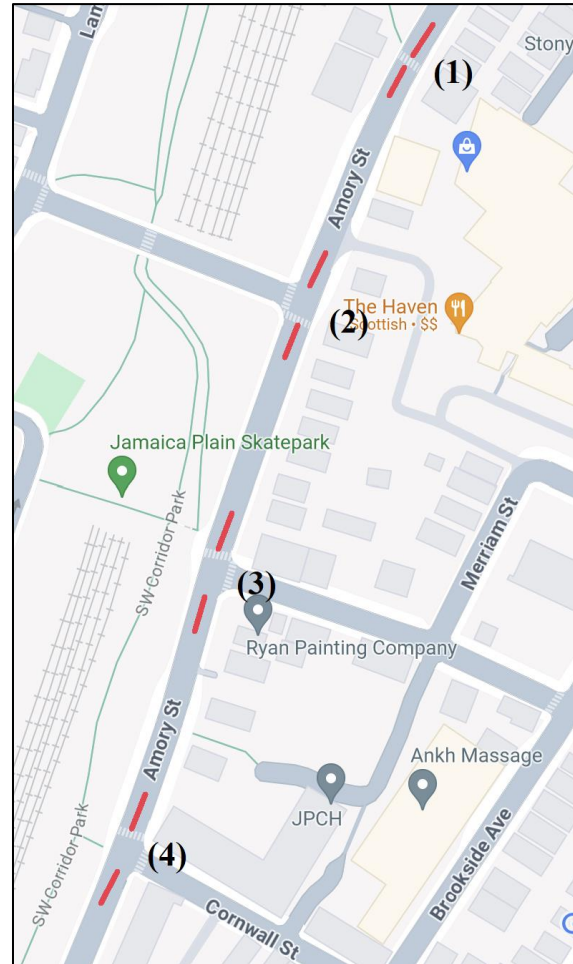


Centerline Hardening and Crossing Islands Made of Temporary Materials on Amory Street – Boston, MA

Site and Treatment Description

Amory Street is a minor arterial in Boston's Jamaica Plain district. The stretch of interest, from Cornwall Street to an unsignalized midblock crossing at 265 Amory Street which leads to the MBTA's Stony Brook Station (Orange Line), runs alongside the Southwest Corridor Park. It is 30 ft wide, with one lane per direction and a parking lane on the northbound side. The City of Boston received numerous reports concerning drivers speeding along Amory Street and, at unsignalized crossings, failing to yield to pedestrians accessing the park and the Orange Line. From 2018 to 2020, several nonfatal crashes were reported in this stretch, including two pedestrian crashes at the 265 Amory Street crossing and one pedestrian crash at the intersection with Cornwall Street. As a first action, the City converted the 3-leg intersection with New Minton Street (location 2) to all-way Stop control, which helped reduce speeding, though people complained that some drivers on Amory Street drove right through the Stop sign.

In Fall 2021 the City hardened the Amory Street centerline, creating median islands using temporary materials, at four locations: (1) the midblock crossing and (2) the all-Stop intersection already mentioned; (3) at Minton Street (signalized), and (4) at Cornwall Street (unsignalized). Along the approach centerlines, rows of hard plastic C-sections, also called traffic separators, were bolted to the street, with a yellow reflective flex post rising from each C-section. At the 265 Amory Street crossing, the rows of C-sections diverge to create a median island 6 ft wide (Figure 1); an in-street Yield to Pedestrians sign was also installed on the newly created island. At the other locations, while there is no formal crossing island, the rows of C-sections diverge to create a median island 4 ft wide (Figure 2).



To enable drivers to get around the median islands, a few parking spots closest to the intersection were removed from the northbound side of the street, with white flex posts enforcing the new No Parking areas, a treatment known as “daylighting.” (Figure 3; also visible in Figures 1 and 2).



Centerline hardening creating a crossing island at the 265 Amory Street crosswalk



Centerline Hardening at Intersection of Amory St. and Minon St.

