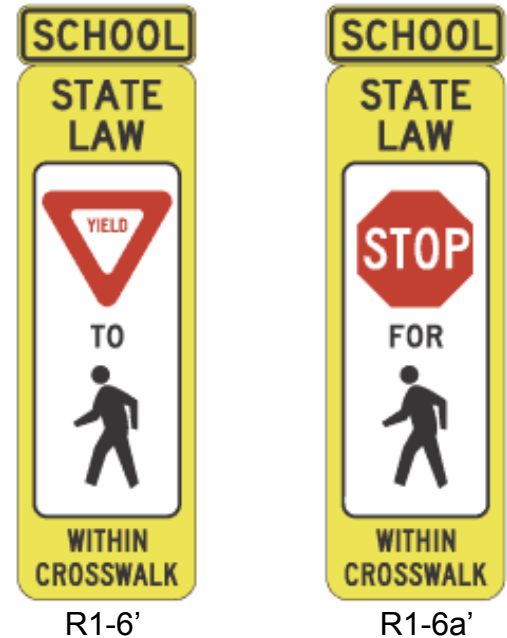




In-Street Pedestrian Crossing Signs Increase Driver Yielding Compliance

Warning signs and pavement markings used at pedestrian crossings can take many shapes and forms. Some of these traffic control devices are used to warn drivers to watch out for pedestrians. Even though drivers may receive the warning many of them consider yielding or stopping for pedestrians as a courtesy. However, in many states, it is the law.

In-street pedestrian crossing signs are regulatory signs placed in the street (on edge lines, centerlines, or in medians) to remind drivers of their legal obligation with respect to pedestrians at unsignalized pedestrian crossings.¹ These signs are easily implemented and may be removed for snow removal or other maintenance purposes. Typically, these signs are viewed as an appropriate treatment for lower speed roadways (≤ 30 mph) and cost \$200 to \$300 per sign includes labor).²



Interest concerning in-street pedestrian crossing signs is growing, especially since these signs were added to the 2003 Edition of the *Manual on Uniform Traffic Control Devices* (MUTCD).¹ Cities in several states including Iowa, Minnesota, New Hampshire, New York State, Wisconsin, Washington State, and the District of Columbia have deployed in-street pedestrian crossing signs as a low-cost safety improvement.

Some of the first applications of in-street pedestrian crossing signs were in New York State. In 1996, the New York State Department of Transportation developed a pedestrian safety cone that could be placed in the middle of a crosswalk.^{3,4} This device consisted of a traffic cone fitted with an orange retroreflective “jacket” bearing the sign STATE LAW-YIELD TO PEDESTRIANS IN YOUR HALF OF ROAD.

In the late 1990s, the Highway Safety Research Center (HSRC) evaluated the effectiveness of the New York State device at six locations in New York State and one location in Portland, Oregon.^{3,4} All of the sites had a speed limit ≤ 30 mph and the average daily traffic (ADT) ranged from 7200 to 15,500 vehicles per day (vpd). Six of the sites were two-lane roadways (one had a two-way left-turn lane) and one site was a four-lane roadway. Combining data from all seven sites, in the before period drivers yielded to 70 percent of the pedestrians. After the installation of the pedestrian safety cone, drivers yielded to 81 percent of the pedestrians (a 16 percent increase).

In the summer of 2002, the Center for Transportation Research and Education at Iowa State University completed a small-scale assessment of in-street pedestrian crossing signs in Cedar Rapids, Iowa.⁵ The signs were installed on a four-lane major arterial with a continuous left-turn lane. The speed limit was 25 mph and the ADT was approximately 25,000 vpd. Prior to the use of the in-street pedestrian crossing signs, drivers in the eastbound, outside lane stopped only 70 percent of the time. After the installation, drivers stopped 84 percent of the time (a 20 percent increase). In the westbound, outside lane, the percent change was less dramatic, increasing from 64 percent to 67 percent (a 5 percent increase).

In December 2002, the City of Redmond, Washington installed 13 in-street pedestrian crossing signs on roadways with speed limits ≤ 30 mph.⁶ These signs contained the words STOP FOR and the standard walking person pedestrian symbol. Before the signs were installed, the percent of drivers stopping ranged from 19 to 67 percent. After the signs were installed, the percent of drivers stopping ranged from 68 to 98 percent.



Redmond, Washington

In a recent Transit Cooperative Research Program (TCRP)/National Cooperative Highway Research Program (NCRHP) study completed by the Texas Transportation Institute (TTI), researchers conducted field studies to provide insight into the actual behavior of drivers at locations with existing pedestrian crossing treatments.² At three of the sites, researchers evaluated in-street pedestrian crossing signs. All three sites were on two-lane roadways with speed limits of 25 or 30 mph. The field studies indicated that in-street pedestrian crossing signs had relatively high driver yielding (ranged from 82 to 91 percent with an average of 87 percent) compared to other high visibility signs and markings (ranged from 10 to 61 percent with an average of 32 percent).

Overall, evidence suggests that the application of in-street pedestrian crossing signs is a low cost safety improvement that increases driver yielding compliance at unsignalized pedestrian crossings.

In August 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) created a new, federally funded Safe Routes to School program (Section 1404). This bill provides specific funding for infrastructure related projects which includes pedestrian crossing improvements. For more information on the Safe Routes to School program, please visit the Federal Highway Administration (FHWA) Highway Safety Program website at <http://safety.fhwa.dot.gov/saferoutes/index.htm>.

¹ *Manual on Uniform Traffic Control Devices for Streets and Highways*. Federal Highway Administration, Washington, D.C., 2003 Edition with Revision No. 1 Incorporated, November 2004. <http://mutcd.fhwa.dot.gov>.

² Fitzpatrick, K., S. Turner, M. Brewer, P. Carlson, N. Lalani, B. Ullman, N. Trout, E.S. Park, D. Lord, and J. Whitacre. *Improving Pedestrian Safety at Unsignalized Crossings*. Draft Report Submitted to the Transit Cooperative Research Program/National Cooperative Highway Research Program, Transportation Research Board, National Research Council, Washington, D.C., January 2006.

³ Huang, H., C. Zegeer, R. Nassi, and B. Fairfax. *The Effects of Innovative Pedestrian Signs at Unsignalized Locations: A Tale of Three Treatments*. FHWA-RD-00-098. Federal Highway Administration, Washington, D.C., August 2000. <http://www.tfhrc.gov/safety/pedbike/pubs/00-098.pdf>.

⁴ Huang, H., C. Zegeer, and R. Nassi. Effects of Innovative Pedestrian Signs at Unsignalized Locations: Three Treatments. In *Transportation Research Record 1705*, Transportation Research Board, National Research Council, Washington, D.C., 2000, pp. 43-52. <http://www.enhancements.org/trb%5C1705-008.pdf>.

⁵ Kannel, E., R.R. Souleyrette, and R. Tenges. *In-Street Yield to Pedestrian Sign Applications in Cedar Rapids, Iowa*. CTRE Project 02-115. Center for Transportation Research and Education, Iowa State University, Ames, Iowa, May 2003. <http://www.ctre.iastate.edu/reports/pedyield.pdf>.

⁶ Byszski, S. *City of Redmond In Street Pedestrian Crossing Sign Test*. FHWA Experimentation #2-507(Ex) – In Street Pedestrian Crossing Signs Six Month Report. City of Redmond, Public Works/Transportation, Redmond, Washington, June 2003.