

City of Newton



DEPARTMENT OF PUBLIC WORKS

TRANSPORTATION DIVISION

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Newton, MA 02460

Setti D. Warren
Mayor

DATE: November 24, 2014
TO: Alejandro Valcarce, Project Manager, Department of Public Buildings
FROM: William G. Paille, P.E., Director of Transportation
RE: **Zervas Elementary School Reconstruction Project – Traffic Impact Study**

The Transportation Division has completed its review of the Traffic Impact Study (TIS) for the referenced project prepared by Nitsch Engineering (dated October 2014) and respectfully provides the following:

Site Development

Coordination with representatives from Design Partnership of Cambridge & Nitsch Engineering (Design Team) began over a year ago with an initial meeting to discuss the project with respect to site constraints, existing conditions, and its impact on future traffic/pedestrian circulation. Concerns were raised with respect to site access, pedestrian safety, intersection capacity, drop off/pickup zone, off-site and on-site parking, etc. The Design Team clearly understood the significance of this project and the impact to the adjacent properties, the environment and the community, appreciated the input and as a result, it was decided to schedule a meeting with the Transportation Team shortly thereafter.

The Transportation Team is an ad-hoc group of city employees represented by the Department of Public Works (Commissioner, Engineering & Transportation), Police Department, School Department, Planning Department, the Mayor's Office and the Director of Sustainability. The Design Team attended a weekly meeting of the Transportation Team and the discussion became an important first step in the design process as it identified issues/concerns related to how parents would enter/exit the site, school bus circulation, parking, pedestrian access/circulation, vehicle/bicycle/pedestrian safety, traffic flow, and the impact to Beacon St/Beethoven Ave as well as several adjacent streets. This initial meeting allowed the Design Team to move forward and begin the process of narrowing alternatives and coordinate with various City committees as well as engage the general public. Even after the preferred alternative was presented to the community, it went through several iterations resulting in the configuration that was recently presented to Public Facilities. The preferred site layout addresses several issues:

First, by providing access/egress to the bus lane and parking lot from Beacon Street whereas there is currently only an egress is a major improvement to the facility. Removing site access from Beethoven not only simplifies the morning drop off and afternoon pick up, it provides for a safer operation by reducing the number of vehicle/pedestrian conflicts where there are many pedestrians moving about, exiting vehicles, crossing the street, etc.;

Second, the site provides for approximately 74 parking spaces that are necessary to accommodate a majority of staff who do not live in Newton and cannot walk or take public transit to the school. In addition, the parking lot will keep vehicles off Beethoven Avenue during non-school day operation such as parent/teacher conferences, public meetings and other evening activities the school will likely host.

Finally, I have been part of the development process for this project from the beginning, witnessed several changes and redesigns as a result of not only internal city reviews and discussions but input from the community.

Although the preferred site has not been finalized and will likely need minor revisions during the design phase, I believe the overall configuration of the site is sound, and will result in a facility that is safe for vehicle/pedestrian circulation, full/part-time school staff accommodation, fire/rescue access and best accommodates traffic into/out of the site, specifically along Beacon Street and Beethoven Avenue.

Traffic Accommodation

In general, we concur with the limit of the study area with respect to traffic, the means to which the existing traffic data was obtained, the crash analysis, annual growth rate of 1% and the decision not to apply a seasonal adjustment. Although the TIS report states there are no planned projects in the vicinity of the school that would add additional trips to the study area in the near future, it should be noted the property now or formerly of Saint Philip Neri is expected to be developed and may have an impact to traffic along Beacon. However, we believe the 1% growth factor utilized in the TIS is sufficient and would likely account for any increase in traffic from this development.

