

**Texas Department of Transportation
Highway Safety Improvement Program
(HSIP)**

Work Codes Table

Revised 10/01/2015



HSIP Work Codes Table

This document contains a current and complete listing of work codes used in the SII calculation described in Section 6 of the Texas Department of Transportation (TxDOT) *Highway Safety Improvement Program Manual*. The work codes are grouped into five categories, as shown in the following table.

Code	Item
100	<u>Signing and Signals</u>
200	<u>Roadside Obstacles and Barriers</u>
300	<u>Resurfacing and Roadway Lighting</u>
400	<u>Pavement Markings</u>
500	<u>Roadway Work</u>

Work codes are listed by number within each group.

Signing and Signals

101	Install Warning/Guide Signs	
	Definition:	Provide advance signing for unusual or unexpected roadway features where no signing existed previously.
	Reduction Factor (%):	20
	Service Life (Years):	6
	Maintenance Cost:	N/A
	Preventable Crash:	(Vehicle Movements/Manner of Collision = 20–22 or 30) OR (Roadway Related = 2, 3 or 4)

102	Install STOP Signs	
	Definition:	Provide STOP signs where none existed previously.
	Reduction Factor (%):	20
	Service Life (Years):	6
	Maintenance Cost:	N/A
	Preventable Crash:	Intersection Related = 1 or 2

104	Improve Advance Warning Signals	
	Definition:	Bring existing flasher units into conformance with current design standards. Refer to W.C. 106 for modernization of intersection flashing
	Reduction Factor (%):	To be defined.
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Will be determined from supplied diagram

105	Install Intersection Flashing Beacon	
	Definition:	Provide a flashing beacon at an intersection where a beacon did not exist previously.
	Reduction Factor (%):	35
	Service Life (Years):	10
	Maintenance Cost:	\$2,100 (overhead) \$1,300 (roadside mounted)
	Preventable Crash:	Intersection Related = 1 or 2

106	Modernize Intersection Flashing Beacon	
	Definition:	Improve an existing overhead flashing beacon, located at an intersection, to current design standards. Refer to W.C. 104 for non-intersection flashing beacon.
	Reduction Factor (%):	10
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Intersection Related = 1 or 2

107	Install Traffic Signal	
	Definition:	Provide a traffic signal where none existed previously.
	Reduction Factor (%):	35
	Service Life (Years):	10
	Maintenance Cost:	\$3,400 (Isolated) \$3,900 (Interconnected) \$5,400 (Diamond Interchange)
	Preventable Crash:	[(Intersection Related = 1 or 2) AND (Vehicle Movements/Manner of Collision = 10–39)] OR (First Harmful Event = 1 or 5)

108	Improve Traffic Signals	
	Definition:	Modernize existing intersection signals to current design standards. Refer to W.C. 106 for modernization of intersection flashing beacons.
	Reduction Factor (%):	50
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	[(Intersection Related =1 or 2) AND (Vehicle Movements/Manner of Collision = 10–39)] OR (First Harmful Event = 1 or 5)

110	Install Pedestrian Signal	
	Definition:	Provide a pedestrian signal at an existing signalized location where no pedestrian phase exists, but pedestrian crosswalks are existing. Refer to W.C. 403 for installation of pedestrian crosswalks.
	Reduction Factor (%):	15
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	First Harmful Event = 1

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111	Interconnect Signals	
	Definition:	Provide a communication link between two or more adjacent signals in a corridor. Specify all signalized intersections to be included in the interconnection.
	Reduction Factor (%):	10
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	All

112	Overheight Warning System	
	Definition:	Install electronic devices to detect overheight loads.
	Reduction Factor (%):	65
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Object Struck = 43

113	Install Delineators	
	Definition:	Install post-mounted delineators to provide guidance.
	Reduction Factor (%):	30
	Service Life (Years):	2
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2 , 3 or 4) AND (Light Condition = 3, 4 or 6)

