Intersection Safety Strategies

Strategy Number	Description
1	Improve data systems for identifying specific intersections and intersection types at high probability for serious injury crashes.
2	Encourage use of the intersection control evaluation (ICE) process in project development by TxDOT and local agencies. Develop case studies, provide training, and conduct outreach.
3	Improve pedestrian safety at intersections with high probability of crashes.
4	Increase driver awareness of intersections.
5	Develop educational campaigns incorporating data analysis to improve intersection safety.
6	Reduce red light running.

STRATEGY 1

Improve data systems for identifying specific intersections and intersection types at high probability for serious injury crashes.

Countermeasure

Focus	Number	Description	Action Plan
Intersection database	1A	Create a statewide intersection safety and roadway elements database. (Incorporate the Model Inventory of Roadway Elements [MIRE] format; create a standardized data structure to support geographic information system (GIS) applications; create an app for data collection; develop partnerships between TxDOT, metropolitan planning organizations (MPOs), and local agencies to populate the database; and develop and implement an intersection identifier system for posting at intersections.)	✓

Intersection Database Countermeasure (1A) Action Plan

Create a statewide intersection safety and roadway elements database. (Incorporate the MIRE 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.)

Element	Description
Steps for Implementation	1. Develop ramp data and edit GIS line work to ensure the roadway network is topologically correct. 2. Conduct a Geospatial Roadway Inventory Database (GRID) software enhancement project to incorporate an intersection/interchange inventory. 3. Develop algorithms to generate intersections and derive descriptors and location identifiers such that all MIRE fundamental data elements are fully incorporated into the roadway inventory system. 4. Maintain the database.
Participating Organizations	TxDOT's Transportation, Planning, and Programming Division and Traffic Operations Division
Effectiveness	***
Cost to Implement	$$$
Time to Implement	Long
Barriers	• Budget. • Staffing and staff capacity for data enhancements. • Database definition and upkeep. • Data acquisition and maintenance. • Training data users.

Note: For more information, see the Texas Traffic Records Coordinating Committee Strategic Plan, Section 6—MIRE Fundamental Data Element 9/30/2026 Implementation Plan.

STRATEGY 2

Encourage use of the ICE process in project development by TxDOT and local agencies. Develop case studies, provide training, and conduct outreach.

Countermeasures

Focus	Number	Description	Action Plan
Roundabouts	2A	Construct roundabouts and create an outreach program to educate the public and public officials about roundabout advantages and safety benefits.	✓
Diverging left intersections	2B	Convert signalized intersections to diverging left intersections.	
Intersection control evaluation	2C	Encourage use of the ICE process in project development by TxDOT and local agencies. Develop case studies, provide training, and conduct outreach.	✓

Roundabouts Countermeasure (2A) Action Plan

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

Element	Description
Steps for Implementation	1. Identify stakeholders (TxDOT, local agencies, DPS, and the Department of Motor Vehicles [DMV]). 2. Develop training, design, and construction. • Provide designers/planners with education about roundabout application and design. This includes making agencies aware of the free FHWA peer review program. Fund roundabout design/application training through webinars; the Fort Worth, Dallas, and Atlanta Districts have received this training. Expand it through the Texas A&M Engineering Extension Service (TEEX) or other methods. Provide training at TxDOT Short Course and Texas District of the Institute of Transportation Engineers (TexITE) meetings. • Adopt/implement the ICE process as part of project planning. The process can look at all intersection control strategies and not just roundabouts. • Identify sources for construction funding. • Design and construct roundabouts by identifying locations based on safety performance; incorporate roundabouts in the capital improvements program; design; and construct. 3. Implement an education and outreach program. • Provide documentation of how roundabouts can result in the wide nodes/narrow roads concept, which may defer or eliminate the need for bridges or road widening. • Ensure roundabout information included in the Texas driver's manual is up to date and covers both single-lane and multi-lane roundabouts. • Include roundabout questions on the driver's license exam. • Provide driver training facilities and online driver education programs with roundabout information. • Create a public service announcement on roundabouts for use across the state. • Document successful roundabout implementations across the state so agencies can share with their local appointed and elected officials. 4. Conduct research. • Fund research into construction methods to reduce the cost of multi-lane roundabout retrofits to overcome barriers in urban areas where multi-lanes are more likely to be needed. Find ways to use overlays of existing concrete to reduce initial capital cost. • Support pool-funded research on impacts of striping multi-lane roundabouts.
Participating Organizations	TxDOT's Design Division and Traffic Operations Division, districts, city and county agencies, TexITE, FHWA, Texas Trucking Association, and TEEX
Effectiveness	***
Cost to Implement	$$$
Time to Implement	Medium
Barriers	• Overcoming the inertia of not using roundabouts. • Overcoming public perceptions. • Identifying and securing a champion. • Obtaining sufficient and sustained funding to build roundabouts.

