



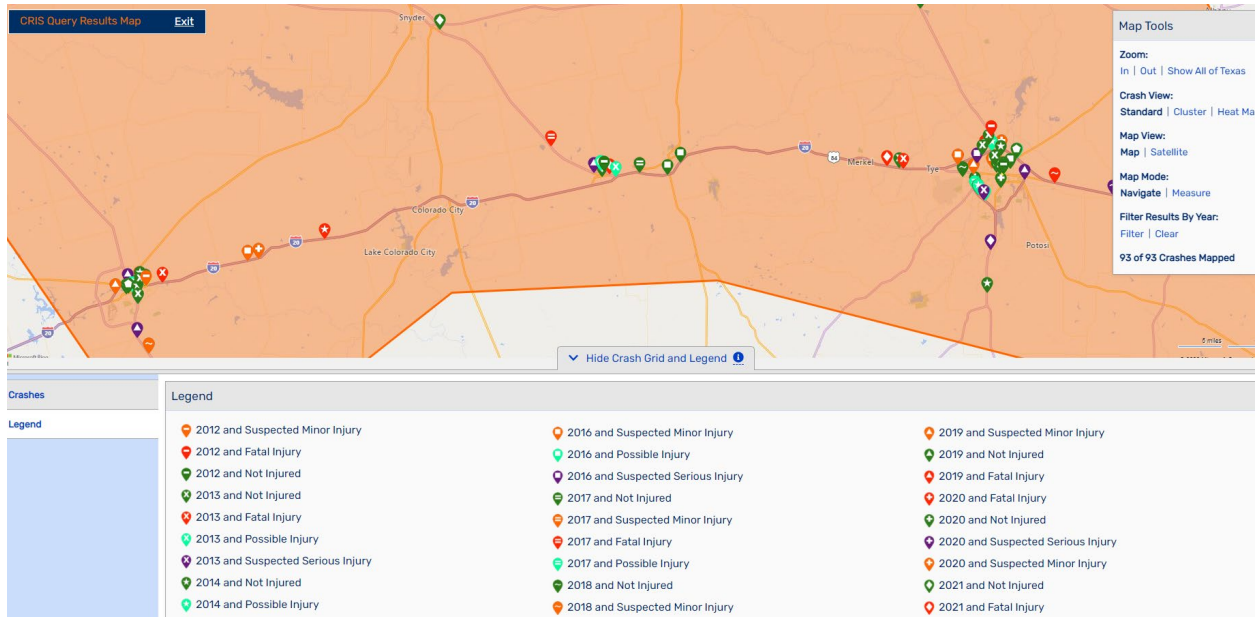
**Highway Attachment -Wrong Way Crash Analysis and Countermeasures in TXDOT
Abilene District**

HWY22FH001

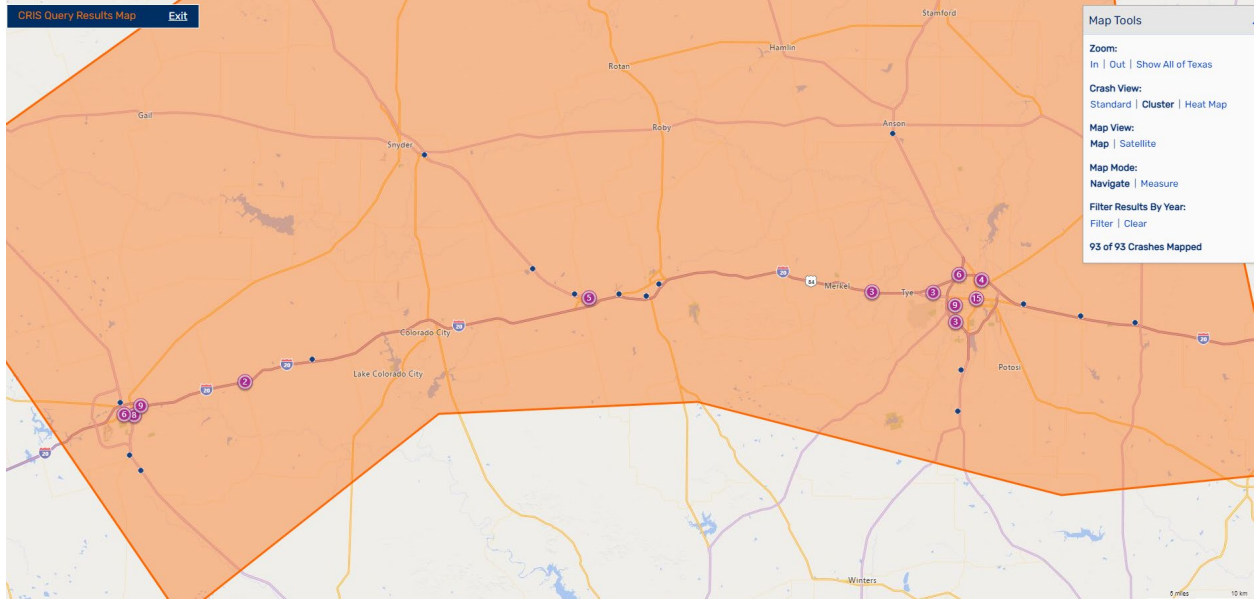
(7 pages)

