



2027 Highway Safety Improvement Program Guidelines

Traffic Safety Division

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2027 HSIP Highlights

2027 HSIP Timeline

- September 2026 → 2027 HSIP Call (Announcement & Webinar).
- Sept. 2026 - Jan. 2027 → HSIP Proposals to fill FY 27-29 funding gaps.
- January 15, 2027 → HSIP Proposals for FY 30 and District Requests for Changes to Existing Cat 8 Projects (scope, estimate, date) due.

HSIP Submission Process

Districts will be advised to upload proposal documentation to Box using **one folder per project** and will enter projects in TxDOTConnect. ZIP files and/or PDF portfolios are no longer required.

To streamline the submission process, an integrated Excel-based submission file replaced the previous HSIP Submission Forms (Auto & Manual). This consolidated file incorporates multiple tools, including the HSIP Project Submission Form, the Safety Improvement Index (SII) Calculator, and an updated Work Code Combination Calculator.

District HSIP Funding

Associated with the TxDOT Unified Transportation Program (UTP) update, the District's total programming levels for FY 27 through FY 30 will be provided on TRF's HSIP SharePoint Site. Districts should look to fill any funding gaps for FY 27 – FY 30 and submit new projects for FY 30.

By January 15, 2027, each district should submit an FY 2027 – FY 2030 HSIP project list including all projects already approved for HSIP funding and those being submitted for HSIP funding review. Each new project submission must

include a complete packet of items required for review as detailed under Project Submission Guidelines. It is important that districts fully program each FY.

If a District identifies a new (not previously reviewed and approved) safety improvement project for FY 2027-29, it may be submitted for consideration as soon as the required project proposal documentation is prepared. Districts do not need to wait for the January 15th deadline. TRF will prioritize the review of projects with an FY 2027 estimated letting date.

District Communications – Category 8

The Traffic Safety Division (TRF) will coordinate quarterly with districts to verify that all Category 8 Safety projects, including State Systemic Widening (SSW) and Highway Safety Improvement Program (HSIP), are current in TxDOTCONNECT and TRF's systems, verifying project information such as letting date, project limits, scope, cost estimate, construction start and end dates, and final construction cost. Any project changes **MUST** be reviewed by the Traffic Engineering (TE) section of TRF for approval based on program requirements and funding. No changes may be made in TxDOTCONNECT until TRF approves them.

Contacts

Local Governments should reach out to their TxDOT HSIP District Coordinator. Contact TRF_TE_Safety@txdot.gov for additional questions.

Overview

Texas has approximately 325,000 miles of highways and streets. The Texas Department of Transportation (TxDOT) maintains approximately 81,000 of those miles, according to TxDOT's 2023 Roadway Inventory Annual Report published by TxDOT's Transportation Planning and Programming (TPP) Division.

According to projections from the Texas Demographic Center, the population in Texas is expected to grow from 31,290,831 in 2024 to 42,598,048 by 2060; assuming migration patterns remain consistent with those observed over the past two decades. The citizens, visitors, and businesses depend on the state to provide facilities that safely and efficiently transport people and goods throughout Texas. This is emphasized in TxDOT's Goals and Objectives, "Promote Safety: Champion a culture of safety. Reduce crashes and fatalities by continuously improving guidelines and innovations along with increased targeted awareness and education."

Texas Highway Safety Improvement Program

The Department considers the needs of the citizens as TxDOT plans, designs, constructs, operates, and maintains transportation facilities. However, a road segment or intersection may experience crashes due to many factors.

In compliance with Title 23 U.S.C., the Texas Highway Safety Improvement Program (HSIP) is a federally mandated program managed by TxDOT. The HSIP, directed by [Texas's Strategic Highway Safety Plan \(SHSP\)](#), aims to significantly reduce traffic fatalities and serious injuries on all public roads by providing a standardized approach for identifying and reviewing specific traffic safety concerns throughout the state. Texas's SHSP identifies the Emphasis Areas and strategies that the HSIP will focus on to meet the state's objectives of reducing fatal and serious injury crashes in Texas.

The program requires a data-driven, strategic, results-focused approach to improving highway safety on all public roads, consistent with the SHSP. The HSIP implements the priorities identified in the SHSP, and the goal is to significantly reduce fatalities and serious injuries on Texas roadways, including on-system and off-system roads. The vision of zero deaths on Texas roadways is based on the belief that everyone, no matter how they travel, should be able to arrive at their destinations safely. The plan lists eight Emphasis Areas that have the greatest potential for reducing fatalities and injuries. The Emphasis Areas are roadway and lane departures, speed-related, intersection safety, occupant protection, impaired driving, distracted driving, vulnerable road users, and post-crash care. Younger and older drivers are incorporated into the eight Emphasis Areas to avoid duplication.

Projects must address one of the eight Emphasis Areas and logically flow from the appropriate countermeasure(s) specified in the Texas SHSP. The Emphasis Areas are as follows:

- Roadway & Lane Departure
- Speed Related
- Intersection Safety
- Occupant Protection
- Impaired Driving
- Distracted Driving
- Vulnerable Road Users
- Post-Crash Care
- Young Drivers (subsidiary to other EA's)
- Older Drivers (subsidiary to other EA's)

Funds are provided for construction and operational improvements for projects on and off the state highway system (on- or off-system).

Projects funded under the HSIP are also required to be evaluated for cost-effectiveness. Completed projects are subject to cost/benefit analysis using three to five years of before and after crash data, average annual daily traffic for the years before and after the improvement, and actual construction costs.

Planning, implementing, and evaluating HSIP projects requires partnering with all state and local stakeholders to maximize the cost-benefit of a safety improvement project.

HSIP Project Eligibility

All Texas public roadways are eligible for participation under HSIP provided the proposed highway safety improvement project addresses Emphasis Areas identified in the most current Texas SHSP. A list of eligible HSIP project types (i.e., “safety countermeasures”) can be found in [Appendix B](#). Each countermeasure is coded with a 3-digit Work Code. Some work items may address a serious crash type but are not eligible for HSIP funding. Some examples include bridge replacements and general maintenance projects of roadways, signs, signals, pavement markings, etc.

Consider the following when selecting HSIP projects:

- Is the strategy, activity, or project consistent with the priorities of Texas’s SHSP?
- Does the project address a serious crash risk such as a hot spot, systemic risk factor, road segment, or crash type that has been identified through a data-driven process?
- Is the project likely to contribute to a significant reduction in fatalities and serious injuries?
- Is this project consistent with the District's Annual Safety Plan?

Confidentiality of Data

Federal statutes 23 U.S.C. 148(h)(4) and 23 U.S.C. 407 make data and reports confidential if they are compiled to evaluate the safety of federal-aid highways. Data used in the HSIP should not be released. Any written request must be routed through the TxDOT General Counsel Division (GCD).

Program Funding

The HSIP is federally funded. Program funds are eligible to cover 90 percent of project construction costs. State or local participation must cover the remaining 10 percent of project construction costs. Certain safety projects may qualify for increased federal share, Title 23, United States Code (23 U.S.C.), Section 120(c)(1), as designated by TRF. The HSIP is legislated under Section 148 of Title 23, United States Code (23 U.S.C. 148) and regulated under Part 924 of Title 23, Code of Federal Regulations (23 CFR Part 924).

The Texas HSIP provides funding for construction and operational safety improvements for locations on and off the state highway system. It is administered by the Texas Department of Transportation (TxDOT) Traffic Safety Division (TRF) and is part of the Unified Transportation Program (UTP – Funding Category 8). When a potential highway safety project location is identified, it is important to work with your TxDOT HSIP District Coordinator.

HSIP funds are only eligible to cover construction (i.e., only the funding line in the Construction grid of the Funding Tab in TxDOTCONNECT). Examples of commonly excluded costs include:

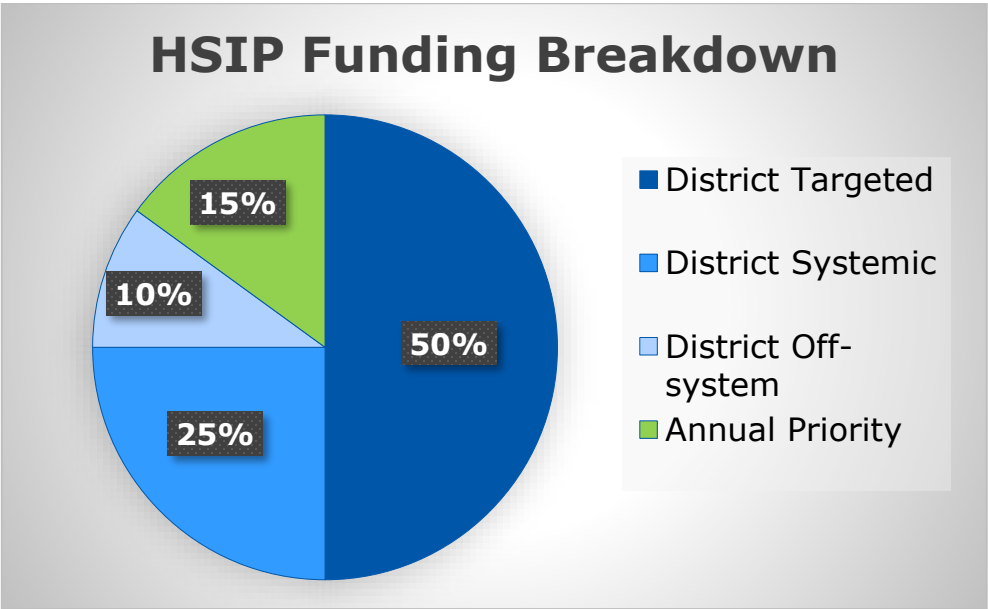
- Environmental permits
- Right of Way (ROW)
- Additional contingencies
- Design/engineering costs (Unless explicitly authorized by TRF)
- Additional work not covered by the scope of approved safety countermeasures

TRF will provide districts with 4 years of projected funding levels each year. Districts should aim to program each FY fully and work closely with TRF if a project does not meet the requirements, if an awarded project is let at a lower cost than estimated, if a project is canceled, or if additional funding becomes

available. Projects with total contract costs (sum of all the CSJs letting together) under \$20,000 may not qualify for HSIP funds.

Each District will receive a proposed HSIP programming level for which they should plan to spend each FY on safety countermeasures aimed at reducing fatal and serious injury crashes. The programmed funds are based on the previous three years of KA (Fatal and Severe) crashes (2023, 2024, and 2025) that occurred in each District.

Figure 1: Breakdown of Funding Programming



The program’s UTP allocation will be programmed according to the following guidelines:

50% District Targeted Subprogram

The District Targeted component is the traditional approach used in safety analysis in which “hotspot” locations are identified based on crash history, and appropriate countermeasures are implemented to reduce crashes. Targeted projects typically identify specific locations, and targeted funding would provide for these “hotspot” on-system locations using KA on-system crash data.

25% District Systemic Subprogram

Systemic or “system-based” projects take a broader view and evaluate risks across the district’s roadway system. A systemic approach does not solely look at crash data, particularly in low-volume and/or rural roadways where crash densities are lower or inconsistent.

Systemic funding provides each District with a set amount toward district-wide systemic improvement projects using proven safety countermeasures to reduce the risk of fatal and serious injury crashes.

15% Annual Priority Subprogram

Each FY TRF will advance a specific statewide systemic countermeasure, such as median barriers. Projects will be submitted by the districts for consideration and selected based on need, existing conditions, and available funding.

This subprogram was previously referred to as the Statewide Systemic but has been renamed to reduce confusion with the HSIP District Systemic subprogram and the State Systemic Widening program, a state-funded program separate from HSIP.

10% District Off-System Subprogram

Off-system funds will be programmed by the district in the same manner as the On-System Targeted but using KA off-system crash data. If you are a new off-system partner, please get in touch with your TxDOT HSIP District Coordinator regarding options for additional assistance with Design, ROW, and other construction-related costs.

Development Authority (8DA)

TxDOT’s Administration established a safety development authority category in the Unified Transportation Program. The development authority category

(Category 8DA) allows districts to design the PS&E, purchase ROW if necessary, relocate utilities, and obtain environmental clearance for planned safety projects. Category 8DA does not fund the construction of these safety projects. The District needs to continue to pursue construction funding from other categories including STP, Category 8 HSIP, the Energy Sector, etc.

Requests for 8DA funding should be those projects that are expected to meet HSIP criteria once ready to let but take significantly longer for planning; in general, larger projects like interchanges are unlikely to be eligible. Category 8DA funding lines are reviewed and approved by TRF; however, 8DA approval does not guarantee Category 8 construction funds, nor does the project have to be funded with Category 8 funds.

Federal Domestic Materials Program

All Category 8 HSIP-funded projects must comply with the Federal Domestic Materials Program (FDMP). Detailed guidance, current requirements, waivers, forms, and compliance resources are available on the [TxDOT Buy America FDMP Website](#).

Key applicability considerations:

- Projects with total federal participation of less than \$500,000 (planning, design, utilities, right-of-way, construction, etc.) fall under the Small Grants Waiver.
- The De Minimis Waiver allows the use of limited non-compliant materials when the total value does not exceed the lesser of \$1 million or 5% of Total Applicable Costs.
- The Total Applicable Cost includes the actual cost of all materials subject to Domestic Materials requirements, including iron, steel, or other materials covered within the scope of existing waivers.

Off-system HSIP Projects

Local (Off-system) Road Safety Plans

Local Governments play a critical role in addressing crash risks. The SHSP can assist local practitioners in addressing safety on local rural roads. Still, a focused plan is often needed to assist local entities in making informed, data-driven safety investment decisions. A Local Road Safety Plan (LRSP) provides a framework for local practitioners to proactively identify the specific or unique conditions that contribute to crashes within their jurisdictions. To encourage local participation in the HSIP program, TRF encourages districts to collaborate with local governments to help facilitate the development of an LRSP. Please refer to the [FHWA website for Local Road Safety Plans Guidance](#) and the Manual for [Developing Safety Plans for Local Rural Road Owners](#) for additional information and resources on developing an LRSP.

Funding

The construction costs for eligible Off-system HSIP projects may be fully covered (100%) by federal funding, up to the authorized Category 8 amount, through Increased Federal Share (G match) or State Transportation Development Credits (TDCs). Bid overruns will be covered by Category 3 “Non-Traditionally Funded Transportation Projects” funding. After project approval, requests for additional authorized funding may be considered if there is adequate time to amend the Advance Funding Agreement (AFA) prior to 100% PS&E submittal. AFA instructions for HSIP projects can be viewed on [TRF – HSIP Tools folder in SharePoint](#) and in the [TxDOT’s HSIP Public box.com folder](#).

Increased Federal Share (G Match)

The Traffic Safety Division is continuing efforts to encourage local participation in the HSIP program. To that end and following 23 U.S.C. §120(c)(1): Federal share payable, Increased Federal Share for Certain Safety Projects, TRF and

FHWA have evaluated the HSIP countermeasures for eligibility for 100% federal funding for construction dollars. All projects must conform to the guidelines for HSIP projects (e.g., meeting minimum SII). TRF will consider off-system projects a priority for this increased share. A complete list of G Match eligible HSIP countermeasures is available in Appendix B. This appendix is a guideline to assist local governments in selecting safety projects that may qualify. G-match project selections will be communicated when the district's program is approved. Note that G-match funds will not cover project overruns.

Examples of potentially eligible projects include:

- traffic control signalization,
- roundabouts,
- pavement markings, or,
- installation of signs, safety lighting, guardrails, impact attenuators, or median barrier.

G-Match Work Codes will be determined per 23 USC 120(c)(1):

(c) Increased Federal Share

(1) Certain safety projects.-The Federal share payable on account of any project for traffic control signalization, maintaining minimum levels of retroreflectivity of highway signs or pavement markings, traffic circles (also known as "roundabouts"), safety rest areas, pavement marking, shoulder and centerline rumble strips and stripes, commuter carpooling and vanpooling, rail-highway crossing closure, or installation of traffic signs, traffic lights, guardrails, impact attenuators, concrete barrier end treatments, breakaway utility poles, or priority control systems for emergency vehicles or transit vehicles at signalized intersections may amount to 100 percent of the cost of construction of such projects; except that not more than 10 percent of all sums apportioned for all the Federal-aid programs for any fiscal year in accordance with section 104 of this title shall be used under this subsection. In this subsection, the term "safety rest area" means an area where motor vehicle

operators can park their vehicles and rest, where food, fuel, and lodging services are not available, and that is located on a segment of highway with respect to which the Secretary determines there is a shortage of public and private areas at which motor vehicle operators can park their vehicles and rest.

State Transportation Development Credits (TDCs)

Transportation Development Credits (TDCs) are a financial tool approved by the Federal Highway Administration that allows states to use federal obligation authority without the requirement of providing matching dollars. TxDOT has allocated State TDCs to cover the local 10 percent project construction costs and minimize the financial resources needed for safety improvement projects from Local Governments and encourage participation in the HSIP program. Note that TDCs will not cover project overruns. Any countermeasure that is not listed as G match eligible in [Appendix B](#), will be eligible for state TDCs.

Project Identification

Through a data-driven decision-making process, the Department aims to identify and prioritize projects with the greatest potential for reducing deaths and serious injuries on all public roadways. Each TxDOT District has unique needs for identifying and planning safety improvements. TRF and the districts have many tools at their disposal to analyze crash data and trends for project screening and selection. Districts employ a comprehensive approach to project selection, analyzing road inventory, crash trends, and crash heat maps, to identify high-risk areas. Additionally, districts solicit input from the District's Traffic Operations office, transportation planning teams, area offices, and maintenance sections to ensure a thorough understanding of local safety needs. Once those needs have been identified, safety projects can be selected through two primary approaches: systemic and targeted. By integrating both systemic and targeted approaches, the Department ensures a balanced and effective strategy for enhancing road safety across Texas.

Systemic Approach

A systemic approach involves widely implementing improvements based on high-risk roadway features correlated with specific severe crash types. This approach provides a more comprehensive method for safety planning and implementation. It is an approach that broadens traffic safety efforts by considering risk and crash history when identifying where to make low-cost safety improvements. A systemic approach helps to identify sites for potential safety improvements that typically would not be identified using a traditional site analysis approach. Districts can also refer to the [FHWA's Systemic Safety Project Selection Tool](#) as a resource, or TxDOT staff may visit [TRF's HSIP SharePoint](#) to review the FHWA Systemic Safety Webinar files.

