

US 31W

Safety & Efficiency Improvements

From St. John Road in Elizabethtown
to Blackjack Road in Radcliff



Why is This Important?

US 31W (Dixie Highway) serves as a backbone of transportation for our local economy. It supports local and regional traffic, local businesses and job centers, and serves as a primary route for many in our community. Unfortunately, the route is not without its challenges. Over the past several decades, the operating conditions and safety have deteriorated to a point where KYTC is looking at innovative ways to not only increase your safety, but also to make it easier to navigate. We are taking a data driven approach and utilizing current best practices and countermeasures to make certain that, once improved, US 31W will continue to work for future generations of people and businesses that rely on it. We already know that the pavement conditions for US 31W are causing significant issues for you, but there are also underlying safety issues that are worth taking a closer look.

Crashes along the Hardin County section of US 31W have a negative economic impact of roughly

\$6.7M
annually

This includes emergency response, insurance, medical and property damage implications.

Deteriorating Paving Conditions

The original two southbound lanes of the US 31W Corridor in Hardin County were originally constructed with concrete pavement in 1941. When the corridor was widened to four lanes in 1959, the original two northbound lanes were also constructed with concrete pavement while the two southbound lanes were overlaid with asphalt pavement. Over time, the Kentucky Transportation Cabinet (KYTC) has further overlaid the original concrete lanes in both directions to extend the life of the pavement, filled in the median, and widened to add a third lane in some locations. These additional lanes have been constructed completely with asphalt, leading to an inconsistent pavement design throughout. Currently, the four original concrete lanes sit anywhere from four to nine inches below the driving surface. Joints from the original concrete have propagated cracks up to the surface that require periodic maintenance and repairs.

As part of this US 31W corridor improvement project, KYTC is combining safety improvements with pavement rehabilitation to limit delays to the traveling public between St. John Road (KY1357) and Veterans Boulevard. The asphalt above the existing concrete pavement will be milled up to five inches deep and replaced with new, high strength, fiber-reinforced asphalt to reduce the propagation of cracks. Relief joints will be cut into the original concrete to minimize the effect of joints and cracks reflecting up through the new asphalt. Long-term, this pavement rehabilitation will decrease maintenance cost for the Cabinet while improving the ride quality for drivers.

2,448

crashes between January 2013 and December 2017

9

were fatal crashes

413

were injury crashes

With the remainder being primarily property damage.



Total distance of 8.359 miles

32

intersections along our section of US 31W

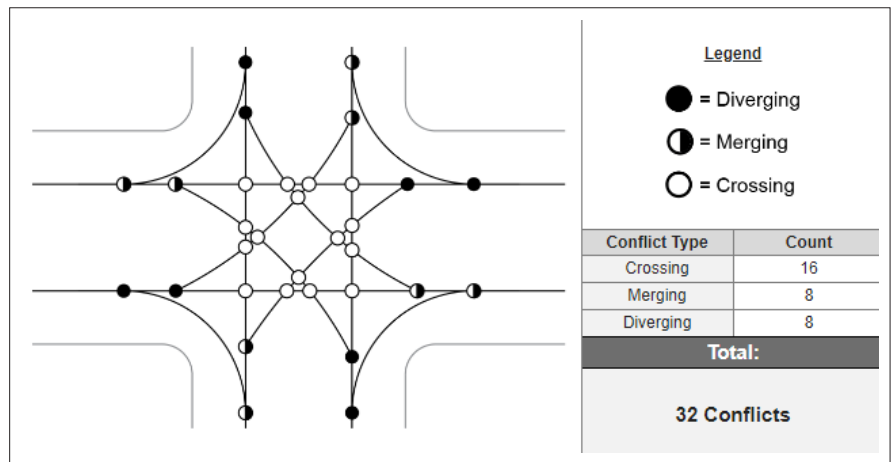
Every intersection creates opportunities for crashes and signal timing frustration.

24

of these intersections are in the top 10% of lowest performing intersections in KYTC District 4 with 7 of these being in the top 1%. That means that along the project limits, we are experiencing serious safety and travel time delays.

What Is Causing These Issues?

It boils down to conflict points. These are instances where one direction or mode of transportation has the potential to meet another; for instance, where a left turning car crosses an oncoming car, or a right turning car sideswipes a car traveling in the same direction. Each of these conflict points not only has the potential to cause a serious safety issue, it is also an instance that drives down efficiencies along the corridor.



Conventional Intersection

Diagram courtesy of [VDOT Virginia Department of Transportation](#)

This diagram shows a conventional intersection with every type of conflict point that can occur. Crossing (shown in white) typically cause the most serious injuries. Merging (shown in half-circle) cause more side-swipe types of crashes and diverging (shown in black) are usually caused by late decision points.

Moving Forward

Thankfully, several best practices have been tested to directly combat these unsafe conditions. The Kentucky Transportation Cabinet is committed to working closely with local businesses to rapidly deploy engineering best practices that will help make your travel along US 31W safer, more efficient, and more comfortable.