Intersection Control Evaluation Countermeasure (2C) Action Plan

Encourage use of the ICE process in project development by TxDOT and local agencies. Develop case studies, provide training, and conduct outreach.

Element	Description
Steps for Implementation	1. Identify stakeholders (TxDOT, local agencies, DPS, and DMV). 2. Draft policies and guidelines based on best practices. Integrate them into the project development process. Consider maintenance requirements. 3. Revise based on stakeholder input. 4. Develop training materials or adapt FHWA materials.
Participating Organizations	TxDOT's Design Division and Traffic Operations Division, districts, city and county agencies, TexITE, FHWA, Texas Trucking Association, and TEEX
Effectiveness	***
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Institutional inertia. • Identifying and securing a champion. • Changing long-standing practices. Considering early enough in the project development phase. • Public acceptance of non-standard designs and controls.

STRATEGY 3

Improve pedestrian safety at intersections with high probability of crashes.

Countermeasures

Focus	Number	Description	Action Plan
Hot spots	3A	Develop methods to identify and target locations with a high probability of pedestrian crashes: systemic methods (i.e., based on characteristics) and screening for locations with above-average crash experience.	
Systemic approach	3B	Install low- to medium-cost improvements to increase pedestrian safety.	✓

Systemic Approach Countermeasure (3B) Action Plan

Install low- to medium-cost improvements to increase pedestrian safety.

Element	Description
Steps for Implementation	1. Identify high-risk intersection characteristics and a procedure for evaluating pedestrian risk. Create an inventory of relevant intersection characteristics including pedestrian volumes. Prioritize location by risk. 2. Create a toolbox of engineering solutions that can be applied systemically (see note below). 3. Identify specific countermeasures for each intersection. 4. Identify funding sources and costs to implement. 5. Implement. Publicize improvements as safety enhancements. Evaluate outcomes.
Participating Organizations	TxDOT, city and county agencies, transportation and public works departments, engineering design consultants, FHWA, and TexITE
Effectiveness	**
Cost to Implement	$$
Time to Implement	Short
Barriers	• Identifying a committed champion. • Obtaining funding to develop a systemic process. • Collecting a comprehensive set of intersection characteristics. • Obtaining sufficient and sustained funding to implement countermeasures. • Public perception. • Data limitations.

Note: 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 a pedestrian is present or during active times of day), provide enhanced measures (a 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.

STRATEGY 4

Increase driver awareness of intersections.

Countermeasures

Focus	Number	Description	Action Plan
Practitioner guide for resources	4A	Develop Texas-specific resources on the use of specific countermeasures, based on roadway type, system ownership, rural/urban character, etc., as a guide to practitioners.	
Systemic approaches	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 the current Texas Intersection Safety Implementation Plan to prepare for the next iteration of the Highway Safety Improvement Program.)	✓

Systemic Approaches Countermeasure (4B) Action Plan

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 the current Texas Intersection Safety Implementation Plan to prepare for the next iteration of the Highway Safety Improvement Program.)

Element	Description
Steps for Implementation	1. Create a systemic program to develop a procedure that identifies countermeasures, selects locations, and supports contracting and program management. 2. Conduct outreach to encourage participation in the implementation of a pilot program. 3. Set up and implement a pilot program. 4. Evaluate the pilot program and develop a longer-range systemic program. 5. Continue the outreach effort. Encourage more jurisdictions to participate.
Participating Organizations	TxDOT, city and county transportation agencies and public works departments, FHWA, and TexITE
Effectiveness	***
Cost to Implement	$$
Time to Implement	Medium
Barriers	• Identifying and securing a champion. • Developing buy-in among jurisdictions. • Obtaining funding to develop the process. • Finding a jurisdiction willing to pilot. • Obtaining sufficient and sustained funding for more comprehensive implementation.

