



TRANSPORTATION ADVISORY COMMITTEE

To: Arlington Redevelopment Board (ARB), Arlington, MA

From: Transportation Advisory Committee (TAC) Working Group

Subject: Review of Proposed 30-50 Mill Street Project Traffic Impact and Access Study

Date: November 21, 2010

The Working Group (WG) of the Arlington Transportation Advisory Committee (TAC) met with the proponent for the 30-50 Mill Street project on Wednesday, November 17, 2010 to review outstanding issues outlined in the WG's memo dated October 22, 2010. At the meeting, the proponent provided written responses to comments in the October 22 memo and the proponent's traffic engineer presented traffic simulations of the Mill Street study corridor. A copy of the written responses is attached.

The information provided at the meeting adequately addresses the outstanding transportation issues raised by the WG. The following summarizes the WG's recommendations to the ARB regarding site access and transportation mitigations.

1. Access

Based on the simulation analysis and review of the three access options for the project driveway (one-way exit, one-way entry, and two-way), we support the proponents preferred option for one-way exit for this roadway. The one-way exit will allow for a balance of traffic exiting the site and Mill Brook Drive; prevent cut-through traffic to the high school, and allow for a new sidewalk on the north side of the roadway. Adequate warning for the exit will be needed, as identified in #5 below.

The proponent had also proposed a new truck pullover on their property for deliveries at 22 Mill Street. This measure will help to improve the existing delivery issue at 22 Mill Street where trucks conflict with traffic on Mill Brook Drive. The proponent has verbally agreed to install signs at 22 Mill Street directing trucks and deliveries to the rear of the building. We suggest that both owners continue to coordinate in the future to address/improve transportation issues.

2. Bikeway Mitigation

Donald Marquis Minuteman Trail (Bikeway) at Mill Street. The proponent has offered to provide new pavement markings and signage and flashing beacons (continuous) facing both approaches of the Bikeway and southbound Mill Street traffic.

The WG recommends the following measures for this location:

- ◆ Flashing beacons be installed facing both Bikeway approaches (flashing red) and both Mill Street approaches (flashing yellow), mounted on two poles, one for each direction;
- ◆ The flashing beacons shall be activated by detection equipment only when a Bikeway user (pedestrian or cyclist) approaches Mill Street;
- ◆ The detection equipment will be provided on both Bikeway approaches to a design that is approved by the town and minimizes false calls;
- ◆ The system is installed, and shown to operate satisfactorily for a minimum of three months prior to the issuance of the certificate of occupancy.

We feel these measures will be most effective in improving driver awareness, slowing speeds of Bikeway users approaching Mill Street, and improving overall safety. We suggest that the funding proposed by the proponent for the intersection of Mass/Mill/Jason be transferred to this item.

Design plans for this improvement will need to be approved by the Department of Public Works, TAC, and Board of Selectmen (BoS). TAC will consult with the Arlington Bicycle Advisory Committee (ABAC).

3. Mass/Mill/Jason Intersection

The proponent's traffic consultant has evaluated different improvement options as requested at this intersection. The proponent has offered to make a monetary contribution towards future improvements at this intersection.

The WG recommends the following:

The proponent provide analysis results (both hard copy and electronic files) showing recommended signal timing/phasing improvements at the intersection both for the current geometrics and with a second northbound approach lane on Jason Street;

Provide a lane utilization sign for southbound Mill Street that indicates a left turn and shared through-right lane (pending TAC and BoS approval); and

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Transfer proposed funding for other improvements at this location to Mitigation #2 above.

4. “No Block Intersection” Signage: The proponent verbally agreed at the November 17 meeting with the WG to provide signage on Mill Street to alert motorists to not block the Mill Brook Drive and site driveway intersections. The WG agrees with this measure. The wording and location of signs will need to be approved by the TAC and BoS.

5. Proposed On-site Mitigation: The WG agrees with the other proposed on-site mitigation measures, which include:

Provide public access easement at retail plaza and sidewalk connection to Mill Brook Park;

Provide direct connection from Bikeway to project with maintained landscape;

Provide alternative surface treatment crosswalk at proposed internal site drive;

Provide Stop Sign and Stop bar at site drive approach to Mill Street;

Provide visual warning device at site drive approach to Mill Street. The specifics will need to be approved by the DPW and TAC; and

Transportation Demand Management Plan to be approved by ARB.

6. Signal Timing at Mill Street/Summer Street Intersection. The WG recommends that the proponent provide analysis results (both hard copy and electronic files) showing recommended signal timing/phasing improvements at the intersection.

7. Other

The Arlington Fire Department has requested that the proponent provide signal pre-emption (Opticom) equipment at the intersections of Mass/Mill/Jason and Mill/Summer. The town will provide this equipment at the intersection of Mass/Mill/Jason.

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Date: November 18, 2010

To: Arlington Transportation Advisory Committee

From: William J Scully, P.E., New England Engineering Group

Cc: A. Grady, Wood Partners, M. O'Connor

RE: 30-50 Mill Street, Traffic Simulation

In response to a request from the Town's Transportation Advisory Committee (TAC), New England Engineering Group conducted a supplemental analysis based on simulation modeling for the study area. This simulation analysis supplements the previously completed analyses using SYNCHRO for the study intersections in both the original¹ and the updated² analyses. The simulation analysis was completed using SimTraffic, a complimentary computer tool packaged by the same manufacturer³ of SYNCHRO.