114	Install School Zones	
	Definition:	Place school zones to include flashers, signing and/or pavement markings where none existed previously. Refer to W.C. 403 for pedestrian crosswalk markings.
	Reduction Factor (%):	20
	Service Life (Years):	5
	Maintenance Cost:	N/A
	Preventable Crash:	All

118	Replace Flashing Beacon with a Traffic Signal	
	Definition:	Replace an existing flashing beacon at an intersection with a traffic signal.
	Reduction Factor (%):	25
	Service Life (Years):	10
	Maintenance Cost:	\$1,300
	Preventable Crash:	[(Intersection Related = 1 or 2) AND (Vehicle Movements/Manner of Collision = 10–39)] OR (First Harmful Event = 1 or 5)

119	Install Overhead Guide Signs	
	Definition:	Install overhead advance signing for unusual or unexpected roadway features where no signing existed previously.
	Reduction Factor (%):	20
	Service Life (Years):	6
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 20–29

121	Convert 2-way STOP Signs to 4-way STOP Signs	
	Definition:	Provide 4-way STOP signs where 2-way STOP signs existed previously
	Reduction Factor (%):	15
	Service Life (Years):	6
	Maintenance Cost:	N/A
	Preventable Crash:	Intersection/Intersection Related = 1 or 2

122	Install Advance Intersection Warning Signals — Existing Warning Signs	
	Definition:	Provide flasher units in advance of an intersection where none previously existed. Advance warning signs already exist.
	Reduction Factor (%):	10
	Service Life (Years):	10
	Maintenance Cost:	\$1,300 per approach
	Preventable Crash:	Intersection Related = 1 or 2

123	Install Advance Curve Warning Signals – Existing Warning Signs	
	Definition:	Provide flasher units in advance of a curve where none previously existed. Advance warning signs already exist.
	Reduction Factor (%):	10
	Service Life (Years):	10
	Maintenance Cost:	\$1,300 per approach
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision= 20–24 or 30)

124	Install Advance Intersection Warning Signals and Signs	
	Definition:	Provide flasher units and signs in advance of an intersection where none previously existed.
	Reduction Factor (%):	15
	Service Life (Years):	10
	Maintenance Cost:	\$1,300 per approach
	Preventable Crash:	Intersection Related = 1 or 2

125	Install Advance Curve Warning Signals and Signs	
	Definition:	Provide flasher units and signs in advance of a curve where none previously existed.
	Reduction Factor (%):	15
	Service Life (Years):	10
	Maintenance Cost:	\$1,300 per approach
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 20–24 or 30)

128	Install Advance Intersection Warning Signs	
	Definition:	Provide signs in advance of an intersection where none previously existed.
	Reduction Factor (%):	5
	Service Life (Years):	6
	Maintenance Cost:	N/A
	Preventable Crash:	Intersection Related = 1 or 2

130	Install Advance Curve Warning Signs	
	Definition:	Provide signs in advance of a curve where none previously existed.
	Reduction Factor (%):	5
	Service Life (Years):	6
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 20–24 or 30)

131	Improve Pedestrian Signals	
	Definition:	Bring existing pedestrian signal units into conformance with current standards.
	Reduction Factor (%):	10
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	First Harmful Event = 1

132	Install Advance Warning Signals and Signs	
	Definition:	Provide flasher units and signs in advance of hazard where none previously existed.
	Reduction Factor (%):	10
	Service Life (Years):	10
	Maintenance Cost:	\$1,300 per approach
	Preventable Crash:	To be determined

133	Improve School Zone	
	Definition:	Improve an existing school zone by upgrading signing, pavement markings or signals.
	Reduction Factor (%):	5
	Service Life (Years):	5
	Maintenance Cost:	N/A
	Preventable Crash:	All

136	Install LED Flashing Chevrons on Curve	
	Definition:	Install LED flashing chevrons on curve to provide guidance.
	Reduction Factor (%):	35
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3, or 4) OR (Vehicle Movements/Manner of Collision = 20 – 24, or 30)

137	Install Chevrons on Curve	
	Definition:	Install chevrons on curve to provide guidance.
	Reduction Factor (%):	25
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3, or 4) OR (Vehicle Movements/Manner of Collision = 20 – 24, or 30)

