TRANSPORTATION ADVISORY COMMITTEE.

Arlington Planning Department, 730 Mass Ave,
Arlington MA, c/o Daniel Amstutz.

Date: 12 October 2022
To: TAC
From: TAC Arlington High School Working Group
Subject: Arlington High School Short Term Recommendations

Memorandum

A TAC working group consisting of Jeff Maxtutis, Melissa Laube, Shoji Takahashi, and Scott Smith was asked to assess (1) installation of a traffic signal at the intersection of Mill St and Mill Brook Dr and (2) traffic patterns in front of AHS on Mass Ave. We reviewed past documents and observed conditions on Mill Street and in front of the school in late September / October 2022. Short term recommendations, to be completed in 2022, are as follows:

1. **At Mill Street and Mill Brook Drive:**
    a. **Install do-not-block intersection markings and signage at Mill and Mill Brook**. Our understanding is that the contractor is going ahead with installing a signal at this location. It will not be effective unless the issue of the intersection being blocked is addressed.
    b. **When the new signal is installed, provide an interconnect to the existing signal at Mass / Mill / Jason, to allow for coordination at a future date, should it prove desirable.**
2. **At the signalized pedestrian crosswalk on Mass Ave, directly in front of the school:**
    a. **Install a semi-permeable barrier (e.g., flex posts) in the parking lane on Mass Ave upstream of the signalized crosswalk. On the westbound side, they would go approximately 40' to the stop bar. On the eastbound side, they would go approximately 20' to the driveway.** This has three purposes
        i.   Provide bicyclists arriving at the school a safe pull off spot
        ii. Prevent motor vehicle travel in the parking lane immediately upstream of the signal, enabling the pedestrian clearance interval at the signal to be slightly shorter than it would otherwise need to be
        iii. Improve visibility between pedestrians and traffic on Mass. Ave in the crosswalk.
    b. **Lengthen pedestrian clearance interval at the Mass Ave. pedestrian signal to be MUTCD compliant**
3. **Add the planned bike parking to the southeast corner of the property (by Mass Ave) as soon as possible.**

Discussion

1. **Mill Street and Mill Brook Drive**
    a. Observation of the Mill / Mill Brook intersection during the morning peak period (~8:15 AM) did not reveal substantial queues either for the left turn from Mill northbound to Mill Brook, nor for exiting Mill Brook. However, the intersection was frequently blocked by southbound traffic queuing for the signal at Mass. Ave. Consideration will need to be given as to how enforce illegal intersection blockage. Note that

        Mill Street, looking towards Mass Ave

        through traffic behind the high school is currently prohibited due to construction.
    b. Back in October 2018, the TAC working group noted that the consultant's level of service analyses for the Mill / Mill Brook signal "do not appear to take into account the effect of projected queues on Mill Street from the Massachusetts Avenue and Summer Street intersections. The morning queues are expected to go back to and through the Millbrook Drive intersection. This queuing would interfere with cars exiting Millbrook Drive, creating long queues and delays on Millbrook Drive." In 2018, the working group recommend a revised analysis to include a corridor analysis of Mill Street to account for the impacts of queuing at the intersections with Massachusetts Avenue and Summer Street on the operation of the new signal at Mill Brook Drive. In February 2020, the consultant provided a revised analysis, noting that 95% percentile queues will extend back through the Mill / Mill Brook intersection, with or without coordination with the signal at Mill/Jason/Mass Ave. They recommended against coordination, due to the potential for increased delays, primarily on Mass Ave. That said, a carefully designed coordination plan could reduce the likelihood that the Mill / Mill Brook intersection is blocked.
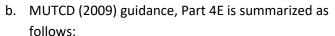
        Shared rides from family/friend is a major mode of transportation for students to the high school (30% in morning arrival[1]). The future build analysis shows a significant increase in volume on Mill Brook Drive, suggesting that the consultant assumed that pickup / dropoff would shift to the back of the school[2]. Given the congestion on Mill Street, we are not sure this shift will occur. Thus, future traffic volume on Mill Brook Drive may be substantially lower than what the consultant had assumed.

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[1] Table B4 of the Appendix to the 2018 Traffic Impact Study

[2] "The two driveway configuration alternative anticipates that the majority of the traffic volume generated by the school will be concentrated on Schouler Court via Massachusetts Avenue and Mill Brook Drive via Mill Street (and by extension Summer Street and Massachusetts Avenue" – page 14 of the 2020 Supplemental Traffic Impact Study

2. **Mass. Ave in front of the high school**
   a. During drop off time, motorists who had just dropped off a student were seen blocking the bike lane, as they waited to pull back into the traffic stream. However, we also observed that parking on Mass Ave east bound was occupied, and there were significant left turns from Mass Ave westbound. For these reasons, a parking-protected bike lane should be considered as a long-term action. That said, it is inappropriate to have parking, or even drop-off activity, immediately upstream of the crosswalk.

Drop-off area on Mass Ave westbound

   b. MUTCD (2009) guidance, Part 4E is summarized as follows:

   (07) Except as provided in Paragraph 8 (push button for extended interval), the pedestrian clearance time should be sufficient to allow a pedestrian crossing in the crosswalk who left the curb or shoulder at the end of the WALKING PERSON (symbolizing WALK) signal indication to travel at a walking speed of 3.5 feet per second to at least the far side of the traveled way or to a median of sufficient width for pedestrians to wait

Mass Ave eastbound at ped. signal

   (11) Except as provided in Paragraph 12, the walk interval should be at least 7 seconds in length so that pedestrians will have adequate opportunity to leave the curb or shoulder before the pedestrian clearance time begins.

   (14) The total of the walk interval and pedestrian clearance time should be sufficient to allow a pedestrian crossing in the crosswalk who left the pedestrian detector (or, if no pedestrian detector is present, a location 6 feet from the face of the curb or from the edge of the pavement) at the beginning of the WALKING PERSON (symbolizing WALK) signal indication to travel at a walking speed of 3 feet per second to the far side of the traveled way being crossed or to the median if a two-stage pedestrian crossing sequence is used. Any additional time that is required to satisfy the conditions of this paragraph should be added to the walk interval.

   The clearance interval is currently approximately 12 seconds. With a curb-to-curb crosswalk length of 58', and walking speed of 3.5 ft / second, the required clearance interval is 16.6 seconds. Furthermore, given the high pedestrian volumes, it would not be appropriate to shorten the walk interval (currently 7 seconds).

3. **Bicycle parking**

   As of late September, four temporary bike racks have been provided near the school entrance, in addition to the permanent rack installed on the front west side of the school. Bike and scooter parking in front of the school was observed on Thursday October 6, at 9 AM, in pleasant weather.   69 bicycles and 3 scooters were counted (see table, below):

Rack	Capacity	Usage
Two temporary "schoolyard" racks	Approximately 20	20
Two temporary U racks	20	16
Permanent rack – front west side	20	20
Other locations – benches, poles, etc.	N/A	16
TOTAL	60	72

The contractor's layout plan calls for a total of 5 racks. The installed rack in front of the school is being used to capacity. Installing the second planned rack (at the east end of the property) will provide added capacity. It will also provide students arriving by bicycle from East Arlington a chance to pull off before entering the drop-off area in front of the school.

Respectfully submitted,

Scott Smith, Chair

Arlington High School Working Group