

Intersection Safety Emphasis Area Team Report Wednesday March 7, 2018, 2:00 p.m.

Participants

Name	Agency/Organization
Brian Moen, Team Leader	City of Frisco
Tim Barrette	TTI
Kevin Cunningham	Cedar Hill Fire/EMS Department
Jay Crossley	Vision Zero Austin
David Freidenfeld	TxDOT
Srinivas Geedipally	TTI
Susan Herbel	SUB Consulting
Kirk Houser	City of Dallas
Maurice Johnson	TxDOT Houston District
Kevin Kroll	NCTCOG
Heather Lott	TxDOT
Darren McDaniel	TxDOT
Danny Magee	TxDOT
Amanda Martinez	TxDOT
Stephen Ratke	FHWA-TX
Darius Samuels	TxDOT
Eva Shipp	TTI
Stacey Schrank	TTI
Rebecca Wells	TxDOT - ATL
Robert Wunderlich	TTI

Action Plan Development

During the Traffic Safety Conference participants had the opportunity to prioritize the countermeasures in each of the seven emphasis areas. The top 3-5 countermeasures in each emphasis area were presented during the facilitated discussion sessions and preliminary action plans for some of the prioritized countermeasures were developed. Most of these action plans are incomplete and require more consideration by EA team members.

Through a collaborative process EA team members reviewed, revised and/or confirmed the countermeasure rankings and identified all needed action plans based on the following guidelines:

- Action Plan is not needed for every countermeasure
- All strategies must have at least one countermeasure with an action plan.
- Ensure that all EA team priorities are addressed.
- Countermeasures can be combined when appropriate (some were already combined about the conference).

Intersection Safety Strategies - Revised

Strategy #1: Improve data systems for identifying specific intersections and intersection types at high probability for serious injury crashes

Countermeasures and Programs

- 1a Create a statewide intersection safety and roadway elements database. (Incorporate Model Inventory of Roadway Elements format, create a standardized data structure to support GIS applications, create an app for data collection, develop partnerships between TxDOT, MPOs, and local agencies to populate the database, and develop and implement an intersection identifier system for posting at intersections).

Strategy #2: Consider alternative design strategies for improving intersection safety

Countermeasures and Programs

- 2a Construct roundabouts and create an outreach program to educate the public and public officials about roundabout advantages and safety benefits.
- 2b Convert signalized intersections to diverging left intersections.
- 2c Encourage use of the Intersection Control Evaluation process for use in project development by TxDOT and local agencies – develop case studies, provide training, and conduct outreach.

Strategy #3: Improve pedestrian safety at intersections with high probability of crashes

Countermeasures and Programs

- 3a Develop methods to identify and target high pedestrian crash probability locations: Systemic methods (i.e., based on characteristics) and screening for locations with above average crash experience.
- 3b Install low to medium cost improvements to increase pedestrian safety:
Eliminate free flow turn lanes or convert them to angled turn lanes that require stopping/ yielding, add turn islands and median islands and curb bulb outs, convert permissive only or protected permissive phasing to protected only (when pedestrian is

present or during active times of day), provide enhanced measures – rectangular rapid flash beacon, pedestrian hybrid beacon, lighting, etc. at uncontrolled high risk locations, and pedestrian islands. At targeted intersections:

Prohibit right on red and permissive left turns at high probability locations, install/improve pedestrian signals, pedestrian crosswalks, lighting, and/or high friction surface treatment on intersection approaches, and ensure pedestrian signals, push buttons, crosswalk markings, etc. meet current requirements or upgrade to current requirements, including signal timing.

Note: Countermeasures 3b & 3c combined by EA team

Strategy #4: Increase driver awareness of intersections

Countermeasures and Programs

- 4a Develop Texas specific resources on the use of specific countermeasures, based on roadway types, system ownerships, rural/urban character, etc. as a guide to practitioners.
- 4b Implement proven, low cost engineering countermeasures in a systemic manner: modify operations, add or enhance signs, and add or enhance physical conditions. (Install driver speed feedback signs in advance of intersections. 4c, Implement current Texas Intersection Safety Implementation Plan to prepare for the next iteration of the HSIP.)