A systemic approach to safety:

- Identifies a “problem” based on system-wide data, such as rural lane departure crashes, urban pedestrian crashes, or rural unsignalized intersection crashes. These crashes are often spread across the network, with few or no locations experiencing a “cluster” of crashes during a given period of 3-5 years. However, they still present a safety risk to the traveling public.
- Look for characteristics (e.g., geometry, volume, or location) frequently present in severe crashes. These characteristics are referred to as risk factors.
- Focuses on promptly deploying one or more low-cost countermeasures to address the underlying circumstance contributing to crashes on most roads sharing a set of risk factors. By addressing crash types experiencing low densities (crashes per intersection or mile) with high aggregate numbers, program funds can be dedicated toward low-cost solutions deployed across the system, affecting many locations.
- Identifies and prioritizes locations across the roadway network for implementation. Systemic projects should be widely implemented across the system. Projects should be along a roadway corridor/segment or at multiple regional locations.

Each applicable safety countermeasure is uniquely identified with a work code (WC) corresponding to the description of work (see [Appendix B](#)). Approved systemic safety countermeasures are closely aligned with FHWA’s proven safety countermeasures and eligibility for systemic selection is limited to the identified list in [Appendix C](#) under the following emphasis areas:

- Intersections
- Roadway Lane Departures (RLD)
- Speed Related
- Vulnerable Road Users (VRU)

Project submissions seeking systemic funding that do not follow the criteria above will not be approved through the standard review process. However, if your district has data to support an additional systemic countermeasure not listed, the district may submit that data to TRF to request approval.

Crash counts and Safety Improvement Index (SII) calculations are not required for systemic safety countermeasure project proposals, as these proven countermeasures can be effective even on roadways without a history of crash concentrations. Districts should, however, be prepared to provide documentation of their analysis and justification to demonstrate the data-driven process used to identify and select the proposed systemic safety improvements.

Additional information about many of the systemic safety countermeasures can be found in the following resources:

- [FHWA Proven Safety Countermeasures](#)
- [Highway Safety Manual - Roadway Safety Management Process \(SPICE & CAPX\)](#)
- [TxDOT – Innovative Intersections](#)

Systemic Countermeasures Eligibility Provisions

The following provisions apply to specific systemic countermeasures in addition to the general systemic eligibility requirements:

- Generally, systemic projects that address only a single location, such as an individual intersection or curve, will not be approved.
- Systemic project proposals need to include multiple intersections/curves, or other qualifying locations within a corridor, route or geographical region exhibiting common risk factors.

- For projects involving pavement resurfacing or rehabilitation, Work Code 303 (Resurfacing) must be included if 50 percent or more of the total construction cost is attributable to resurfacing or rehabilitation activities.
- These resurfacing projects must demonstrate safety improvement potential through a systemic analysis and either have a Safety Improvement Index (SII) greater than 1.0 or a pavement skid score below 20.

Targeted Approach

The Targeted approach is the traditional method for identifying high-crash clusters or "hot spot" locations and recommending adequate countermeasures to reduce crashes at those specific sites.

Each single high-risk location (e.g., intersection, horizontal curve, or uncontrolled VRU crossing) must undergo a benefit-cost analysis to prioritize projects with the greatest potential for crash reduction and improving road safety.

This prioritization is guided by the Safety Improvement Index (SII). Project limits may be extended if it meets the SII requirements.

SII Formula and Calculation

In its most basic form, the SII represents the ratio of the annual savings in preventable crash costs at a specific location to the cost of constructing the proposed safety improvement.

The SII incorporates adjustments to provide additional benefits for:

- locations experiencing increasing traffic over the project life.
- improvements that will reduce maintenance costs.
- projects expected to have long service lives over which construction costs can be amortized.

The SII formula is as follows:

Figure 2: SII Formula

$S = \frac{R(CfF + CiI)}{Y} - M$	$Q = \left(\frac{Aa - Ab}{Ab} + L \right) S$
$B = \frac{S + \frac{1}{2}Q}{1.06} + \sum_{i=2}^L \left[\frac{\left(S + \frac{1}{2}Q \right) + (i-1)Q}{(1.06)^i} \right]$	
$SII = \frac{B}{C}$	

Table 1: Definition of Variables in SII Formula

Var	Definition
S	Annual savings in preventable crash costs (equal to crash cost savings per year minus annual maintenance costs), as determined by the above formula
R	Crash reduction factor (see Table 2 for explanation)
F	Number of preventable fatal and incapacitating injury crashes (see Table 2 for explanation)
Cf	Cost of a fatal or incapacitating injury crash (see Table 2 for explanation)
I	Number of preventable non-incapacitating injury crashes (see Table 2 for explanation)
Ci	Cost of a non-incapacitating injury crash (see Table 2 for explanation)
Y	Number of years of crash data

Var	Definition
M	Change in annual maintenance costs for the proposed project relative to the existing situation
Q	Annual change in crash cost savings, as determined by the above formula
Aa	Projected average Annual Average Daily Traffic (AADT) at the end of the project service life
Ab	AADT during the year before the project is implemented
L	Project service life (see Table 2 for explanation)
B	Present worth of project benefits over its service life, as determined by the above formula
C	Initial cost of the project

Obtaining SII Data

Before calculating the SII, the “Proposed Corrective Action” or safety countermeasure(s) must be translated into “work codes.” The HSIP Work Codes Table (see [Appendix B](#)) is a comprehensive list of applicable safety countermeasures, each uniquely identified with a work code corresponding to the description of work. The table provides definitions, reduction factors, service lives, applicable maintenance costs, and preventable crash codes.

The data necessary to calculate each project’s SII can be obtained from the sources shown in Table 2.

Table 2: Necessary data to Calculate SII

Data Item	How It Is Obtained
R = Crash Reduction Factor NOTE: The reduction factor represents the percentage reduction in crash costs or severity of the applicable crash types that can be expected as a result of the improvement.	From the Highway Safety Improvement Program (HSIP) Work Codes Table (Appendix B). NOTE: If the scope of work includes more than one work code, TRF program administrators derive a composite reduction factor.
F = Number of fatal and incapacitating injury crashes I = Number of non-incapacitating injury crashes	The HSIP Work Codes Table lists "Preventable Crash" codes. Preventable crashes are those with defined characteristics that may be affected by the proposed improvement as described by the work code. The codes correspond to numeric codes assigned in the Crash Records Information System (CRIS) for the indicated variable. Information is collected from the peace officer's crash report and converted into a coded format. Use the Preventable Crash Decoding Table (Appendix D) to interpret the codes and determine the preventable number of each type of crash, using three years of

Data Item	How It Is Obtained
F= & I = Continued from previous page.	preventable crash data, determined by the program call.
Cf — Cost of a fatal or incapacitating injury crash	The average cost of each type of crash is based on the comprehensive cost figures provided by the National Safety Council. The program call provides the cost figures used each year.
Ci — Cost of a non-incapacitating injury crash	
L — Project service life	From the HSIP Work Codes Table found in Appendix B of this manual. NOTE: If the project is represented by more than one work code, TRF program administrators base the project service life on the primary work.

SII Results

All targeted projects, both on and off system, must have an SII report submitted as part of the supporting documentation. Off-system projects will use CRIS and the SII calculator; on-system projects must use MicroStrategy reports, whenever available.

NOTE: The SII does not establish the need or lack of a need for a project. The SII formula is a mathematical representation of the ratio of the historical costs of preventable crashes to costs of construction; it provides no evaluation of the appropriateness of the type of construction.

A project with an SII greater than or equal to 1.0 is considered cost-effective. Projects with an SII of less than 1.0 will not be considered for funding through the HSIP program.

SII Calculator Available

The HSIP Project Submission file includes the SII calculator that can be used to create the SII report for Off-system projects, or On-System projects with work code combinations that are not in MicroStrategy. This file will be available on [TxDOT's HSIP public box folder](#) and for TxDOT staff on the [TRF 2027 HSIP Program folder in SharePoint](#). All submissions using this calculator to establish a qualifying SII must include Crash IDs on the form for verification.

SII Report using MicroStrategy (On-System only) on CRIS

MicroStrategy is a resource within the Crash Records Information System (CRIS) that can generate an On-System SII Safety Project Submission Report. The information required to run an SII report includes safety work code(s), year group, project total cost, annual maintenance cost, highway(s), and project limits (DFOs). For step-by-step instructions on how to run an SII report in MicroStrategy, please refer to the How to use CRIS to calculate SII instructions available on TRF's HSIP SharePoint.

If a proposed work code combination is not available on MicroStrategy, a new work code combination calculator is available in the HSIP Project Submission file. For assistance on how to use this new tool, please contact TRF_TE_Safety@txdot.gov for assistance.

Work codes with a reduction factor of "TBD" require additional information and cannot be found in MicroStrategy. To obtain an SII for these work codes, send project information and work codes to TRF_TE_Safety@txdot.gov.

SII Report for Off-System Projects

To generate SII reports for Off-System projects, Districts can use the CRIS map query builder. They are expected to utilize this tool to identify relevant, preventable crash IDs (See [Appendix D](#)) and then calculate the SII using the Excel-based SII calculator in the HSIP Project Submission File. Additional instructions for locating off-system crashes using the CRIS query tool are available on TRF's HSIP SharePoint.

AASHTOWare Safety

AASHTOWare Safety provides tools for data analysis, visualization, and decision-making aimed at reducing traffic accidents and enhancing overall roadway safety. Districts may use AASHTOWare Safety tools to identify high-crash locations and prioritize them for safety improvements, identify trends, patterns, and high-risk areas and use the visualization tools to support their decision-making process. At this time, the AASHTOWare Safety Software will not replace the reports required for benefit-cost analysis documentation for HSIP projects. TRF will continue to require CRIS and MicroStrategy reports for HSIP project submittals.

Please contact TRF_CRASH@txdot.gov to obtain access or any questions related to the AASHTOWare Safety tool.

Acceleration of Targeted projects

TRF supports project acceleration for Targeted locations where crash rates have increased since initial submission. The Design Division (DES) may also advance projects to meet letting volume targets, as well as level letting efforts. If contacted by DES with a request to accelerate projects, districts should prioritize those with elevated K crash occurrences where possible.

Annual Priority Approach

The Annual Priority Subprogram is a focused initiative within the Highway Safety Improvement Program designed to reduce traffic fatalities and serious injuries on all public roads through low-cost safety improvements.

Each year, TRF identifies a specific emphasis area, such as Roadway Departure (RwD) or Intersection crashes, and allocates 15% of HSIP funds to address it through proven systemic countermeasures.

The Annual Priority Subprogram operates through a competitive selection process. Districts are encouraged to participate in this subprogram to submit projects that align with the designated emphasis area and meet eligibility criteria. Projects are evaluated and ranked based on data-driven factors such as crash history (locations with K or A crashes prioritized), traffic volume, functional classification, posted speed, advisory speed and geometric characteristics of the roadway. Selected projects are prioritized for funding through a structured scoring methodology that evaluates their potential to reduce severe and fatal crashes.

This subprogram was formerly known as the “Statewide Systemic” but was renamed to avoid confusion with other HSIP and state-funded initiatives, such as the District Systemic Subprogram and the State Systemic Widening program.

This portion of funding gives the state the flexibility to quickly shift resources toward low-cost, systemic safety countermeasures on roadway segments that present the highest risk, allowing for a more responsive and data-driven approach to improving safety across Texas.

Design

Introduction

The design guidelines presented in this section are intended to aid in planning HSIP projects. Work types are assigned based on the information provided by the district during the project proposal process. Only work types programmed for the safety project will be considered “the scope.” The design guidelines reference portions of the [Roadway Design Manual \(RDM\)](#) and establish items of work not eligible for HSIP funding. These guidelines offer sufficient flexibility while maintaining safety as the essential element of all HSIP projects.

Design Guidelines

Freeway, Non-Freeway “New Location or Reconstruction,” or Texas Highway Freight Network (THFN) Projects

All roadway elements affected by the scope of the approved HSIP safety improvement must comply with 4R Design Criteria found in the RDM. Enhancements to features outside the scope of the HSIP project are at the district’s option and are to be funded using district funds under a separate Control-Section Job (CSJ).

Non-Freeway “Rehabilitation or Restoration” Projects

All roadway elements affected by the scope of the approved HSIP safety improvement must comply with 3R Design Criteria found in the RDM. Enhancements to features outside the scope of the HSIP project are at the district’s option and are to be funded using district funds under a separate CSJ.

“Safety Treat Fixed Objects” Projects

Projects whose primary scope of work is “Safety Treat Fixed Objects” must comply with the Clear Zone criteria found in the RDM. The designer should provide clearance greater than that required whenever reasonably practicable.

Other Projects

All projects not included in the above categories must retain the existing roadway conditions (lane widths, shoulder widths, etc.) as a minimum.

Design Considerations

At the beginning of the HSIP project proposal process, highway designers should analyze crash data to identify the specific safety problems that might be corrected and follow the suggested design process in the RDM and the Traffic and Safety Analysis Procedures Manual (TSAP). When the HSIP design guidelines cannot be met, the current design exception or design waiver process established in the RDM must be followed.

HSIP Project Submission Guidelines

As a condition of obligating Federal Highway Safety Improvement Program (HSIP) funds, a state is required to submit an annual report to the Federal Highway Administration (FHWA) that describes the progress on safety improvement projects and their contribution to reducing roadway fatalities, injuries, and crashes. To comply with these requirements and to maintain the integrity of the program-selection process, the following must be adhered to and considered before project proposal submission:

HSIP projects are not eligible for local letting. All HSIP projects must be let by TxDOT's competitive bid process. TRF is evaluating the progress of a Local Let pilot program initiated with the 2022 Program Call. At this time, no additional projects will be added to the local letting pilot. Off-system project proposals are required to be submitted through the local district office.

TRF Responsibilities

Table 3: TRF Responsibilities

Step	Action
1.	Leverage the most current SHSP to define the HSIP program safety emphasis areas, eligible scopes of work and safety improvement countermeasures.
2.	Conduct an informative webinar outlining the steps and requirements of the HSIP program call.
3.	Provide districts with HSIP guidance and funding allocations.

Step	Action
4.	Analyze the proposed highway safety improvement projects for eligibility, data accuracy, and overall conformance with program requirements.
5.	Calculate the District's requests for reduction factors for new work code combinations.
6.	Analyze each targeted/hot spot project's Safety Improvement Index (SII) and review systemic projects for eligibility.
7.	Conduct district-level meetings to review their TRF HSIP Program and provide comments.
8.	Issue final funding decisions and communicate selected projects.
9.	Monitor project progress through letting, ensuring any changes in scope or schedule are addressed and overseeing overruns of project authorized funds at the divisional PS&E review stage in accordance with the current TxDOT policy.
10.	Perform HSIP effectiveness evaluations and periodically review, revise, and update program guidelines and processes to strengthen program delivery and support achievement of safety performance targets.

HSIP Participant Responsibilities

Table 4: HSIP Participant Responsibilities.

Step	Action
1.	Use the latest SHSP to learn about the safety Emphasis Areas.
2.	Conduct safety studies to identify potential project locations eligible for improvements within the designated program Emphasis Areas, using the most recent three years of crash data for a targeted/hotspot approach and applying proven systemic safety countermeasures for a systemic selection approach.
3.	Evaluate each location for feasibility and verify that appropriate countermeasures addressing the location's safety needs are not already completed or scheduled.
4.	Collaborate with stakeholders to collect additional location details, incomplete or inaccurate crash data and identify high-risk areas that may have been overlooked.
5.	Perform a field evaluation to determine existing conditions at the proposed project site. This will avoid the submission of work that has already been constructed and provide the information necessary for a complete and accurate estimate.
6.	Consult with the district's planning office prior to submitting project proposals to determine if the proposed improvement or another is already scheduled for construction under this program or any other.

Step	Action
7.	For feasible projects, determine the appropriate safety countermeasure or combination of countermeasures, and develop a detailed cost estimate for the entire construction cost of the project. Leveraging of project estimate is not allowed.
8.	NOTE: Districts are discouraged from adding district funds to the requested amount to “leverage” the cost of the project. All bid items must be included in the submitted estimate.
9.	Work is assigned based on the information provided. Only work programmed will be considered “in scope,” and is the only work that can be done as part of the HSIP project. Work considered incidental to the primary work type will not have a separate work code assigned, but the work will be allowed (e.g., widening a roadway to install a left-turn lane or extend drainage structures or re-striping to accompany an overlay). If additional non-incidental work is required or desired, it will be considered “out of scope” and will be funded by the district under a separate CSJ.
10.	Project selection is based on the crash history, traffic volumes, and roadway geometrics at the specified location. Accurately identify project parameters for the project to be programmed correctly. When defining project parameters, consideration should be given to including distance for project approaches and tapers, as necessary. Non-site-specific contracts are not eligible for HSIP funding.

Step	Action
11.	Complete and submit HSIP project proposals containing requested data to TxDOT's Traffic Safety Division, Traffic Engineering Section, Safety Engineering branch, through the TxDOT HSIP District Coordinator, along with the necessary backup data (typical sections, layouts, maps, photographs of existing site conditions, etc.) in response to the program call. To submit projects for consideration, set projects up in TxDOTCONNECT (Except annual priority projects).
12.	Notify TRF of potential overrun of an HSIP project's authorized funds prior to Plans, Specifications and Estimates (PS&E) submittal.
13.	Submit PS&E for HSIP projects to TRF in accordance with standard PS&E submission schedule.

Project Documentation

The HSIP project proposals will be submitted electronically through TxDOTCONNECT, with supporting documentation to be submitted through [Box.com](#).

An HSIP Project Submission Form Excel File is required for each project. Detailed instructions for using the new format are available on the first tab of the file. All related fields are expected to be filled out completely and accurately. The form is to be submitted along with the rest of the supporting documentation for each project in Folder. The supporting documentation includes:

- Project Layout - Specify project limits to verify location in TxDOTCONNECT. Location map (satellite image or CAD) cannot replace the in-person field

evaluation (Table 4, Step 5). Project layout shall identify locations of the work codes (safety countermeasures) proposed.

- Bid Item Estimate – The estimate must be for the entire cost of constructing the project and must include all items, priced using the [Average Low Bid Unit Price dashboard](#) published by TxDOT. It is preferable to use districtwide average low bid unit prices, unless the bid item utilization sample size is too small, then use the statewide average low bid unit prices. A detailed set of instructions on how funding should be entered into TxDOTCONNECT can be found on [TRF's 2027 HSIP Program SharePoint](#) (Tools folder) to ensure letting estimate, inflation and funding lines correlate. If a detailed estimate is not provided, the project may not be considered for funding and may be eliminated from the call.
 - Each bid item must include:
 - Complete Bid Item Codes
 - Quantities
 - Bid Item Average Unit Prices
 - Total Price for Each Item
 - For projects covering multiple locations, such as signal interconnects or systemic projects, quantities must be broken down by intersection or roadway segment. For example, improving a corridor might show 3 backplates at 1st street, 2 at 2nd street, etc. This is to facilitate completion of the annual report to FHWA.
 - Commonly overlooked bid items:
 - Item 100 Series: Prep ROW, Excavation, Embankment, Blading, Pavement Removal
 - Item 200 & 300 Series: Pavement items (and related Special Specs); even projects where a district has attempted to include pavement bid items, the final design sometimes ends up being much more expensive. TRF may require review of pavement bid items by the District Pavement Engineer prior to project approval.