Wrong Way Crash Analysis and Countermeasures in the Abilene District, Texas Department of Transportation

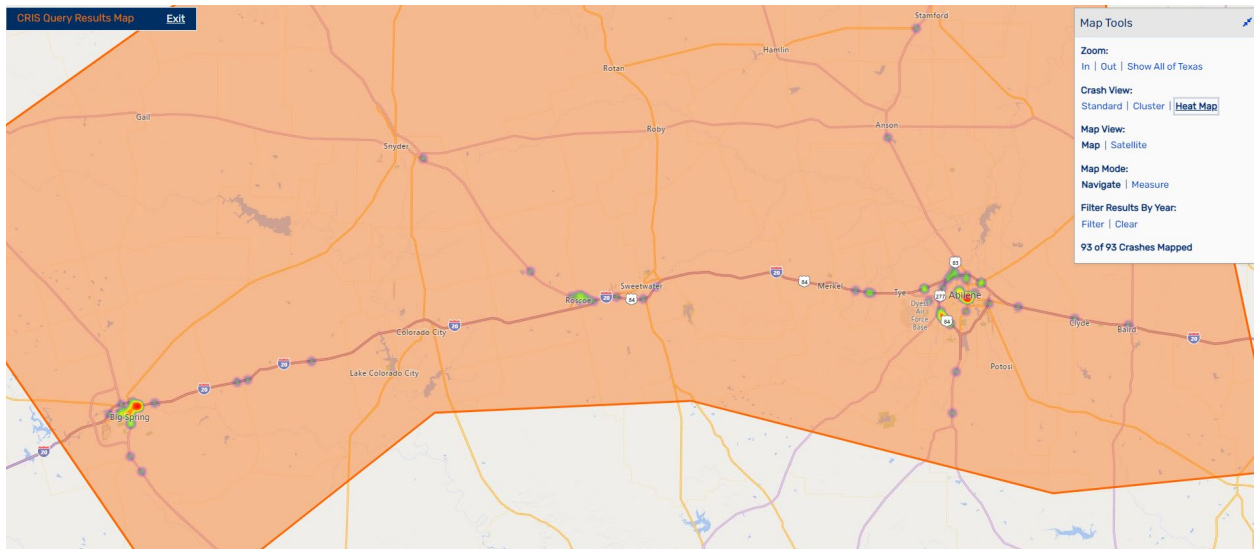
The Abilene District conducts monthly meetings to review and address fatal crashes within the district. Crashes from the previous month are reviewed, analyzed and if applicable, recommended countermeasures are implemented. Recommendations from the previous months' meetings are revisited to follow up on the status of the countermeasure implementation, until full implementation is made. As part of the monthly review process, the Texas Peace Officer's Crash Report CR-3 and Form 2354 (attachment A) are reviewed for vital information pertaining to the crash. Additionally, the roadway geometry is studied via Google Earth and pictures submitted by the local county maintenance section supervisor, showing roadway characteristics in the vicinity of the crash site. From these analyses immediate improvements can be recognized and implemented. Additionally, as part of the crash review, data is queried from TxDOT's Crash Record Information System (CRIS) to look at crash history of the roadway segment in question to look for trends. When crash trends are noticed in non-clustered areas (i.e., wrong way crashes), additional queries can be performed across all roadways to look for areas which may need further investigation. Below are screen snippets of ways in which data can be visualized on a map. The first graphic is the standard view. The second graphic is a clustered view, and the third graphic is a view showing a heat map.