There are several ways in which this centerline treatment reduces speed and otherwise improves safety. The vertical elements create a narrow gateway that helps eliminate high speed traffic and promotes yielding to crossing pedestrians. The median islands force horizontal deflection on northbound traffic. At intersections, turning vehicles are forced to make sharper turns, with a squarer trajectory that improves visibility between pedestrians and turning drivers. At the crossing island, pedestrians can cross one direction at a time, which is far easier; what’s more, pedestrians almost never have to wait in the crossing island, because vehicles in the second direction nearly always yield, thanks to the gateway effect.



Daylighting taper with parking removal

Before-After Results

While no formal evaluation has been done, it is evident from casual observation that high speed traffic has all but disappeared, and that at the midblock crossing where a crossing island was added, motorist compliance in yielding to pedestrians is close to 100%.

Design Specs and Cost

Design drawings in Appendix A show the treatment layout. On each major street approach, two rows consisting of three hard plastic C-sections in series (3 x 40" long, 8" wide, 2" high) were installed near the center of the road. Yellow reflective flex posts rise 36 inches from the center of each C-section. The double yellow centerline marking was divided into a pair of double yellow lines that surround the C-sections, creating an island about 4 ft wide, except at the midblock crosswalk, where the island is 6 ft wide. To create space for drivers to swerve around the newly created islands, a tapered "daylighting" area was marked with a white edge line and fitted with white flex posts.

At the treated intersections, the openings between median islands vary in width from 44 to 65 ft, based on the existing crosswalk layout, since the centerline treatments extend to the existing crosswalks. Turning analysis confirmed that the design vehicle, a delivery truck, can turn at all the intersections.

The total cost of treating four intersections was \$47,000, including for purchasing and installing C-sections and flex posts and \$1,000 for yellow line striping.

Emergency Response Impacts

This centerline hardening treatment did not present an issue for emergency response. While fire trucks are larger than the design vehicle, the C-sections and flex posts are traversable, and so they

are not a barrier to turning fire trucks. No complaints or concerns from the fire department have been received.

Support Story

This project was initiated in response to complaints from residents, after which measurements confirmed that there was a speeding problem. By City policy, because Amory Street is an emergency response route, it was not eligible for speed humps, the City's most common treatment for speed management. Some creativity was therefore needed on the part of designers to come up with a treatment that would eliminate extreme speeds without inhibiting fire response.

There was no public engagement process because the project involved so little negative impact to anyone – in this case, only the removal of a few parking spaces outside buildings that have off-street parking.

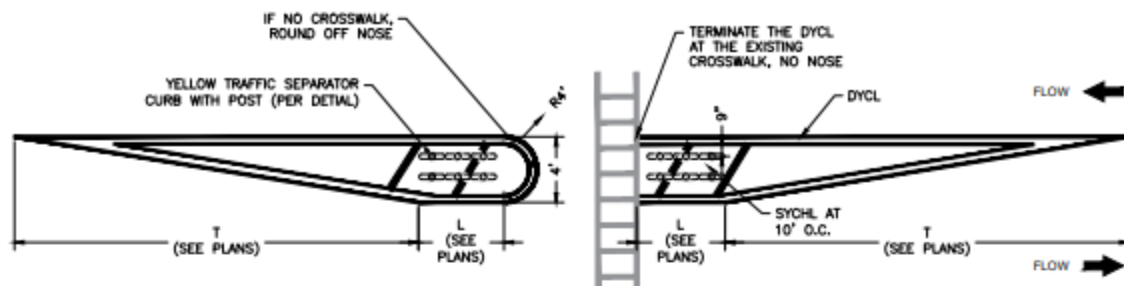
Maintenance and Lessons Learned

While the centerline flex posts have strong springs that enable them to bounce back after being overrun, they have survived at some locations but not at others. At location 4 (Cornwall Street), most of the flex posts were destroyed within two weeks of installation and all were removed. Two issues with its layout meant that the flex posts were frequently overrun: it's a skew intersection (intersection angle = 84°), and the opening between the flex post islands was only 50 ft. At location 2 (New Minton Street), the flex posts lasted a little longer, but all were removed after several months because so many had been destroyed. The opening at this intersection is only 44 ft wide. Meanwhile, at location 3 (Minton Street), while turning volumes are lower, only one of the twelve flex posts has been destroyed after almost two years. There, the intersection angle is 90° and the opening between the flex post islands is 65 ft. This experience suggests that in future installations, more attention should be given to flex post survivability by creating a large enough opening, perhaps by using a larger design vehicle for the turning analysis.