Note: Countermeasures 4b & 4c combined by EA team

Strategy #5: Develop educational campaigns incorporating data analysis to improve intersection safety.

Countermeasures and Programs

- 5a Publicize high crash locations and point out the contributing crash factors (e.g., red light running, speeding impaired driving, texting, phone use).
- 5b Increase and renew emphasis on safe driving behaviors in driver education
- 5c Create info graphics and other social media friendly information.
- 5d Develop and implement a young driver educational campaign relating to signalized intersections.

Strategy #6: Reduce red light running

Countermeasures and Programs

- 6a Use targeted enforcement at high incident locations. Install red light indicator (in most cases, white) lights to inform law enforcement of red signal onset.

Note: Countermeasures 6a & 6f combined by EA team

- 6b Research, identify, and address the factors contributing to the trend of reduced law enforcement citations for intersection violations.
- 6c Develop best practice guide for Automated enforcement. Educate decision makers and the public on the effectiveness and appropriate use of automated enforcement.
Note: Additional wording added by EA team
- 6d Install automated red light enforcement cameras.
- 6e Improve traffic signal timing and interconnect signals to improve efficient traffic flow and encourage a safe travel speed.

Intersection Safety Countermeasures and Current DRAFT Action Plans

Strategy #1

- 1a Create a statewide intersection safety and roadway elements database. (Incorporate Model Inventory of Roadway Elements format, create a standardized data structure to support GIS applications, create an app for data collection, develop partnerships between TxDOT, MPOs, and local agencies to populate the database, and develop and implement an intersection identifier system for posting at intersections).

Draft Action Plan

EA Working Group: Stephen Ratke, David Freidenfeld
Status: Updated 3/7/18

Steps for implementation:

- Step 1: Develop ramp data and edit GIS line work to ensure the roadway network is topologically correct.
- Step 2: Conduct GRID software enhancement project to incorporate intersection/interchange inventory.
- Step 3: Develop algorithms to generate intersections and derive descriptors and location identifiers such that all MIRE FDEs are fully incorporated into our Roadway Inventory system.
- Step 4: Maintain the database

Lead Organization: TxDOT TPP

Effectiveness: ***

Cost of implementation: \$\$\$

Time to implementation: Long

- TSIS document identifies a cost of \$4 million between now and 9/30/2026

Barriers:

- Budget
- Staffing and staff capability for data enhancements
- Database definition and upkeep
- Data acquisition and upkeep

- Training data users

Other notes: for more information, see the Texas Traffic Records Coordinating Committee (TRCC) Strategic Plan section 6 – MIRE Fundamental Data Element 9/30/2026 Implementation Plan.

Strategy #2

- 2a Construct roundabouts and create an outreach program to educate the public and public officials about roundabout advantages and safety benefits.

Draft Action Plan

EA Working Group: Brian Moen, Rebecca Wells

Status: Updated 3/7/18

Steps for implementation:

Step 1: Identify Stakeholders (TxDOT, Local Agencies, DPS, DMV)

Step 2: Design Training, Design, and Construction

A. Use HSIP program to implement roundabouts

1. Dedicate portion of HSIP for roundabout implementation
2. Use crash modifications factors from other states/national studies until Texas can develop their own factors

B. Provide designers/planners with education on roundabout application and design

1. Make agencies aware of free FHWA peer review program
2. Fund roundabout design/application training through webinars – Fort Worth District, Dallas District and Atlanta District have received this training. Expand through TEEX or other methods.
3. Provide training at Short Course

C. TxDOT adoption/implementation of ICE (Intersection Control Evaluation) process as part of project planning. The process can look at all innovative intersection types and not just roundabouts

Step 3: Implement Education and Outreach Program

A. Provide documentation of how roundabouts can result in wide nodes narrow roads concept. For example, implementation of roundabouts at interchanges may defer or eliminate need for bridge widenings. Implementation of roundabouts could also defer or eliminate need to widen roadway links between intersections.