138	Install Flashing Yellow Arrow	
	Definition:	Modernize existing intersection signals by adding a flashing yellow arrow indication. Refer to W.C. 108 for improvement of traffic signal.
	Reduction Factor (%):	15
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Intersection Related = 1 or 2) AND (Vehicle Movements/Manner of Collision = 34)

139	Install Surface Mounted Delineators on Centerline	
	Definition:	Install surface mounted delineators on centerline.
	Reduction Factor (%):	35
	Service Life (Years):	2
	Maintenance Cost:	N/A
	Preventable Crash:	(Vehicle Movements/Manner of Collision = 21 or 30) OR (Roadway Related = 2 or 3)

140	Wrong Way Driver Warning Signs	
	Definition:	Provide warning signs to warn wrong way drivers at freeway entrances.
	Reduction Factor (%):	35
	Service Life (Years):	6
	Maintenance Cost:	N/A
	Preventable Crash:	Contributing factor = 71

141	Wrong Way Driver Warning Markings	
	Definition:	Provide markings (lane direction arrows) to warn wrong way drivers at freeway entrances.
	Reduction Factor (%):	40
	Service Life (Years):	2
	Maintenance Cost:	N/A
	Preventable Crash:	Contributing factor = 71

142	Wrong Way Driver Advanced Technologies	
	Definition:	Provide advanced technologies to detect and warn wrong way drivers at freeway entrances.
	Reduction Factor (%):	TBD
	Service Life (Years):	8
	Maintenance Cost:	\$25,000
	Preventable Crash:	Contributing factor = 71

143	Pedestrian Hybrid Beacon	
	Definition:	Provide pedestrian hybrid beacon at established crosswalk.
	Reduction Factor (%):	15
	Service Life (Years):	10
	Maintenance Cost:	\$2,100
	Preventable Crash:	First Harmful Event = 1

Roadside Obstacles and Barriers

201	Install Median Barrier	
	Definition:	Construct a metal, concrete, or cable safety system median barrier where none existed previously.
	Reduction Factor (%):	55
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 30

202	Convert Median Barrier	
	Definition:	Remove an existing metal median barrier system and install a concrete or cable safety system median barrier.
	Reduction Factor (%):	40
	Service Life (Years):	15
	Maintenance Cost:	N/A
	Preventable Crash:	[(Roadway Related = 4) AND (Object Struck = 23, 39, 56, 62, or 63)] OR (Vehicle Movements/Manner of Collision = 30)

203	Install Raised Median	
	Definition:	Install a roadway divider using barrier curb
	Reduction Factor (%):	25
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Part of Roadway No. 1 Involved = 1) AND (Vehicle Movements/Manner of Collision = 10, 14, 20–22, 24, 26, 28–30, 34 or 38)

204	Flatten Side Slope	
	Definition:	Provide an embankment side slope of 6:1 or flatter.
	Reduction Factor (%):	46
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	Roadway Related = 3

205	Modernize Bridge Rail and Approach Guardrail	
	Definition:	Improve existing substandard bridge rail and approach guardrail to current design standards.
	Reduction Factor (%):	15
	Service Life (Years):	10
	Maintenance Cost:	N/A

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	Preventable Crash:	(Object Struck = 23, 39–41 or 56) OR (Bridge Detail = 2 or 3)
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206	Improve Guardrail to Design Standards	
	Definition:	Bring existing substandard guardrail into conformance with current design standards.
	Reduction Factor (%):	35
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Object Struck = 20–26, 29–36, 40–42, 56–58, 60, 62, or 63)

207	Install Protection	
	Definition:	Install guardrail or concrete traffic barrier where none existed previously. Refer to W.C. 209 if using guardrail to safety treat a fixed object or drainage structures.
	Reduction Factor (%):	30
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Object Struck = 20–26, 29–36, 40–42, 56–58, 60, 62, or 63)

209	Safety Treat Fixed Objects	
	Definition:	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.
	Reduction Factor (%):	50
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Object Struck = 20–26, 29–36, 40–42, 56–58, 60, 62, or 63)

