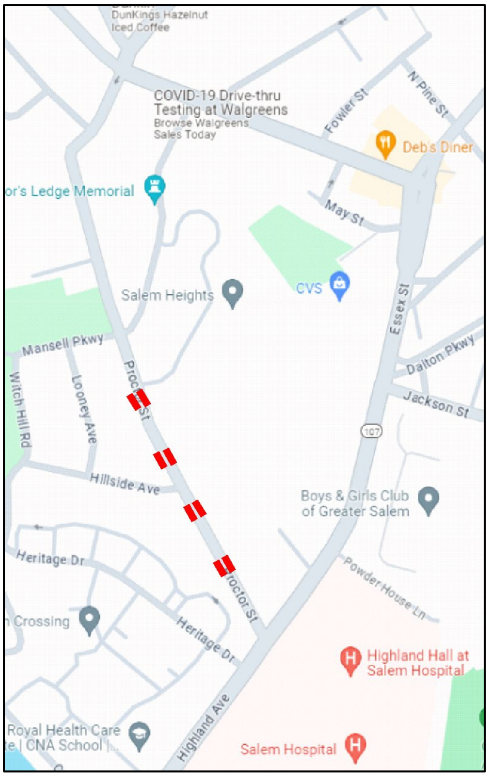
Speed Cushions on Proctor Street – Salem, MA

Site and Treatment Description

Proctor Street is a collector street in a densely settled neighborhood. It provides a shortcut between two arterials, with Salem Hospital at its southern terminus. The northern half of Proctor Street is narrower and is one-way southbound (toward the hospital). This project was applied only to the two-way portion of the street, between Pope St. and Highland Ave., a stretch that is 1,260 long, carries 5,000 vehicles per day, and has a 25 mph speed limit. It is 27 ft wide, with parking allowed on one side.



Residents complained of high speeds, which the City confirmed by data collection. Many people parked their cars on the sidewalk out of fear of being hit by speeding cars.

Because a lot of ambulances use Proctor Street to get to the hospital, the City's traffic calming consultant, Neighborways, suggested using speed cushions instead of speed humps because speed cushions allow wider wheelbase vehicles to avoid vertical deflection.

Four pairs of temporary, pre-fab speed cushions, purchased from Traffic Logix, were installed in 2022, resulting in 250 ft spacing. A centerline was striped as well, and flex posts were installed on the centerline at each cushion pair to deter motorists from trying to straddle two cushions. The cushions and flex posts are removed each winter. They were reinstalled in 2023 and are due to be reinstalled in 2024.

Before-after Speed and Volume Results

The fraction of vehicles exceeding the speed limit (25 mph) fell from 78% to 5% after the speed cushions were installed, though that fraction rose to 75% during the winter when they were removed. The number of vehicles going faster than 40 mph fell by 93%. Average speed fell from 29 to 20 mph (and then rose to 28 mph when the cushions were removed for the winter). Once the speed cushions were installed, there was no more parking on the sidewalk.

While the main goal of this traffic calming project was to reduce vehicle speed, it also reduced traffic volume. Daily traffic fell by 500 vehicles per day (10%) after the speed cushions were installed, and during the winter, when the cushions were removed and only striping remained, daily traffic fell by another 700 vehicles. However, traffic counts on the parallel local street that might have been used to avoid the speed cushions showed no significant change, suggesting that the declines in traffic were either diversion to the arterials (Highland Ave., Boston Street) or a general reduction in traffic.

Design Specs and Cost

Traffic Logix's design spec for its speed cushions can be found at this link. A standard width cushion is 6 ft wide, 7 ft long (i.e., in the direction of travel), and follows a parabolic profile that rises to 3 inches high. Given the width of Proctor Street, a pair of cushions was sufficient to ensure that no vehicle could get by without vertical deflection unless its wheels leave a gap of 6 ft or more; wider streets may need a trios of cushions.

The cushions cost $931 each (and thus $1,862 per pair), including hardware needed for installation (2021). The DPW installed them the first year, but the next year, because the DPW was too busy, a contractor did the installation at a cost of $885 per cushion ($1,770 per pair), plus the cost of a police detail.

Support Story

The request for traffic calming originated with residents. [Another case study from Salem, MA, on Speed Humps, explains the origin of the City's Traffic Calming Program and how it has evolved to handle the large number of community requests using data collection, a prioritization tool, and extensive public engagement.] The City's traffic calming consultant suggested using speed cushions rather than speed humps so that they wouldn't be jarring to ambulances. EMS were pleased that their needs were considered, and has not complained since the installation. Evaluation after the first season showed a large drop in speeding. Resident support has been strong; each spring, residents inquire when the cushions will be reinstalled because they have seen how much faster people drive in their absence.

There is no issue with snow removal because the speed cushions are removed each winter. However, the City is not sure what to do about a permanent solution, because clearing snow from around speed cushions appears to be a daunting task.

Maintenance Tips

Storing the City's temporary speed cushions and speed humps required purchasing a storage shed. For removal and storage, the cushions are modular, with 8 pieces each.

Other Lessons

In an earlier speed cushion application, the City found that where the parking lane is empty, drivers sometimes veered into the parking lane and mounted the sidewalk to avoid a speed cushion. To prevent this behavior, speed cushions were installed only at locations with normal curb reveal and

no nearby driveway. Where needed, the City installed a street sign even with the cushion to keep people from mounting the curb.

Further Plans

The City is pleased with the speed cushions' performance, and may use them in future projects if the right situation for this treatment presents itself. The City has also learned from two other speed cushion projects that were discontinued or changed.

One is Valley Street, where, In 2021 and 2022, the City installed 9 pairs of temporary speed cushions in order to achieve the desired spacing of 250 ft. While many of the street's residents were very appreciative because it solved the speeding problem, others resented the large number of humps they had to go over. At the northern end of Valley Street there is a neighborhood with an elementary school, and the City heard complaints from residents of that neighborhood and from people who drive their children to the elementary school. When a survey of abutters found that only 50% of respondents supported the speed cushions, the City decided to discontinue their use.

The other installation was Mall Street, where the City installed temporary speed cushions in 2022. While it lowered speeds as desired, some drivers were veering onto the sidewalk to avoid the cushions. After consulting with residents, the City decided to switch to temporary speed humps for 2023, and residents are happy with this solution.