- Item 400 Series, Drainage and Hydraulics: modify or reconstruct culverts, pipes, SET's, headwalls, wingwalls, backfill, shoring, riprap, etc.
- Required Items 500 Mobilization & Item 502 Barricades, Signs, and Traffic Handling (no longer a lump sum on the submittal form); also consider 503 Portable Changeable Message Signs, 505 Truck Mounted Attenuators and Trailer Attenuators, and 662 Work Zone Pavement Markings
- Item 506 Erosion Control (plus some related items in the 100's: Sodding, Seeding, Watering)
- SII Report – Either in MicroStrategy report, or included in 2027 HSIP Submittal Form - SII Tab. All crash data used in the SII calculation will be queried using Beginning and Ending Distance From Origins (DFO's). The majority of the required SII reports are located in the MicroStrategy component of CRIS at the following location:
 - CRIS -TX DOT > Shared Reports > HSIP Call > On-System SII Submission Reports
 - Detailed instructions on how to run the SII reports for on-system projects are available in the How to use CRIS to calculate SII file located in [TRF's 2027 HSIP SharePoint](#).
 - Off-system projects will use the SII calculator tab in the 2027 HSIP Project Submission File also available on [TxDOT's Highway Safety Improvement Program public folder](#). Districts must include SII reports for BOTH on- and off-system targeted projects.
- Existing and Proposed Typical Sections – Existing and proposed typical sections are required for any projects that involve widening the roadway, installing median barriers, refuge islands, adding shared use path or adding lanes.

- Intersection Layouts – Intersection layouts are required for any intersection improvement project, including traffic signals, RRFBs, signing & pavement markings, channelization, pedestrian improvements, or RCUTs.
- Traffic Signal Warrants, SPICEX and CAPX – Required for intersection projects seeking to change the type of control installing a traffic signal, or any other innovative intersection improvement.

Submittal Instructions

Districts will enter all the projects to be submitted for approval into TxDOTCONNECT. For each project, prepare the additional documentation required; all supporting documentation will be uploaded to the District's HSIP folder in [Box.com](https://box.com).

Please upload one folder per project, with all submittal documents in each folder (Zip files and PDF portfolios are no longer necessary), with folder name for each project "2027 District Highway CSJ".

Ex: "2027 AUS IH-35 0015-01-123"

After all the projects have been entered into TxDOTCONNECT, including the off-system projects, districts must notify TRF_TE_Safety@txdot.gov that their submissions are ready to be reviewed.

TRF will review submissions and meet with each District to provide comments. Once all changes have been reviewed and approved, TRF will coordinate with Financial Management Division (FIN) to approve Category 8 Construction funding lines.

Post-Programming Activities

After projects have been adequately programmed and approved, the districts will move on to project development, and any changes will need to be submitted and approved by TRF.

Letting Deadline, Changes and Cancellations

Due to the nature of HSIP projects (safety), projects must be let to contract in a timely manner. Ensure the estimated let date entered in TxDOTCONNECT is achievable. Once a project is approved for letting in a fiscal year, every effort must be made to meet this date. TRF reviews and approves all letting fiscal year changes. Projects requesting a delay in letting past the following three fiscal years from the time it was approved for funding will require an updated project submittal for review and approval (highest priority will be targeted projects requiring updated crash data).

After the letting change has been approved by TRF, a Letting Schedule Modification (LSM) should be submitted in TxDOTCONNECT if applicable.

Changes in Scope

A request for a change in scope must be submitted as soon as the change is known and prior to PS&E submittal. Submit an email request to TRF_TE_Safety@txdot.gov for approval concerning changes in scope. Provide a detailed explanation for the change being requested and update the required documentation that was included in the original project submission, as applicable. TRF will review the request and notify the District if the request has been approved.

Note: Requests for changes in scope that result in redefining the project location or deviating from the emphasis area or countermeasures specified in the original project proposal may result in the request being denied.

Requests for Additional Funds

If an on-system project requires additional funding, the district should submit a request upon identification as far in advance of 100% PS&E submittal as possible. TRF Safety will evaluate the request on a case-by-case basis.

For projects with multiple CSJs in one submittal: as PS&E development is progressing to 100% and the need arises to re-balance Authorized Amounts with Bid Item Estimates, please contact TRF TE Safety with these requests as far in advance of 100% PS&E Submittal as possible.

For off-system projects, the local government is responsible for bid overruns in excess of the Category 8 authorized amount. Bid overruns will be covered by the Category 3 “Non-Traditionally Funded Transportation Projects” funding. After project approval, requests for additional authorized funding may be considered if there is adequate time to amend the Advance Funding Agreement (AFA) prior to 100% PS&E submittal.

While not required, it is strongly recommended that all Category 8 off-system CSJs let under a single construction contract be included in the same AFA. Doing so provides greater flexibility in managing project costs. If a sub-CSJ experiences a cost overrun, available funding may be redistributed among the CSJs included in the contract, up to the approved contract amount, provided that all CSJs are Category 8 projects and are covered under the same AFA.

Overruns

No later than the time of 100% PS&E submittal, notify TRF_TE_Safety@txdot.gov when the engineer’s final estimate exceeds the project’s authorized funds by including the Cat 8 Overrun Justification Form, available to TxDOT staff on TRF’s HSIP SharePoint. TRF will review the request and notify the District if additional information is needed for approval.

If the whole contract is funded by Category 8, and the engineer’s final estimate is under the total authorized amount for the contract, an overrun justification is not required. However, if the engineer’s final estimate for the whole contract exceeds the total authorized amount, then an overrun justification form must be filled out and submitted for each CSJ with an overrun on the form.

If the contract includes additional funding besides Category 8, and one or more of the HSIP CSJs has an overrun, an overrun justification form will need to be filled out and submitted for each HSIP CSJ with an overrun.

TRF tracks all overruns in a monthly budget table available to districts in the 2027 HSIP Program folder in TRF SharePoint. For any overruns over \$250,000, the districts should reach out to TRF via email as early as possible prior to PS&E submittal to resolve any known funding issues, and to submit a request for approval for additional safety funds as needed for a project. An updated project estimate and detailed justification for the overrun should be included in the request.

Change Orders

Submit an email request to TRF_TE_Safety@txdot.gov and include a copy of the Change Order Report from Site Manager along with all supporting documentation (including any additional plan set sheets). TRF will review the request and notify the District if the request has been approved.

Districts may not submit a change order to add or modify project scope to an existing HSIP contract. All HSIP projects must be submitted for review and approval in accordance with our guidelines and undergo TxDOT's competitive bid process once approved.

Cancellations

Districts must promptly notify TRF if an HSIP project needs to be canceled. This will allow TRF to assess the impact on allocated funds and determine if any further action is necessary. TRF will inform the district if any additional steps are required. Cancellations of projects classified under FHWA Special Rules (VRU or HRRR) may require a substitute project to maintain program targets for these Special Rules.

Reporting

TRF submits a statewide HSIP report for the prior federal fiscal year to FHWA by August 31st of each year. The report addresses intersections and segments as required under 23 U.S.C. Section 148(g). The report includes sections on progress in implementing HSIP projects; program effectiveness; project evaluation; a narrative addressing methodology and effectiveness; and an explanation of how HSIP projects link to Texas' Strategic Highway Safety Plan.

TRF will analyze the crash reduction data from completed projects and use the results to adjust the factors for the following year's HSIP.

Crash Data

Overview

The Crash Records Information System (CRIS) is the official state database for traffic crashes occurring in Texas. CRIS contains spatial and reporting components designed to be used by TxDOT personnel to obtain and analyze crash data. Each district has personnel licensed to have access to CRIS. TxDOT district offices are encouraged to work closely with TxDOT area offices and local governments to identify locations with the highest need for safety improvements. Crash data for the past three full calendar years (current year may be included) will be used for an HSIP Program Call and any crashes occurring in years prior will not be used in the SII calculation.

The crash reports that are provided for each district contain fatal (K) and severe injury (A) crashes only. Non-incapacitating (B) crashes are still used in the Safety Improvement Index (SII) calculation, but for screening purposes only. The following crash reports will be provided to each district:

- On-System KA Crashes by Control-Section
- On-System KA Crashes on Curves
- On-System KA Crashes on Rural 4-Lane Undivided Highways without Paved Shoulders
- On-System KA Crashes Work Code 541 Preventable Rural 2-Lane Highways < 24ft and $\geq$ 400 ADT
- Pedestrian Involved KA Crashes

The Texas A&M Transportation Institute has provided individual District CAVS data to enhance the process of selecting safety projects to submit for HSIP funding consideration. Crash data and crash attributes for all K, A, and B crashes will be compiled into a spreadsheet, analyzed for each crash to determine whether that crash could be prevented by the type of work, and

then mapped. The maps can be filtered to only show crashes that apply to a particular type of work. Additionally, Crash Tree Diagrams and Comprehensive Dashboards may be used to assist districts during their project selection.

Crash Cost

For the 2027 HSIP Program Call, the cost per crash will be:

- \$4,420,000 → K or A crashes
- \$380,000 → B crashes

Only KAB crashes from the last 3 years (current year may be included) that are preventable by the proposed countermeasure(s) are used to calculate the SII for HSIP targeted projects programmed in Fiscal Year 2030. Always refer to the most current HSIP program call guidelines to verify the applicable crash costs.

Appendix A – Definitions

Terminology	Definition
A Crash	Crash resulting in one or more Suspected serious injuries as the most serious outcome.
B Crash	Crash resulting in one or more Non-incapacitating injuries as the most serious outcome.
C Crash	Crash resulting in one or more Possible injuries as the most serious outcome.
CAVS Data	Computer Aided Visualization data set compiled for use by TxDOT to identify hot spots as well as possible locations for specific countermeasures across a District.
Change Orders	Work that is added or deleted during construction from the original PS&E, cost, or timeline of a contract.
Countermeasure	A roadway-based strategy intended to reduce risk at a site
Crash	A set of events that results in injury or property damage due to the collision of at least one motorized vehicle and may involve a collision with another motorized vehicle, bicyclist, a pedestrian or an object
Crash frequency	The basic measure of crashes in the Highway Safety Manual (HSM): number of crashes occurring at a particular site, facility, or network per year (expressed for a location/site or per mile depending on the context)
CRIS	Crash Records Information System
FHWA	Federal Highway Administration
District	A geographical area managed by a district engineer, in which TxDOT conducts its primary work activities
Emphasis Area	A collection of safety concerns identified in the state SHSP, sharing common characteristics such as users affected, types of transportation involved, or other data points.

Terminology	Definition
Highway Safety Improvement Project	A project on a public road that implements countermeasures consistent with the Texas SHSP and improves road conditions or roadway features.
Highway Safety Improvement Program (HSIP)	The collection of projects on public roads which implement countermeasures consistent with the SHSP and which is funded by a specific category of federal dollars.
K Crash	Crash resulting in one or more Fatalities as the most serious outcome.
O Crash	Crash resulting in Property Damage Only as the most serious outcome.
Off-system Roadways	Roadway not designated on the State Highway System and not maintained by TxDOT (i.e., city street or county road).
On-system Roadways	Roadway designated on the State Highway System and maintained by TxDOT.
Overruns	The difference between the engineer's final estimate and the original amount programmed for a specific HSIP project, when the engineer's final estimate is greater.
Preventable Crash	Crashes with defined characteristics that may be affected by the proposed improvement (work code).
Road User	A motorist, passenger, public transportation operator or user, truck driver, bicyclist, motorcyclist, or pedestrian, including a person with disabilities.
SII	Safety Improvement Index
Safety Study	An analysis of roadway, traffic, and crash-related data to determine the probable cause of an identified crash pattern. It provides alternative countermeasures meant to mitigate predominate crash pattern(s).
Strategic Highway Safety Plan (SHSP)	Federally mandated document compiled at the State level addressing areas of greatest concern to the state and which identifies strategies and countermeasures to address those Emphasis Areas.

Terminology	Definition
Systemic Safety Improvement	An improvement that is widely implemented based on high-risk roadway features that are correlated with particular crash types, rather than crash frequency.
Traffic Engineering Section (TE)	A section in the Traffic Safety Division (TRF) whose primary responsibility relates to traffic engineering.
Traffic Safety Division (TRF)	The division within the Texas Department of Transportation, headquartered in Austin, whose primary responsibility relates to traffic operations.
TxDOTCONNECT (TxC)	Project & Portfolio management tool developed for use at TxDOT

Appendix B - HSIP Work Codes Tables

The Work codes are listed by number within each group divided into five categories linked in the list below:

- [100 Signing and Signals](#)
- [200 Roadside Obstacles and Barriers](#)
- [300 Resurfacing and Roadway Lighting](#)
- [400 Pavement Markings and Vulnerable Road Users](#)
- [500 Roadway Work and Innovative Intersections](#)

The information for each work code includes:

- Safety countermeasure associated with the work code.
- Work Code definition.
- Preventable Crash Criteria short description. Preventable Crash Codes are in [Appendix D](#) of this document and [Appendix E](#) contains a full description of the Preventable Crash criteria by work code.
- Required documentation for HSIP project submittal package.
- Reduction Factor expressed in percentage.
- Service Life in years.
- General maintenance cost. Districts should verify responsibility (state or local) and agreements. Maintenance costs are at the discretion of district.
- G-Match Eligibility Work Codes marked as "Y" (Yes) or "N" (No) state FHWA eligibility. Eligibility of projects with "C" (Conditional) G-Match Work Codes will be determined per 23 USC 120(c)(1).

100 - Signing and Signals

WC 101 - Install Warning/Guide Signs: Provide signing for unusual or unexpected roadway features where no signing existed previously. Applies to both intersection and non-intersection signage.

Preventable Crash Criteria: ALL

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	15	\$0	Y

WC 107 - Install Traffic Signal: Provide a traffic signal where none existed previously. This does not include the installation of flashing beacons. SPICE and CAP-X analyses are required for all intersection related HSIP project submittals. See TxDOT Chief Engineer June 24, 2024 memo.

Preventable Crash Criteria: (Intersection Related = 1 or 2) AND [(Vehicle Movements/Manner of Collision = 10-39) OR (Object Struck = 21, 26, 27 or 55) OR (First Harmful Event = 1 or 5)]

Required Documents: Overhead Intersection Layout, Traffic Signal Warrants, SPICE and CAP-X analyses.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	10	\$3,400 (Isolated) \$3,900 (Interconnected) \$5,400 (Diamond Interchange)	Y

WC 107R - Install Traffic Signal (Rural): Provide a traffic signal where none existed previously. Only for Rural installation. This does not include the installation of flashing beacons. Reduction Factor not available in MicroStrategy, for use with SII calculator only. SPICE and CAP-X analyses are required for all intersection related HSIP project submittals. See TxDOT Chief Engineer June 24, 2024 memo.

Preventable Crash Criteria: (Intersection Related = 1 or 2) AND [(Vehicle Movements/Manner of Collision = 10-39) OR (Object Struck = 21, 26, 27 or 55) OR (First Harmful Event = 1 or 5)]

Required Documents: Overhead Intersection Layout, Traffic Signal Warrants, SPICE and CAP-X analyses.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
35%	10	\$3,400 (Isolated) \$3,900 (Interconnected) \$5,400 (Diamond Interchange)	Y

WC 108 - Improve Traffic Signals (Hardware): Improve existing intersection signals to current design standards. Can include replacement of signal heads with retroreflective backplates, as well as upgrading wire signals with mast arms. May also include adding and realigning curb ramps, as well as enhancements to pavement markings.

Preventable Crash Criteria: (Intersection Related = 1 or 2) AND [(Vehicle Movements/Manner of Collision = 10-39) OR (Object Struck = 21, 26, 27 or 55) OR (First Harmful Event = 1 or 5)]

Required Documents: Overhead Intersection Layout, SPICE and CAP-X analyses Optional.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	10	\$0	Y

WC 109 - Implement Leading Pedestrian Interval (LPI) Timing: Adjust signal timing to allow Vulnerable Road Users to enter crosswalk at intersection before vehicles are given a green indication.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
16%	10	\$0	Y

WC 110 - Install Pedestrian Signal: Provide a pedestrian signal at an existing signalized location where no pedestrian phase exists, but pedestrian crosswalks are existing, or in conjunction with WC 403. Use default RF of 34% for SII calculation. If $SII < 3.0$, a project-specific RF can be calculated.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: Overhead Intersection Layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
34%	10	\$0	Y

WC 111 - Install Signal Coordination or Adaptive Signal Timing

(Interconnect Signals): Provide signal coordination; a communication link between two or more adjacent signals in a corridor. This WC can be used as an approved systemic countermeasure along a corridor when combined with WC 108.

Preventable Crash Criteria: All

Required Documents: List and drawing of all signalized intersections to be included in the interconnection.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	10	\$0	Y

WC 113 - Install Delineators: Install post-mounted delineators to provide guidance.

Preventable Crash Criteria: (Roadway Related = 2 , 3 or 4) AND (Light Condition =2-6)

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
12%	5	\$0	N

WC 114 - Install School Zones: Place school zones to include signing, flashing beacons and/or pavement markings where none existed previously. Refer to WC 403 for pedestrian crosswalk markings.

Preventable Crash Criteria: All

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	5	\$0	Y

WC 115 - Install Pedestrian Countdown Timer: Add pedestrian countdown timer to existing pedestrian signals.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
50%	10	\$0	Y

WC 118 - Replace Flashing Beacon with a Traffic Signal: Replace an existing flashing beacon at an intersection with a traffic signal. Districts to verify existing Overhead Flashing Beacon has exceeded its 10 yr service life.

Preventable Crash Criteria: (Intersection Related = 1 or 2) AND [(Vehicle Movements/Manner of Collision = 10-39) OR (Object Struck = 21, 26, 27 or 55) OR (First Harmful Event = 1 or 5)]

Required Documents: Overhead Intersection Layout, Traffic Signal Warrants, SPICE and CAP-X analyses.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	10	\$1,300	Y

WC 119 - Install Overhead Signs: Install overhead advance regulatory, warning or guide signing for unusual or unexpected roadway features where no signing existed previously.

