SHSP Action Plan Development

Intersection EA Team

March 7, 2018

Agenda

- Welcome and Introductions
- Review Completed Action Plans Developed by Working Groups
- Next Steps

STRATEGIES: INTERSECTION SAFETY EMPHASIS AREA

Strategy #1	Improve data systems for identifying specific intersections and intersection types at high probability for serious injury crashes.
Strategy #2	Consider alternative design strategies for improving intersection safety.
Strategy #3	Improve pedestrian safety at intersections with high probability of crashes.
Strategy #4	Increase driver awareness of intersections.
Strategy #5	Develop educational campaigns incorporating data analysis to improve intersection safety.
Strategy #6	Reduce red light running.

NUMBER	COUNTERMEASURE for ACTION PLANNING
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).
2a	Construct roundabouts and create an outreach program to educate the public and public officials about roundabout advantages and safety benefits.
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.
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.
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 the next iteration of the HSIP.
5a	Publicize high crash locations and point out the contributing crash factors (e.g., red light running, speeding impaired driving, texting, phone use).
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.
6e	Improve traffic signal timing and interconnect signals to improve efficient traffic flow and encourage a safe travel speed.

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).

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

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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.

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Barriers:

- Getting policy approved
- Cooperation from stakeholders
- Budget
- Realistic vs. administration time frame
- Data integration
- Maintaining the data "properly"
- 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	Improve data systems for identifying specific intersections and intersection types at high probability for serious injury crashes
Countermeasures and Programs:	
2a	Construct roundabouts and create an outreach program to educate the public and public officials about roundabout advantages and safety benefits.

Steps for implementation:

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

Step 2: Design Training, Design, and Construction

1. Use HSIP program to implement roundabouts
   a. Dedicate portion of HSIP for roundabout implementation
   b. Use crash modifications factors from other states/national studies until Texas can develop their own factors
2. Provide designers/planners with education on roundabout application and design
   a. Make agencies aware of free FHWA peer review program
   b. 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.
   c. Provide training at Short Course?
3. 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

Strategy #2	Improve data systems for identifying specific intersections and intersection types at high probability for serious injury crashes
Countermeasures and Programs:	
2a	Construct roundabouts and create an outreach program to educate the public and public officials about roundabout advantages and safety benefits.

Step 3: Implement Education and Outreach Program

1. 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.
2. Insure roundabout information included in the Texas driver's manual is up to date and covers both single lane and multi-lane roundabouts
3. Include roundabout questions on driver's license exam
4. Provide driver training facilities and online driver education programs with roundabout information
5. Have TxDOT create a PSA on roundabouts for use across the state
6. Document successful roundabout implementations across so agencies can share with their local appointed and elected officials

Strategy #2	Improve data systems for identifying specific intersections and intersection types at high probability for serious injury crashes
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Step 4: Conduct Research

1. 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.
2. Support current FHWA pool fund request of research on impacts of striping multi-lane roundabouts

Strategy #2	Improve data systems for identifying specific intersections and intersection types at high probability for serious injury crashes
Countermeasures and Programs:	
2a	Construct roundabouts and create an outreach program to educate the public and public officials about roundabout advantages and safety benefits.

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

Strategy #4	Increase driver awareness of intersections
Countermeasures and Programs:	
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 HSIP.

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

Strategy #4	Increase driver awareness of intersections
Countermeasures and Programs:	
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 the next iteration of the HSIP.

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

<u>Additional Notes (modify):</u>

- 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 #2	Consider alternative design strategies for improving intersection safety
Countermeasures and Programs:	
2c	Encourage use of the Intersection Control Evaluation process (ICE) for use in project development by TxDOT and local agencies

Facilitated Discussion Group Results:

Step 1: Identify stakeholders (Lead organization: TxDOT)

Step 2: Draft policy based on best practices;
Current ICE appendix to design guide doesn't contain policy; Standard intersection design doesn't 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)

Strategy #2	Consider alternative design strategies for improving intersection safety
Countermeasures and Programs:	
2c	Encourage use of the Intersection Control Evaluation process (ICE) for use in project development by TxDOT and local agencies

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	Improve pedestrian safety at intersections with high probability of crashes
Countermeasures and Programs:	
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.

Facilitated Discussion Group Results:

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)

Strategy #3	Improve pedestrian safety at intersections with high probability of crashes
Countermeasures and Programs:	
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Effectiveness: **

Cost of implementation: $$

Time to implementation: short

Barriers:

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

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, etc.

Facilitated Discussion Group Results:

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)

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, etc.

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	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.

Facilitated Discussion Group Results:

Step 1:
Step 2:
Step 3:
Step 4:
Step 5:

Effectiveness:

Cost to implement:
Time to implement:
Barriers :

Strategy #6	Reduce red light running
Countermeasures and Programs:	
6e	Improve traffic signal timing to improve efficient traffic flow

Facilitated Discussion Group Results:

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

Wrap Up

- Regional Workshops
  - Houston: May 1st
  - DFW: May 3rd
  - San Antonio: May 3rd
  - Midland: May 17th
- Enforcement focused Webex: April 12th
- Project inventory web survey
- Questions
- Comments

Thanks very much!