STRATEGY 5

Develop educational campaigns incorporating data analysis to improve intersection safety.

Countermeasures

Focus	Number	Description	Action Plan
High-volume crash locations	5A	Publicize high-volume crash locations and point out the contributing crash factors (e.g., red light running, speeding, impaired driving, texting, and phone use).	✓
Driver education	5B	Increase and renew emphasis on safe driving behaviors in driver education.	
Media	5C	Create infographics and other media-friendly information.	
Young drivers	5D	Develop and implement a young driver educational campaign relating to signalized intersections.	

High-Volume Crash Locations Countermeasure (5A) Action Plan

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

Element	Description
Steps for Implementation	1. Gather and analyze data; identify locations. 2. Obtain interagency approvals; obtain necessary public outreach approvals (council, MPOs, division, and coalition); and use existing program guidelines. 3. Implement through use of standardized pamphlets, news and radio spots, internet and social media, and physical signs (aluminum and dynamic message signs) that target citizens and visitors. 4. Coordinate with enforcement activities. 5. Evaluate efficacy; analyze data post-implementation.
Participating Organizations	TxDOT; city and county transportation, public works, and information agencies; law enforcement departments; MPOs; and insurance companies
Effectiveness	**
Cost to Implement	$
Time to Implement	Short
Barriers	• Delays. Consensus between organizations could extend the implementation time. • Staff. Smaller agencies may have difficulty obtaining data analysis. • Incorrect data (outliers; issues with latitude/longitude). • Obtaining stakeholder buy-in. • Need for an improvement plan prior to publicizing. • Addressing liability concerns (may consider publicizing general characteristics versus specific intersections). • Identifying and securing a champion. • Developing widespread buy-in among jurisdictions. • Assessing efficiency. • Obtaining sufficient and sustained funding for implementation.

STRATEGY 6

Reduce red light running.

Countermeasures

Focus	Number	Description	Action Plan
Enforcement	6A	Use targeted enforcement at high-volume incident locations. Install red light indicator lights (in most cases, white lights) to inform law enforcement of red signal onset.	✓
Reduced citation trend	6B	Research, identify, and address the factors contributing to the trend of reduced law enforcement citations for intersection violations.	
Best practices	6C	Develop a best practice guide for automated enforcement. Educate decision makers and the public on the effectiveness and appropriate use of automated enforcement.	
Automated red light cameras	6D	Install automated red light enforcement cameras.	
Improve signal timing	6E	Improve traffic signal timing and interconnect signals to improve efficient traffic flow and encourage a safe travel speed.	✓

Enforcement Countermeasure (6A) Action Plan

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

Element	Description
Steps for Implementation	1. Identify signalized intersections with a high number of red-light-running crashes. 2. Prioritize intersections and install red light indicator lights. 3. Enforce red light running at targeted intersections. Use local funds or apply for Selective Traffic Enforcement Program (STEP) grants. 4. Evaluate effectiveness.
Participating Organizations	City and county transportation agencies, law enforcement officers, TxDOT, and DPS
Effectiveness	**
Cost to Implement	$$
Time to Implement	Medium
Barriers	• STEP funding and funding at the city level. • Funding for red light indicator lights. • Concern over legal issues due to the removal of red light cameras even though this is just an indicator light, not a camera. • Finding and securing a champion.

Reduced Citation Trend Countermeasure (6E) Action Plan

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

Element	Description
Steps for Implementation	1. Screen corridors to determine ones with an overrepresentation of crashes, including an analysis of time of day. 2. Drive corridors during periods when crashes are overrepresented, and determine whether traffic progression can be improved. 3. Select corridors and periods for timing improvements, and select a target speed for the corridor. 4. Collect data, including travel time and delay data; conduct analyses; and develop new timing plans. 5. Implement new timing plans and fine-tune them in the field. Collect after travel time and delay data. 6. Evaluate timing improvements and monitor crash data. Perform an after evaluation.
Participating Organizations	MPOs, city and county transportation agencies, TexITE, and TxDOT
Effectiveness	**
Cost to Implement	$
Time to Implement	Short
Barriers	• Identifying and securing a champion. • Developing widespread buy-in and collaboration between jurisdictions along a corridor. • Obtaining sufficient and sustained funding.