Preventable Crash Criteria: All

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	10	\$0	Y

WC 122 - Install Advance Warning Beacons (Intersection - Existing Warning Signs):

Provide warning beacons as supplemental emphasis to warning signs in advance of an intersection where none previously existed but where advance warning signs already exist. Also consider using it in combination with WC 545 (Transverse Rumble Strips).

Preventable Crash Criteria: Intersection Related = 1 or 2

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	10	\$1,300 per approach	Y

WC 123 - Install Advance Warning Beacons (Curve - Existing Warning Signs):

Provide warning beacons as supplemental emphasis to warning signs in advance of a curve where none previously existed but where advance warning signs already exist.

Preventable Crash Criteria: (Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision= 20-24 or 30)

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	10	\$1,300 per approach	Y

WC 124 - Install Advance Warning Beacons and Signs (Intersection):

Provide warning beacons and signs in advance of an intersection where none previously existed. It is now recommended to include retroreflective strips on sign posts. Also consider using it in combination with WC 545 (Transverse Rumble Strips).

Preventable Crash Criteria: Intersection Related = 1 or 2

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	10	\$1,300 per approach	Y

WC 125 - Install Advance Warning Beacons and Signs (Curve): Provide warning beacons and signs in advance of a curve where none previously existed. It is now recommended to include retroreflective strips on sign posts.

Preventable Crash Criteria: (Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 20-24 or 30)

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
15%	10	\$1,300 per approach	Y

WC 128 - Install Advance Warning Signs (Intersection): Provide signs in advance of an intersection (including flashing signs) where none previously existed. It is now recommended to include retroreflective strips on sign posts. Also consider using it in combination with WC 545 (Transverse Rumble Strips).

Preventable Crash Criteria: Intersection Related = 1 or 2

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
15%	15	\$0	Y

WC 130 - Install Advance Warning Signs (Curve): Provide signs in advance of a curve where none previously existed. It is now recommended to include retroreflective strips on sign posts.

Preventable Crash Criteria: (Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 20-24 or 30)

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	15	\$0	Y

WC 131 - Improve Pedestrian Signals: Bring existing pedestrian signal units into conformance with current standards. Also consider WC 138 Install Flashing Yellow Arrow.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	10	\$0	Y

WC 132 - Install Advance Warning Beacons and Signs: Provide warning beacons and signs in advance of hazard where none previously existed. It is now recommended to include retroreflective strips on sign posts.

Preventable Crash Criteria: All

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	10	\$1,300 per approach	Y

WC 133 - Improve School Zone: Improve an existing school zone by upgrading signing, pavement markings or signals.

Preventable Crash Criteria: All

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	5	\$0	Y

WC 134 - Install Advance Pedestrian Crossing Signage: Install pedestrian crossing warning signs in advance of a pedestrian crosswalk where none previously existed. It is now recommended to include retroreflective strips on sign posts. For signing within school zones, see WC 114 and 133.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	15	\$0	Y

WC 136 - Install LED Flashing Chevrons (Curve): Install LED flashing chevrons on curve to provide guidance. May include Dynamic LED Chevron System.

Preventable Crash Criteria: (Roadway Related = 2, 3, or 4) OR (Vehicle Movements/Manner of Collision = 20 - 24, or 30)

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
35%	10	\$0	Y

WC 137 - Install Chevrons (Curve): Install chevrons on curve to provide guidance. It is now recommended to include retroreflective strips on sign posts.

Preventable Crash Criteria: (Roadway Related = 2, 3, or 4) OR (Vehicle Movements/Manner of Collision = 20 - 24, or 30)

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	15	\$0	Y

WC 138 - Install Flashing Yellow Arrow: Improve existing intersection signals by adding a flashing yellow arrow indication and install the LEFT TURN YIELD ON FLASHING YELLOW ARROW (R10-17T) sign. Refer to WC 108 for improvement of traffic signal.

Preventable Crash Criteria: (Intersection Related = 1 or 2) AND [(Vehicle Movements/Manner of Collision = 13-19, 25, 27-29, 34, 36,38) OR (First Harmful Event= 1 or 5)]

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
40%	10	\$0	Y

WC 139 - Install Surface Mounted Delineators on Centerline: Install surface mounted delineators on centerline.

Preventable Crash Criteria: Vehicle Movements/Manner of Collision = 20,30,31,32,33,34,35,36,37,38,39

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
12%	7	\$0	Y

WC 140 - Wrong Way Driver Warning Signs: Provide warning signs to warn wrong way drivers at freeway exit ramps (e.g., Oversized and Flashing LED "Wrong Way" and "Do Not Enter" signs with red retroreflective strip on sign supports). For Flashing LED signs, use SS6066 and bid code 6066-7001. For retroreflective strip, refer to D&OM(SIGN)-25; Recommended bid code is 658-7080. Systemic only.

Preventable Crash Criteria: Contributing factor = 71

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
35%	10	\$0	Y

WC 141 - Wrong Way Driver Warning Markings: Provide markings (wrong way arrows using striping or raised pavement markers) to warn wrong way drivers at freeway exit ramps. Refer to FPM(1)-25 and SHSD Section 12. Systemic only.

Preventable Crash Criteria: Contributing factor = 71

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
40%	5	\$0	Y

WC 142 - Wrong Way Driver Detection Technologies: Provide detection technologies to detect and warn wrong way drivers at freeway exit ramps. (e.g., exit ramp detection systems and upstream DMS alerts). Requires a One Time Use Special Specification. Refer to SS6028, SS6038, SS6056, and SS6087 for examples. Systemic only.

Preventable Crash Criteria: Contributing factor = 71

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
35%	5	\$25,000	N

WC 143 - Pedestrian Hybrid Beacon: Provide pedestrian hybrid beacon at established crosswalk or in conjunction with installation of new crosswalk (403). Requires TRF-P&S approval.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
30%	10	\$2,100	Y

WC 144 - Install Rectangular Rapid Flashing Beacon (RRFB): Install pedestrian activated rectangular rapid flashing beacon (RRFB) at existing or in conjunction with installation of new crosswalk (403). Requires TRF-P&S approval. Systemic only.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: Overhead layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
45%	10	\$1,300 per roadside assembly	Y

WC 145 - Flashing Stop Beacon or LED-embedded Stop Signs: Install LED stop signs or stop beacons on existing stop signs at intersections where only standard stop signs are present.

Preventable Crash Criteria: (Intersection Related = 1 or 2) AND [(Vehicle Movements/Manner of Collision = 10-39) OR (First Harmful Event = 1 or 5) OR (Object Struck = 20, 21, 55)]

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	10	\$1,300 per roadside assembly	Y

WC 150 - Dynamic Speed Feedback Signs: Install permanent dynamic message speed display signs related to a regulatory speed limit or advisory speed for unexpected roadway features (curves, school zones, etc.).

Preventable Crash Criteria: Part of Roadway No. 1 Involved = 1

Required Documents: Overhead layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
5%	10	\$0	Y

WC 151 - Variable Speed Limit (VSL): Provide Variable Speed Limits where none existed previously.

Preventable Crash Criteria: Part of Roadway No. 1 Involved = 1, 3, 4

Required Documents: TRF-TM concurrence for proposed VSL location and limits required.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
30%	10	\$0	N

200 - Roadside Obstacles and Barriers

WC 201 - Install Median Barrier: Construct a concrete or cable safety system median barrier where none existed previously. Consider existing median width, percent truck traffic, cable post spacing, material availability, maintenance cost, and inside shoulder widening when selecting CTB versus steel cable. TRF may approve replacing existing steel cable with CTB on a case-by-case basis.

Preventable Crash Criteria: Vehicle Movements/Manner of Collision = 30-39

Required Documents: Existing and Proposed Typical Sections.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
50%	25	\$0	Y

WC 203 - Install Raised Median: Install a roadway divider using barrier curb. If local access is impacted, approval from the Chief Engineer is required prior to advertisement & publishing the job for letting. See the DES Proposed

Raised Median Projects Guidelines and applicability of approval process. For TxDOT staff, refer to the Proposed Raised Median Request found within Design Division Crossroads Page named Other submittals and requests section within Project Delivery Section. <https://crossroads/divisions/des/sections/project-delivery-section/other-submittals-and-requests.html#proposed-raised>

Preventable Crash Criteria: (Part of Roadway No. 1 Involved = 1) AND (Vehicle Movements/Manner of Collision = 10, 14, 20-22, 24, 26, 28-30, 34, 36, or 38)

Required Documents: Overhead layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	20	\$0	N

WC 204 - Flatten Side Slope: Provide an embankment side slope of 6:1 or flatter.

Preventable Crash Criteria: Roadway Related = 2-4

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
5%	20	\$0	N

WC 209 - Safety Treat Fixed Objects: Remove, relocate, or safety treat all fixed objects including the installation of guardrail for safety treatment of a fixed object or drainage structures within the project limits, to include both point and continuous objects.

Preventable Crash Criteria: Object Struck = 20,22,24,25,26,29,30,31,32,36,40,41,42,58,61,62,63

Required Documents: List examples of fixed objects addressed in notes section of HSIP submittal form.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
45%	15	\$0	C

WC 217 - Install Impact Attenuation System: Provide any of a variety of impact attenuators where none existed previously.

Preventable Crash Criteria: Object Struck = 20, 30, 40, or 42

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
50%	10	\$0	Y

WC 218 - Widen Bridge: Provide additional width across an existing structure, either by rehabilitation or replacement. Specify existing bridge width, existing approach roadway width and roadway type (2 lane, 4 lane undivided, etc.)

Preventable Crash Criteria: (Bridge Detail = 1-6) AND (Vehicle Movements/Manner of Collision = 20, 21, or 30)

Required Documents: Existing & Proposed Typical Sections.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
50%	30	\$0	N

WC 220 - Truck Parking Facilities: Construct, expand, upgrade, or re-purpose existing roadside facilities for truck parking that are eligible for funding under section 1401 of the MAP-21. Systemic only.

Preventable Crash Criteria: Systemic Only. Needs separate analysis.

Required Documents: Proposed rest stop layout including entrances and exits.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
TBD	20	\$0	N

WC 225 - Pedestrian Crossing Deterrent: Install attachments to existing concrete barrier systems to deter prohibited pedestrian crossings on divided highways. Systemic only.

Preventable Crash Criteria: First Harmful Event = 1

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
TBD	10	\$TBD	N

300 - Resurfacing and Roadway Lighting

WC 303 - Resurfacing: Provide a new roadway surface to increase pavement skid numbers on all the lanes.

Preventable Crash Criteria: Surface Condition = 2, 3, 4, 5, 6, or 9

Required Documents: Skid Numbers. (Skid Value must be less than 20)

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	10	\$0	N

WC 304 - Safety Lighting (Non-Intersection): Provide roadway lighting, either partial or continuous, where either none existed previously or major improvements are being made. Refer to WC 305 for intersection lighting.

Preventable Crash Criteria: Light Condition = 2-6

Required Documents: Overhead Layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
30%	15	\$300 per Luminaire	Y

WC 305 - Safety Lighting (Intersection): Install lighting at an intersection where either none existed previously or major improvements are proposed. Refer to WC 304 for general lighting.

Preventable Crash Criteria: (Light Condition = 2-6) AND (Intersection Related = 1 or 2)

Required Documents: Overhead Intersection Layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
13%	15	\$300 per Luminaire.	Y

400 - Pavement Markings and Vulnerable Road Users

WC 401 - Install Pavement Markings: Place complete pavement markings, excluding crosswalks, in accordance with the TMUTCD where either no

markings or nonstandard markings exist. This work code includes items such as turn arrows, stop lines, lane markings, raised pavement markers, etc. Refer to WC 402 for edgeline markings, WC 403 for pedestrian crosswalks, WC 404 for centerline markings.

Preventable Crash Criteria: All

Required Documents: Preliminary layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	5	\$0	Y

WC 402 - Install Edgeline Marking: Place edge lines where none existed previously.

Preventable Crash Criteria: Roadway Related = 2, 3 or 4

Required Documents: Preliminary layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	5	\$0	Y

WC 403 - Install Pedestrian Crosswalk: Place pedestrian crosswalk markings where none existed previously. Refer to WC 114 for school zones, and WC 110 for pedestrian signal.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: Preliminary layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	5	\$0	Y

WC 404 - Install Centerline Marking: Provide centerline marking where either no markings or nonstandard markings existed previously. Refer to WC 401 for complete pavement markings.

Preventable Crash Criteria: Vehicle Movements/Manner of Collision = 30-39

Required Documents: Preliminary layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	5	\$0	Y

WC 405 - Install Centerline Buffer (2ft): Provide centerline marking with 2 ft lateral separation on high-speed undivided highways. See Standard CLB(1)-23, CLB(2)-23. Systemic eligibility is limited to pavement marking applications and associated minor work, and it is subject to TRF approval. Include Work Code 303 – Resurfacing if 50% or more of the total project construction cost is associated with pavement resurfacing or rehabilitation items. Such projects must demonstrate crash potential through a systemic analysis and have an SII greater than 1.0 or a pavement skid score below 20.

Preventable Crash Criteria: Vehicle Movements/Manner of Collision = 30-39

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	5	\$0	Y

WC 406 - Install Centerline Buffer (4ft): Provide centerline marking with 4 ft lateral separation on high-speed undivided highways. See Standard CLB(1)-23, CLB(2)-23. Systemic eligibility is limited to pavement marking applications and associated minor work, and it is subject to TRF approval. Include Work Code 303 – Resurfacing if 50% or more of the total project construction cost is associated with pavement resurfacing or rehabilitation items. Such projects must demonstrate crash potential through a systemic analysis and have an SII greater than 1.0 or a pavement skid score below 20.

Preventable Crash Criteria: Vehicle Movements/Manner of Collision = 30-39

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
50%	5	\$0	Y

WC 407 - Install Sidewalks: Install new sidewalks where none currently exist including the extension of existing sidewalks. Widening existing sidewalks is not eligible.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
50%	20	\$0	N

WC 408 - Add Shared Use Path: Provide a shared used path (sidepath) adjacent to roadway physically separated from motorized vehicular traffic.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: Existing & Proposed Typical Sections.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	20	\$0	N

WC 409 - Install Pedestrian Refuge Islands: Install pedestrian median or refuge island where none existed previously.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: Existing & Proposed Typical Sections; Overhead Intersection Layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
34%	25	\$0	N

WC 410 - Install Dedicated Bicycle Lanes: Restripe existing pavement to provide dedicated space for bike lanes. If widening is needed use in combination with WC's 502-504

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: Proposed typical section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
27%	4	\$0	C

WC 411 - Install Pedestrian Raised Crosswalk: Install raised pedestrian crosswalk where none currently exists.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: Overhead layout.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
30%	10	\$0	N

500 – Roadway Work & Innovative Intersections

WC 502 - Widen Lane(s): Provide additional width to the lane(s). A Refer to WC 517 if adding a through lane. Consider Standard CLB(1)-23, CLB(2)-23 for adding centerline buffer for undivided facilities.

Preventable Crash Criteria: (Vehicle Movements/Manner of Collision = 20-39) AND (Intersection Related = 4)

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
15%	20	\$0	N

WC 503 - Widen Paved Shoulder (to 5 ft. or less): Extend the existing paved shoulder to achieve desirable shoulder width. Refer to WC 504 or 537 for constructing a paved shoulder.

Preventable Crash Criteria: Roadway Related = 2, 3 or 4

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	20	\$0	N

WC 504 - Construct Paved Shoulders (1-4 ft.): Provide paved shoulders of 1- to 4-foot width where no shoulders existed previously. Refer to WC 503 or 536 for widening paved shoulders.

Preventable Crash Criteria: Roadway Related = 2, 3 or 4

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	20	\$0	N

WC 505 - Improve Vertical Alignment: Reconstruct the roadway to improve sight distance.

Preventable Crash Criteria: All

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
35%	20	\$0	N

WC 506 - Improve Horizontal Alignment: Flatten existing curves. Refer to WC 507 for providing superelevation, and WC 508 for intersection realignment.

Preventable Crash Criteria: All

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
50%	20	\$0	N

WC 507 - Increase Superelevation: Provide increased superelevation on an existing curve. Use default RF of 20% for SII calculation. If $SII < 3.0$, a project-specific RF can be calculated.

Preventable Crash Criteria: (Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 20-39)

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
20%	20	\$0	N

WC 508 - Realign Intersection: Improve an existing intersection by partial or complete relocation of the roadway(s). Refer to WC 509 for channelization, and WC 506 for improving horizontal alignments.

Preventable Crash Criteria: Intersection Related = 1 or 2

Required Documents: Proposed Overhead Intersection View, SPICE and CAP-X analyses.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
50%	10	\$0	N

WC 509 - Channelization: Install islands and/or pavement markings to control or prohibit vehicular movements. A sketch of the proposed channelization should be provided. Refer to WC 508 for intersection realignment.

Preventable Crash Criteria: All

Required Documents: Proposed Overhead View.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	10	\$0	C

WC 510 - Construct Turn Arounds: Provide turnarounds at an intersection where none existed previously.

Preventable Crash Criteria: (Intersection Related = 1 or 2) AND (Vehicle Movements/Manner of Collision = 12, 14, 18, 20, 22, 24, 26, 28, 29, or 34)

Required Documents: Overhead Intersection View.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	20	\$0	N

WC 515 - Construct Interchange: Construct vertical separation of intersecting roadways to include interconnecting ramps.

Preventable Crash Criteria: Intersection Related = 1 or 2

Required Documents: Overhead View.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
50%	30	\$0	N

WC 516 - Close Crossover: Permanently close an existing crossover.

Preventable Crash Criteria: (Part of Roadway Involved = 1) AND (Vehicle Movements/Manner of Collision = 10, 14, 20-22, 24, 26, 28-30, 34 or 38)

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
50%	20	\$0	N

WC 517 - Add Through Lane: Provide an additional travel lane.

Preventable Crash Criteria: Vehicle Movements/Manner of Collision = 20-24, 26-27, 29-30

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	20	\$0	C

WC 518 - Install Continuous Turn Lane: Provide a continuous two-way left turn lane where none existed previously.

Preventable Crash Criteria: Vehicle Movements/Manner of Collision = 20-22, 24, 26, 28-30, 34 or 38

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
30%	20	\$0	N

WC 519 - Add Left Turn Lane: Provide an exclusive left turn lane where none existed previously. The affected intersection approaches must be specified.

