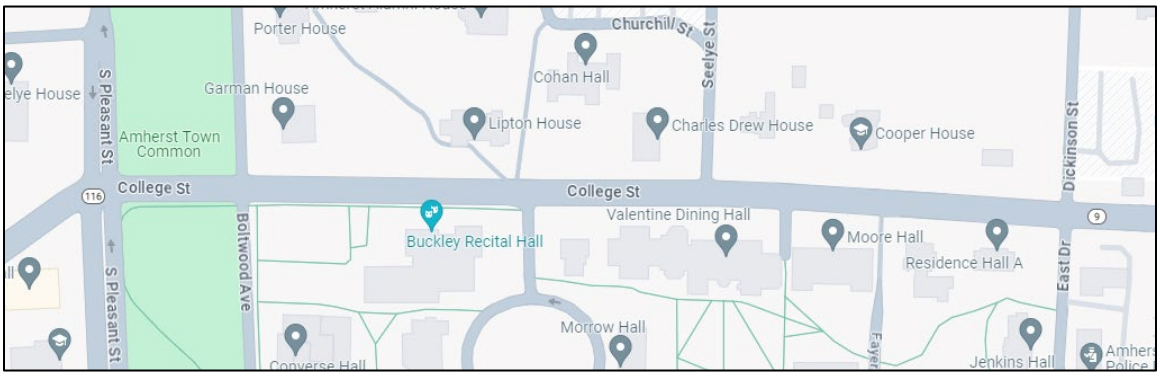
Raised Crossing on College Street (SR 9) – Amherst, MA

Site Description

College Street (SR 9) is a popular east/west two-lane roadway for thru and local traffic. The principal arterial splits Amherst College's campus – several residence halls are on the north side and the academic buildings are on the south side. Due to the surrounding land use, pedestrians cross the roadway frequently – throughout a typical day. The roadway grade varies – drivers traveling westbound encounter a 5% grade near the eastern limit of the traffic calmed section (@East Drive); drivers on the western limit encounter a 2% grade (@Boltwood Ave). The grade is downhill traveling eastbound. The ADT Is approximately 10,300. The posted speed limit is 30 mph; however, each raised crossing has a posted advisory speed limit (yellow sign with raised crossing) of 25 mph (these were not in place when speed data were collected).



Treatment Description

Three raised crossings with vertical deflection were installed on College Street. One crossing was located near Boltwood Avenue, one at the entrance to Noah Webster Circle, and one near East Drive/Dickinson Street. The options were reviewed by public works, police and Amherst College. The raised crossings were selected due to their cost and potential for lowering speed. Linear ramps begin at the roadway level and terminate at the level crossing. The crosswalks are level, comprising pre-cast concrete pavers and vertical granite curbing.

Before-After Speed Results

Speed data were collected for both directions, at two locations, pre and post installation. At the western most crossing, the 85th %ile speed decreased by 8 mph (32 – 24 mph) in the eastbound direction and 7 mph (31 – 24 mph) in the westbound direction. At the eastern most crossing, the 85th %ile speed decreased by 9 mph (40 – 31 mph) in the eastbound direction and 12 mph (39 – 27 mph) in the westbound direction.

Design

The level crossing comprises precast concrete pavers, vertical granite perimeter, and asphalt pavement. The linear ramps leading into and out of the raised crossing are constructed of asphalt pavement. The base for the precast concrete pavers is also asphalt pavement – thereby reducing settlement. The pre-cast concrete pavers are installed in a herringbone pattern for the walking surface. Vertical granite curbing was buried – the surface flush with the wearing surface – on all sides of the precast concrete pavers - to protect the precast concrete pavers during the winter. The granite provides a riding surface for snowplow blades, ensuring minimal damage, if any, to the pre-cast pavers. 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 costs.

Maintenance

The precast concrete pavers have held up well in New England Conditions. The raised crossings were constructed with vertical granite along the edges to promote their useful life. Granite's resiliency provides the long-lasting behavior needed for New England conditions

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

Lessons Learned

Iterative Process: When the crossings were installed, very little guidance was available for ramp transition lengths and crossing heights. The crossings were installed, driven over, and ultimately redesigned. The initial final crossing height, and steep approach caused many drivers to scrape part of their vehicle – exhaust systems, transmissions casings, and other under vehicle components. To address this shortcoming, the crossings were removed, redesigned and reinstalled.