



**Diane Nichols Tradd**  
*Assistant City Manager/DPD Director*

MEMORANDUM

TO: Eileen M. Donoghue, City Manager *EMD*

FROM: Diane N. Tradd, Assistant City Manager/DPD Director

SUBJECT: MOTION OF 6/26/18 BY COUNCILOR NUON  
REQUEST CITY MANAGER HAVE TRAFFIC ENGINEER REVIEW TRAFFIC PATTERNS AT THE  
INTERSECTIONS AT WESTFORD AND WILDER STREETS, AS WELL AS, AT MIDDLESEX AND  
WILDER STREETS AND REPORT ON WHETHER THE INSTALLATION OF TRAFFIC SIGNALS ARE  
APPROPRIATE AT THESE LOCATIONS

In spring 2016, the Department of Planning and Development (DPD) put out an RFP for the Design of Intersection Reconstruction at Various Locations. The RFP included design of a bike corridor along Merrimack Street, redesign of Bridge Street/French Street traffic signal, Green Street/Church Street conversion and the study of the following four unsignalized intersections to determine if they warranted signalization:

Mammoth Road at East Meadow Road  
Stedman Street at Westford Street  
Westford Street at Wilder Street  
Middlesex at Baldwin Street

The Engineering Corp (TEC) is under contract to perform the above design work for \$124,000. They have completed the warrant analysis for the above intersections listed. The intersection at Mammoth Road and East Meadow was identified as the most critical intersection and warrants a traffic signal. The intersection at Westford and Wilder was identified as the second most critical intersection and also warrants a traffic signal. The scope of work only includes final design of one intersection. At this time, TEC is awaiting direction on which intersection to select for final design.

In order to determine if the Middlesex/Wilder intersection warrants a traffic signal, the City would need to perform a traffic study. The Manual on Uniform Traffic Control Devices (MUTCD), Section 4C.01, entitled Studies and Factors for Justifying Traffic Control Signals, explains the criteria to determine if a traffic signal is warranted. They include the following:

The investigation of the need for a traffic control signal shall include an analysis of factors related to the existing operation and safety at the study location and the potential to improve these conditions, and the applicable factors contained in the following traffic signal warrants:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing

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- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network
- Warrant 9, Intersection Near a Grade Crossing

Engineering study data may include the following:

- A. The number of vehicles entering the intersection in each hour from each approach during 12 hours of an average day. It is desirable that the hours selected contain the greatest percentage of the 24-hour traffic volume.
- B. Vehicular volumes for each traffic movement from each approach, classified by vehicle type (heavy trucks, passenger cars and light trucks, public-transit vehicles, and, in some locations, bicycles), during each 15-minute period of the 2 hours in the morning and 2 hours in the afternoon during which total traffic entering the intersection is greatest.
- C. Pedestrian volume counts on each crosswalk during the same periods as the vehicular counts in Item B and during hours of highest pedestrian volume. Where young, elderly, and/or persons with physical or visual disabilities need special consideration, the pedestrians and their crossing times may be classified by general observation.
- D. Information about nearby facilities and activity centers that serve the young, elderly, and/or persons with disabilities, including requests from persons with disabilities for accessible crossing improvements at the location under study. These persons might not be adequately reflected in the pedestrian volume count if the absence of a signal restrains their mobility.
- E. The posted or statutory speed limit or the 85th-percentile speed on the uncontrolled approaches to the location.
- F. A condition diagram showing details of the physical layout, including such features as intersection geometrics, channelization, grades, sight-distance restrictions, transit stops and routes, parking conditions, pavement markings, roadway lighting, driveways, nearby railroad crossings, distance to nearest traffic control signals, utility poles and fixtures, and adjacent land use.
- G. A collision diagram showing crash experience by type, location, direction of movement, severity, weather, time of day, date, and day of week for at least 1 year.

The road safety audit and traffic study for the four intersections identified above cost \$10,500. The City does not currently have plans or funding to analyze other intersections. DPD and the Transportation Engineer will research grants and funding sources to analyze more intersections to determine if traffic signals are warranted.

NV/ns

7/18/18

cc: Natasha Vance, Transportation Engineer