217	Install Impact Attenuation System	
	Definition:	Provide any of a variety of impact attenuators where none existed previously.
	Reduction Factor (%):	60
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Object Struck = 20, 30, 40 or 42)

218	Widen Bridge	
	Definition:	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.)
	Reduction Factor (%):	55
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Bridge Detail is not blank) OR (Vehicle Movements/Manner of Collision = 20, 21, or 30) OR (Roadway Related = 2, 3 or 4)

219	Install Curb – Control of Access	
	Definition:	Install curb for an urban low-speed design highway where no previous curb existed and the crash history indicates a control of access problem.
	Reduction Factor (%):	10
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	[(Intersection Related = 3 or 4) AND (Vehicle Movements/Manner of Collision = 10–29, 33–44)] OR (Roadway Related = 2 or 3) OR (Object Struck = 20, 22–23, 26, 29–36) OR (First Harmful Event = 1 or 4)

220	Relocate Luminaire Supports From Median	
	Definition:	Relocate luminaire supports from median (usually narrow) and place between outside curb and R.O.W.
	Reduction Factor (%):	To be defined.
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2 or 3) OR (Object Struck = 20–26, 29–36, 40–42, 56–58, 60, 62, or 63)

222	Improve Impact Attenuation System	
	Definition:	Improve existing impact attenuators.
	Reduction Factor (%):	10
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Object Struck = 20, 30, 40 or 42)

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223	Improve Median Barrier	
	Definition:	Replace an existing median barrier with an improved barrier. Refer to W.C. 201 for installing a new median barrier where none previously existed.
	Reduction Factor (%):	15
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2 or 3) OR (Object Struck = 39)

224	Install Dragnet	
	Definition:	Install dragnet at overpass to prevent vehicles from running off embankment between bridges.
	Reduction Factor (%):	55
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 30

Resurfacing and Roadway Lighting

303	Resurfacing	
	Definition:	Provide a new roadway surface to increase pavement skid numbers on all the lanes.
	Reduction Factor (%):	30
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Surface Condition = 2, 5, 6 or 9 (Skid Value must be less than 20)

304	Safety Lighting	
	Definition:	Provide roadway lighting, either partial or continuous, where either none existed previously or major improvements are being made. Refer to W.C. 305 for intersection lighting.
	Reduction Factor (%):	40
	Service Life (Years):	15
	Maintenance Cost:	\$100 per Luminaire
	Preventable Crash:	Light Condition = 3, 4 or 6

305	Safety Lighting at Intersection	
	Definition:	Install lighting at an intersection where either none existed previously or major improvements are proposed. Refer to W.C. 304 for general lighting.
	Reduction Factor (%):	45
	Service Life (Years):	15
	Maintenance Cost:	\$100 per Luminaire
	Preventable Crash:	Light Condition = 3, 4 or 6 AND Intersection Related = 1 or 2

306	High Friction Surface Treatment on Curve	
	Definition:	Provide a high friction surface treatment on a curve.
	Reduction Factor (%):	45
	Service Life (Years):	5
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3, or 4) OR (Surface Condition = 2, 5, 6 or 9)

307	High Friction Surface Treatment at Intersection	
	Definition:	Provide a high friction surface treatment at an intersection approach.
	Reduction Factor (%):	20
	Service Life (Years):	5
	Maintenance Cost:	N/A
	Preventable Crash:	Intersection Related = 1 or 2

Pavement Markings

401	Install Pavement Markings	
	Definition:	Place complete pavement markings, excluding crosswalks, in accordance with the TMUTCD where either no markings or nonstandard markings exist. Refer to W.C. 402 for edge marking, W.C. 403 for pedestrian crosswalks, W.C. 404 for centerline striping.
	Reduction Factor (%):	20
	Service Life (Years):	2
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 21 or 30) OR (First Harmful Event = 3)

402	Install Edge Marking	
	Definition:	Place edge lines where none existed previously.
	Reduction Factor (%):	25
	Service Life (Years):	2
	Maintenance Cost:	N/A
	Preventable Crash:	Roadway Related = 2, 3 or 4