B. Insure roundabout information included in the Texas driver's manual is up to date and covers both single lane and multi-lane roundabouts

C. Include roundabout questions on driver's license exam.

- D. Provide driver training facilities and online driver education programs with roundabout information
- E. Have TxDOT create a PSA on roundabouts for use across the state
- F. Document successful roundabout implementations across so agencies can share with their local appointed and elected officials

Step 4: Conduct Research

- A. Fund research into construction methods to reduce cost of multi-lane roundabout retrofits. This seems to be a hurdle in urban areas where multi-lanes are more likely to be needed and costly to remove/replace large amounts of concrete. Find ways to use overlays of existing concrete to reduce up front capital cost.
- B. Support current FHWA pool fund request of research on impacts of striping multi-lane roundabouts

Effectiveness: ****

- Significant improvement in safety and operations

Cost of implementation: Design Construction - \$\$\$\$, Education and Outreach - \$\$, Research - \$\$

Time to implementation: varies from short to medium

- Some of the work already done by other states and FHWA – don't reinvent the wheel
- Work with local agencies who have already started programs to help with development of outreach and training programs
- Use TexITE standing committee on roundabouts for support

Barriers:

- Institutional fear of roundabouts

- 2c Encourage use of the Intersection Control Evaluation process for use in project development by TxDOT and local agencies – develop case studies, provide training, and conduct outreach.

Draft Action Plan

EA Working Group: Brian Moen, Rebecca Wells, Stephen Ratke

Status: Developed during facilitated discussion session at Traffic Safety Conference 6/17

Steps for implementation:

Step 1: Identify stakeholders (Lead organization: TxDOT)

Step 2: Draft policy based on best practices; Current ICE appendix to design guide does not contain policy; Standard intersection design does not apply in certain cases. (Lead organization: research agency)

Step 3: Revise based on stakeholder input. (Lead organization: research agency)

Step 4: Train & promote; Identify expert contact. (Lead organization: TxDOT; research agency)

Effectiveness: *******

- Context sensitive – not just roundabouts
- Already used by several states
- TxDOT sticking to tried and true

Cost of implementation: \$\$ (staff and outreach)

Time to implementation: **medium**

- Some of the work already done
- EDC 2 has already done and years of leg work

Barriers:

- Institutionalized inertia

Strategy #3

3b Install low to medium cost improvements to increase pedestrian safety:

Eliminate free flow turn lanes or convert them to angled turn lanes that require stopping/yielding, add turn islands and median islands and curb bulb outs, convert permissive only or protected permissive phasing to protected only (when pedestrian is present or during active times of day), provide enhanced measures – rectangular rapid flash beacon, pedestrian hybrid beacon, lighting, etc. at uncontrolled high risk locations, and pedestrian islands. At targeted intersections:

Prohibit right on red and permissive left turns at high probability locations, install/improve pedestrian signals, pedestrian crosswalks, lighting, and/or high friction surface treatment on intersection approaches, and ensure pedestrian signals, push buttons, crosswalk markings, etc. meet current requirements or upgrade to current requirements, including signal timing.

Draft Action Plan

EA Working Group: Robyn Root, assistance from Pedestrian EA team needed

Status: Developed during facilitated discussion session at 2017 Traffic Safety Conference

Steps for implementation:

Step 1: Identify targeted intersections through crash analysis and public input. Identify high-risk intersection characteristic. Prioritize projects. (Lead organization: TxDOT, cities, etc.)

Step 2: Create a toolbox of engineering solutions. Pilot test. (Lead organization: implementing agencies/MPOs/research institutions)

Step 3: Identify specific countermeasures for each intersection. (Lead organization: implementing agencies)

Step 4: Identify funding sources and costs to implement. (Lead organization: implementing agencies)

Step 5: Implement. Educate. Evaluate outcomes. (Lead organization: implementing agencies)

Effectiveness: **

Cost of implementation: \$\$

Time to implementation: short

Barriers:

- Public perception
- Funding
- Effect on LOS
- Data limitations

Strategy #4

- 4b Implement proven, low cost engineering countermeasures in a systemic manner: modify operations, add or enhance signs, and add or enhance physical conditions. (Install driver speed feedback signs in advance of intersections. Implement current Texas Intersection Safety Implementation Plan to prepare for a future iteration of the HSIP.

