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MEMORANDUM

TO: Eileen M. Donoghue, City Manager EMD

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

DATE: July 28, 2020

SUBJECT: MOTION OF 6/9/20 BY COUNCILOR ELLIOTT
REQUEST CITY MANAGER HAVE TRANSPORTATION ENGINEER INITIATE A SPEED BUMP PILOT PROJECT AND IDENTIFY SEVERAL DANGEROUS ROADWAYS, TO ADDRESS SPEEDING AND DANGEROUS DRIVING

The Transportation staff has researched the use of speed bumps and speed humps on City streets. The difference between a speed hump and a speed bump is size. A speed hump is typically 12 feet in length (in the direction of travel), between 3 and 4 inches in height, and is intended for use on a public roadway. A speed bump is much shorter, between 1 and 2 feet in length (in the direction of travel). A speed bump can be as much as 6 inches in height. A speed bump is typically found in a parking lot or commercial driveway, but not on a public roadway.

Speed bumps are designed to reduce vehicle speeds to about 2-5 miles per hour. The goal is to slow vehicles down to a minimum or even to a halt. It's an aggressive approach to reduce speeding. If a parking lot or facility has issues with motorists ignoring STOP signs, placing a speed bump before the STOP sign can be a very effective solution to enforce a motorist to stop. Speed bumps are normally installed eight feet before a STOP bar.

Speed humps are designed to reduce vehicle speeds to about 10-15 miles per hour. If the intent is to slow vehicles down but still allow for continuous traffic, speed humps provide a "softer" approach to reducing vehicle speed than speed bumps.

At typical travel speeds along a residential street or in a small commercial business district, a speed hump produces sufficient discomfort to a motorist driving above the speed hump design speed to discourage speeding. It encourages the motorist to travel at a slow speed both upstream and downstream of as well as over the speed hump.

The following table describes the appropriate application for speed humps from FHWA. ITE, the Institute of Transportation Engineers' recommendations are also included. Speed bumps are not addressed by FHWA for use in traffic calming.

Appropriate Application – Speed Hump	
Type of Street	Appropriate for a residential local street or any street where the primary function is to provide access to abutting residential property. Appropriate for a street that provides access to a school, park, or community center. Also appropriate for neighborhood or residential collectors.
Intersection or Roadway Segment	Placed at a midblock location, and not near an intersection; as an example, Pennsylvania recommends a distance of 150 feet from an unsignalized intersection and 250 feet from a signalized intersection. Should not be placed on a sharp curve; ITE *Guidelines for the Design and Application of Speed Humps* recommends a minimum horizontal curve radius of 300 feet.
Roadway Cross-Section	Can be used on a single-lane one-way street or two-lane two-way street; should stretch across only one travel lane in each direction. Typically installed on a roadway with an urban cross-section (i.e., curb and gutter) Typically placed one foot from a curb for drainage or six inches from the edge of a non-curbed roadway. A speed hump can be applied on a cross-section both with and without sidewalks or bicycle facilities.
Speed Limit	Appropriate if posted speed limit is 30 mph or less (per ITE *Guidelines for the Design and Application of Speed Humps);* many jurisdictions adhere to ITE maximum (e.g., South Carolina, Pennsylvania); some use a 25 mph ceiling (e.g., Delaware). Generally not appropriate when the pre-implementation 85th percentile speed is 45 mph or more.
Vehicle Traffic Volume	Appropriate if daily traffic volume is relatively low; as examples, Pennsylvania sets a maximum daily volume of 3,500; South Carolina uses a maximum of 4,000; Pasadena, CA (41) uses a daily volume maximum of 4,000, with at least 1,000 vehicles in each direction. ITE *Guidelines for the Design and Application of Speed Humps* recommends consideration only if no more than five percent of the overall traffic flow consists of long-wheelbase vehicles.
Emergency Route	Generally not appropriate for a primary emergency vehicle route or a street that provides access to a hospital or emergency medical services; speed cushion and speed table are similar vertical measures that could be appropriate. An emergency vehicle can cross a properly designed speed hump but at a slow speed.
Transit Route	Generally not appropriate for a bus transit route but examples of speed humps on bus routes do exist; a speed table and speed cushion are similar vertical measures that could be appropriate.
Access Route	Not appropriate along the primary access to a commercial or industrial site.
Grade	Can be installed on, or beyond, a crest vertical curve only if there is adequate stopping sight distance or warning signs are provided ITE *Guidelines for the Design and Application of Speed Humps* recommends consideration only on a street with a grade of 8 percent or less; many jurisdictions adhere to that maximum (e.g. Pennsylvania, South Carolina) but others follow a lower value: Delaware – 6 percent; Minnesota and Pasadena, CA -5 percent.

Source: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

The City of Lawrence, MA began installing temporary speed bumps in streets near schools and parks in 2019. The temporary rubber speed bumps are installed in the spring after plowing is no longer needed, and removed in the fall before the first snowfall. The cost of the speed bumps was $37,000 in 2019, and they were installed by City workers. The $37,000 cost might be reoccurring biannually as the lifespan of temporary speed bumps is short. Results of the program were not posted, but the temporary speed bumps were reinstalled in 2020.

