

TEXAS FREIGHT NETWORK TECHNOLOGY AND OPERATIONS PLAN



Strategy

SAFETY WARNING DETECTION SYSTEM

Freight Technology Areas	Traffic Management, Enforcement and Inspection
Owner	TxDOT Divisions
Key Stakeholders	TxDOT Districts, Traffic Management Centers (TMCs), Texas Department of Public Safety (TxDPS)
End-User	TxDOT Districts, TMCs, TxDPS, Truckers

Motivation

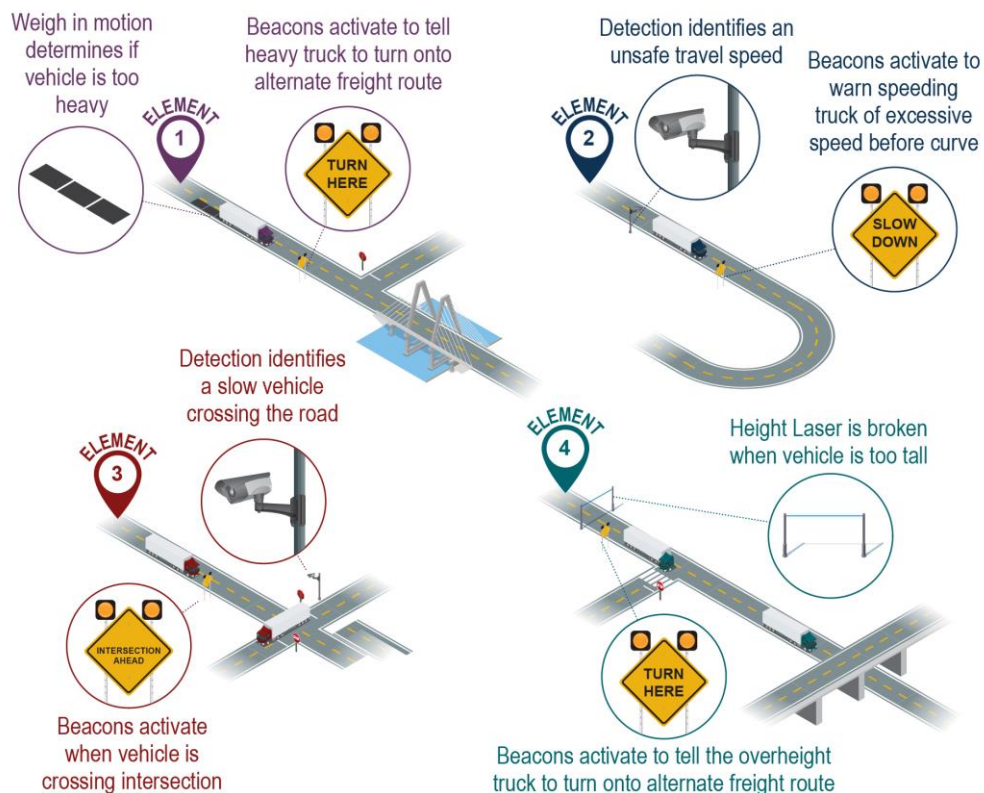
Preserving an infrastructure's lifespan is critical for maintaining safety and mobility along the highway network throughout Texas. In some instances, a truck may be operating outside of desirable parameters (e.g., too fast, too big, too heavy), without awareness of a potential hazard, such as a low overpass, a sharp curve, or a blind intersection. Failing to be aware of these hazards can result in crashes or other safety issues caused by damaged infrastructure, as well as the costs associated with damaged infrastructure (e.g., bridge strike repairs).

Strategy Description

Install overheight, overweight, and overspeed detection and notification systems at locations with a high incidence of truck-related crashes or mission-critical infrastructure (bridges, etc.) to improve road safety. Four illustrative examples are provided in the graphic below.

Contribution to 2018 Texas Freight Mobility Plan Goals

- ✓ Asset Preservation and Utilization
- ✓ Safety



Strategy Scope

- Install overheight detection systems in advance of low-bridge crossings, mission-critical bridge sites, or bridges that have a history of strikes along truck routes. Utilize notification signing to direct overheight truck to stop or proceed to an alternate freight-approved route.
- Install impact detection systems on critical bridges to automatically report to the local TxDOT District when an overheight bridge collision has occurred to allow for quick response and inspection.
- Install overspeed detection at locations with a high incidence of overturned vehicle crashes or other speed-related incidents. Utilize dynamic signing to warn of the overspeed condition.
- Install intersection conflict warning systems for approaching vehicles (typically rural intersections with high freight-related angle crashes).
- Install weight monitoring systems (e.g., Weigh-in-Motion technology) in advance of bridge crossings or other strategic road assets to notify of overweight conditions, either as advisory to driver and/or advisory to law enforcement, as well as publication to historical data sets for asset monitoring purposes. Utilize notification signing to direct overweight trucks to alternate freight-approved route.

Examples of User Needs Addressed*

- Need for better advanced notice of height and weight restrictions on roads to improve safety.
- Need for more advanced notice of safety danger spots with high crashes, severe curves, or steep grades to warn drivers.
- Need for more advanced remote monitoring equipment to detect and uniquely identify vehicles over allowable limits on Texas roadways to increase freight compliance to roadway laws by robustly identifying offenders.
- Need for more blocked rail crossing notification systems to improve safety and efficiency.

Potential Benefits*

Safety	Benefit/Cost Range
<ul style="list-style-type: none"> • Up to 77% reduction in crashes, including bridge strikes 	<ul style="list-style-type: none"> • 3:1 to 6:1

Cost Estimates*

Sample Capital Cost	Sample Annual O&M Cost
<ul style="list-style-type: none"> • Overweight Warning: \$424K - \$656K • Curve Speed Warning: \$19K - \$53K • Intersection Conflict Warning: \$28K - 158K • Overheight Warning: \$148K - \$196K 	<ul style="list-style-type: none"> • Overweight Warning: \$80K • Curve Speed Warning: \$2K - \$4K • Intersection Conflict Warning: \$1K - \$3.5K • Overheight Warning: \$9K - \$17K

Timescale for Implementation

Near-Term (0-2 years)	Medium-Term (2-5 years)	Long-Term (5-7 years)
✓ Plan	✓ Deliver	✓ Operate & Maintain

Freight Modes Covered: Highways

* The full list of user needs and supporting sources for benefits and costs can be found in the FNTOP Strategies and Conceptual Framework Report.

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