Drive at its intersection with Georgia Avenue is limited by the relatively short distance (210 feet) between Georgia Avenue and Grandview Drive. Any additional traffic demand placed on this approach will result in a further reduction in operating efficiency, and will likely result in "spillback" into the intersection of Blueridge Drive and Grandview Drive. Consideration should be given to the construction of an additional eastbound storage lane on Blueridge Drive at its intersection with Georgia Avenue.