NC Sealed Corridor Program

On Track for Safety in North Carolina

In 1992 the United States Department of Transportation (USDOT) designated the Washington, DC-Raleigh-Charlotte Southeast Rail Corridor as one of five nationally designated future high-speed rail corridors. Since that time, North Carolina has received special federal funds to improve railroad crossing safety along this corridor.

In an ongoing effort to improve protection at or eliminate rail-highway crossings, the North Carolina Department of Transportation (NCDOT) has worked with communities across the state to increase safety of these crossings. The **North Carolina Sealed Corridor Program** aims at improving or consolidating every highway-rail grade crossing, public and private, along the section of the designated Southeast High Speed Rail (SEHSR) Corridor that runs through North Carolina between Raleigh, Greensboro and Charlotte. Recent statistics continue to show a growth in both highway and rail traffic, making the need for crossing improvements increasingly critical for improving safety for both vehicular and rail operations.

Private crossings typically exist as a result of an agreement between the railroad company and the property owner of record at the crossing. These crossings are generally under the jurisdiction of the railroad companies so there is no legal precedent for public agency involvement. However, "The Private Crossing Safety Initiative"—a phase of the **North Carolina Sealed Corridor Program**—focuses on the same goal of increasing crossing safety at these locations. This vital phase inventoried and evaluated all private crossings on the corridor and recommended signalization, signage, closure and gate/lock treatments.

The NCDOT has also conducted Traffic Separation Studies to identify crossings which are candidates for consolidation or elimination, including locations with a high rate of crash occurrence, in close proximity to bridges or safer parallel crossings, and where redundancy exists.

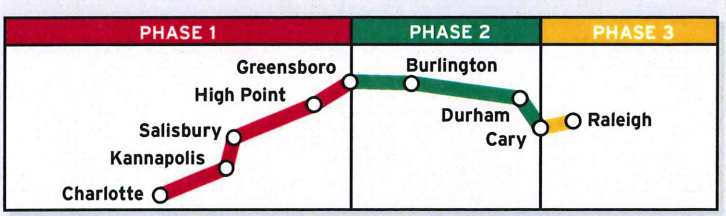
The implementation of the **North Carolina Sealed Corridor Program** is a demonstration of nonstandard corridor highway-railroad grade crossing improvements. NCDOT has adopted enhanced devices as an engineering standard for implementation on high-density freight and passenger corridors in the state, as per the engineering diagnostic.

The corridor project was funded by FRA 1010, 1036 and 1103c grants and state funds.

RESULTS

- **The effectiveness of these crossing safety improvement devices was determined in video monitored tests from 1995 to 1999 that validated a reduction in gate violators from 67% to 98%, depending on the enhanced treatments.**
- **According to the USDOT Volpe Center, their Fatal Crash Analysis estimated 19.7 potential "lives saved" with the projects implemented on the Sealed Corridor through December 2007.**

The North Carolina Sealed Corridor Program is divided into three construction phases: Phase 1, from Charlotte to Greensboro, Phase 2, from Greensboro to Cary, and Phase 3, from Cary to Raleigh. The entire corridor includes 172 public and 43 private railroad crossings.



Safety Devices

MEDIAN SEPARATORS

Median separators are installed along the centerline of roadways – in most cases extending approximately 70 to 100 feet from the crossing – to prevent motorists from crossing lanes to "run around" activated crossing gates. These low-cost devices may be tubes or flat delineator panels attached to a prefabricated island or a concrete monolith with tubes. Median separators have shown to reduce crossing violations by 77%, and by 98% when used in conjunction with four-quadrant gates.

FOUR-QUADRANT GATES

Installing two additional gates to existing two-quadrant signals and gates blocks all lanes of travel across the railroad tracks when the signals are activated. Four-quadrant gates have shown to decrease violations by up to 86%, and by 98% when used in conjunction with median separators.

LONGER GATE ARMS

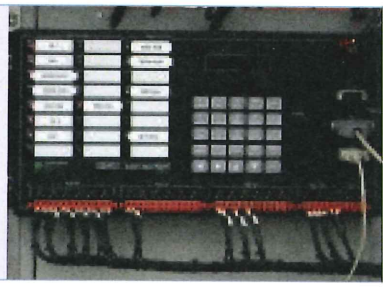
Installing longer gate arms at a railroad crossing also reduces the drivers' ability to "run around" gate arms by blocking three-fourths of the roadway. These devices can also be used in conjunction with median separators where a separator can be placed on only one side of a crossing due to the presence of a street or driveway connection in close proximity to the crossing. Longer gate arms alone have shown to decrease violations by 84%.

SPECIAL SIGNAGE

Special signage is added to crossings as an additional element of the **Sealed Corridor Program** improvements. Signage may direct vehicles where to stop at a crossing, provide a number to call for signal outages, or remind vehicles not to stop on the tracks.

INTELLIGENT SIGNAL MONITORING SYSTEM

The Intelligent Signal Monitoring System provides timely information to railroad personnel by monitoring malfunctions of crossing equipment before being manifested in actual operations of the device. The system has the potential to be linked to local authorities for rerouting emergency responders if a crossing signal is malfunctioning. The Intelligent Signal Monitoring System operates as part of the railroad's centralized dispatching and train control.



VIDEO TICKETING SYSTEM

Video Ticketing Systems place video cameras at some crossings to record drivers who ignore warning devices by photographing the vehicle, driver and license plate number. NCDOT has worked with local law enforcement agencies and county judicial officials to prosecute violators. While Video Ticketing Systems have been shown to decrease violations by 76%, the test demonstration of this technology showed that other crossing treatments result in a higher reduction in violations. Because of this, there are currently no active systems in North Carolina.