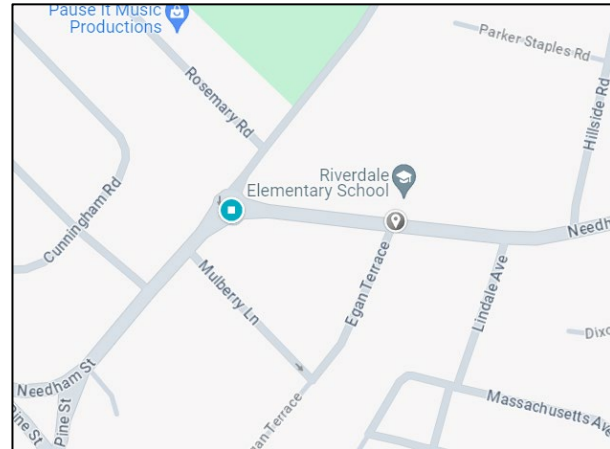


Raised Intersection on Needham Street – Dedham, MA

Site and Treatment Description

Needham Street in Dedham, MA serves as a collector road that connects to Interstate-95, with an annual Daily Traffic (ADT) of 11,000. Given the large volume of vehicles per day, this road was designed for heavier vehicle volume, with high-speed driving during the off-peak hours. The speed limit is 25mph, with an advisory speed limit sign of 20mph during school hours.



The raised intersection was installed on Needham Street (close proximity to Riverdale Elementary School) in 2000. The intersection was designed to improve safety around the school zone, as part of a bigger project that included several other components:

- Granite curbed sidewalks along the corridor (from Lynch Avenue to Riverside Road).
- The design and construction of a roundabout at the intersection of Needham Street and Vine Rock Street (approximately 400ft from the raised intersection).
- New turnaround lot adjacent to the elementary school (parallel to Hillside Ave)

The raised intersection was initially constructed with concrete, and met accessibility compliance when constructed. The concrete's condition quickly deteriorated and updates were performed (2014). The intersection was reconstructed with asphalt, a more affordable short-term solution) and updated pavement markings (figure below). The latest raised intersection continues to provide accessible ramps.



Design Specifications and Cost

The Town of Dedham installed the initial raised intersection on Needham Street in 2000 using concrete; however, a re-design was constructed in 2014 with asphalt and updated pavement markings. A reconfiguration of the stormwater system was necessary at that point to adjust grades

to funnel runoff to catch basins on either end of the intersection. As a result, 4 additional catch basins were installed to accommodate the redesign in 2014.

The raised intersection design followed FHWA specification (see [FHWA Traffic Calming ePrimer](#)), which follows a grade change of approximately 4 percent, and a total vertical alignment change of 3 inches high. While cost varies based on intersections and drainage needs, the Needham Street raised intersection redesign was approximately \$25,000 (including labor and materials).

Support Story

The initial design and construction of the Needham Street raised intersection was to improve safety in-and-around the Riverdale Elementary school in Needham. Since its installation, including the redesign in 2014, no complaints have been made, which highlights a positive impact overall. Emergency personnel were made aware of this design from the initial stages, and there was no resistance with the installation. The geographical proximity of the school zone to the raised intersection provided an “expectation” to drivers that there may be speed reduction measures in the area. More so, winter maintenance personnel are also able to navigate this raised intersection without issues, and little concern has been made since its installation.

As an outreach opportunity, the Safe Routes to School program held a community day at the intersection with residents in August 2023. The overall objective of this endeavor was to promote more awareness to the raised intersection, and to bring together the community for a great event. The town coordinated shutting down the corridor for the day, and residents enjoyed the opportunity to make an impact on this school-zone intersection.

The participants painted a mural on the full width of the raised intersection (see image below). The overall objective of this endeavor was to promote more awareness to the raised intersection, and to bring together the community for a great event. The town coordinated shutting down the corridor for the day, and residents enjoyed the opportunity to make an impact on this school-zone intersection.



Moving forward, the town’s transportation advisory committee has discussed the design of a localized raised crosswalk on the east-approach of the intersection. This redesign will likely be taken into consideration when the roadway is next scheduled for resurfacing (3-4 years from now). In addition to this intersection, the town of Dedham recently revised their [Traffic Calming policy](#) that outlines the current strategies being developed in the townwide strategic plan. These policies include roadway narrowing, horizontal deflection, and vertical deflection measures. The Town has established a set of [eligible traffic calming areas](#) throughout the town.

Maintenance Tips

While the initial concrete design for the raised intersection was redesigned with asphalt in 2014, there are comparable maintenance issues with the asphalt. The asphalt intersection is beginning to deteriorate; however, it's currently 10 years old and therefore following the expected lifespan.

Other Lessons

While emergency personnel have adapted to the raised intersection, the proximity to the school zone assists in providing function reinforcement. There is a much greater challenge installing vertical measures on any of the designated [emergency response routes](#). Unless these routes serve a school or have significant pedestrian flow, these treatments are typically not installed on emergency response routes. As the town alluded to, 'when you make these designs familiar to emergency personnel, they are able to understand where the vertical measures are and react accordingly on their calls.'

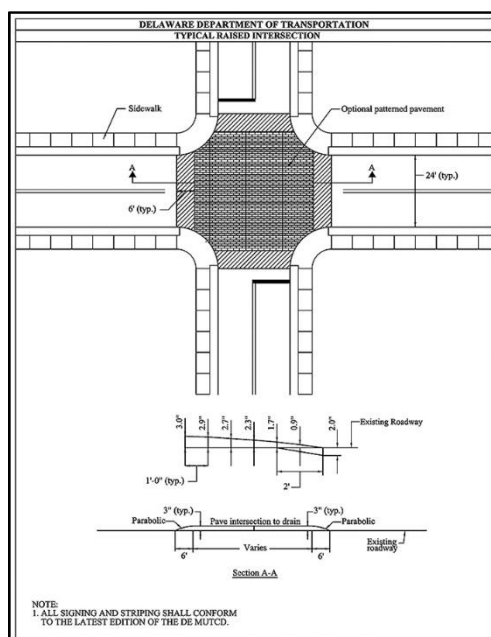
Speed Impacts

Over the years, drivers have adjusted to speeds at the raised intersection; however, speeds have changed upstream and downstream of the intersection. A spot-speed study in 2015 found that vehicles upstream (east of intersection) were traveling upwards of 41mph. Drivers have been able to traverse the intersection approximately 30mph, with speeds reaching 38mph to the west of the intersection.

Further Plans

The town continues to update their Traffic Calming strategies, focusing on the importance and benefit from horizontal measures, vertical measures, and road narrowing.

Appendix – Raised Intersection Specification



Source: Delaware DOT