At the midblock crossing, after almost two years, ten of the twelve flex posts have survived.

All of the C-sections remain intact, even though some are often overrun. However, with flex posts removed at two of the locations, there is concern that plow drivers may not see them and could destroy them (there has been too little snow in the last two winters to test this concern).

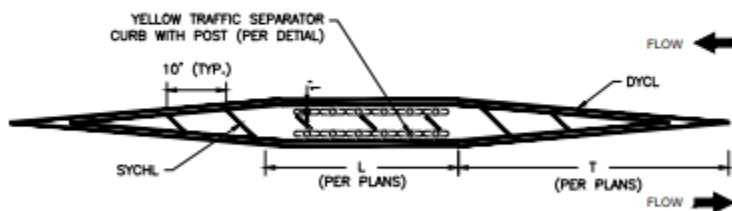
Appendix A: Design Drawings



TYPICAL MEDIAN DETAIL
(N.T.S)

MEDIAN NOTES:

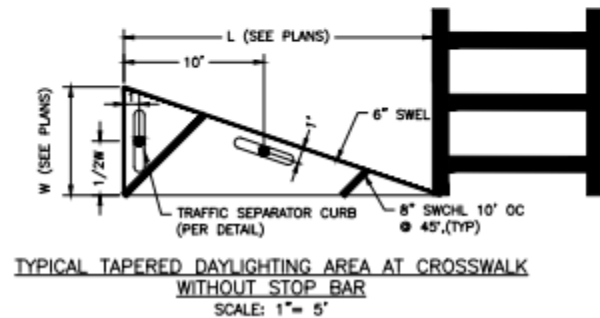
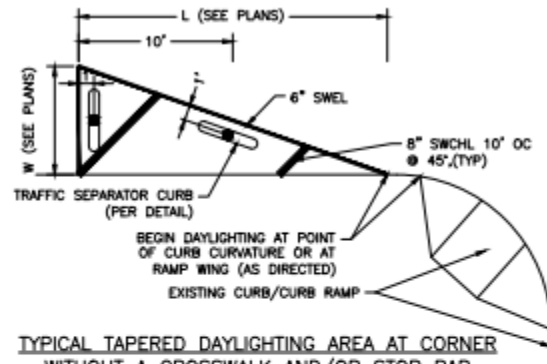
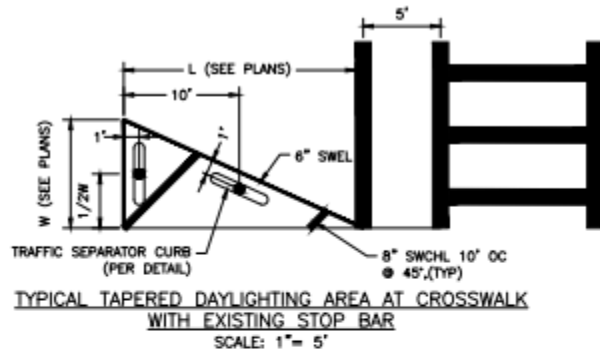
1. T AND L SHALL BE CONSTRUCTED AS NOTES IN PLANS
2. FLEXPOSTS SHALL BE INSTALLED CONTINUOUSLY WITHIN THE T AREA OF THE MEDIAN, EXCEPT IN THE AREA OF THE CROSSWALK
3. FLEXPOSTS SHALL BE OFFSET A MINIMUM OF 1" FROM UTILITIES AND MEET AT MANUFACTURES SPECIFICATIONS
4. FLEXPOSTS SHALL BE INSTALLED 9" FROM THE INSIDE EDGE OF THE DOUBLE YELLOW CENTER LINE
5. SOLID YELLOW CHANNELIZATION LINE SHALL BE INSTALLED AT 10' O.C.
6. BREAK DYCL AND SYCHL AT CROSSWALKS AS SHOWN ON PLANS
7. IF CROSSWALK IS PRESENT, TERMINATE THE DYCL AT THE EXISTING CROSSWALK, NO NOSE
8. IF THERE IS NO EXISTING CROSSWALK, ROUND OFF NOSE OF DYCL USING 4" RADIUS



