



# Bangerter Corridor, Salt Lake County, UT

## DISPLACED LEFT TURN INTERSECTION

### THE PROBLEM

The Bangerter Highway corridor had a high crash rate and heavy delays. At some intersections, 25 percent of the signal time was devoted to left turns onto the minor roads, impeding both through traffic and traffic on the minor roads.

### THE SOLUTION

Installation of two-legged and four-legged DLT intersections at seven locations on the corridor to help alleviate congestion and improve flow.

### THE OUTCOME

- Commute time along the corridor has been reduced by 3 ½ minutes.
- More than 800,000 gallons of fuel have been saved.
- Construction costs have been reduced by \$20-40 million.
- Crashes within ¾ of a mile of the initially treated intersection have been reduced by as much as 60 percent.
- Capacity along the corridor has increased by as much 20-50 percent, depending on the intersection.

### CONTACT

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### CORRIDOR LOCATION

40°41'47.8"N 111°58'51.4"W

### Background

Bangerter Highway is a major north-south corridor stretching from Salt Lake International Airport in the north to an interchange with I-15 in the south. Prior to construction of a series of Displaced Left Turn Intersections (DLT), also known as Continuous Flow Intersections (CFI), Bangerter Highway experienced high crash rates and heavy delays.

### Challenges

Utah DOT's (UDOT) primary challenge along the this corridor was congestion. At some intersections, 25 percent of the signal time was devoted to left turns onto the minor roads,<sup>1</sup> impeding both through and minor road traffic. This challenge was compounded by a high crash rate. Between 1994 and 2003, the intersection of Bangerter and 3500 South alone experienced 618 crashes, an average of more than one crash per week.<sup>2</sup>

### Approach

UDOT examined several ways to treat the intersection of Bangerter and 3500 South— both to reduce congestion and to improve safety. A VISSIM simulation comparing a DLT to no changes at this location showed significant operational improvements with the DLT. UDOT installed the DLT at Bangerter and 3500 South and observed how it improved both traffic flow and safety at the intersection. In addition to the decreased commute time of nearly 4 minutes and a 60 percent reduction in crashes near the intersection, UDOT found that the DLT could be constructed for about ¼ the cost of a grade-separated interchange.<sup>3</sup> This motivated UDOT to install an additional six DLTs along the corridor.



Left Turn Crossover at Bangerter Highway and 3500 South  
Source: DLT Case Study Video FHWA-SA-14-059

### Results

Choosing to apply DLTs saved the state hundreds of millions of dollars. Each new DLT intersection cost between \$6 and \$8 million. Freeway-like, grade-separated interchanges would have cost \$30 to \$50 million each and required the re-location of numerous local businesses.<sup>4</sup>

In addition to cost savings, capacity along the corridor has increased by as much as 20 to 50 percent, depending on the intersection.<sup>5</sup> Safety also has improved, with crashes declining by 60 percent at some installations.<sup>6</sup> Air quality improvements include emissions reductions that save more than 800,000 gallons of fuel previously wasted during congestion-related idling. Pedestrians and bicyclists also benefit from improvements such as overhead pedestrian walkways, signalized crosswalks, refuge islands, and bicycle lane striping.

<sup>1</sup> Lee Davidson, "Unusual Utah intersections improve safety, save money," *The Salt Lake Tribune*, November 19, 2012. Available at: <http://www.sltrib.com/sltrib/news/55293779-78/bangerter-south-million-cfis.html.csp>

<sup>2</sup> Wayne D. Cottrell and Sichun Mu, *Utah Intersection Safety - Recurrent Crash Sites: Identification, Issues and Factors*, "Chapter 6. Study Intersections," Table 6.5, at <http://www.mountain-plains.org/pubs/html/mpc-05-176/pg6.php>

<sup>3</sup> Interview with Eric Rasband, Salt Lake City, UT, October 10, 2013.

<sup>4</sup> Davidson, "Unusual Utah intersections."

<sup>5</sup> Interview with Eric Rasband, Salt Lake City, UT, October 10, 2013.

<sup>6</sup> Davidson, "Unusual Utah intersections."