The TIS report does not account for the number of off-site parking and drop off/pickup that is occurring along streets other than Beethoven Avenue and Evelyn Road where this activity has been observed on several occasions by Transportation Division staff. It is recommended the TIS be amended to include a discussion of Ferncroft Rd/Allen Ave, Paulson Road and Amy Circle in order to develop a better understanding of this activity and impact upon the neighborhood as well as Beacon Street. In addition, although we believe the assumptions with respect to trip generation and the existing, no build and future traffic analysis to be reasonable and sound, we believe these assumptions are very conservative, meaning the projected vehicle trips used in the TIS have not been reduced and expected counts are likely to be substantially less. It should be noted that Joslin Lesser Architects (JLA) coordinated with the Newton Public Schools and Zervas School Administrators to obtain existing metric data and to develop projections for planning and budgeting purposes for this project. This information is summarized as follows:

Mode	Current (230 Families)		Future (360 Families)	
	Percentage (%)	No. Students	Percentage (%)	No. Students
Walk/Bike	43	134	35	171
Bus	11	34	15	74
Vehicle	46	144*	50	245**
Total	100	312	100	490

*Equates to 105 vehicles with 25% families with more than one student enrolled, 2% car pool, 27% vehicles transporting at least 2 students.

** Equates to 179 vehicles with 25% families with more than one student enrolled, 2% car pool, 27% vehicles transporting at least 2 students.

The TIS report indicates the student enrollment is expected to increase from 320 to 490 or 174 students. The TIS took a very conservative approach by assuming the additional 174 students will be driven to school, hence an increase in vehicle trips to the school of 174 during the morning peak hour. Based on the TIS, the future build (Year 2024) scenario results in a decrease in Level of Service (LOS) along Beacon Street (LOS B to C) in either direction with a queue length over 400 feet (approximately 18 vehicles) and an average delay of 30 to 40 seconds. Alternatively, Beethoven Avenue experiences an improvement in LOS from F to D (Left Turn Lane) and C (Right Turn Lane) respectively with a queue length over 200 feet (approximately 8 vehicles) and an average delay of 25 to 40 seconds. Even with this approach, we concur with the TIS analysis the signalized and non-signalized intersections experience an acceptable Level of Service in both the morning and afternoon peak hour.

Based on the TIS, there are approximately 174 vehicles currently exiting Beethoven Avenue during the morning peak hour. By extrapolation using 320 existing students/174 vehicles per hour, an increase of 174 students should result in approximately 266 vehicles once the school is at full capacity (an increase of 266-174 or 92 vehicles) exiting Beethoven Avenue during the morning peak hour. Using the data developed by JLA, the projected increase is estimated at 179-105 or 74 vehicles. Therefore, it is reasonable to assume the projected increase in vehicle trips to the school will be substantially less than 174 stated in the TIS and as such, the intersection will operate better than predicted in the TIS which is already acceptable.

Beethoven Avenue & The 'Blue' Zone

The reconfiguration of Beethoven Avenue to push the 'blue' zone into the site and define each end of the zone using curb extensions is a tremendous improvement as it creates a drop off/pickup area that is both safe and reduces traffic congestion. In addition, the creation of a right turn only and left/thru lane at the approach to Beacon Street will be more efficient by processing more vehicles thru the intersection. The key component is the curb extension that basically separates the 'blue' zone operation from the vehicles that need to exit Beethoven Avenue. This configuration also presents the opportunity to eliminate the need to make Beethoven Avenue one-way during drop off/pickup times. However, the details of this configuration will have to be studied more closely during the design phase before any change to the existing access restriction along Beethoven Avenue is recommended or implemented.

Beacon Street Access/Egress

Although there is some concern regarding left-turning vehicles entering/exiting the site along Beacon Street, the TIS clearly demonstrates these movements will operate safely and efficiently. Recent loop detection upgrades at the signalized intersection have resulted in more efficient operation and will create more gaps along Beacon Street for vehicles exiting the site. In addition, the signals will be upgraded to include countdown timers, audible pushbuttons and additional detection at the drives if needed.

In conclusion, the Transportation Division believes the layout of the site, the reconfiguration of Beethoven Avenue and Beacon Street is a thoughtful and sound design. In addition, specific upgrades to the existing traffic signals at the intersection of Beacon Street with Beethoven Ave/Evelyn Rd will improve the overall operation and safety at this location and provide for adjustment to future growth.