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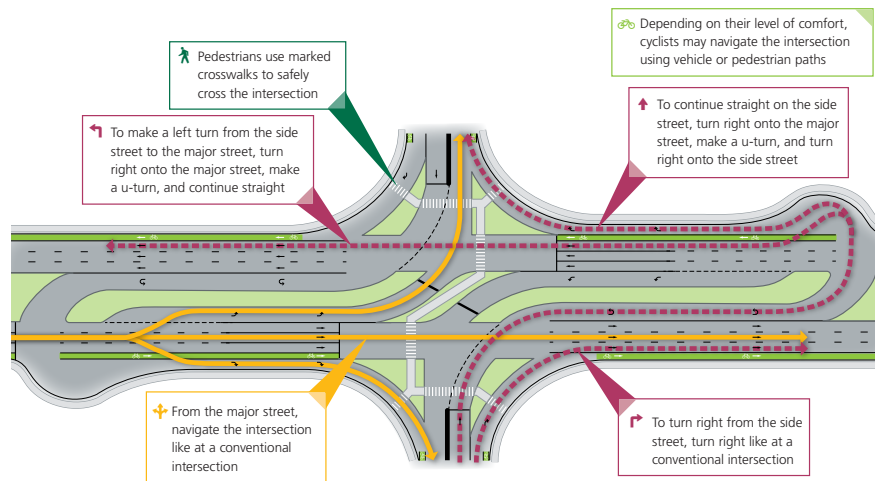
Improving the Issues

We understand that the **pavement condition** is a critical item that needs to be addressed and KYTC is fully committed to addressing this issue as part of these improvements. We also know that safety is a big concern, so we have identified methods for eliminating some of the conflict points currently experienced along the corridor.

The solution that we are proposing effectively minimizes conflict points. The countermeasure that will be implemented is called an RCUT, or a Reduced Conflict U-Turn type intersection.

The RCUT concept is a method that safely and efficiently manages high traffic volumes at intersections with multiple approaches along a divided highway. The RCUT functions by redirecting through and left-turning traffic from the side street approach to turn right onto US 31W, proceed to the nearby U-turn and then return to its intended destination.

Diagram courtesy of
VDOT Virginia Department
of Transportation



In locations across the country, utilization of the RCUTs have yielded better results across the board.

Improved Safety

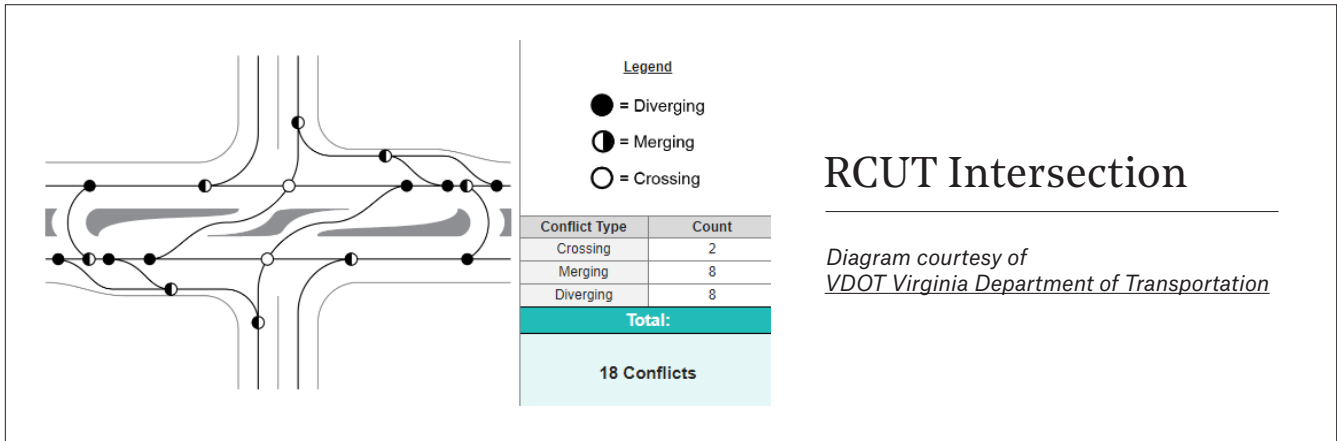
RCUTs reduce the risk of crashes and specifically the risk of severe crashes such as side collisions or T-bone type accidents.

Less Travel Time

The RCUT optimizes the capacity of our existing roadway and reduces wait time for left-turning traffic.

Economically Beneficial

The RCUT intersection allows for more efficient signal timing throughout the corridor, improving the reliability of the corridor.



RCUT Intersection

Diagram courtesy of
VDOT Virginia Department of Transportation

A Comparison of Existing Signalized Intersections vs. RCUTs

In the right location, the RCUT addresses issues that a signal does not.

- Traditional intersections with signals create delays for the mainline road and cause congestion.
- With RCUTs, the delays for vehicles accessing from the side streets are minimized, because they will all be making a right turn maneuver, which requires the shortest gap in traffic.
- Drivers can usually maneuver an RCUT in the same time and sometimes spend less time than waiting on a left-turn signal.
- With RCUTs, some movements are redirected at intersections, reducing the number of conflicting movements drivers need to navigate to make their maneuver.
- Installation of a RCUT reduces rear-end crash potential, the most common type of crash on US 31W. The less the main road is stopped, the less potential there is for high speed rear-end crashes.

Safety Stats

A study by North Carolina State University shows that after installation of RCUTs

46% fewer auto crashes are reported

personal injury crashes are reduced **63%**

RCUTs reduce travel time by

20%

compared to traditional intersections interchanges.

<https://phys.org/news/2011-01-left-superstreet-traffic-safety.html>

In Closing

US 31W creates the ideal setting for the RCUT to be an effective countermeasure for the crashes and travel time delays you are currently experiencing. As the project progresses, we will make sure to keep you apprised of the current status throughout the entire implementation process.

There will be continual updates on the progress of this project online at US31W.org.