403	Install Pedestrian Crosswalk	
	Definition:	Place pedestrian crosswalk markings where none existed previously. Refer to W.C. 114 for school zones, and W.C. 110 for pedestrian signal.
	Reduction Factor (%):	10
	Service Life (Years):	2
	Maintenance Cost:	N/A
	Preventable Crash:	First Harmful Event = 1

404	Install Centerline Striping	
	Definition:	Provide centerline striping where either no markings or nonstandard markings existed previously. Refer to W.C. 401 for complete pavement markings.
	Reduction Factor (%):	65
	Service Life (Years):	2
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 30

407	Install Sidewalks	
	Definition:	Install sidewalks where none existed previously.
	Reduction Factor (%):	20
	Service Life (Years):	10
	Maintenance Cost:	N/A

Preventable Crash:	First Harmful Event = 1 or 5
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Roadway Work

501	Modernize Facility to Design Standards	
	Definition:	Provide modernization to all features within the Right-of-Way to achieve current desirable standards. This includes work such as widening the travelway, widening the shoulders, constructing shoulders, flattening the side slopes, and treating roadside obstacles.
	Reduction Factor (%):	15
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	All

502	Widen Lanes	
	Definition:	Provide additional width to the lane(s). Refer to W.C. 517 if adding a through lane.
	Reduction Factor (%):	30
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 13, 21, 23, 30 or 33)

503	Widen Paved Shoulder to 5 ft. or less	
	Definition:	Extend the existing paved shoulder to achieve desirable shoulder width. Refer to W.C. 504 or 537 for constructing a paved shoulder.
	Reduction Factor (%):	25
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (First Harmful Event = 4)

504	Construct Paved Shoulders of 1 – 4 ft.	
	Definition:	Provide paved shoulders of 1- to 4-foot width where no shoulders existed previously. Refer to W.C. 503 or 536 for widening paved shoulders.
	Reduction Factor (%):	25
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 20, 23–24 or 30) OR (First Harmful Event = 4)

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505	Improve Vertical Alignment	
	Definition:	Reconstruct the roadway to improve sight distance.
	Reduction Factor (%):	50
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 20–24, 30, 32 or 34)

506	Improve Horizontal Alignment	
	Definition:	Flatten existing curves. Refer to W.C. 507 for providing superelevation, and W.C. 508 for intersection realignment.
	Reduction Factor (%):	55
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 20–24 or 30)

507	Increase Superelevation	
	Definition:	Provide increased superelevation on an existing curve.
	Reduction Factor (%):	65
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 30)

508	Realign Intersection	
	Definition:	Improve an existing intersection by partial or complete relocation of the roadway(s). Refer to W.C. 509 for channelization, and W.C. 506 for improving horizontal alignments.
	Reduction Factor (%):	To be defined.
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Will be determined from supplied diagram

509	Channelization	
	Definition:	Install islands and/or pavement markings to control or prohibit vehicular movements. A sketch of the proposed channelization should be provided. Refer to W.C. 508 for intersection realignment.
	Reduction Factor (%):	To be defined.
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Will be determined from supplied diagram

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510	Construct Turn Arounds	
	Definition:	Provide turnarounds at an intersection where none existed previously.
	Reduction Factor (%):	40
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Intersection Related = 1 or 2) AND (Vehicle Movements/Manner of Collision = 12, 14, 18, 20, 22, 24, 26, 28, 29, or 34)

514	Grade Separation	
	Definition:	Construct vertical separation of intersecting roadways.
	Reduction Factor (%):	80
	Service Life (Years):	30
	Maintenance Cost:	N/A
	Preventable Crash:	Intersection Related = 1 or 2

515	Construct Interchange	
	Definition:	Construct vertical separation of intersecting roadways to include interconnecting ramps.
	Reduction Factor (%):	65
	Service Life (Years):	30
	Maintenance Cost:	N/A
	Preventable Crash:	Intersection Related = 1 or 2