Preventable Crash Criteria: (Vehicle Movements/Manner of Collision = 20-22, 24, 26, 28-30, 34 or 38) AND (Intersection Related $\neq$ 4)

Required Documents: Typical Section; proposed overhead layout, SPICE and CAP-X analyses.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	20	\$0	N

WC 520 - Lengthen Left Turn Lane: Provide additional length to an existing exclusive left turn lane. Affected intersection approaches must be specified.

Preventable Crash Criteria: (Vehicle Movements/Manner of Collision = 20-22) AND (Intersection Related $\neq$ 4)

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
40%	20	\$0	N

WC 521 - Add Right Turn Lane: Provide an exclusive right turn lane where none existed previously. Affected intersection approaches must be specified.

Preventable Crash Criteria: (Vehicle Movements/Manner of Collision = 20-23, 25-27, 33 or 36) AND (Intersection Related $\neq$ 4)

Required Documents: Typical Section, proposed overhead layout, SPICE and CAP-X analyses.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	20	\$0	N

WC 522 - Lengthen Right Turn Lane: Provide additional length to an existing exclusive right turn lane. Affected intersection approaches must be specified.

Preventable Crash Criteria: (Vehicle Movements/Manner of Collision = 20-22) AND (Intersection Related $\neq$ 4)

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
30%	20	\$0	N

WC 523 - Construct Pedestrian Over/Under Pass: Construct a pedestrian crossover where none existed previously.

Preventable Crash Criteria: First Harmful Event = 1 or 5

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
90%	30	\$0	N

WC 524 - Increase Turning Radius: Provide an increased turning radius at an existing intersection.

Preventable Crash Criteria: (Vehicle Body Style = 87 or 91) AND [(First Harmful Event = 7) OR (Vehicle Movements/Manner of Collision = 13, 20-21, 30 or 33)]

Required Documents: Overhead Intersection View.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	10	\$0	C

WC 525 - Convert to One Way Frontage Roads: Convert two-way frontage roads to one-way operation. If a district elects to maintain two-way frontage road operation within the limits of an HSIP project, approval through Design Division will be required.

Preventable Crash Criteria: Part of Roadway Involved = 2, 3, 4

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
50%	20	\$0	C

WC 526 - Positive Offset Left-turn Lanes: Add positive offset to existing left-turn lane(s) at an intersection.

Preventable Crash Criteria: (Vehicle Movements/Manner of Collision = 20-22, 24, 26, 28-30, 34 or 38) AND (Intersection Related = 1 or 2)

Required Documents: Proposed Intersection Layout, SPICE and CAP-X analyses.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
30%	20	\$0	N

WC 532 - Milled Edgeline Rumble Strips: Install continuous milled depressions (rumble stripes or rumble strips) along the edgeline. Stand-alone rumble strip project proposals will not be accepted.

Preventable Crash Criteria: Roadway Related = 2, 3 or 4

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
15%	10	\$0	Y

WC 533 - Profile Edgeline Markings: Install profile edgeline markings.

Stand-alone rumble strip project proposals will not be accepted.

Preventable Crash Criteria: Roadway Related = 2, 3 or 4

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
7%	5	\$0	Y

WC 534 - Raised Edgeline Rumble Strips: Install non-reflective raised traffic buttons (yellow or white) along the edgeline. Stand-alone rumble strip project proposals will not be accepted.

Preventable Crash Criteria: Roadway Related = 2, 3 or 4

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	5	\$0	Y

WC 536 - Widen Paved Shoulders (to >5 ft.): Extend the existing paved shoulder to greater than 5 ft. Refer to WC 504 or 537 for constructing a paved shoulder.

Preventable Crash Criteria: Roadway Related = 2, 3 or 4

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
30%	20	\$0	N

WC 537 - Construct Paved Shoulders (>= 5ft.): Provide paved shoulders 5 feet or greater where no shoulders existed previously. Refer to WC 503 or 536 for widening paved shoulders.

Preventable Crash Criteria: Roadway Related = 2, 3 or 4

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
40%	20	\$0	N

WC 538 - Convert 2 Lane Facility to 4 Lane Divided: Convert an existing 2-lane facility to a 4-lane divided facility.

Preventable Crash Criteria: (Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 10, 13, 14, 20, 21, 22, 24 or 30)

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
45%	20	\$0	C

WC 540 - Install Passing Lanes on 2 Lane Road: Widen roadway to install passing lanes on a 2-lane roadway where none currently exist.

Preventable Crash Criteria: (Roadway Related = 1, 2, or 3) AND (Vehicle Movements/Manner of Collision = 20-24 or 30)

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
25%	20	\$0	N

WC 541 - Provide Additional Paved Surface Width: Provide additional paved surface width with appropriate subsurface to each side of two lane, two-way roadways with existing paved surface width less than 24' to a maximum width of 28'. (Existing widths of 24+ feet in need of widening, and additional pavement width beyond 28 feet may be considered on a case-by-case basis in accordance with requirements in the Roadway Design Manual)

Preventable Crash Criteria: (Roadway Related = 2, 3, or 4) OR (Vehicle Movements/Manner of Collision = 21 or 30) OR (First Harmful Event = 10)

Required Documents: Typical Section.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
30%	20	\$0	N

WC 542 - Milled Centerline Rumble Strips: Install milled centerline rumble strips along the centerline. Stand-alone rumble strip project proposals will not be accepted.

Preventable Crash Criteria: Vehicle Movements/Manner of Collision = 30-39

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
15%	10	\$0	Y

WC 543 - Profile Centerline Markings: Install profile centerline markings and preformed thermoplastic strips along the centerline. Stand-alone centerline rumble strip project proposals will not be accepted.

Preventable Crash Criteria: Vehicle Movements/Manner of Collision = 30-39

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
7%	5	\$0	Y

WC 544 - Raised Centerline Rumble Strips: Install non-reflective raised traffic buttons (yellow or black) and preformed thermoplastic strips along the centerline. Stand-alone centerline rumble strip project proposals will not be accepted.

Preventable Crash Criteria: Vehicle Movements/Manner of Collision = 30-39

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
10%	5	\$0	Y

WC 545 - Transverse Rumble Strips: Install transverse or in-lane rumble strips in advance of a high crash incidence and special geometric location.

Preventable Crash Criteria: ALL

Required Documents: None.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
15%	10	\$0	N

WC 547 - Construct a Single-Lane Roundabout: Convert an existing intersection to a single lane roundabout design.

Preventable Crash Criteria: Intersection Related = 1 or 2

Required Documents: Overhead intersection layout, SPICE and CAP-X analyses.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
65%	20	\$0	Y

WC 550 - Reduced Conflict U-Turn (RCUT): Convert intersection to reduced conflict (previously restricted crossing) U-turn (RCUT) intersection.

Preventable Crash Criteria: Intersection Related = 1 or 2

Required Documents: Overhead intersection layout, SPICE and CAP-X analyses.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
40%	20	\$0	N

WC 551 - Median U-Turn (MUT): Convert intersection to median U-Turn (MUT) intersection that replaces direct left turns at an intersection with indirect left turns using a U-turn movement in a wide median. Refer to RDM Appendix E: Section 4

Preventable Crash Criteria: Intersection Related = 1 or 2

Required Documents: Overhead intersection layout, SPICE and CAP-X analyses.

Reduction Factor (%)	Service Life (Years)	Maintenance Cost	G-Match Eligible
30%	20	\$0	N

HSIP Work Codes Quick Reference

Work codes listed with a Reduction Factor of "TBD" require evaluation by a TRF Safety engineer.

Work Code	Description	Reduction Factor	Service Life
101	Install Warning/Guide Signs	20%	15
107	Install Traffic Signal	20%	10
107R	Install Traffic Signal (Rural)	35%	10
108	Improve Traffic Signals (Hardware)	10%	10
109	Implement Leading Pedestrian Interval (LPI) Timing	16%	10
110	Install Pedestrian Signal	34%	10
111	Install Signal Coordination or Adaptive Signal Timing (Interconnect Signals)	10%	10
113	Install Delineators	12%	5
114	Install School Zones	20%	5
115	Install Pedestrian Countdown Timer	50%	10
118	Replace Flashing Beacon with a Traffic Signal	25%	10
119	Install Overhead Signs	20%	10
122	Install Advance Warning Beacons (Intersection – Existing Warning Signs)	10%	10
123	Install Advance Warning Beacons (Curve - Warning Signs)	10%	10
124	Install Advance Warning Beacons and Signs (Intersection)	25%	10
125	Install Advance Warning Beacons and Signs (Curve)	15%	10
128	Install Advance Warning Signs (Intersection)	15%	15
130	Install Advance Warning Signs (Curve)	10%	15
131	Improve Pedestrian Signals	10%	10
132	Install Advance Warning Beacons and Signs	10%	10
133	Improve School Zone	10%	5
134	Install Advance Pedestrian Crossing Signage	25%	15
136	Install LED Flashing Chevrons (Curve)	35%	10

Work Code	Description	Reduction Factor	Service Life
137	Install Chevrons (Curve)	20%	15
138	Install Flashing Yellow Arrow	40%	10
139	Install Surface Mounted Delineators on Centerline	12%	7
140	Wrong Way Driver Warning Signs	35%	10
141	Wrong Way Driver Warning Markings	40%	5
142	Wrong Way Driver Detection Technologies	35%	5
143	Pedestrian Hybrid Beacon	30%	10
144	Install Rectangular Rapid Flashing Beacon (RRFB)	45%	10
145	Flashing Stop Beacon or LED-embedded Stop Signs	10%	10
150	Dynamic Speed Feedback Signs	5%	10
151	Variable Speed Limit (VSL)	30%	10
201	Install Median Barrier	50%	25
203	Install Raised Median	25%	20
204	Flatten Side Slope	5%	20
209	Safety Treat Fixed Objects	45%	15
217	Install Impact Attenuation System	50%	10
218	Widen Bridge	50%	30
220	Truck Parking Facilities	TBD	20
225	Pedestrian Crossing Deterrent	TBD	10
303	Resurfacing	20%	10
304	Safety Lighting (Non-Intersection)	30%	15
305	Safety Lighting (Intersection)	13%	15
401	Install Pavement Markings	20%	5
402	Install Edgeline Marking	20%	5
403	Install Pedestrian Crosswalk	10%	5
404	Install Centerline Marking	20%	5
405	Install Centerline Buffer (2ft)	20%	5

Work Code	Description	Reduction Factor	Service Life
406	Install Centerline Buffer (4ft)	50%	5
407	Install Sidewalks	50%	20
408	Add Shared Use Path	25%	20
409	Install Pedestrian Refuge Islands	34%	25
410	Install Dedicated Bicycle Lanes	27%	4
411	Install Pedestrian Raised Crosswalk	30%	10
502	Widen Lane(s)	15%	20
503	Widen Paved Shoulder (to 5 ft. or less)	20%	20
504	Construct Paved Shoulders (1-4 ft.)	25%	20
505	Improve Vertical Alignment	35%	20
506	Improve Horizontal Alignment	50%	20
507	Increase Superelevation	20%	20
508	Realign Intersection	50%	10
509	Channelization	25%	10
510	Construct Turn Arounds	25%	20
515	Construct Interchange	50%	30
516	Close Crossover	50%	20
517	Add Through Lane	25%	20
518	Install Continuous Turn Lane	30%	20
519	Add Left Turn Lane	25%	20
520	Lengthen Left Turn Lane	40%	20
521	Add Right Turn Lane	25%	20
522	Lengthen Right Turn Lane	30%	20
523	Construct Pedestrian Over/Under Pass	90%	30
524	Increase Turning Radius	10%	10
525	Convert to One Way Frontage Roads	50%	20
526	Positive Offset Left-turn Lanes	30%	20

Work Code	Description	Reduction Factor	Service Life
532	Milled Edgeline Rumble Strips	15%	10
533	Profile Edgeline Markings	7%	5
534	Raised Edgeline Rumble Strips	10%	5
536	Widen Paved Shoulders (to >5 ft.)	30%	20
537	Construct Paved Shoulders ($\geq$ 5ft.)	40%	20
538	Convert 2 Lane Facility to 4 Lane Divided	45%	20
540	Install Passing Lanes on 2 Lane Road	25%	20
541	Provide Additional Paved Surface Width	30%	20
542	Milled Centerline Rumble Strips	15%	10
543	Profile Centerline Markings	7%	5
544	Raised Centerline Rumble Strips	10%	5
545	Transverse Rumble Strips	15%	10
547	Construct a Single-Lane Roundabout	65%	20
550	Reduced Conflict U-Turn (RCUT)	40%	20
551	Median U-Turn (MUT)	30%	20

HSIP Work Code Combinations in MicroStrategy (CRIS)

WC Combo	Description	Reduction Factor	Service Life
101, 136, 533, 543	Install Warning/Guide Signs, Profile Edgeline Markings, Install LED Flashing Chevrons (Curve), Profile Centerline Markings	30%	15
101, 137, 401	Install Warning/Guide Signs, Install Pavement Markings, Install Chevrons (Curve)	20%	15
101, 401	Install Warning/Guide Signs, Install Pavement Markings	20%	15
107, 111	Install Traffic Signal, Install Signal Coordination or Adaptive Signal Timing (Interconnect Signals)	15%	10
107, 122	Install Traffic Signal, Install Advance Warning Beacons (Intersection - Existing Warning Signs)	15%	10
107, 124	Install Traffic Signal, Install Advance Warning Beacons and Signs (Intersection)	23%	10
107, 124, 138	Install Traffic Signal, Install Flashing Yellow Arrow, Install Advance Warning Beacons and Signs (Intersection)	26%	10
107, 128	Install Traffic Signal, Install Advance Warning Signs (Intersection)	18%	15
107, 203, 403	Install Traffic Signal, Install Pedestrian Crosswalk, Install Raised Median	21%	20
107, 305	Install Traffic Signal, Safety Lighting (Intersection)	18%	15
107, 519	Install Traffic Signal, Add Left Turn Lane	21%	20
107, 521	Install Traffic Signal, Add Right Turn Lane	21%	20
108, 110, 407	Improve Traffic Signals (Hardware), Install Sidewalks, Install Pedestrian Signal	11%	20
108, 111	Improve Traffic Signals (Hardware), Install Signal Coordination or Adaptive Signal Timing (Interconnect Signals)	10%	10
108, 111, 122	Improve Traffic Signals (Hardware), Install Advance Warning Beacons (Intersection - Existing Warning Signs), Install Signal Coordination or Adaptive Signal Timing (Interconnect Signals)	10%	10

WC Combo	Description	Reduction Factor	Service Life
108, 111, 138	Improve Traffic Signals (Hardware), Install Flashing Yellow Arrow, Install Signal Coordination or Adaptive Signal Timing (Interconnect Signals)	20%	10
108, 111, 203	Improve Traffic Signals (Hardware), Install Raised Median, Install Signal Coordination or Adaptive Signal Timing (Interconnect Signals)	18%	20
108, 111, 305	Improve Traffic Signals (Hardware), Safety Lighting (Intersection), Install Signal Coordination or Adaptive Signal Timing (Interconnect Signals)	10%	15
108, 111, 403	Improve Traffic Signals (Hardware), Install Pedestrian Crosswalk, Install Signal Coordination or Adaptive Signal Timing (Interconnect Signals)	10%	10
108, 113, 131, 305	Improve Traffic Signals (Hardware), Improve Pedestrian Signals, Install Delineators, Safety Lighting (Intersection)	11%	15
108, 122, 138	Improve Traffic Signals (Hardware), Install Flashing Yellow Arrow, Install Advance Warning Beacons (Intersection - Existing Warning Signs)	20%	10
108, 124	Improve Traffic Signals (Hardware), Install Advance Warning Beacons and Signs (Intersection)	18%	10
108, 128	Improve Traffic Signals (Hardware), Install Advance Warning Signs (Intersection)	13%	15
108, 128, 305	Improve Traffic Signals (Hardware), Safety Lighting (Intersection), Install Advance Warning Signs (Intersection)	13%	15
108, 128, 403	Improve Traffic Signals (Hardware), Install Pedestrian Crosswalk, Install Advance Warning Signs (Intersection)	13%	15
108, 131	Improve Traffic Signals (Hardware), Improve Pedestrian Signals	10%	10
108, 131, 138	Improve Traffic Signals (Hardware), Install Flashing Yellow Arrow, Improve Pedestrian Signals	25%	10
108, 131, 305	Improve Traffic Signals (Hardware), Safety Lighting (Intersection), Improve Pedestrian Signals	11%	15

WC Combo	Description	Reduction Factor	Service Life
108, 131, 305, 407	Improve Traffic Signals (Hardware), Safety Lighting (Intersection), Improve Pedestrian Signals, Install Sidewalks	11%	20
108, 131, 403	Improve Traffic Signals (Hardware), Install Pedestrian Crosswalk, Improve Pedestrian Signals	10%	10
108, 131, 407	Improve Traffic Signals (Hardware), Install Sidewalks, Improve Pedestrian Signals	11%	20
108, 138	Improve Traffic Signals (Hardware), Install Flashing Yellow Arrow	24%	10
108, 138, 305	Improve Traffic Signals (Hardware), Safety Lighting (Intersection), Install Flashing Yellow Arrow	23%	15
108, 138, 407	Improve Traffic Signals (Hardware), Install Sidewalks, Install Flashing Yellow Arrow	26%	20
108, 138, 521	Improve Traffic Signals (Hardware), Add Right Turn Lane, Install Flashing Yellow Arrow	29%	20
108, 203	Improve Traffic Signals (Hardware), Install Raised Median	20%	20
108, 203, 305	Improve Traffic Signals (Hardware), Safety Lighting (Intersection), Install Raised Median	20%	20
108, 305	Improve Traffic Signals (Hardware), Safety Lighting (Intersection)	11%	15
108, 401, 403	Improve Traffic Signals (Hardware), Install Pedestrian Crosswalk, Install Pavement Markings	15%	10
108, 403	Improve Traffic Signals (Hardware), Install Pedestrian Crosswalk	10%	10
108, 509	Improve Traffic Signals (Hardware), Channelization	17%	10
108, 517, 518	Improve Traffic Signals (Hardware), Install Continuous Turn Lane, Add Through Lane	21%	20
108, 519	Improve Traffic Signals (Hardware), Add Left Turn Lane	18%	20
108, 519, 521	Improve Traffic Signals (Hardware), Add Right Turn Lane, Add Left Turn Lane	21%	20

