



## Pedestrian Enhancements

### General Information

Multiple pedestrian crashes at the same intersection is a major concern. To address this there are many options, some of which are limited by time, cost, and/or space. More pedestrian enhancements can be implemented at high pedestrian crash locations than are listed on this sheet. Some of the possible countermeasures are listed below:

- ✓ Advanced Warning for Active Pedestrian Crossings
- ✓ High visibility Crosswalks
- ✓ Rectangular Rapid Flashing Beacons (RRFB) or Active Flashers
- ✓ Median Refuges
- ✓ Curb Bulb-outs (Extensions)
- ✓ Exclusive Pedestrian Phasing

### By the Numbers

Although RRFBs and Curb Bulb-outs have not been studied in detail, it is a common understanding that they do reduce pedestrian crashes by increasing the visibility of the pedestrian. Below are some crash reductions resulting from using some of these countermeasures:

- ✓ Advanced Warning Signs: 4% reduction in all crashes, and 15% reduction in pedestrian crashes.
- ✓ High Visibility Crosswalks: 37% reduction in pedestrian crashes.
- ✓ Median Refuges\*: 46% reduction in pedestrian crashes.
- ✓ Exclusive Pedestrian Phasing: 34% reduction in pedestrian crashes.
- ✓ Countdown Pedestrian Heads: 25%\*\* reduction in pedestrian crashes.

There is a great range in cost when considering many of these countermeasures. It often depends of the location at which the countermeasures would be applied as well as the surrounding property owners. Listed are some of the estimated costs of implementing some of the countermeasures.

- ✓ Advanced Warning Signs: \$2,000 for signage
- ✓ High Visibility Crosswalks: \$1,000
- ✓ RRFBs or Active Flashers: \$5,000-\$15,000 dependant on power source location.
- ✓ Median Refuges: \$5,000-\$30,000 dependant on right-of-way cost and needed mitigation.
- ✓ Curb Bulb-outs (Extensions): \$5,000-\$20,000 dependant on right-of-way cost and needed mitigation.



**Credit:** Federal Highway Administration Website

### Helpful Resources

- ✓ *Highway Safety Manual* Chapter 13
- ✓ Crash Modification Clearinghouse  
<http://www.cmfclearinghouse.org/>
- ✓ *FHWA Desktop Reference for Crash Reduction Factors*  
[http://safety.fhwa.dot.gov/speedmgt/ref\\_mats/fhwasa09028/resources/CRF%20Desktop%20Reference.pdf](http://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa09028/resources/CRF%20Desktop%20Reference.pdf)
- ✓ *Pedestrian Safety Guide and Countermeasure Selection System*  
[http://www.walkinginfo.org/training/collateral/resources/PE\\_DSAFEGuide.pdf](http://www.walkinginfo.org/training/collateral/resources/PE_DSAFEGuide.pdf)

\* Installing a raised median (marked crosswalk) at an unsignalized intersection. The countermeasure of a median refuge for pedestrians is on the CMF clearinghouse most wanted list.

\*\*Compared to traditional pedestrian heads.