Enhanced Crosswalks

What are enhanced crosswalks?

Enhanced crosswalks are pedestrian crossing countermeasures used in addition to the pavement markings typically used at pedestrian crossings not controlled by a traffic signal or STOP sign. The most common examples of enhanced crosswalks include:

- Median refuge islands
- Curb extensions
- Street lights
- Rectangular Rapid Flashing Beacons (RRFBs)
- High-Intensity Activated CrossWalK beacon (HAWK beacon)

Curb Extensions

High-Intensity Activated Crosswalk Beacon

Rectangular Rapid Flashing Beacon

Why are enhanced crosswalks needed?

Research consistently conveys that marked crosswalks alone do NOT reduce the number or rate of pedestrian-vehicle crashes.[5] Since only marking a crosswalk is unlikely to improve pedestrian safety, the use of enhanced crossing countermeasures is suggested to improve crosswalk safety.

Although definitive rationale is not available as to why marked crosswalks alone are ineffective, theories include:

- False sense of security on the part of the pedestrians and inconsistent driving behaviors
- Distracted drivers and pedestrians
- Reduced effectiveness as a result of either overuse or warning of conditions that drivers rarely encounter

How effective are enhanced crosswalks?

Curb Extensions and Median Refuge Islands are countermeasures that reduce crossing distances. In the case of median refuge islands, allow for pedestrians to cross one direction of travel at a time. These improvements are PROVEN effective with crash reductions in the range of 40 to 45 percent.[2]

Street Lighting at isolated locations in rural areas is considered PROVEN effective, with a crash reduction in the range of 30 to 40 percent. Limited research is available on the effectiveness of pedestrian-related crashes in urban areas.

HAWK Beacons and RRBFs are relatively new technologies with promising initial research. HAWK beacons and RRFBs have crash reductions over 50 percent[4], and RRFBs have documented high yielding rates to pedestrians in excess of 80 percent.[4]

What are candidate locations for enhanced crosswalks?

The primary guidelines for installing crosswalk markings are documented in the Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD).[1] To identify locations for enhanced crosswalks, the MN MUTCD guidance recommends that agencies prioritize their systems based on need and existing factors such as:

- Number of lanes
- Presence of median
- Distance from adjacent signals
- Pedestrian volume and delay
- Average daily traffic
- Speed limit
- Geometry
- Potential consolidation of nearby crossings

Although no research identifies minimum levels of pedestrian volumes that would indicate a threshold level of need, maximum vehicle volumes and speed limits are documented at approximately 12,000 vehicles per day and 40 miles per hour along multilane roadways. Therefore, it is recommended that candidate locations for enhanced crosswalks are two- or three-lane roads with speeds of 35 miles per hour or less and traffic volumes under 12,000 vehicles per day. Refer to guidelines for establshing crosswalks and consideration of a variety of enhancements.[6]

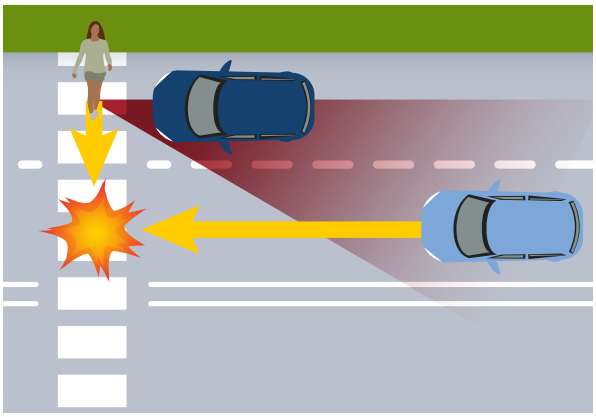
> *"Crosswalk lines should not be used indiscriminately. An engineering study should be performed before they are installed at a location away from a traffic control signal or an approach controlled by a STOP or YIELD sign." Section 3B.18, MN MUTCD*

Cost

Per Crossing

- Curb Extensions, Median Island, RRFB: $10,000-$25,000
- HAWK Beacon: $75,000-$150,000

Deployment should be prioritized by risk



What are the additional considerations?

A specific type of conflict at marked and unmarked crosswalks is the multi-vehicle threat. This conflict occurs on multi-lane roads when a vehicle in one lane stops for a pedestrian and a trailing vehicle (in the same direction) in an adjacent lane potentially hits the pedestrian when they emerge from in front of the stopped vehicle. This type of crash occurs as a result of both the pedestrian and driver failing to see one another.

Potential strategies to address the multi-vehicle threat include:

- The addition of an RRFB or HAWK to provide approaching drivers with a warning of the presence of a pedestrian attempting to cross the road.
- Four-to-three-lane road conversions (road diet) since the multi-vehicle threat occurs on roads with more than three lanes. END

References

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