WC Combo	Description	Reduction Factor	Service Life
108, 520, 522	Improve Traffic Signals (Hardware), Lengthen Right Turn Lane, Lengthen Left Turn Lane	23%	20
108, 521	Improve Traffic Signals (Hardware), Add Right Turn Lane	13%	20
110, 403	Install Pedestrian Signal, Install Pedestrian Crosswalk	34%	10
111, 138	Install Signal Coordination or Adaptive Signal Timing (Interconnect Signals), Install Flashing Yellow Arrow	21%	10
111, 518	Install Signal Coordination or Adaptive Signal Timing (Interconnect Signals), Install Continuous Turn Lane	16%	20
111, 519	Install Signal Coordination or Adaptive Signal Timing (Interconnect Signals), Add Left Turn Lane	14%	20
113, 533	Install Delineators, Profile Edgeline Markings	8%	5
122, 305	Install Advance Warning Beacons (Intersection - Existing Warning Signs), Safety Lighting (Intersection)	10%	15
122, 519	Install Advance Warning Beacons (Intersection - Existing Warning Signs), Add Left Turn Lane	14%	20
123, 136	Install Advance Warning Beacons (Curve - Existing Warning Signs), Install LED Flashing Chevrons (Curve)	35%	10
123, 136, 537	Install Advance Warning Beacons (Curve - Existing Warning Signs), Construct Paved Shoulders ($\geq$ 5ft.), Install LED Flashing Chevrons (Curve)	34%	20
123, 137	Install Advance Warning Beacons (Curve - Existing Warning Signs), Install Chevrons (Curve)	20%	15
123, 137, 533, 543	Install Advance Warning Beacons (Curve - Existing Warning Signs), Profile Edgeline Markings, Install Chevrons (Curve), Profile Centerline Markings	18%	15
123, 401	Install Advance Warning Beacons (Curve - Existing Warning Signs), Install Pavement Markings	15%	10
123, 533	Install Advance Warning Beacons (Curve - Existing Warning Signs), Profile Edgeline Markings	9%	10

WC Combo	Description	Reduction Factor	Service Life
123, 533, 543	Install Advance Warning Beacons (Curve - Existing Warning Signs), Profile Centerline Markings, Profile Edgeline Markings	10%	10
123, 543	Install Advance Warning Beacons (Curve - Existing Warning Signs), Profile Centerline Markings	10%	10
124, 145	Install Advance Warning Beacons and Signs (Intersection), Flashing Stop Beacon or LED-embedded Stop Signs	19%	10
124, 305	Install Advance Warning Beacons and Signs (Intersection), Safety Lighting (Intersection)	23%	15
124, 401, 545	Install Advance Warning Beacons and Signs (Intersection), Transverse Rumble Strips, Install Pavement Markings	17%	10
125, 136	Install Advance Warning Beacons and Signs (Curve), Install LED Flashing Chevrons (Curve)	35%	10
125, 136, 533	Install Advance Warning Beacons and Signs (Curve), Profile Edgeline Markings, Install LED Flashing Chevrons (Curve)	31%	10
125, 137	Install Advance Warning Beacons and Signs (Curve), Install Chevrons (Curve)	20%	15
125, 137, 402	Install Advance Warning Beacons and Signs (Curve), Install Edgeline Marking, Install Chevrons (Curve)	20%	15
128, 145, 305	Install Advance Warning Signs (Intersection), Safety Lighting (Intersection), Flashing Stop Beacon or LED-embedded Stop Signs	13%	15
128, 305	Install Advance Warning Signs (Intersection), Safety Lighting (Intersection)	15%	15
128, 519	Install Advance Warning Signs (Intersection), Add Left Turn Lane	18%	20
130, 136	Install Advance Warning Signs (Curve), Install LED Flashing Chevrons (Curve)	35%	15

WC Combo	Description	Reduction Factor	Service Life
130, 136, 533	Install Advance Warning Signs (Curve), Profile Edgeline Markings, Install LED Flashing Chevrons (Curve)	30%	15
130, 137	Install Advance Warning Signs (Curve), Install Chevrons (Curve)	20%	15
130, 137, 304	Install Advance Warning Signs (Curve), Safety Lighting (Non-Intersection), Install Chevrons (Curve)	19%	15
131, 403	Improve Pedestrian Signals, Install Pedestrian Crosswalk	10%	10
131, 403, 407	Improve Pedestrian Signals, Install Sidewalks, Install Pedestrian Crosswalk	37%	20
131, 407	Improve Pedestrian Signals, Install Sidewalks	40%	20
131, 521	Improve Pedestrian Signals, Add Right Turn Lane	24%	20
132, 133, 203	Install Advance Warning Beacons and Signs, Install Raised Median, Improve School Zone	13%	20
133, 407	Improve School Zone, Install Sidewalks	10%	20
136, 533	Install LED Flashing Chevrons (Curve), Profile Edgeline Markings	29%	10
136, 533, 543	Install LED Flashing Chevrons (Curve), Profile Centerline Markings, Profile Edgeline Markings	31%	10
136, 542	Install LED Flashing Chevrons (Curve), Milled Centerline Rumble Strips	34%	10
137, 304	Install Chevrons (Curve), Safety Lighting (Non-Intersection)	23%	15
137, 503, 507	Install Chevrons (Curve), Increase Superelevation, Widen Paved Shoulder (to 5 ft. or less)	20%	20
137, 504	Install Chevrons (Curve), Construct Paved Shoulders (1-4 ft.)	20%	20
137, 507	Install Chevrons (Curve), Increase Superelevation	20%	20
137, 533, 543	Install Chevrons (Curve), Profile Centerline Markings, Profile Edgeline Markings	18%	15
137, 541	Install Chevrons (Curve), Provide Additional Paved Surface Width	22%	20

WC Combo	Description	Reduction Factor	Service Life
137, 543	Install Chevrons (Curve), Profile Centerline Markings	20%	15
140, 141, 142	Wrong Way Driver Warning Signs, Wrong Way Driver Detection Technologies, Wrong Way Driver Warning Markings	40%	10
143, 403, 407	Pedestrian Hybrid Beacon, Install Sidewalks, Install Pedestrian Crosswalk	40%	20
201, 204	Install Median Barrier, Flatten Side Slope	46%	25
201, 303	Install Median Barrier, Resurfacing	30%	25
201, 303, 532	Install Median Barrier, Milled Edgeline Rumble Strips, Resurfacing	21%	25
201, 304	Install Median Barrier, Safety Lighting (Non-Intersection)	33%	25
201, 516	Install Median Barrier, Close Crossover	50%	25
201, 532	Install Median Barrier, Milled Edgeline Rumble Strips	20%	25
201, 533	Install Median Barrier, Profile Edgeline Markings	20%	25
203, 304, 407	Install Raised Median, Install Sidewalks, Safety Lighting (Non-Intersection)	27%	20
203, 407	Install Raised Median, Install Sidewalks	25%	20
203, 517	Install Raised Median, Add Through Lane	25%	20
203, 533	Install Raised Median, Profile Edgeline Markings	17%	20
203, 533, 542	Install Raised Median, Milled Centerline Rumble Strips, Profile Edgeline Markings	18%	20
203, 533, 543	Install Raised Median, Profile Centerline Markings, Profile Edgeline Markings	19%	20
209, 218	Safety Treat Fixed Objects, Widen Bridge	49%	30
209, 218, 541	Safety Treat Fixed Objects, Provide Additional Paved Surface Width, Widen Bridge	46%	30
209, 303, 503	Safety Treat Fixed Objects, Widen Paved Shoulder (to 5 ft. or less), Resurfacing	32%	20
209, 303, 504	Safety Treat Fixed Objects, Construct Paved Shoulders (1-4 ft.), Resurfacing	35%	20

WC Combo	Description	Reduction Factor	Service Life
209, 304	Safety Treat Fixed Objects, Safety Lighting (Non-Intersection)	35%	15
209, 502	Safety Treat Fixed Objects, Widen Lane(s)	25%	20
209, 502, 503	Safety Treat Fixed Objects, Widen Paved Shoulder (to 5 ft. or less), Widen Lane(s)	25%	20
209, 502, 503, 533, 543	Safety Treat Fixed Objects, Widen Paved Shoulder (to 5 ft. or less), Widen Lane(s), Profile Edgeline Markings, Profile Centerline Markings	23%	20
209, 502, 504	Safety Treat Fixed Objects, Construct Paved Shoulders (1-4 ft.), Widen Lane(s)	26%	20
209, 502, 536	Safety Treat Fixed Objects, Widen Paved Shoulders (to >5 ft.), Widen Lane(s)	26%	20
209, 503	Safety Treat Fixed Objects, Widen Paved Shoulder (to 5 ft. or less)	37%	20
209, 503, 518	Safety Treat Fixed Objects, Install Continuous Turn Lane, Widen Paved Shoulder (to 5 ft. or less)	34%	20
209, 503, 532	Safety Treat Fixed Objects, Milled Edgeline Rumble Strips, Widen Paved Shoulder (to 5 ft. or less)	28%	20
209, 503, 540	Safety Treat Fixed Objects, Install Passing Lanes on 2 Lane Road, Widen Paved Shoulder (to 5 ft. or less)	29%	20
209, 504	Safety Treat Fixed Objects, Construct Paved Shoulders (1-4 ft.)	42%	20
209, 504, 532, 542	Safety Treat Fixed Objects, Milled Edgeline Rumble Strips, Construct Paved Shoulders (1-4 ft.), Milled Centerline Rumble Strips	28%	20
209, 504, 542	Safety Treat Fixed Objects, Milled Centerline Rumble Strips, Construct Paved Shoulders (1-4 ft.)	40%	20
209, 506	Safety Treat Fixed Objects, Improve Horizontal Alignment	49%	20
209, 516	Safety Treat Fixed Objects, Close Crossover	48%	20
209, 517	Safety Treat Fixed Objects, Add Through Lane	30%	20

WC Combo	Description	Reduction Factor	Service Life
209, 518	Safety Treat Fixed Objects, Install Continuous Turn Lane	35%	20
209, 518, 536	Safety Treat Fixed Objects, Widen Paved Shoulders (to >5 ft.), Install Continuous Turn Lane	33%	20
209, 519	Safety Treat Fixed Objects, Add Left Turn Lane	31%	20
209, 519, 521	Safety Treat Fixed Objects, Add Right Turn Lane, Add Left Turn Lane	29%	20
209, 532	Safety Treat Fixed Objects, Milled Edgeline Rumble Strips	27%	15
209, 532, 541	Safety Treat Fixed Objects, Provide Additional Paved Surface Width, Milled Edgeline Rumble Strips	28%	20
209, 532, 541, 542	Safety Treat Fixed Objects, Provide Additional Paved Surface Width, Milled Edgeline Rumble Strips, Milled Centerline Rumble Strips	28%	20
209, 532, 542	Safety Treat Fixed Objects, Milled Centerline Rumble Strips, Milled Edgeline Rumble Strips	27%	15
209, 533, 541, 543	Safety Treat Fixed Objects, Provide Additional Paved Surface Width, Profile Edgeline Markings, Profile Centerline Markings	27%	20
209, 533, 542	Safety Treat Fixed Objects, Milled Centerline Rumble Strips, Profile Edgeline Markings	25%	15
209, 533, 543	Safety Treat Fixed Objects, Profile Centerline Markings, Profile Edgeline Markings	28%	15
209, 536	Safety Treat Fixed Objects, Widen Paved Shoulders (to >5 ft.)	35%	20
209, 537	Safety Treat Fixed Objects, Construct Paved Shoulders (>= 5ft.)	41%	20
209, 540	Safety Treat Fixed Objects, Install Passing Lanes on 2 Lane Road	29%	20
209, 541	Safety Treat Fixed Objects, Provide Additional Paved Surface Width	34%	20
209, 541, 542	Safety Treat Fixed Objects, Milled Centerline Rumble Strips, Provide Additional Paved Surface Width	33%	20

WC Combo	Description	Reduction Factor	Service Life
209, 542	Safety Treat Fixed Objects, Milled Centerline Rumble Strips	41%	15
303, 503, 542	Resurfacing, Milled Centerline Rumble Strips, Widen Paved Shoulder (to 5 ft. or less)	19%	20
303, 518, 533	Resurfacing, Profile Edgeline Markings, Install Continuous Turn Lane	21%	20
303, 519, 533	Resurfacing, Profile Edgeline Markings, Add Left Turn Lane	18%	20
303, 532	Resurfacing, Milled Edgeline Rumble Strips	16%	10
303, 532, 540	Resurfacing, Install Passing Lanes on 2 Lane Road, Milled Edgeline Rumble Strips	20%	20
303, 533	Resurfacing, Profile Edgeline Markings	15%	10
303, 533, 536	Resurfacing, Widen Paved Shoulders (to >5 ft.), Profile Edgeline Markings	28%	20
303, 533, 543	Resurfacing, Profile Centerline Markings, Profile Edgeline Markings	19%	10
303, 542	Resurfacing, Milled Centerline Rumble Strips	19%	10
304, 407	Safety Lighting (Non-Intersection), Install Sidewalks	30%	20
305, 515	Safety Lighting (Intersection), Construct Interchange	45%	30
305, 519	Safety Lighting (Intersection), Add Left Turn Lane	20%	20
305, 519, 521	Safety Lighting (Intersection), Add Right Turn Lane, Add Left Turn Lane	22%	20
305, 547	Safety Lighting (Intersection), Construct a Single-Lane Roundabout	45%	20
401, 532, 536	Install Pavement Markings, Widen Paved Shoulders (to >5 ft.), Milled Edgeline Rumble Strips	21%	20
403, 407	Install Pedestrian Crosswalk, Install Sidewalks	40%	20
502, 503	Widen Lane(s), Widen Paved Shoulder (to 5 ft. or less)	15%	20
502, 503, 518	Widen Lane(s), Install Continuous Turn Lane, Widen Paved Shoulder (to 5 ft. or less)	20%	20

WC Combo	Description	Reduction Factor	Service Life
502, 503, 542	Widen Lane(s), Milled Centerline Rumble Strips, Widen Paved Shoulder (to 5 ft. or less)	15%	20
502, 504	Widen Lane(s), Construct Paved Shoulders (1-4 ft.)	15%	20
502, 504, 518	Widen Lane(s), Install Continuous Turn Lane, Construct Paved Shoulders (1-4 ft.)	18%	20
502, 504, 542	Widen Lane(s), Milled Centerline Rumble Strips, Construct Paved Shoulders (1-4 ft.)	15%	20
502, 518	Widen Lane(s), Install Continuous Turn Lane	19%	20
502, 537	Widen Lane(s), Construct Paved Shoulders ($\geq$ 5ft.)	34%	20
503, 518	Widen Paved Shoulder (to 5 ft. or less), Install Continuous Turn Lane	27%	20
503, 532	Widen Paved Shoulder (to 5 ft. or less), Milled Edgeline Rumble Strips	15%	20
503, 532, 542	Widen Paved Shoulder (to 5 ft. or less), Milled Centerline Rumble Strips, Milled Edgeline Rumble Strips	15%	20
503, 540	Widen Paved Shoulder (to 5 ft. or less), Install Passing Lanes on 2 Lane Road	24%	20
503, 542	Widen Paved Shoulder (to 5 ft. or less), Milled Centerline Rumble Strips	18%	20
504, 506	Construct Paved Shoulders (1-4 ft.), Improve Horizontal Alignment	49%	20
504, 506, 507	Construct Paved Shoulders (1-4 ft.), Increase Superelevation, Improve Horizontal Alignment	45%	20
504, 507	Construct Paved Shoulders (1-4 ft.), Increase Superelevation	20%	20
504, 518	Construct Paved Shoulders (1-4 ft.), Install Continuous Turn Lane	29%	20
504, 519	Construct Paved Shoulders (1-4 ft.), Add Left Turn Lane	25%	20
505, 516	Improve Vertical Alignment, Close Crossover	38%	20
506, 507, 537	Improve Horizontal Alignment, Construct Paved Shoulders ($\geq$ 5ft.), Increase Superelevation	45%	20

WC Combo	Description	Reduction Factor	Service Life
506, 532, 540	Improve Horizontal Alignment, Install Passing Lanes on 2 Lane Road, Milled Edgeline Rumble Strips	46%	20
507, 532	Increase Superelevation, Milled Edgeline Rumble Strips	18%	20
507, 536	Increase Superelevation, Widen Paved Shoulders (to >5 ft.)	28%	20
507, 537	Increase Superelevation, Construct Paved Shoulders (>= 5ft.)	36%	20
508, 509	Realign Intersection, Channelization	49%	10
517, 518	Add Through Lane, Install Continuous Turn Lane	26%	20
517, 518, 533	Add Through Lane, Profile Edgeline Markings, Install Continuous Turn Lane	20%	20
517, 522	Add Through Lane, Lengthen Right Turn Lane	26%	20
518, 532	Install Continuous Turn Lane, Milled Edgeline Rumble Strips	20%	20
518, 532, 540	Install Continuous Turn Lane, Install Passing Lanes on 2 Lane Road, Milled Edgeline Rumble Strips	23%	20
518, 533	Install Continuous Turn Lane, Profile Edgeline Markings	16%	20
518, 533, 543	Install Continuous Turn Lane, Profile Centerline Markings, Profile Edgeline Markings	24%	20
518, 536	Install Continuous Turn Lane, Widen Paved Shoulders (to >5 ft.)	30%	20
518, 537	Install Continuous Turn Lane, Construct Paved Shoulders (>= 5ft.)	36%	20
519, 521	Add Left Turn Lane, Add Right Turn Lane	25%	20
519, 521, 524	Add Left Turn Lane, Increase Turning Radius, Add Right Turn Lane	23%	20
519, 532	Add Left Turn Lane, Milled Edgeline Rumble Strips	18%	20
532, 536, 542	Milled Edgeline Rumble Strips, Milled Centerline Rumble Strips, Widen Paved Shoulders (to >5 ft.)	25%	20
532, 537	Milled Edgeline Rumble Strips, Construct Paved Shoulders (>= 5ft.)	31%	20