In developing the simulation analysis, the network model was enlarged in terms of adjusting segments lengths and additional segments and intersecting drives. For example, to accommodate the vehicle loading aspect of the model and to relate to the project, Millbrook Drive and the site drive were extended and then connected. The primary network was Mill Street between Summer Street and Massachusetts Avenue. As the network was refined and the calibration (i.e. adjust model attributes in effort to better reflect existing actual conditions) work undertaken, the computer model constraints and limitations had to also be taken into account. As a result, further changes to the model were completed to facilitate the running of the model.

As discussed with TAC, the focus of the simulation was for the morning peak hour as that was the time period of greater concern due to the high school morning arrival period. In total, there were nine networks and 45 computer runs completed as part of the calibration process before concluding. Certain drives (i.e. condo drive adjacent to trail) could not ultimately be included in the computer network due to the limitations of the model such as distance between major points of intersection. The estimated retail trips associated with the project were reassigned to the Shattuck's driveway that was incorporated into the model. It should also be noted that the relative sensitivity of the model to segments with less than 100 vehicle trips is low.

The initial sets of computer runs following calibration included the following:

- ◆ existing conditions,

¹ New England Engineering Group/MS Transportation Systems, [Traffic Impact and Access Study, Proposed Residential & Retail Development, 30-50 Mill Street, Arlington, MA](#), April 2010.

² New England Engineering Group/MS Transportation Systems, [Traffic Impact and Access Study, Proposed Residential & Retail Development, 30-50 Mill Street, Arlington, MA, Updated Analysis](#), September 2010

³ Trafficware is the software developer of both the SYNCHRO and SimTraffic.

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- ◆ future Build conditions with a two way drive to Mill Street ,
- ◆ future Build conditions with a one way entrance from Mill Street, and
- ◆ future Build conditions with a one way exit to Mill Street.

Each condition was simulated a minimum of 5 separate times that were then averaged to produce a set of results. The next section summarizes the key findings resulting from the simulation analysis followed by a listing of further recommendations that build on the previous set of recommendations that have been presented to the TAC and the Town's Redevelopment Board.

Conclusions/Recommendations

Overall, the traffic simulations continued to show that the Proposed One Way Exit Drive for the project performed acceptably. Further, the simulation did not indicate any advantage for utilizing the one way enter or the two way drive design instead of the One Way Exit design. Similar to the previous analyses as well as field observations, it was noted that there will be vehicle queuing on Millbrook Drive during the peak time within the morning peak period due to the high school arrival time. The vehicle queuing is similar in all driveway options, though noticeably worse in the One Way Enter scenario.

Based on all previous analyses, the current analysis and considering a number of safety and pedestrian related factors, we continue to recommend a one way exit site drive option. With the one way plan, a sidewalk can be installed along the driveway and the unsafe "cut thru" that occurs in the site presently will be eliminated.

In addition to evaluating simulations with the project and the different travel directional access options, possible mitigation actions were also tested. These largely focused on the Massachusetts Avenue intersection with Mill Street and Jason Street. The actions tested included:

- ◆ Providing a short second lane on Jason Street approach for either a left turn or right turn lane,
- ◆ Designating an exclusive left turn lane on Mill Street southbound approach to Massachusetts Avenue,
- ◆ Altering the signal timing to provide for lead-lag phasing operation on Massachusetts Avenue,
- ◆ Split phasing on the north-south movements,
- ◆ Examining minor geometry and timing actions at Summer Street,
- ◆ Instituting 'DO NOT BLOCK' at certain intersections or drives including Millbrook Drive,
- ◆ Providing for concurrent pedestrian timing rather than exclusive timing, and
- ◆ Installing peak period westbound right turn lane on Massachusetts Avenue approach to Mill Street by restricting peak period curbside parking.

In the end, it became clear that the manner of accommodating pedestrians at the intersection (i.e. exclusive phase) along with the high frequency of pedestrian calls has the major effect on traffic flow along Mill Street. Because an exclusive pedestrian phase occurs in nearly every signal cycle during the peak hour, there are relatively long vehicle delays

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and vehicle queuing during these periods. This also affects the queuing along Mill Street and Jason Street. The peak loading that occurs due to the school arrival period also factors into the operational characteristics creating the periodic long queue and vehicle delays on Millbrook Drive, although for a relatively small portion of the overall peak morning period.

Such delays and queuing of automobiles could be reduced by converting to concurrent pedestrian phases, in which pedestrians would cross along with traffic moving in the same direction. This strategy would also require a learning curve for both pedestrians and drivers adjust to turning onto streets in the short term as motorists and pedestrians are simultaneously crossing. While we do not expect that the Town would authorize concurrent pedestrian cycles, we call your attention to this condition to highlight the tradeoff inherent in a bustling downtown area where walking is encouraged and pedestrians are prioritized.

The simulation work also showed that at times the vehicle queues on both Mill Street and Summer Street have the potential to block intersections or driveways that then have a related or cumulative effect as turning vehicles must wait and thus block the advance of through moving vehicles. The worst conditions indicated in the model occurred when vehicles queued along Mill Street do not leave an opening to allow vehicles to turn left off of Mill Brook Drive into the unblocked northbound lane on Mill Street. When the simulation provides for queued vehicles to not block intersections, much of the congestion is alleviated.

As a result of this further analysis, we recommend the following improvements in addition to those previously discussed to improve traffic conditions in the Mill Street corridor.

- Designate an exclusive left turn lane on Mill Street southbound approach,
- Implement clear 'DO NOT BLOCK' signage at the Mill Brook Drive and Mill Street intersection,
- Adjust the signal timing at Massachusetts Avenue/ Mill Street/Jason Street as appropriate once the approach lanes are added or re-designated.
- Ensure that the Summer Street/Mill Street signal timing is operating optimally once the project is constructed and occupied.

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