City of Brainerd
Technology Enhanced Traffic Control Policy

1. Introduction

The City of Brainerd seeks to optimize its existing traffic control measures in locations where unique situations exist. With evolving Technology Enhanced Traffic Control devices, it is crucial to analyze the effectiveness of each device and determine whether their use factually increases the safety and well-being of the public.

This policy defines how devices are evaluated and recommended for application. Devices failing to meet the guidelines established by this policy will not be considered for installation unless they are a replacement to a previously installed, older technology system (standard flashing beacons, etc.).

2. Policy

Devices considered for use include flashing LED regulatory (stop and yield) and warning (curve ahead, etc.) signs, digital speed feedback signs, and rectangular rapid-flashing beacons at pedestrian crosswalks. New devices, as developed, will be considered for addition to the policy.

The city will follow guidance for appropriate use as provided by the Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD).

Flashing LED Signs (Regulatory and Warning)
Light Emitting Diode (LED) units may be used individually within the legend of a sign and/or the border of a sign to improve the conspicuity or to increase the legibility of sign legends and borders.

Prior to implementing a flashing LED sign, the following conspicuity improvement alternatives shall first be considered:

- Install an advanced warning sign on approach to the intersection or warning condition.
- Increase the size of the existing signage.
- Install a second sign of equal or lesser size on the left-hand side of the road (if allowed by MN MUTCD).
- Add one or more red or orange flags (cloth or retroreflective sheeting) above a standard sign, with flags oriented at 45 degrees to the vertical.
- Add a strip of retroreflective material to the sign support.

Flashing regulatory and warning signs shall only be considered for installation in situations necessitating enhanced visibility of the sign not accomplished by the above

treatment techniques. The city will follow the MnDOT Traffic Engineering Manual to create premises for use. For local road situations the manual provides instruction that use of these devices should be limited to locations where both of the following conditions exist:

- Limited visibility on approach to an intersection or roadway condition requiring warning, as determined by the sight distance criteria for Warrant 1 in Section 9-4.02.012 in the Traffic Engineering Manual.
- A history of crashes documented to be caused by a failure to stop or adherence to warning, and deemed preventable by implementation of conspicuity improvements.

Speed Feedback Signs

These signs provide a real-time dynamic display of the driver's vehicular speed at the location where speeding and safety has been documented as a problem. When considering use of these signs, at least four (4) of the following conditions must be met:

- The 85th percentile speed exceeds the posted speed limit by at least 5 MPH during the time period of concern.
- A speed transition area exists.
- The area of interest is within the vicinity of a school or other high pedestrian traffic area.
- The posted speed is 40 MPH or less.
- The road is under city jurisdiction.

Installation may be considered when three (3) of the above five (5) conditions are met, and crash data and documented repeat lane departures can clearly be linked to excessive speed in the area of interest.

Speed Feedback Signs shall also meet the following technical specifications when implemented:

- Installation must be used in conjunction with the traditional speed limit sign.
- When activated, the sign display shall give drivers immediate feedback on their individual driving speed.
- When traveling above the posted speed limit, the sign shall rapidly flash or have other dynamic elements.
- When installed in association with school speed zones, the Speed Feedback Signs shall operate only when the school speed zone is in effect.
- The installation shall not interfere with the visibility and general effectiveness of any other signs in the area.

Rectangular Rapid Flashing Beacons (RRFBs)

RRFBs are user-actuated LEDs that supplement warning signs to increase awareness of a pedestrian crossing location. They are activated by a push button which triggers the LEDs to display an irregular flash pattern which can help alert drivers of the approaching crosswalk.

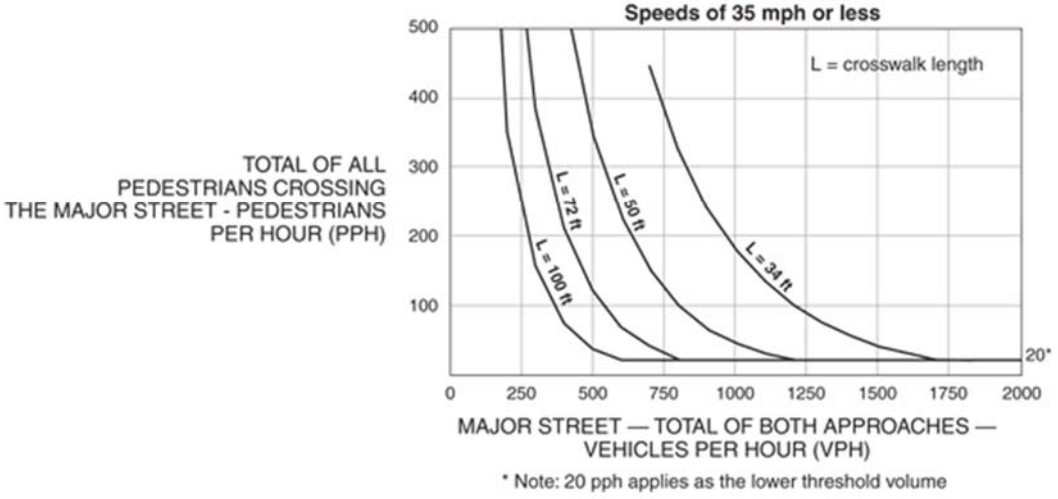
Prior to implementing RRFBs, the following conspicuity improvement alternatives shall first be considered:

- Add crosswalk pavement markings.
- Install an advanced warning sign on approach to the crosswalk.
- Increase the size of the existing signage.
- Install a second sign of equal or lesser size on the left-hand side of the road (if allowed by MN MUTCD).
- Add one or more red or orange flags (cloth or retroreflective sheeting) above a standard sign, with flags oriented at 45 degrees to the vertical.
- Add a strip of retroreflective material to the sign support.
- Add an In-street Pedestrian Crossing sign.

RRFBs shall only be considered for installation in situations necessitating enhanced visibility of the crosswalk not accomplished by the above treatment techniques.

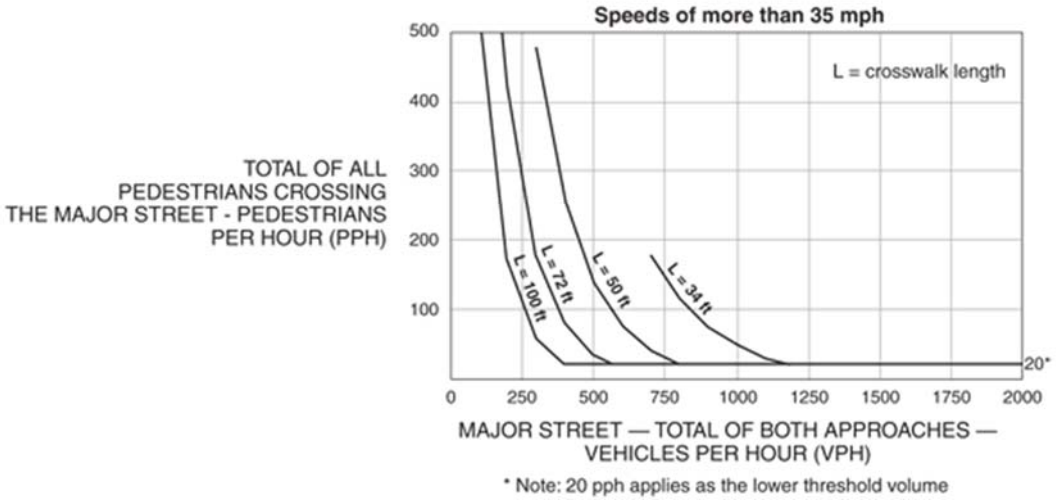
The analysis for determining if RRFBs shall be used is specified in figures 4F-1 and 4F-2 from Part 4 of the Manual on Uniform Traffic Control Devices as shown below. Variables that influence the proper procedure include the number of pedestrians crossing at a location, the volume and speed of crossing vehicular traffic and the length of the crosswalk.

Figure 4F-1. Guidelines for the Installation of Pedestrian Hybrid Beacons on Low-Speed Roadways



* Note: 20 pph applies as the lower threshold volume

Figure 4F-2. Guidelines for the Installation of Pedestrian Hybrid Beacons on High-Speed Roadways



RRFBs shall be limited in use to crosswalk locations that exist at non-controlled intersections or other midblock locations where vehicular traffic would otherwise not be required to stop.

Costs

Annual budgets are prepared without including installation of any new Technology Enhanced Traffic Control devices due to the large and variable costs for each individual system.

Requests for Technology Enhanced Traffic Control devices, found to meet the guidelines established in this policy, shall be considered for inclusion in the following year's budget or Capital Improvement Plan.

Requests for installation within the current budget year found to meet the guidelines established by this policy may be considered if they are accompanied with a donation of all costs associated with the purchase, installation and maintenance of the system. Acceptance of the donation will be by the City Council and shall not obligate the city to future replacement costs.