Standard View

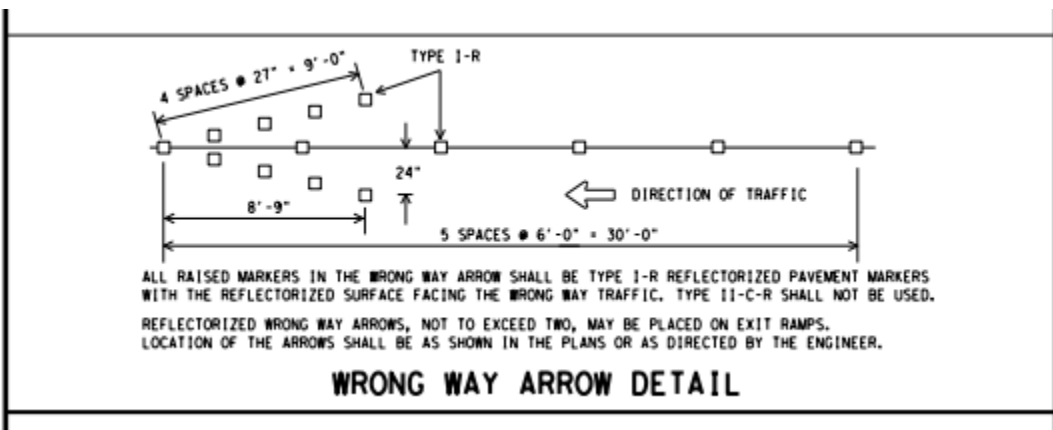


Clustered View



Heat Map

Since 2012, there have been 13 fatal crashes involving wrong way drivers in the Abilene District. However, 6 of these have occurred in the past 2 years. As a result of this significant increase, the Abilene District has undertaken an initiative to evaluate and improve our traffic operations and signing at all ramp connections and at-grade crossovers on 4 lane divided highways. All ramps and crossovers are being inspected by the 3 area engineers to ensure that proper signing is in place in compliance with the Texas MUTCD and TxDOT signing and markings standards. This will include “Do Not Enter” (R5-1), “Wrong Way” (R5-1a) and “One Way” (R6-1) signs as well as prohibited turn movement signs (R3-1 & R3-2) where applicable. Additionally, all ramps will have the Wrong Way Arrow installed as shown in the TxDOT standard detail below. The installation of the Wrong Way Arrow pavement markers was recently added to two existing pavement marker installation contracts by change order and should be completed by August 2022. The completion of the crossover signing, and pavement markings is projected to be complete by the end of calendar year 2023.



Item 672

Raised Pavement Markers



1. DESCRIPTION

Furnish and install raised pavement markers (RPMs).

2. MATERIALS

2.1. **Markers.** Furnish RPMs in accordance with the following Department Material Specifications:

- **Reflectorized Pavement Markers.** [DMS-4200](#), "Pavement Markers (Reflectorized)," types I-A, I-C, I-R, II-A-A, and II-C- R.
- **Traffic Buttons.** [DMS-4300](#), "Traffic Buttons," types I-A, I-C, I-R, II-A-A, II-C- R, W, Y and B. Round or oval unless otherwise specified on the plans.
- **Plowable Reflectorized Pavement Markers.** [DMS-4210](#), "Snowplowable Pavement Markers," types I-A, I-C, I-R, II-A-A, and II-C- R.