TYPICAL TAPERED MEDIAN DETAIL
(N.T.S)

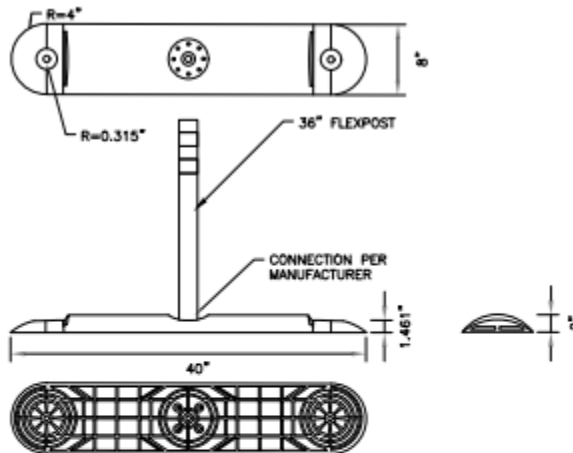
MEDIAN NOTES:

1. T AND L SHALL BE CONSTRUCTED AS NOTES IN PLANS
2. FLEXPOSTS SHALL BE INSTALLED CONTINUOUSLY WITHIN THE L AREA OF THE MEDIAN, EXCEPT IN THE AREA OF THE CROSSWALK
3. FLEXPOSTS SHALL BE OFFSET A MINIMUM OF 1" FROM UTILITIES AND MEET AT MANUFACTURES SPECIFICATIONS
4. FLEXPOSTS SHALL BE INSTALLED 1" FROM THE INSIDE EDGE OF THE DOUBLE YELLOW CENTER LINE
5. SOLID YELLOW CHANNELIZATION LINE SHALL BE INSTALLED AT 10' O.C.
6. BREAK DYCL AND SYCHL AT CROSSWALKS AS SHOWN ON PLANS



DAYLIGHTING NOTES:

1. DAYLIGHTING AREAS SHALL BE A MINIMUM OF 20' IN LENGTH FROM THE NEAREST CROSSWALK AND MAXIMUM OF 8' WIDE.
2. SEE PLAN SHEETS FOR FLEXPOST LOCATIONS.
3. FLEXPOSTS SHALL BE INSTALLED OUTSIDE OF CROSSWALK, OFFSET A MINIMUM OF 1' FROM UTILITIES AND MEET AT MANUFACTURERS SPECIFICATIONS.
4. FLEXPOSTS SHOULD BE INSTALLED INSIDE THE SOLID WHITE EDGE LINES.
5. STOP LINES SHALL BE MODIFIED TO BE ERADICATED WITHIN DAYLIGHTING AREAS AS NEEDED.



MANUFACTURING INFORMATION

1. INJECTION MOLDED
2. UV STABILIZED HDPE
3. COLOR: WHITE OR YELLOW

INTENDED USE

1. CRASHWORTHINESS TESTED TO 2009 M.A.S.H. STANDARD

NOTES:

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DIMENSIONS, MATERIALS, AND ATTACHMENTS MAY VARY BETWEEN MANUFACTURERS.
3. PER CITY OF BOSTON SPECS FOR IN-GROUND CORED-BASE FLEXPOST.
4. DESIGN PLANS SHOULD BE CONSULTED FOR VARIATIONS.
5. IF LOCATED ON BRIDGE BASE MUST BE GLUED TO BRIDGE DECK INSTEAD OF CORED.
6. COLOR OF TRAFFIC SEPARATOR CURB AND POST SHALL MATCH THE COLOR OF THE ADJACENT PAVEMENT MARKING

TRAFFIC SEPARATOR CURB (MODULAR BASE)
 (RTD DETAIL A720)

N.T.S.