Draft Action Plan

EA Working Group: Stephen Ratke, Heather Lott, Rebecca Wells, Robyn Root
Status: Updated 3/7/18

Steps for implementation:

Step 1: TxDOT forms HSIP steering committee to discuss implementation of a possible systemic program – contracting, countermeasure identification, location selection, and program management; to define a pilot program of systemic intersection improvements.

Step 2: TxDOT TRF/Districts and FHWA conduct outreach to locals and MPOs for locally owned participation in the pilot implementation.

Step 3: Set up and implement a pilot with HSIP funds.

Step 4: Evaluate pilot and develop a permanent systemic program.

Lead Organization: TxDOT TRF

Effectiveness: ***

Cost to implement: \$\$

Time to implement: medium

Barriers:

- Contracting and project management
- Program inertia / change management

- Local involvement – cost share, program and project management

Additional Notes (modify):

- Visibility
- Add/update features (turn lane channelization medians)
- Signs (add, update, size, relocate, LED, advance warning)
- PM to guide
- Illumination
- Pavement – HFST
- Rural – RS
- Flashing beacons

Strategy #5

- 5a Publicize high crash locations and point out the contributing crash factors (e.g., red light running, speeding impaired driving, texting, phone use).

Draft Action Plan

EA Working Group: James Keener, Ruby Martinez

Status: Developed during facilitated discussion session at 2017 Traffic Safety Conference

Steps for implementation:

- Step 1: Data gathering/ analysis; location identification. (Lead organization: state or city/ road owner)
- Step 2: Obtain interagency approvals; obtain necessary public outreach approvals (council, MPO, Division approval, coalition); use existing program guidelines (Lead organization: road owner)
- Step 3: Implementation: pamphlets; news/radio spots; internet/social media; physical signs (aluminum/DMS). (Lead organization: road owner)
- Step 4: Efficacy evaluation – analyze data post implementation. (Lead organization: road user)

Effectiveness: **

- Based on prior publicity of top crash intersections in news articles
- Prior use of large drunk driving signs on high risk corridors. It may translate to risky intersections
- Local DMS signs may improve driver behavior

Cost of implementation: \$

- Lower cost than rebuilding each intersection
- Publicity through multiple medium
- Internet
- Radio/TV
- Signs – static/DMS
- Use the existing program guidelines

Time to implementation: short

- Data analysis
- Sign fabrication and installation on state or city right of way

Barriers:

- Consensus between organizations
- This may push the outreach from short term to medium term
- Smaller agencies may have difficulty obtaining data analysis
- Incorrect data (few outliers; lat/long)
- Lack of stakeholder buy-in

Strategy #6

- 6a Use targeted enforcement at high incident locations. Install red light indicator (in most cases, white) lights to inform law enforcement of red signal onset.

NO Draft Action Plan

EA Working Group: Darren McDaniel, law enforcement representative

Status: No action plan

- 6e Improve traffic signal timing and interconnect signals to improve efficient traffic flow and encourage a safe travel speed.

Draft Action Plan

EA Working Group: Brian Moen, John Denholm

Status: Developed during facilitated discussion session at Traffic Safety Conference 6/17

Steps for implementation:

Step 1: Traffic study (pilot)

Step 2: Equipment

Step 3: Program

Step 4: Implement

Step 5: Evaluation

Effectiveness: **

- Progression
- Dilemma zone
- Controller update

Cost to implement: \$

Time to implement: short

Barriers:

- Public
- Funding
- City/county issues

Next Steps

- Collect completed action plans and send to EA team for comment after April 12
- Project inventory web survey

Upcoming Meeting Dates

- Enforcement-focused SHSP meeting - April 12, 2018
- Regional Workshops
 - Houston: May 1st
 - DFW: May 3rd
 - San Antonio: May 3rd
 - Midland: May 17th
- August 8-10, 2018 - Traffic Safety Conference, Sugarland