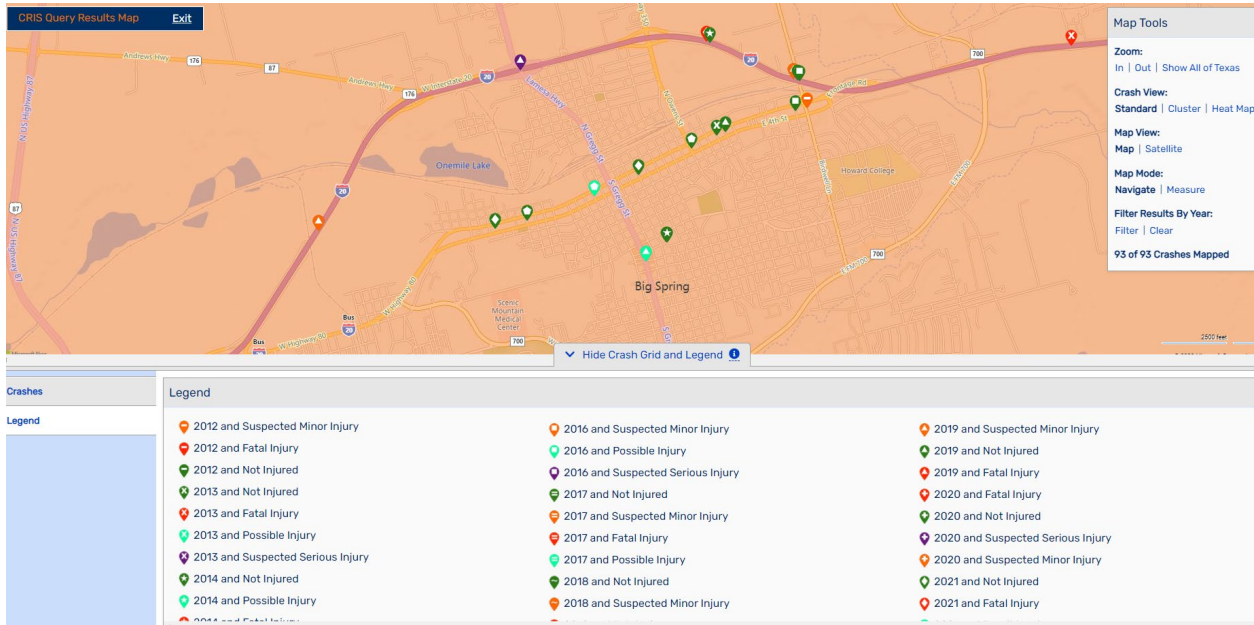
The following are descriptions for each type of RPM:

- **Type I-A.** The approach face must retro-reflect amber light. The body, other than the retro-reflective face, must be yellow.
- **Type I-C.** The approach face must retro-reflect white light. The body, other than the retro-reflective face, must be white or silver-white.
- **Type I-R.** The trailing face must retro-reflect red light. The body, other than the retro-reflective face, must be white or silver-white, except for I-R plowable markers which may be black.
- **Type II-A-A.** The 2 retro-reflective faces (approach and trailing) must retro-reflect amber light. The body, other than the retro-reflective faces, must be yellow.
- **Type II-C-R.** Contain 2 retro-reflective faces with an approach face that must retro-reflect white light and a trailing face that must retro-reflect red light. The body, other than the retro-reflective faces, must be white or silver-white.
- **Type W.** Must have a white body and no reflective faces.
- **Type Y.** Must have a yellow body and no reflective faces.
- **Type B.** Must have a black body and no reflective faces.

2.2. **Adhesives.** Furnish adhesives that conform to the following requirements:

- [DMS-6100](#), "Epoxies and Adhesives," Type II—Traffic Marker Adhesives.
- [DMS-6130](#), "Bituminous Adhesive for Pavement Markers."
- The Contractor may propose alternate adhesive materials for consideration and approval.

A separate initiative is also under way on BI-20G (3rd & 4th Streets) in Big Spring. These two roadways are parallel and bisect the City of Big Spring with a significant number of perpendicular city street crossings. Since 2012, there have been 10 crashes on these streets attributed to wrong way drivers. Although there were no fatalities, and only 2 possible injuries from these crashes, there is the possibility that wrong way drivers on BI-20G could eventually navigate their way along this route and eventually wind up on the main lanes of IH-20.



An engineering study is being performed to study these routes and inventory all street, alleyway and driveway connections, existing signage, and pavement markings. The results of this study will be to provide recommendations to improve and enhance the conspicuity of the traffic operation elements of the roadway to reduce or eliminate wrong way entry to these roadways. Possible improvements will consist of more frequent installations of the "Do Not Enter" (R5-1), "Wrong Way" (R5-1a), and "One Way" (R6-1) signs, installation of Movement Prohibition Signs (R3-1 & R3-2) mounted on signal mast arms at signalized intersections and the use of lane use arrows and pavement marking words at strategic locations. The results of this study and the implementation of recommended improvements is anticipated to be complete by the end of calendar year 2023.

Figure 2B-4. Movement



R3-1



R3-2



R6-1



R5-1



R5-1a