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## Technical Memorandum

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**Subject:** Bayside Middle School  
Traffic/Bus Circulation Options

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### **PART A – INTRODUCTION/EXISTING CONDITIONS**

Bayside Middle School is planning on constructing a new school on the current site. This provides an opportunity to improve the site circulation for parent pick-up/drop-off, busses and students the bike/walk to/from school. Under the current/existing conditions the parent pick-up/drop-off is on the northeast corner of the school site which results in vehicle queues extending on the public streets (i.e. Ellsworth Lane and N. King Road). On a typical school day at school dismissal, approximately 60 vehicles queue for pick-up. During winter/poor weather conditions, the number of parent pick-up/drop-off increases thereby having longer queues on the public streets. The busses pick-up/drop-off at the southeast corner of the school site. Due to the parent pick-up congestion at school dismissal, the busses can't leave until after the parent-pick up is completed. Based on information provided by the school, approximately 120 kids enter/exit to passenger/parent vehicles for pick-up/drop-off, 265 kids enter/exit via school busses and 90 kids enter/exit via bike or walking.

TADI has conducted school traffic and safety studies for over 25 schools in Wisconsin in the past 10 years ranging from new schools, school additions, and providing safety/circulation improvements. In all cases, to improve safety and efficiency, it is the goal to separate the bus pick-up/drop-off from the parent pick-up/drop-off and provide enough internal site queueing storage for the parent pick-up/drop-off such that the queues do not spill back onto the public street. For urban and suburban schools, it is also desirable to provide a separate path/door for the kids that bike/walk to/from school.

This technical memorandum has been prepared to evaluate the alternative internal circulation plans based on our experience in school traffic operations and safety studies.

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## **PART B – ALTERNATIVE SITE CIRCULATION EVALUATIONS**

Two alternative site circulation plans have been developed as described below and as shown on the attached Figures from EUA/Kapur:

- Figure 1: West Bus Lane with 6' Striped Asphalt Median
- Figure 2: East Bus Lane

TADI evaluated each of these alternatives based on the following criteria to provide safe and efficient traffic flow for all users:

- A. Separation of busses and parent pick-up/drop-off traffic
- B. Separation of bus route paths and parent pick-up/drop-off traffic paths
- C. Separate pedestrian paths for bus, parent pick-up/drop-off, and bike/walk.
- D. Providing internal queue capacity on-site for both parent pick-up/drop-off and busses
- E. Orderly flow of parent pick-up/drop-off and bus pick-up/drop-off
- F. Provide a separate path for bike/walk patterns that do not cross with parent pick-up/drop-off paths or bus paths
- G. Distribution of exiting traffic to more than one access driveway to spread out the traffic flow and minimize back-ups of traffic exiting to allow egress traffic to exit smoothly and efficiently

### ***Figure 1: West Bus Lane with 6' Striped Asphalt Median***

This option does successfully separate parent pick-up/drop-off from the busses by having the parent pick-up/drop-off on the east side and the busses on the west side of the site with different ingress and egress for both. The access points for the parent pick-up/drop-off allows vehicles to utilize both Ellsworth Lane and Standish Place while the busses utilize King Road which distributes the surge of traffic to several access points allowing the traffic to enter and exit smoothly and efficiently.

The parent pick-up/drop-off kids utilize the east doors while the bus kids utilize the west doors, which is beneficial for orderly flow of pedestrians, vehicles, and busses. This option also allows all queuing for parent pick-up/drop-off and busses to stack on-site and off the public streets thereby minimizing conflicts. The busses would queue along N. King Road within the public right-of-way, but outside of the travel lanes. This option does allow for busses to depart at any time without waiting for the front bus to leave first. An alternative option would be to have the busses queue on-site and not on-street, which would minimize conflicts.

Consideration could be given to provide a separate path(s) for the bike/walk students such that they would not be mixed with the bus and parent pick-up/drop-off areas.

## **Figure 2: East Bus Lane**

Of the two options, this option is the least desirable from a traffic operations and safety standpoint. The parent pick-up/drop-off and bus loading/unloading is partially separated, however both parent pick-up/drop-off kids and bus kids utilize the same door and the parent pick-up/drop-off kids may cross the bus paths. The circular bus queuing pattern is NOT recommended from a safety standpoint for the following reasons:

- Bus numbers are not visible from one location requiring kids to traverse back and forth with the temptation for kids to cross within the circle and crossing in front of other busses for the shortest path to their bus.
- Tight turning radiuses for busses with the potential of the rear-end of busses crossing the sidewalk path, which is a safety concern during the morning drop-offs.
- Additional school staff is needed to supervise and manage the circular bus pattern at dismissal.

The safest condition for the busses is to have all the bus loading and unloading on the west side of the school, completely separated from the parent pick-up/drop-off and separated from the kids biking/walking. All busses on the west side of the school would be parked in a linear manner providing an orderly, direct, and safe path for the kids to/from the busses and school doors.

The parent pick-up/drop-off does not allow for the existing queuing to be accommodated on-site and does cause the queue spillback to extend onto Ellsworth Lane, which is not desirable from a safety standpoint.

For loading and unloading of the parent pick-up/drop-off, this option requires all traffic to utilize Ellsworth Lane and does not allow opportunities for the traffic to distribute to other streets. This slows down egress and increases the traffic impact to Ellsworth Lane.

This option does not have a separate path/door for the bike/walk students. It appears that the bike/walk students are required to mix with the bus, parent pick-up/drop-off areas, which is not desirable from a safety standpoint.

In summary, having the busses on the east side of the school presents several safety issues which can be avoided with the busses queuing for loading and unloading linearly on the west side of the school as illustrated in Figure 1.

## **PART C – RECOMMENDATION**

Based on the traffic and safety criteria outlined in Part B, the option shown in Figure 1 achieves most of the criteria and is preferred as this option:

- Provides complete separation of busses and parent pick-up/drop-off traffic by having the parent pick-up/drop-off traffic on the east side of the site and the busses on the west side of the site.
- Removes the tight circular bus pick-up/drop-off area as shown on Figure 2, which poses several safety issues.

- Provides separate pedestrian paths and doors for bus kids and parent pick-up/drop-off kids. However, consideration could be given to have a separate path and doors for bike/walk kids that do not cross with the parent pick-up/drop-off area or bussing area.
- Provides internal queue capacity on-site for both parent pick-up/drop-off and busses without spillback onto the public streets.
- Provides orderly flow of parent pick-up/drop-off and bus pick-up/drop-off with separate ingress/egress points.
- Separates the travel paths for busses and parent pick-up/drop-off by having the busses on the west side of the site, all busses would proceed north on King Road, turn left on Ellsworth Lane and then north or south on Regent, while parent pick-up/drop-off travel paths would be Ellsworth Lane east and Standish Place east.
- Provides distribution of exiting traffic to more than one access driveway to spread out the traffic flow and minimize back-ups of traffic exiting to allow egress traffic to exit smoothly and efficiently.

Based on this evaluation of traffic flow and safety, TADI recommends that Figure 1 be utilized for the future planning for the Bayside Middle School.