516	Close Crossover	
	Definition:	Permanently close an existing crossover.
	Reduction Factor (%):	95
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Part of Roadway Involved = 1) AND (Vehicle Movements/Manner of Collision = 10, 14, 20–22, 24, 26, 28–30, 34 or 38)

517	Add Through Lane	
	Definition:	Provide an additional travel lane.
	Reduction Factor (%):	28
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 20–24, 26–27, 29–30

518	Install Continuous Turn Lane	
	Definition:	Provide a continuous two-way left turn lane where none existed previously.
	Reduction Factor (%):	50
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 20–22, 24, 26, 28–30, 34 or 38

519	Add Left Turn Lane	
	Definition:	Provide an exclusive left turn lane where none existed previously. The affected intersection approaches must be specified.
	Reduction Factor (%):	25
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 20–22, 24, 26, 28–30, 34 or 38 AND Intersection Related ≠ 4

520	Lengthen Left Turn Lane	
	Definition:	Provide additional length to an existing exclusive left turn lane. Affected intersection approaches must be specified.
	Reduction Factor (%):	40
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 20–22 AND Intersection Related ≠ 4

521	Add Right Turn Lane	
	Definition:	Provide an exclusive right turn lane where none existed previously. Affected intersection approaches must be specified.
	Reduction Factor (%):	25
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 20–23, 25–27, 33 or 36 AND Intersection Related ≠ 4

522	Lengthen Right Turn Lane	
	Definition:	Provide additional length to an existing exclusive right turn lane. Affected intersection approaches must be specified.
	Reduction Factor (%):	40
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 20–22 AND Intersection

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		Related ≠ 4
523	Construct Pedestrian Over / Under Pass	
	Definition:	Construct a pedestrian crossover where none existed previously.
	Reduction Factor (%):	95
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	First Harmful Event = 1
524	Increase Turning Radius	
	Definition:	Provide an increased turning radius at an existing intersection.
	Reduction Factor (%):	10
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	[(Vehicle Body Style = 87 or 91) AND (First Harmful Event = 7)] OR (Vehicle Movements/Manner of Collision = 13, 20–21, 30 or 33)
525	Convert to One-Way Frontage Roads	
	Definition:	Convert two-way frontage roads to one-way operation.
	Reduction Factor (%):	25
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Part of Roadway Involved = 2
526	Increase Vertical Clearance by Lowering Grade	
	Definition:	Increase vertical clearance of a roadway underneath an overhead obstacle by lowering the roadway grade.
	Reduction Factor (%):	50
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Object Struck = 43
527	Increase Vertical Clearance by Removing Structure	
	Definition:	Remove an overhead structure in order to increase vertical clearance.
	Reduction Factor (%):	95
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Object Struck = 43

528	Construct Median Crossover	
	Definition:	Provide crossovers in the median where none previously existed.
	Reduction Factor (%):	20
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Part of Roadway Involved = 1) AND (Vehicle Movements/Manner of Collision = 10, 14, 20–22, 24, 26, 28, 29, 34 or 38)

529	Remove Raised Median/Concrete Island	
	Definition:	Permanently remove raised median/concrete island.
	Reduction Factor (%):	35
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Object Struck = 21 or 36

532	Milled Edgeline Rumble Strips	
	Definition:	Install continuous milled depressions (rumble stripes or rumble strips) along the edgeline.
	Reduction Factor (%):	50
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 30)

533	Profile Edgeline Markings	
	Definition:	Install profile edgeline markings.
	Reduction Factor (%):	60
	Service Life (Years):	5
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 30) OR (Surface Condition = 2, 5, 6 or 9)

534	Raised Edgeline Rumble Strips	
	Definition:	Install non-reflective raised traffic buttons (yellow or white) along the edgeline.
	Reduction Factor (%):	60
	Service Life (Years):	2
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 30) OR (Surface Condition = 2, 5, 6 or 9)

535	Widen Median Opening for Storage	
	Definition:	Widen an existing opening in the median to accommodate vehicles for storage.
	Reduction Factor (%):	20
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 10, 14, 20 or 21