WC Combo	Description	Reduction Factor	Service Life
532, 537, 542	Milled Edgeline Rumble Strips, Milled Centerline Rumble Strips, Construct Paved Shoulders (≥ 5 ft.)	33%	20
532, 540	Milled Edgeline Rumble Strips, Install Passing Lanes on 2 Lane Road	20%	20
532, 540, 542	Milled Edgeline Rumble Strips, Milled Centerline Rumble Strips, Install Passing Lanes on 2 Lane Road	21%	20
532, 541	Milled Edgeline Rumble Strips, Provide Additional Paved Surface Width	24%	20
532, 541, 542	Milled Edgeline Rumble Strips, Milled Centerline Rumble Strips, Provide Additional Paved Surface Width	25%	20
532, 542	Milled Edgeline Rumble Strips, Milled Centerline Rumble Strips	15%	10
533, 537	Profile Edgeline Markings, Construct Paved Shoulders (≥ 5 ft.)	32%	20
533, 537, 543	Profile Edgeline Markings, Profile Centerline Markings, Construct Paved Shoulders (≥ 5 ft.)	36%	20
533, 540, 543	Profile Edgeline Markings, Profile Centerline Markings, Install Passing Lanes on 2 Lane Road	21%	20
533, 541, 543	Profile Edgeline Markings, Profile Centerline Markings, Provide Additional Paved Surface Width	28%	20
533, 542	Profile Edgeline Markings, Milled Centerline Rumble Strips	7%	10
533, 543	Profile Edgeline Markings, Profile Centerline Markings	7%	5
533, 544	Profile Edgeline Markings, Raised Centerline Rumble Strips	7%	5
534, 544	Raised Edgeline Rumble Strips, Raised Centerline Rumble Strips	10%	5
541, 542	Provide Additional Paved Surface Width, Milled Centerline Rumble Strips	29%	20

Appendix C – Approved Systemic Countermeasures

Emphasis Areas:

- [Intersections](#)
- [Roadway and Lane Departure](#)
- [Speed Related](#)
- [Vulnerable Road Users](#)

Intersections

Countermeasure	Eligibility Details	Work Codes
Markings improvements at stop-controlled intersections	Overhead Signs, doubled-up signs, oversized advance signs, street name signs, stop ahead warning signs, retroreflective sheeting on signposts, sight distance improvements, and two-direction large arrow sign at T intersections, flashing or LED Stop sign, enhanced pavement markings, stop lines	119, 122, 124, 128, 145, 401
Low-cost urban intersection improvements	Includes additional low-cost items such as signal heads, protected left-turn signal phases, pavement markings, signing improvements, and signal-ahead warning signs.	108, 111, 138, 401, 510, 550
Dedicated right and left turn lanes	Particularly helpful at two-way stop-controlled intersections on high-speed mainline roadways. Includes adding right and left turn lanes at intersections along an entire corridor where none existed and lengthening existing turn lanes to provide appropriate deceleration and storage on high-speed roadways (>50mph). Include all intersection standard signing and pavement markings.	509, 519, 520, 521, 522, 526

Countermeasure	Eligibility Details	Work Codes
Signal head backplates	Signal head backplates with reflective borders.	108
Leading Pedestrian Intervals (LPI)	Eligible LPI projects will let to contract with the installation of APS.	109
Close Median Openings	Close Median Openings (Crossovers)	516, 551
Rural Intersection Improvements	Includes systemic signing and marking improvements at stop-controlled intersections (see above), safety lighting, rumble strips on stop-controlled approaches, installation of roadside flashers or embedded LEDs for stop signs on controlled approaches and "Intersection Ahead" warning signs along uncontrolled approaches. Where Overhead Flashing Beacons (OFBs) previously funded by the HSIP are removed due to the installation of roadside flashing beacons or embedded LEDs, the OFBs must have met the 10-year service life.	122, 124, 138, 510, 545, 305, 145
Two-Way Left-Turn Lanes	Two-Way Left-Turn Lanes (TWLTLs / Continuous Turn Lanes)	518
Single Lane Roundabouts	Roundabouts both in urban and rural areas	547
Reduced Conflict U-Turn	Signalized and unsignalized intersections	550

Roadway and Lane Departure

Countermeasure	Eligibility Details	Work Codes
Median Barriers	Installation of concrete or cable median barrier where no barrier of any kind currently exists, placed in the median separating opposing mainlines of traffic. The existing median width must be less than or equal to 70ft. Cable median barriers are for use only on medians greater than 25ft in width; concrete median barriers can be used on all median widths. Locations of projects will be prioritized as follows: – By roadway type (Interstate, non-Interstate freeways, other principal arterials, all others) – 0-45' median widths in urban and rural areas – Greater than 45ft median widths in rural areas – Greater than 45ft median widths in urban areas	201, 217
Roadway widening	Rural two-lane, two-way undivided highways with a paved surface width less than or equal to 24ft; Widen to 28ft or more, add rumble strips.	502, 503, 504, 536, 537, 541
Safety Lighting	Continuous safety lighting along a corridor where no lighting is present	304

Countermeasure	Eligibility Details	Work Codes
Safety Treat Fixed Objects	Remove, relocate, or safety treat fixed objects that may increase the severity risk for roadway and lane departure crashes. Segments must be identified through a systemic analysis of common roadway risk factors. Relevant crashes on the segment or adjacent segments should support the selection of the segment.	209
Enhanced Delineation on Curves	Systemically treat curves within a geographical area or roadway type, not single locations. Includes pavement markings, raised retroreflective pavement markers, post mounted delineation, larger chevrons/curve warnings signs/advisory speed plaques, or LED chevrons.	113, 123, 125, 130, 136, 137, 139, 401, 402, 404, 532, 533, 534, 542, 543, 544

Speed Related

Countermeasure	Eligibility Details	Work Codes
VSL	Installation of Variable Speed Limits. VSL installations are eligible on segments identified as priority corridors in the District Safety Plan.	150, 151
Traffic Calming Devices	Speed reduction pavement markings (See TRF Standard SRM-25), Transverse rumble strips.	401, 545

Vulnerable Road Users

Countermeasure	Eligibility Details	Work Codes
Safety lighting	Safety lighting at urban intersections where pedestrian facilities are present and no lighting is present.	305
Concrete Barrier Attachments	Installation of attachments to existing concrete barrier systems to deter prohibited pedestrian crossings on divided highways.	225
Uncontrolled crossing locations	Eligible improvements include: Crosswalk pavement markings; Lighting at the crosswalk; Raised crosswalks; Signing for parking restrictions, advance crosswalk warning signs, in street pedestrian crossing signs, and stop here for pedestrians signs; Curb extensions; Rectangular Rapid-Flashing Beacon (RRFB)* and Pedestrian Hybrid Beacon (PHB)*. Use the Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations. Follow the guidelines provided in Step 4 of the guide to select countermeasures. On page 16, Table 1, select the appropriate box based on each roadway's configuration, AADT, and speed limit for each roadway being submitted. ADA requirements should be addressed as part of any pedestrian crossing improvement project. *Implementation of PHBs must meet the TxDOT PHBs Guidance memo dated June 17, 2026 and be submitted to the DE for final approval and signature using updated Form 2108.	110, 114, 115, 131, 133, 134, 143, 144, 403, 304, 305, 203, 409, 411, 523

Countermeasure	Eligibility Details	Work Codes
Median and crossing islands in urban and suburban areas	Install medians or crossing islands where none existed previously on curb sections of urban and suburban multilane roadways where there is a significant mix of pedestrian and vehicle traffic and intermediate or high travel speeds. Includes mid-block areas, approaches to multi-lane intersections and areas near transit stops or pedestrian-focused corridors.	203, 409
Sidewalks	Install sidewalks or shared-use paths where none existed previously. Proposed location must be included as a prioritized segment (Low – Very High) identified in the District-specific summary of the Texas Pedestrian Safety Action Plan (PSAP) results. Districts should follow the recommendations of the PSAP and may utilize the TxDOT PSAP Screening tool to determine the potential risk factors for pedestrian crashes. Refer to the Table 3-10: Statewide Risk factors on pages 33 and 34 of the PSAP.	407, 408

Appendix D – Preventable Crash Decoding

The Preventable Crash Decoding Table in this section can be used to interpret the codes in the Highway Safety Improvement Program (HSIP) Work Codes Table.

Part of Roadway No. 1 Involved

Code	Value
1	Main/Proper Lane
2	Service/Frontage Road
3	Entrance/On Ramp
4	Exit/Off Ramp
5	Connector/Flyover
6	Detour
7	Transitway
8	Transitway Ramp

Roadway Related

Code	Value
1	On roadway
2	Off roadway
3	Shoulder
4	Median

Intersection Related

Code	Value
1	Intersection
2	Intersection related
3	Driveway access
4	Non-intersection

First Harmful Event - Collision of a Motor Vehicle with

Code	Value
1	Pedestrian
2	Another motor vehicle in transport
3	RR train
4	Parked car
5	Pedalcyclist
6	Animal
7	Fixed object
8	Other object
9	Other non-collision
10	Overturn (

First Harmful Event – Other than a collision

Code	Value
9	Other non-collision
10	Overturn

Vehicle Movements & Manner of Collision

Two Motor Vehicles approaching at an angle:

Code	Value
10	Both going straight
11	One straight, one backing
12	One straight, one stopped
13	One straight, one right turn
14	One straight, one left turn
15	Both right turn
16	One right turn, one left turn
17	One right turn, one stopped
18	Both left turn
19	One left turn, one stopped

Two Motor Vehicles going the same direction:

Code	Value
20	Both going straight - rear end
21	Both going straight - sideswipe
22	One straight, one stopped
23	One straight, one right turn
24	One straight, one left turn
25	Both right turn
26	One right turn, one left turn
27	One right turn, one stopped
28	Both left turn
29	One left turn, one stopped

Two Motor Vehicles going opposite direction:

Code	Value
30	Both going straight
31	One straight, one backing
32	One straight, one stopped
33	One straight, one right turn
34	One straight, one left turn
35	One backing, one stopped
36	One right turn, one left turn
37	One right turn, one stopped
38	Both left turn
39	One left turn, one stopped

Two Motor Vehicles - Other

Code	Value
40	One straight, one entering or leaving parking space
41	One right turn, one entering or leaving parking space
42	One left turn, one entering or leaving parking space

Code	Value
43	One entering or leaving parking space, one stopped
44	Both entering or leaving parking space
45	Both vehicles backing
46	All others

Object Struck

Code	Value
0	No code shown is applicable
1	Vehicle overturned
2	Vehicle hit hole in road
3	Vehicle jackknifed
4	Person fell or jumped from vehicle
9	Vehicle hit train on tracks parallel to road - no crossing
10	Vehicle hit train moving forward
11	Vehicle hit train backing
12	Vehicle hit train standing still
13	Vehicle hit train - action unknown
20	Vehicle hit highway sign
21	Vehicle hit curb
22	Vehicle hit culvert - headwall
23	Vehicle hit guardrail
24	Vehicle hit railroad signal pole or post
25	Vehicle hit railroad crossing gates
26	Vehicle hit traffic signal pole or post
27	Vehicle hit overhead signal light, wires, sign, etc.
28	Vehicle hit work zone barricade, cones, signs or material
29	Vehicle hit luminaire pole
30	Vehicle hit utility pole
31	Vehicle hit mailbox
32	Vehicle hit tree or shrub
33	Vehicle hit fence

Code	Value
34	Vehicle hit house, building or building fixture
35	Vehicle hit commercial sign
36	Vehicle hit other fixed object
37	Vehicle hit bus stop structure
38	Vehicle hit work zone machinery or stockpiled materials
39	Vehicle hit median barrier
40	Vehicle hit end of bridge (abutment or rail end)
41	Vehicle hit side of bridge (bridge rail)
42	Vehicle hit pier or support at underpass, tunnel or overhead sign bridge
43	Vehicle hit top of underpass or tunnel
44	Vehicle hit bridge crossing gate
45	Vehicle hit attenuation device
49	Vehicle hit by falling/blowing rocks from a truck
50	Vehicle hit fallen trees or debris on road
51	Vehicle hit object from another vehicle in road
52	Vehicle hit previously wrecked vehicle
53	Vehicle hit toll booth
54	Vehicle hit other machinery
55	Vehicle hit other object
56	Vehicle hit concrete traffic barrier
57	Vehicle hit delineator or marker post
58	Vehicle hit retaining wall
59	Vehicle hit HOV lane gate
60	Vehicle hit guard post
61	Fire hydrant
62	Ditch (long narrow excavation dug in earth)
63	Embankment (a raised strip of land or berm)
64	Not Applicable
65	Not Reported

Bridge Detail

Code	Value
1	Vehicle retained on bridge or overpass
2	Vehicle went through rail
3	Vehicle went over rail
4	Crash involved underpass
5	Vehicle went between parallel structures
6	Structure not hit
7	Result Unknown
8	Not Applicable
9	Not Reported

Other Factors

Code	Value
0	No code shown is applicable
1	Lost control or skidded (icy or slick road, etc.)
2	Passenger interfered with driver
3	Attention diverted from driving (delayed perception or lack of alertness)
4	Open door or object projecting from vehicle
5	Foot slipped off clutch or brake
6	Gusty winds
7	Vehicle passing or attempting to pass on left
8	Vehicle passing or attempting to pass on right
9	Vehicle changing lanes
10	One car parked improper location
11	One car forward from parking
12	One car backward from parking
13	One car entering driveway
14	One car leaving driveway
54	Not Applicable
55	Not Reported

Code	Value
56	Road rage

Vision obstructed by

Code	Value
16	Standing or parked vehicle
17	Moving vehicle
18	Embankment or ledge
19	Commercial sign
20	Highway sign
21	Headlight or sun glare
22	Hillcrest
23	Trees, shrubs, weeds, etc.
24	Other visual obstructions

Vehicle swerved or veered from intended course:

Code	Value
25	Reason not specified
26	For surface or visibility
27	For officer, watchman, flagman, or traffic control device (unable to stop, etc.)
28	Avoiding pedestrian, pedal cyclist, etc. in road
29	Avoiding animal in road
30	Avoiding object in road
31	Avoiding vehicle stopped or moving slowly in traffic lane
32	Avoiding vehicle entering road
33	Avoiding vehicle from opposite direction in wrong lane
34	Avoiding previous crash
35	Avoiding vehicle passing, changing lanes
16	Standing or parked vehicle

Vehicle slowing, stopping, or stopped on road:

Code	Value
36	Reason not specified
37	Because of surface or visibility
38	For officer, watchman, flagman, or traffic control device
39	For pedestrian, pedalcyclist, etc. in road
40	For animal in road
41	For object in road
42	For traffic
43	To avoid vehicle entering road
44	To avoid vehicle from opposite direction in wrong lane
45	To avoid previous crash
46	To make right turn
47	To make left turn
25	Reason not specified

School bus related crash

Code	Value
48	School bus related crash

Construction Related

Code	Value
49	Within posted road construction zone (not related to crash)
50	Within posted road construction zone (related to crash)
51	In other construction maintenance area (not related to crash)
52	In other construction maintenance area (related to crash)

Beach Related

Code	Value
53	Crash occurred on a beach

Lighting Condition

Code	Value
0	Unknown
1	Daylight
2	Dawn
3	Darkness - not lighted
4	Darkness - lighted
5	Dusk
6	Darkness, unknown lighting
8	Other

Surface Condition

Code	Value
0	Unknown
1	Dry
2	Wet
3	Standing Water
4	Snow/Icy
5	Slush
6	Ice
7	Muddy
8	Other
9	Snow
10	Sand, Mud, Dirt
0	Unknown

Vehicle Body Style

Code	Value
0	Unknown
87	Truck - tractor
91	Semitrailer

Appendix E – Preventable Crash (PC) Criteria By Work Code

PC Work Codes 100 Series

Work Code	Condition
101 Install Warning / Guide Signs	ALL
107 Install Traffic Signals	Intersection Related = 1 Intersection OR 2 Intersection Related AND Vehicle Movements/Manner of Collision = 10-19 Two Vehicles, Angle Crash OR 20-29 Two Vehicles, Same Direction Crash OR 30-39 Two Vehicles, Opposite Direction Crash OR Object Struck = 21 Curb OR 26 Traffic Signal Pole/Post OR 27 overhead signal light, wires, sign, etc OR 55 Other object OR First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
108 Improve Traffic Signals	Intersection Related = 1 Intersection OR 2 Intersection Related AND Vehicle Movements/Manner of Collision = 10-19 Two Vehicles, Angle Crash OR 20-29 Two Vehicles, Same Direction Crash OR 30-39 Two Vehicles, Opposite Direction Crash OR Object Struck = 21 Curb OR 26 Traffic Signal Pole/Post OR 27 overhead signal light, wires, sign, etc OR 55 Other object OR First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist

Work Code	Condition
109 Implement Leading Pedestrian Interval (LPI) Timing	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
110 Install Pedestrian Signal	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
111 Interconnect Signals	ALL
113 Install Delineators	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median AND Light Condition = 2 Dawn OR 3 Dark, Not Lighted OR 4 Dark, Lighted OR 5 Dusk OR 6 Dark, Unknown Lighting
114 Install School Zones	ALL
115 Install Pedestrian Countdown Timer	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
118 Replace Flashing Beacon with a Traffic Signal	Intersection Related = 1 Intersection OR 2 Intersection Related AND Vehicle Movements/Manner of Collision = 10-19 Two Vehicles, Angle Crash OR 20-29 Two Vehicles, Same Direction Crash OR 30-39 Two Vehicles, Opposite Direction Crash OR 21 Curb OR 26 Traffic Signal Pole/Post OR 27 overhead signal light, wires, sign, etc OR Object Struck = 55 Other object OR First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
119 Install Overhead Signs	ALL
122 Install Advance Warning Signals (Intersection - Existing Warning Signs)	Intersection Related = 1 Intersection OR 2 Intersection Related

Work Code	Condition
123 Install Advance Warning Signals (Curve- Existing Warning Signs)	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 23 Two Vehicles, Same, One Straight, One Right OR 24 Two Vehicles, Same, One Straight, One Left OR 30 Two Vehicles, Opposite Straight
124 Install Advance Warning Signals and Signs (Intersection)	Intersection Related = 1 Intersection OR 2 Intersection Related
125 Install Advance Warning Signals and Signs (Curve)	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median OR Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 23 Two Vehicles, Same, One Straight, One Right OR 24 Two Vehicles, Same, One Straight, One Left OR 30 Two Vehicles, Opposite Straight
128 Install Advance Warning Signs (Intersection)	Intersection Related = 1 Intersection OR 2 Intersection Related
130 Install Advance Warning Signs (Curve)	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median OR Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 23 Two Vehicles, Same, One Straight, One Right OR 24 Two Vehicles, Same, One Straight, One Left OR 30 Two Vehicles, Opposite Straight
131 Improve Pedestrian Signals	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist

