



# Pilot Implementation for Preventing Incorrect Turns at Highway-Rail Grade Crossings

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## Project Number

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## Project Manager

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### Current Situation

When a driver encounters an at-grade rail crossing close to another turn, such as an intersection or an on-ramp, they may misinterpret the situation and turn into the at-grade crossing. Similarly, when at-grade tracks cross a divided highway, they may appear to offer a place to make a U-turn. Although this is uncommon, it can lead to very dangerous situations when drivers become stuck on the tracks, take extreme measures to get off the tracks, encounter trains, or abandon vehicles, with potential injuries or fatalities to vehicle or train passengers or operators. The situation is even more dangerous at night. Standard turn markings can be part of the problem, and guidance is needed for improved marking. Countermeasures including revised pavement markings and curbing can be desirable.

### Research Objectives

University of South Florida researchers evaluated the effectiveness of three countermeasures in preventing drivers from turning onto graded rail crossings.

### Project Activities

The researchers investigated three low-cost countermeasures: (1) elimination of potentially misleading pavement markings and signs, (2) implementation of pavement markings with guidance information, and (3) installation of Qwick Kurb delineators to prevent drivers from turning around at railroad crossings.

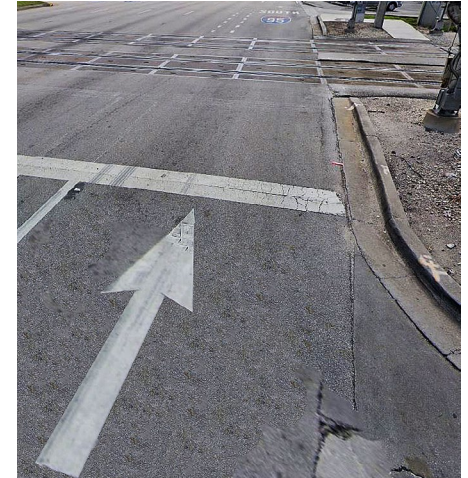
Countermeasures were installed at eight sites. One site was selected for use of Qwick Kurb to discourage using graded tracks for U-turns. At the rest of the sites, turn arrows were removed in the approach to the crossing, and they were replaced by straight arrows and textual guidance to encourage drivers to continue toward their desired road. Near I-95 on-ramps, the guidance was an I-95 shield. At one site that was an intersection of arterial roads, the guidance was the target road name. The researchers measured the effect of these countermeasures by observing the “hesitation rate” of drivers approaching the crossing before and after installation. Hesitation rates were derived from speed profiles and videos.

Comparison of hesitation rates before and after installation of the countermeasures, both in the day and at nighttime, showed that the countermeasures were highly effective in reducing driver hesitation and, by implication, incorrect turns onto graded tracks.

### Project Benefits

Low-cost countermeasures with proven effectiveness, like the ones demonstrated in this project, can improve roadway safety.

For more information, please see [fdot.gov/research](http://fdot.gov/research)



*In this turn lane, approaching an I-95 on-ramp, a straight arrow has replaced a turn arrow. The arrow directs drivers across the at-grade railroad tracks, just ahead. At the top of the image is an I-95 South marking for additional guidance.*