



NC 55 Bypass, Holly Springs, NC

RESTRICTED CROSSING U-TURN INTERSECTION

THE PROBLEM

Traffic on an already heavily traveled mixed use corridor was expected to more than double within just a few years due to additional growth and the opening of a new interchange.

THE SOLUTION

A series of four Restricted Crossing U-Turn intersections along the corridor.

THE OUTCOME

- Reduced travel times on the main roadway.
- Reduced number of potential conflict points, benefitting both motorized and non-motorized traffic.
- Ability to handle increasing traffic for the next 20 years.
- Innovative design solution funded with private investment in the form of a public-private partnership between NCDOT and a local developer.

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CORRIDOR LOCATION

35°39'27.2"N, 78°50'54.7"W

Background

Located in Wake County, the NC 55 Bypass is a four-lane divided expressway. The surrounding area consists of residences, big-box retail, offices, and other mixed use development. Already a heavily-traveled roadway, planned growth and development were expected to double traffic in the area by 2013.

Challenges

The opening of a new shopping center and the addition of an interchange with I-540 posed safety and operational challenges for motorized and non-motorized users of the NC 55 Bypass. While the road carried approximately 25,000 vehicles per day in 2011, these changes were expected to more than double the amount of traffic to 53,000 vehicles per day.¹

Approach

North Carolina DOT (NCDOT) knew it needed to upgrade the corridor to handle the projected increase in traffic, but funding was an issue. NCDOT considered different options and quickly determined that Restricted Crossing U-Turn (RCUT) intersections, also known as Superstreets, would move traffic more efficiently, providing better throughput than a square loop interchange. RCUTs also could reduce conflict points between vehicles by half and total vehicle collisions by 46 percent.² A local developer privately funded the new RCUTs. They were planned to better accommodate existing developments as well as spur new ones.



Vehicle Turning at an RCUT Intersection Along the NC 55 Bypass
Source: RCUT Case Study Video FHWA-SA-14-063

the expressway. At the intersection with Green Oaks Parkway, pedestrians and cyclists can use the median as a refuge. With the new design, they do not have to worry about turning vehicles conflicting with their path while they cross the street.

“When we analyzed the corridor, we saw that a superstreet would actually work better than a square loop interchange ... We could process more traffic more efficiently.”

— James Dunlop, P.E.
Congestion Management Engineer, North Carolina DOT

Results

Because the RCUT design creates a consistent progression along the corridor, the new intersections have increased efficiency by reducing travel times on the main roadway. Furthermore, engineers with the city of Holly Springs expect the NC 55 Bypass RCUTs to handle increasing traffic for the next 20 years. Foot and bicycle traffic are accommodated by a signalized crosswalk to the median of

¹ Brian Shrader, “Holly Springs hopes ‘superstreets’ will solve growth problems,” WRAL, June 7, 2012, available at: <http://www.wral.com/traffic/story/11183210/>

² NCDOT, “Superstreets: A Tool for Safely and Efficiently Managing Congestion,” undated presentation, available at: <http://www.hollyspringsnc.us/DocumentCenter/Home/View/1261>

