

US 50 Highway Safety and Operational Improvements – Phase 2 Roy’s Road to US 95 A

Project Purpose and Need

Improve safety and reduce crashes, improve operations, and increase capacity to meet current and projected demands. The NDOT mission is to provide, operate, and preserve a transportation system that enhances safety, quality of life and economic development through innovation, environmental stewardship and a dedicated workforce. This project completes the widening of U.S. Highway 50 from a two-lane highway to a four-lane divided highway from Dayton Valley to U.S. Highway 95A. As part of the improvements, wild horse fencing with cattleguards will be installed.

Past Five-Year Crash History

U.S. Highway 50 from Roy’s Road to U.S. Highway 95A (Phase 2)

Crashes 2013-2017

| | |
|---------------|----|
| Non-Collision | 37 |
| Angle | 15 |
| Rear-Ending | 21 |
| Head-On | 1 |
| Sideswipe | 5 |
| Total | 79 |

| Societal Costs | | Cost/per | Total Cost |
|----------------------|----|--------------|---------------------|
| Property Damage Only | 48 | \$7,400 | \$355,200 |
| Injury | 41 | \$82,600 | \$3,386,600 |
| Fatal | 4 | \$4,008,900 | \$16,035,600 |
| | | Total | \$19,777,400 |

Proposed Improvements

Like the previously-improved U.S. Highway 50 from Chaves Road to Roy’s Road, NDOT is increasing safety by utilizing high-T intersections and frontage roads or county roads to create safer access points for the community and the travelling public. Included with the improvements will be intersection lighting to ensure higher levels of visibility.

Advantages

The high-T intersections reduce the risk for crashes and allows traffic to enter and leave general purpose lanes at the speed of traffic, rather than crossing additional lanes of traffic while attempting to accelerate. This approach consolidates access using frontage roads, reducing the number of locations allowed to access the highway, reducing the total number of potential conflict points throughout the corridor and encouraging local movements to use the lower speed frontage roads. The new access

points will incorporate modern LED technology to light the intersections, improving visibility of turning vehicles at night.

The Figures below are indicative of the conflict points for a two-lane facility not a four-lane facility, however it demonstrates the reduction in the opportunities for crashes.

Conflict Points:

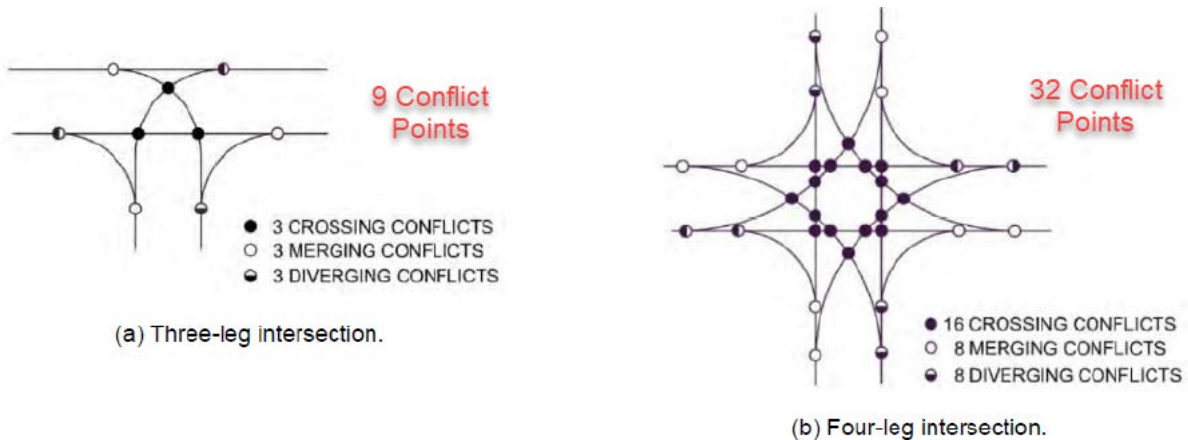


Figure (a) shows 9 conflict points for a 3-Leg intersection or T Intersection. The US 50 corridor will be constructed with alternating T-intersections, to accommodate as much access as possible.

Figure (b) shows 32 conflict points for a standard 4-Leg intersection. This configuration is reflective of the existing intersection conditions throughout the US 50 corridor.

In a corridor like U.S. 50, with relatively lower number of turning movements versus through traffic, the high-T allows a safer way for the turning movements to interact with the through traffic.

Disadvantages

In a corridor with multiple county roads and intersections like U.S. Highway 50 from Roy's Road to U.S. Highway 95A, the high-T intersections have to be alternated providing left turn movements to the north side of U.S. 50 and the south side of U.S. 50. What this means is that local traffic will have to utilize frontage roads to get to the high-T that accommodates their need. Additionally, direct access to businesses from U.S. 50 will be limited. In these cases, there may be some out of direction travel required by drivers to consolidate access. Motorists will not have to drive more than approximately a half mile out of direction to access U.S. 50 safely at one of the high-T intersections. This inconvenience results in less driver delay than what an average signalized four-way intersection would cause.

Does it work? Improved U.S. 50 Crash History

U.S. Highway 50, Chaves Road to Roy's Road

Normally, NDOT would look at five years of crash data to evaluate a corridor, however there is not five years of data available. Evaluating the thirty months prior to the completion with the thirty months following shows significant improvements to the safety of the corridor while experiencing almost a 20% increase in traffic.

30 Months Before and 30 Months After Improvements (Five-year history not available as of yet)

| | Before | After |
|------------------------------|---------------|--------------|
| Non-Collision | 14 | 8 |
| Angle | 2 | 2 |
| Rear-Ending | 1 | 0 |
| Head-On | 2 | 1 |
| Sideswipe | 0 | 3 |
| Average Daily Traffic | 6300 | 7300 |

| Societal Costs | Before | After | Cost/per | Total Cost Before | Total Cost After |
|-----------------------|---------------|--------------|-----------------|--------------------------|-------------------------|
| Property Damage Only | 10 | 10 | \$7,400 | \$74,000 | \$74,000 |
| Injury | 6 | 3 | \$82,600 | \$495,600 | \$247,800 |
| Fatal | 3 | 1 | \$4,008,900 | \$12,026,700 | \$4,008,900 |
| | | | Total | \$12,596,300 | \$4,330,700 |