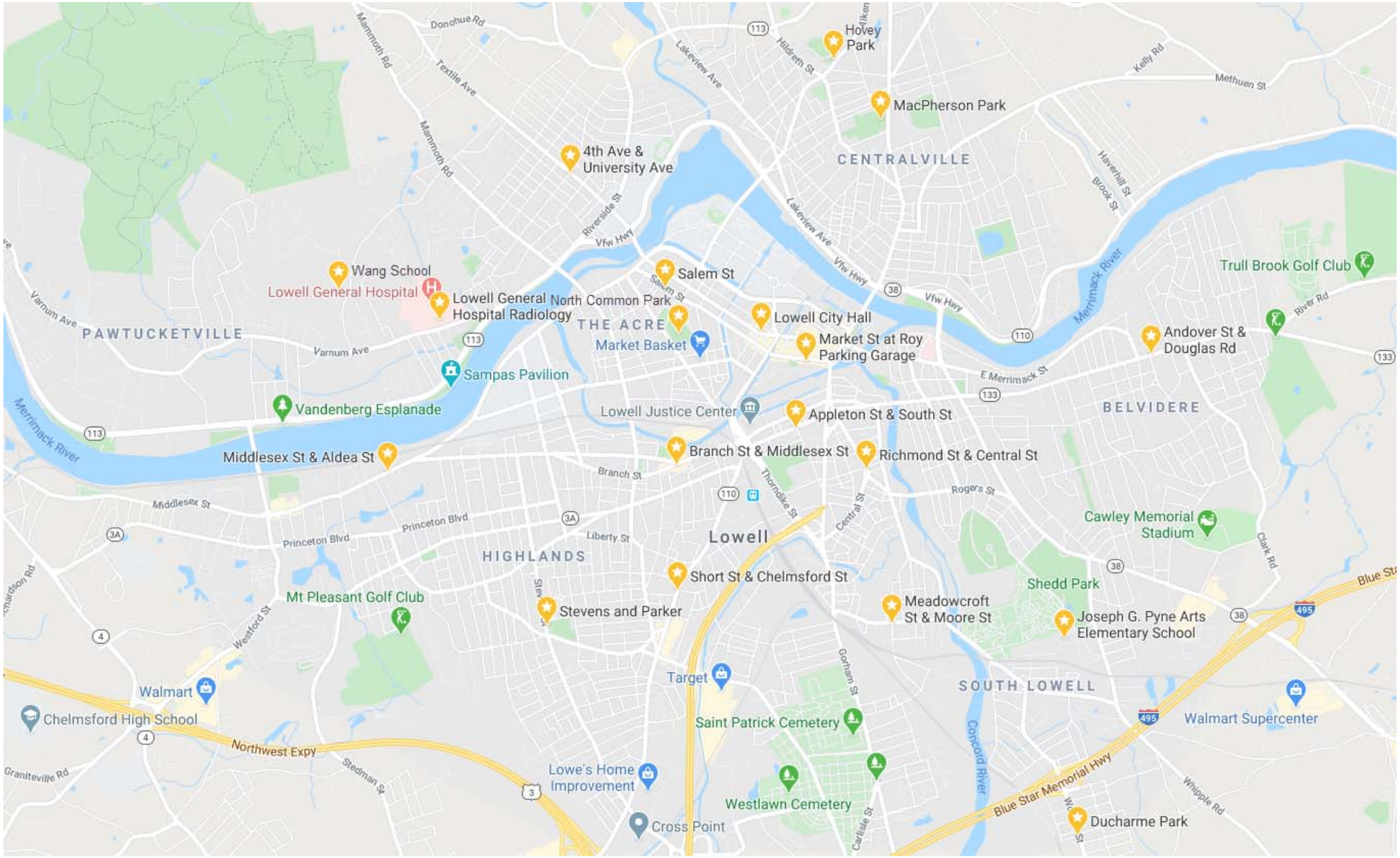
Currently, the global pandemic is creating an unprecedented reduction in traffic in the United States. The lack of congestion invites speeding and has resulted in fatalities here in Lowell. Across the Commonwealth, despite traffic volumes being down, the number of crashes and fatalities has not decreased. Given the current conditions, it seems like an appropriate time to try a novel approach. The Transportation Engineer recommends creating a pilot program that mirrors Lawrence's approach to speeding and pedestrian safety. The pilot would purchase both temporary speed bumps and speed humps and deploy them across the City. Speed bumps will be placed adjacent to schools on low speed neighborhood streets. Note that commercially available temporary speed humps are 24" long in the direction of travel, rather than the recommended 12' length for permanent installations. Speed humps would be placed at the following locations:

- W. Meadow at Pawtucketville Elementary/Wang School
- Varnum Avenue at LGH
- Market Street near the Roy Garage
- Merrimack Street at City Hall
- Appleton Street and South Street intersection
- Boylston Street at Pyne School/Shedd Park
- Fletcher Street at North Common
- Salem Street
- University Avenue and Fourth
- Central Street and Richmond Street
- Branch Street and Middlesex intersection
- Andover Street and Douglas Road (at flasher)
- Middlesex and Aldea Streets
- Stevens and Parker Streets
- Moore Street and Meadowcroft
- Bridge Street at McPherson Park
- Chelmsford and Short Streets
- Woburn Street at Ducharme Park
- Aiken Avenue at Hovey Field

Ideally, we would perform a speed study on all the streets prior to implementing the speed bumps and speed humps. City staff does not have sufficient manpower to do that, so we will rely on resident feedback for the efficacy of the speed bump/hump pilot program. Estimated cost will be $30,000. The speed bumps/humps will be installed once the City identifies funding, procures the materials through the competitive bidding process and DPW staff can be made available for installation.

NV/ns
Attachment
cc: Natasha Vance, Transportation Engineer
Christine Clancy, DPW Commissioner

Speed Hump Pilot Program Map



Legend

Speed Hump Locations