Work Code	Condition
132 Install Advance Warning Signals and Signs	ALL
133 Improve School Zones	ALL
134 Install Advance Crossing Signage	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
136 Install LED Flashing Chevrons (Curve)	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median OR Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 23 Two Vehicles, Same, One Straight, One Right OR 24 Two Vehicles, Same, One Straight, One Left OR 30 Two Vehicles, Opposite Straight
137 Install Chevrons (Curve)	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median OR Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 23 Two Vehicles, Same, One Straight, One Right OR 24 Two Vehicles, Same, One Straight, One Left OR 30 Two Vehicles, Opposite Straight
138 Install Flashing Yellow Arrow	Intersection Related = 1 Intersection OR 2 Intersection Related AND Vehicle Movements/Manner of Collision = 13-19 Two vehicles angle crash OR 25 Two vehicles, Same, Both Right OR 27 Two vehicles, Same, One Right, One Stopped OR 28 Two vehicles, Same, Both Left OR 29 Two Vehicles, Straight, One Left, One Stopped OR 34 Two Vehicles, Opposite, One Straight, One Left OR 36 Two Vehicles, Opposite,

Work Code	Condition
138 - Continued from previous page	One Right, One Left OR 38 Two Vehicles, Opposite, Both Left OR First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
139 Install Surface Mounted Delineators on Centerline	Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 30-39 Two Vehicles, Opposite Direction Crash
140 Wrong Way Driver Warning Signs	Contributing Factor = 71 Wrong Way - One Way Road
141 Wrong Way Driver Warning Markings	Contributing Factor = 71 Wrong Way - One Way Road
142 Wrong Way Driver Detection Technologies	Contributing Factor = 71 Wrong Way - One Way Road
143 Pedestrian Hybrid Beacon	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
144 Install Rectangular Rapid Flashing Beacon (RRFB)	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
145 Flashing or LED Stop Sign	Intersection Related = 1 Intersection OR 2 Intersection Related AND Vehicle Movements/Manner of Collision = 10-19 Two Vehicles, Angle Crash OR 20-29 Two Vehicles, Same Direction Crash OR 30-39 Two Vehicles, Opposite Direction Crash OR Object Struck = 20 highway sign 21 Curb 55 Other object OR First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
150 Dynamic Speed Feedback Sign	Part of Roadway = 1 Mainlane

Work Code	Condition
151 Variable Speed Limit (VSL)	Part of Roadway = 1 Mainlane OR 3 On ramp 4 Off Ramp

PC Work Codes 200 – 300 Series

Work Code	Condition
201 Install Median Barrier	Vehicle Movements/Manner of Collision = 30-39 Two Vehicles, Opposite Direction Crash

203 Install Raised Median	Part of Roadway = 1 Mainlane AND Vehicle Movements/Manner of Collision = 10 Two Vehicles, Angle, Straight OR 14 Two Vehicles, Angle, One Straight, One Left OR 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, One Straight, One Stopped OR 24 Two Vehicles, One Straight, One Left OR 26 Two Vehicles, One Right, One Left OR 28 Two Vehicles, Straight, Both Left OR 29 Two Vehicles, Straight, One Left, One Stopped OR 30 Two Vehicles, Opposite Straight OR 34 Two Vehicles, Opposite, One Straight, One Left OR 36 Two Vehicles, Opposite, One Right, One Left OR 38 Two Vehicles, Opposite, Both Left
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204 Flatten Side Slope	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median
209 Safety Treat Fixed Objects	Object Struck = 20 Highway Sign OR 22 Culvert OR 24 RR Signal Pole OR 25 RR Crossing Gate OR 26 Traffic Signal Pole/Post OR 29 Luminaire Pole OR 30 Utility Pole OR 31 Mailbox OR 32 Tree/Shrub OR 36 Other Fixed Object OR 40 Bridge End OR 41 Bridge Side OR 42 Pier/Support at Underpass OR 58 Retaining Wall OR 61 Fire hydrant OR 62 Ditch OR 63 Embankment
217 Install Impact Attenuation System	Object Struck = 20 Highway Sign OR 30 Utility Pole OR 40 Bridge End OR 42 Pier/Support at Underpass

Work Code	Condition
218 Widen Bridge	Bridge Detail = 1-6 Vehicle Interaction with Bridge Structure AND [Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 30 Two Vehicles, Opposite Straight]
225 Pedestrian Crossing Deterrent	First Harmful Event = 1 Pedestrian
303 Resurfacing	Surface Condition = 2 Wet OR 3 Standing Water OR 4 Snow/Icy OR 5 Slush OR 6 Ice OR 9 Snow AND Skid Value less than 20
304 Safety Lighting	Light Condition = 2 Dawn OR 3 Dark, Not Lighted OR 4 Dark, Lighted OR 5 Dusk OR 6 Dark, Unknown Lighting
305 Safety Lighting at Intersection	Light Condition = 2 Dawn OR 3 Dark, Not Lighted OR 4 Dark, Lighted OR 5 Dusk OR 6 Dark, Unknown Lighting AND Intersection Related = 1 Intersection OR 2 Intersection Related

PC Work Codes 400 – 500 Series

Work Code	Condition
401 Install Pavement Markings	ALL
402 Install Edgeline Markings	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median
403 Install Pedestrian Crosswalk	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist

Work Code	Condition
404 Install Centerline Striping	Vehicle Movements/Manner of Collision = 30-39 Two Vehicles, Opposite Direction Crash
405 Install Centerline Buffer (2 ft)	Vehicle Movements/Manner of Collision = 30-39 Two Vehicles, Opposite Direction Crash
406 Install Centerline Buffer (4 ft)	Vehicle Movements/Manner of Collision = 30-39 Two Vehicles, Opposite Direction Crash
407 Install Sidewalks	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
408 Add Shared Use Path	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
409 Install Pedestrian Refuge Islands	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
410 Install Dedicated Bicycle Lanes	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
411 Install Pedestrian Raised Crosswalk	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
502 Widen Lanes	Intersection Related = 4 Non-Intersection AND Vehicle Movements/Manner of Collision = 20-29 Two Vehicles, Same Direction Crash OR 30-39 Two Vehicles, Opposite Direction Crash
503 Widen Paved Shoulder (to 5 ft. or less)	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median
504 Construct Paved Shoulders (1-4 ft.)	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median

Work Code	Condition
505 Improve Vertical Alignment	ALL
506 Improve Horizontal Alignment	ALL
507 Increase Superelevation	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median OR Vehicle Movements/Manner of Collision = 20-29 Two Vehicles, Same Direction Crash OR 30-39 Two Vehicles, Opposite Direction Crash
508 Realign Intersection	Intersection Related = 1 Intersection OR 2 Intersection Related
509 Channelization	ALL
510 Construct Turn-Arounds	Intersection Related = 1 Intersection OR 2 Intersection Related AND Vehicle Movements/Manner of Collision = 12 Two Vehicles, Angle, One Straight, One Stopped OR 14 Two Vehicles, Angle, One Straight, One Left OR 18 Two Vehicles, Angle, Both Left OR 20 Two Vehicles, Same Straight, Rear End OR 22 Two Vehicles, Same, One Straight, One Stopped OR 24 Two Vehicles, Same, One Straight, One Left OR 26 Two Vehicles, Same, One Right, One Left OR 28 Two Vehicles, Same, Both Left OR 29 Two Vehicles, Same, One Left, One Stopped OR 34 Two Vehicles, Opposite, One Straight, One Left
515 Construct Interchange	Intersection Related = 1 Intersection OR 2 Intersection Related
516 Close Crossover	Part of Roadway = 1 Mainlane AND Vehicle Movements/Manner of Collision = 10 Two Vehicles, Angle, Straight OR 14 Two Vehicles, Angle, One Straight, One Left OR 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR

Work Code	Condition
516 – Continued from previous page	22 Two Vehicles, Same, One Straight, One Stopped OR 24 Two Vehicles, Same, One Straight, One Left OR 26 Two Vehicles, Same, One Right, One Left OR 28 Two Vehicles, Same, Both Left OR 29 Two Vehicles, Same, One Left, One Stopped OR 30 Two Vehicles, Opposite Straight OR 34 Two Vehicles, Opposite, One Straight, One Left OR 38 Two Vehicles, Opposite, Both Left
517 Add Through Lane	Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 23 Two Vehicles, Same, One Straight, One Right OR 24 Two Vehicles, Same, One Straight, One Left OR 26 Two Vehicles, One Right, One Left OR 27 Two Vehicles, One Right, One Stopped OR 29 Two Vehicles, Same, One Left, One Stopped OR 30 Two Vehicles, Opposite Straight
518 Install Continuous Turn Lane	Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 24 Two Vehicles, Same, One Straight, One Left OR 26 Two Vehicles, One Right, One Left OR 28 Two Vehicles, Same, Both Left OR 29 Two Vehicles, Same, One Left, One Stopped OR 30 Two Vehicles, Opposite Straight OR 34 Two Vehicles, Opposite, One Straight, One Left OR 38 Two Vehicles, Opposite, Both Left
519 Add Left Turn Lane	Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 24 Two Vehicles, Same, One Straight, One Left OR 26 Two Vehicles, One Right, One Left OR 28 Two Vehicles, Same, Both Left OR 29 Two Vehicles, Same, One Left, One Stopped OR 30 Two Vehicles, Opposite Straight OR 34 Two Vehicles, Opposite, One Straight, One Left OR 38 Two Vehicles, Opposite, Both Left AND

Work Code	Condition
519 - Continued	Intersection Related $\neq$ 4 Non Intersection
520 Lengthen Left Turn Lane	Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped AND Intersection Related $\neq$ Non Intersection
521 Add Right Turn Lane	Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 23 Two Vehicles, Same, One Straight, One Right OR 25 Two Vehicles, Same, Both Right OR 26 Two Vehicles, One Right, One Left OR 27 Two Vehicles, One Right, One Stopped OR 33 Two Vehicles, Opposite, One Straight, One Right OR 36 Two Vehicles, Opposite, One Right, One Left AND Intersection Related $\neq$ Non Intersection
522 Lengthen Right Turn Lane	Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped AND Intersection Related $\neq$ Non Intersection
523 Construct Pedestrian Over/Underpass	First Harmful Event = 1 Pedestrian OR 5 Pedalcyclist
524 Increase Turning Radius	[Vehicle Movements/Manner of Collision = 13 Two Vehicles, Angle, One Straight, One Right OR 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 30 Two Vehicles, Opposite Straight OR 33 Two Vehicles, Opposite, One Straight, One Right OR First Harmful Event = 7 Fixed Object] AND Vehicle Body Style = 87 Truck - tractor OR 91 Semitrailer

Work Code	Condition
525 Convert to One-Way Frontage Road	Part of Roadway = 2 Service/Frontage Road OR 3 Entrance/On Ramp OR 4 Exit/Off Ramp
526 Positive Offset Left-Turn Lane	Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 24 Two Vehicles, Same, One Straight, One Left OR 26 Two Vehicles, Same, One Right, One Left OR 28 Two Vehicles, Same, Both Left OR 29 Two Vehicles, Same, One Left, One Stopped OR 30 Two Vehicles, Opposite Straight OR 34 Two Vehicles, Opposite, One Straight, One Left OR 38 Two Vehicles, Opposite, Both Left AND Intersection Related = 1 Intersection OR 2 Intersection Related
532 Milled Edgeline Rumble Strips	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median
533 Profile Edgeline Markings	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median
534 Raised Edgeline Rumble Strips	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median
536 Widen Paved Shoulder (> 5 ft)	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median
537 Construct Paved Shoulder (>= 5ft)	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median
538 Convert 2-Lane Facility to 4-Lane Divided	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median OR Vehicle Movements/Manner of Collision = 10 Two Vehicles, Angle, Straight OR 13 Two Vehicles, Angle, One Straight, One Right OR 14 Two Vehicles, Angle, One Straight, One Left OR

Work Code	Condition
538 - Continued	20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 24 Two Vehicles, Same, One Straight, One Left OR 30 Two Vehicles, Opposite Straight
540 Install Passing Lanes on 2-Lane Road (Super 2)	Roadway Related = 1 On Roadway OR 2 Off Roadway OR 3 Shoulder AND Vehicle Movements/Manner of Collision = 20 Two Vehicles, Same Straight, Rear End OR 21 Two Vehicles, Same Straight, Side Swipe OR 22 Two Vehicles, Same, One Straight, One Stopped OR 23 Two Vehicles, Same, One Straight, One Right OR 24 Two Vehicles, Same, One Straight, One Left OR 30 Two Vehicles, Opposite Straight
541 Provide Additional Paved Surface Width	Roadway Related = 2 Off Roadway OR 3 Shoulder OR 4 Median OR Vehicle Movements/Manner of Collision = 21 Two Vehicles, Same Straight, Side Swipe OR 30 Two Vehicles, Opposite Straight OR First Harmful Event = 10 Overturn
542 Milled Centerline Rumble Strips	Vehicle Movements/Manner of Collision = 30-39 Two Vehicles, Opposite Direction Crash
543 Profile Centerline Markings	Vehicle Movements/Manner of Collision = 30-39 Two Vehicles, Opposite Direction Crash
544 Raised Centerline Rumble Strips	Vehicle Movements/Manner of Collision = 30-39 Two Vehicles, Opposite Direction Crash
545 Transverse Rumble Strips	ALL
547 Construct a Roundabout	Intersection Related = 1 Intersection OR 2 Intersection Related

Work Code	Condition
550 "Restricted Crossing U-Turn (RCUT)"	Intersection Related = 1 Intersection OR 2 Intersection Related
551 Median U-Turn (MUT)	Intersection Related = 1 Intersection OR 2 Intersection Related

Appendix F – Estimating Guidance

Although HSIP project approvals occur prior to 30% PS&E, it is critical to develop a 100% bid item estimate (or as close as possible) to ensure proper funding is allocated to each project and minimize the chance of a significant cost overrun during 100% PS&E submittal.

TRF TE Safety has created a list of CSJs covering the most common types of HSIP projects. You may use the estimates and plan sets for these projects as a reference to ensure that the most complete set of applicable bid items is included in each HSIP project. [TRF SharePoint Cost Estimating Guidance](#).

To assist districts with ensuring estimates are complete, TRF has reviewed estimates that had significant cost overruns at 100% PS&E submittal, and the following **bid items were commonly overlooked** (regardless of the project type) when initial estimates are being prepared for the annual HSIP program:

Item 100 Series Earthwork & Landscape:

- 100 Prep ROW
- 104, 105 Pavement Removal
- 110 Excavation
- 132 Embankment
- 150 Blading

Item 200 & 300 Series Pavement (and related Special Specs):

Even on projects where a district has included pavement bid items on the initial estimate, the final design sometimes ends up being much more costly.

TRF may require review of pavement bid items by the District Pavement Engineer prior to project approval. If the condition of the current pavement is not known, it is recommended to request pavement core samples to determine the extent of needed rehab* or reconstruction* of existing pavement.

* within the scope of the HSIP project (e.g., add shoulders or add turn lanes).

Item 400 Series Drainage & Hydraulics:

(recommend reviewing as-builts with district hydraulics team)

- 400, 401 Backfill
- 403 Shoring
- 432 Riprap
- 462, 464, 468, 472 Modify or Reconstruct Culverts
- 466 Headwalls & Wingwalls
- 467 Safety End Treatments

Item 500 Series Miscellaneous:

- 500* Mobilization
- 502* Barricades Signs & Traffic Handling
- 662 Work Zone Pavement Markings (and other work zone items not covered under 502)
- 677 Pavement Marking Removal
- 503 (old 6001)
- Portable Changeable Message Signs
- 505 (old 6185)
- Truck Mounted Attenuators

* Please include 500 & 502 as individual bid items instead of a lump sum. When programming multiple CSJs as a single HSIP submittal, provide bid item estimates for each CSJ and include item 500 & 502 with each CSJ.

Item 506 Erosion Control:

- Sediment Control Fence
- Erosion Control Logs
- Rock Filter Dams
- Sandbags

Also consider:

- 160 Topsoil
- 161 Compost
- 162 Sodding
- 164 Seeding
- 166 Fertilizer
- 168 Vegetative Watering

Item 600 Series Traffic:

644 Small Roadside Sign Assemblies: it is also recommended to use Reflective Strips on sign posts (paid under spec 658). See also new standard D&OM(SIGN)-25.

Smart Work Zone

These are the one time use special specifications SS6307, SS6302, SS6314, SS6344, SS6303, and SS6315. There is not yet a 2024 special spec for smart work zones

2024 SS: 6069, 6016, 6090, 6105, 6158, 6097 (OTU with new OTU coming) - there is a Go / No-Go tool on the [Smart Work Zone TxDOT website](#).

Appendix G – Change Log

Date of Release	Changes
August 2023	Updated timeline to reflect 2023 Program Call dates. Updated citations relating to Confidentiality of Data. Updated Project Submission Guidelines with a discussion of Local Letting as a pilot program. Updated Project Documentation with a note to discourage contingency or “lump sum” line items in estimates. Updated Crash Costs to reflect current expected values. Updated Appendix A with additional definitions and clarifications. Updated Work Code tables to reflect current countermeasures, definitions, and preventable crash types.
August 2024	Updated timeline to reflect 2025 Program Call dates and renamed program to align with UTP Program naming conventions. Updated Guidelines document with new TxDOT template. Added Project Identification section with Targeted and Systemic Approaches Moved Calculating SII section to Targeted Approach section. Added Sidewalks and Roundabouts as a district systemic qualifying countermeasure. Added the systemic qualifying countermeasures into a table. Added Pedestrian Safety Action Plan screening tool link. Added LRSP and State TDC information. Renamed “State Systemic” to “Annual Priority” subprogram.

Date of Release	Changes
2024 Continued	Removed Instructions on how to run SII report on CRIS and linked on separate document. Removed 15% extra funding from Programming levels. Added six new VRU work codes. Added Appendix D – Estimating Guidance
August 2025	Updated timeline for 2026 program call. Added Annual Priority Approach section. Updated HSIP Project Submission Guidelines section. Work Code Updates: Removed WC 514. Added SPICE and CAP-X requirements for intersection projects in alignments with DES. Reviewed and/or Updated all Reduction Factors of all HSIP Eligible Work Codes. Updated WC title and/or description for 108, 111, 304, 305, 402, 404 . Updated Preventable Crash Codes for WC 502, 542, 543, 544. Updated the Reduction Factors for Work Code Combinations and eliminated unused WC combos. Added List of Preventable Crash Criteria by Work Code to Appendix C. November 2025 – Service life updated for 14 WC combos. If used, low SIIs were checked during 2026 reviews.

Date of Release	Changes
August 2026	Updated to meet digital accessibility guidelines. Added explanation on WC details to Appendix B. Added ICE requirements to Appendix B information. Updated preventable crash criteria to 34 single work codes and the associated work code combinations. Added Appendix C for Approved Safety Countermeasures. Added Approved Systemic Countermeasures for Centerline Buffer, Raised Pedestrian Crosswalk, and Speed Related. Added funding section on Federal Domestic Materials Program (FDMP). Added Smart Work Zones to Appendix F estimating guidance