536	Widen Paved Shoulders to > 5 ft.	
	Definition:	Extend the existing paved shoulder to greater than 5 ft. Refer to W.C. 504 or 537 for constructing a paved shoulder.
	Reduction Factor (%):	40
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (First Harmful Event = 4)

537	Construct Paved Shoulders \geq 5 ft.	
	Definition:	Provide paved shoulders 5 feet or greater where no shoulders existed previously. Refer to W.C. 503 or 536 for widening paved shoulders.
	Reduction Factor (%):	40
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 20, 23–24 or 30) OR (First Harmful Event = 4)

538	Convert 2-Lane Facility to 4-Lane Divided	
	Definition:	Convert an existing 2-lane facility to a 4-lane divided facility.
	Reduction Factor (%):	45
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2, 3 or 4) OR (Vehicle Movements/Manner of Collision = 10, 13, 14, 20, 21, 22, 24 or 30)

539	Install Median on Undivided Facility	
	Definition:	Install a grass or flush median on an undivided facility.
	Reduction Factor (%):	40
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	Vehicle Movements/Manner of Collision = 20–24 or 30

HSIP Work Codes Table

540	Install Passing Lanes on 2-Lane Roadway	
	Definition:	Install passing lanes on a 2-lane roadway where none currently exist.
	Reduction Factor (%):	25
	Service Life (Years):	15
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2 or 3) OR (Vehicle Movements/Manner of Collision = 20–24 or 30)

541	Provide Additional Paved Surface Width	
	Definition:	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'.
	Reduction Factor (%):	30
	Service Life (Years):	20
	Maintenance Cost:	N/A
	Preventable Crash:	(Roadway Related = 2,3 or 4) OR (Vehicle Movements/Manner of Collision = 21 or 30) OR First Harmful Event = 10)

542	Milled Centerline Rumble Strips	
	Definition:	Install milled centerline rumble strips along the centerline.
	Reduction Factor (%):	35
	Service Life (Years):	10
	Maintenance Cost:	N/A
	Preventable Crash:	(Vehicle Movements/Manner of Collision = 21 or 30) OR (Roadway Related = 2 or 3)

543	Profile Centerline Markings	
	Definition:	Install profile centerline markings and preformed thermoplastic strips along the centerline.
	Reduction Factor (%):	35
	Service Life (Years):	5
	Maintenance Cost:	N/A
	Preventable Crash:	(Vehicle Movements/Manner of Collision = 21 or 30) OR (Roadway Related = 2 or 3) OR (Surface Condition = 2, 5, 6 or 9)

544	Raised Centerline Rumble Strips	
	Definition:	Install non-reflective raised traffic buttons (yellow or black) and preformed thermoplastic strips along the centerline.
	Reduction Factor (%):	35
	Service Life (Years):	2
	Maintenance Cost:	N/A
	Preventable Crash:	(Vehicle Movements/Manner of Collision = 21 or 30) OR (Roadway Related = 2 or 3) OR (Surface Condition = 2, 5, 6 or 9)

545 Transverse Rumble Strips		
Definition:	Install transverse or in-lane rumble strips in advance of a high incident and special geometric location.	
Reduction Factor (%):	15	
Service Life (Years):	5	
Maintenance Cost:	N/A	
Preventable Crash:	Intersection Related = 1 or 2	

546 Convert 4 Lane Undivided to Super 2 with Paved Shoulders		
Definition:	Convert an existing 4 lane undivided highway with no shoulders into a Super 2 highway with shoulders.	
Reduction Factor (%):	25	
Service Life (Years):	20	
Maintenance Cost:	N/A	
Preventable Crash:	(Roadway Related = 2 or 3) OR (Vehicle Movements/Manner of Collision = 21 or 30)	

547 Construct a Roundabout		
Definition:	Convert an existing intersection to a roundabout design	
Reduction Factor (%):	40	
Service Life (Years):	10	
Maintenance Cost:	N/A	
Preventable Crash:	Intersection Related = 1 or 2	