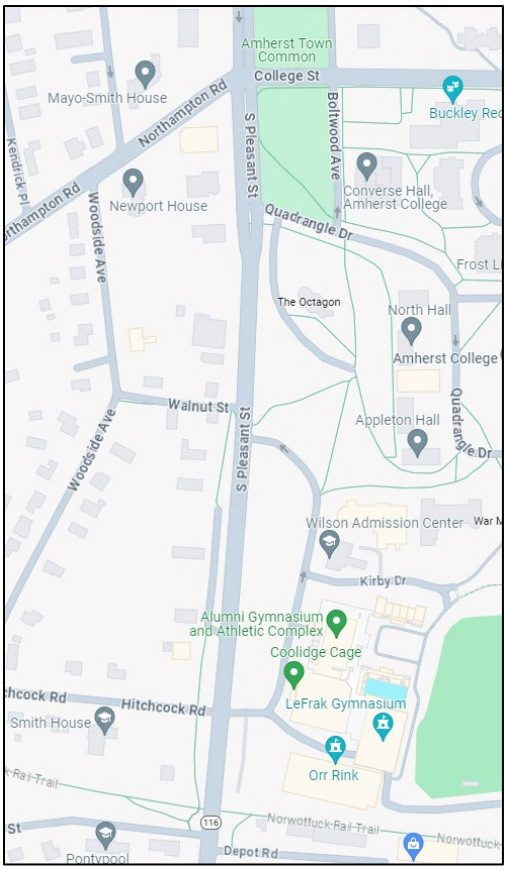
Median Island with Horizontal Deflection on South Pleasant Street (SR116) – Amherst, MA

Site Description

South Pleasant Street connects the suburban part of Amherst to its downtown. Land uses along the corridor vary - Amherst College Academic Buildings and residences pepper the roadside. Drivers traveling northbound, toward downtown, encounter a 5% grade, the grade is downhill when leaving downtown. Due to its surrounding land use and location, pedestrians cross the roadway frequently. The posted speed limit is 30 mph approaching downtown, and 40 mph leaving downtown.



Treatment Description

Three median islands with horizontal deflection were installed on South Pleasant Street. Other options (full-length median, roundabouts) were considered. The options were reviewed by public works, police and Amherst College. The islands were selected due to their cost and potential for lowering speed. The islands were designed to be resilient in all seasons – granite curbing and sloped granite edging outline the islands. Cobbles and vegetation populate the island's interior.

Before-After Speed Results

Speed data were collected for both directions, pre and post installation. The northbound (uphill direction) 85%ile speed decreased by an average of 1.5 mph. In the southbound (downhill) direction, the 85th%ile speed decreased by 7 mph (39-32 mph) closest to downtown; farther away from downtown, near the last treatment, speeds decreased by 3 mph.

Design

The islands comprise granite, cobbles, and landscaping. Closest to the intersection, the granite is sloped granite edging to accommodate heavy vehicle off tracking (see lessons learned below). Vertical granite curbing was used on the islands away from areas that could be mounted. Infill material included cobbles or landscaping. Approach pavement markings and signs were installed in accordance with the Manual on Uniform Traffic Control Devices (MUTCD).

Cost

Amherst College and the Town of Amherst shared construction cost.

Maintenance

The islands were constructed with granite along the edges to promote their useful life. Granite's resiliency provides the long-lasting behavior needed for New England conditions. Plow blades and winter chemicals do not influence or impact its performance.

The Town of Amherst and Amherst College collaborate on maintaining the islands.

Lessons Learned

Pedestrian Safety: Pedestrian compliance, and ultimately pedestrian safety improved with island installation. Prior to installation, pedestrians would cross at random locations, often times not at marked crosswalks. Pedestrian crosswalk compliance – those using a crosswalk – prior to island installation was 45% at one location and 64% at another. After island installation, pedestrian compliance increased to at least 94% at all locations.

Island Design: All of the islands are located near intersections, that accommodate heavy vehicles – turning into and out of the intersecting roads/drives – this proved to be a challenge in design. If the islands were pulled away from the intersection to accommodate large vehicles turning radii, the crosswalks would have been far away from the intersection. Designers worried that pedestrians would not use them if this were the case. To keep the islands near the intersection, as well as crosswalks, sloped granite edging was used on the part of the island that may experience tires riding over it (tractor trailer off tracking). A suitable offset was provided between the front of the island and crosswalk to ensure pedestrian safety.

Emergency Response: During the design process, town officials were concerned with emergency response along the corridor. Officials were concerned that if a driver pulled over where the island is located when an emergency response vehicle was passing, there may not be enough room to accommodate both vehicles – side-by-side. The final design provided space for a vehicle pulled over at the curb, near the island, and a fire truck, the widest emergency response vehicle to pass safely.