



NEVADA DEPARTMENT OF TRANSPORTATION Planning Level Crash Modification Factor (CMF) LIST*

VERSION 1.0

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For questions please contact NDOT Traffic & Safety (Itisler@dot.nv.gov)

***The NDOT Planning Level CMF List is for planning purposes only. The user of this document must ensure that most recent version is being used and that more relevant, applicable, and updated research in the area of CMFs hasn't been completed and published since that version was published by NDOT. It is important to ensure the NDOT design standards are followed during the planning process to the extent possible.**

23 U.S.C. § 409: Discovery and Admission as Evidence of Certain Reports and Surveys

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

LIST OF ACRONYMS

A	Serious Injury
AADT	Annual Average Daily Traffic
B	Minor Injury
BP	Bicycle/Pedestrian
C	Possible Injury
CFI	Continuous Flow Intersection
CMF	Crash Modification Factor
CS	Curve Segment
HAWK	High intensity Activated crossWalk
HSM	Highway Safety Manual
ICWS	Intersection Conflict Warning System
IN	Interchange
K	Fatal Injury
NDOT	Nevada Department of Transportation
PHB	Pedestrian Hybrid Beacon
RCUT	Restricted crossing U-Turn
RR	Railroad
RRFB	Rectangular Rapid Flashing Beacon
RS	Road Segment
SI	Signalized Intersection
TWLTL	Two-Way Left-Turn Lane
US	Unsignalized Intersection

NDOT Planning Level CMF List

#	Facility Type	Countermeasure Type	Countermeasure	Intersection or Roadway Type	Prior Condition	Area Type	Crash Type	Crash Severity	Nevada CMF Value	Last Updated	Notes
RS-01	Road Segment	Barriers	Install Cable Median Barrier	Freeway and Expressway	No Cable Median Barrier	All	All	Fatal and Serious Injury (K,A)	0.48	Dec-20	
RS-02	Road Segment	Barriers	Install Median Barrier	Freeway and Expressway	No Cable Median Barrier	All	All	All	1.58	Dec-20	
RS-03	Road Segment	Barriers	Install W-Beam Guardrail	Freeway and Expressway	No Roadside Barrier	All	All	All	1.06	Dec-20	
RS-04	Road Segment	Barriers	Install W-Beam Guardrail	Freeway and Expressway	No Roadside Barrier	All	All	Fatal and Serious Injury (K,A)	0.84	Dec-20	
RS-03	Road Segment	Clear Zone	Remove and Relocate Fixed Objects Outside of Clear Zone	All	-	Rural	All	All	0.65	Dec-20	
RS-04	Road Segment	Lanes	Converting 4-Lane Roadways to 3-Lane Roadways with TWLTL	Undivided	4 Lane Roadway	Urban	All	All	0.73	Dec-20	
RS-05	Road Segment	Lanes	Add TWLTL to Two-Lane Roadway	Undivided	2 Lane Roadway	All	All	All	0.72	Dec-20	
RS-06	Road Segment	Lanes	Provide Passing or Climbing Lanes	2-Lane Undivided Roadway	No Passing/Climbing Lanes	Rural	All	All	0.62	Dec-20	The HSM CMF for a rural passing lane in one direction is 0.75 and is 0.65 for a short 4 lane section or passing lanes in both directions.
RS-07	Road Segment	Lanes	Increase Rural Lane Widths While Maintaining Existing Shoulder Width	-	-	Rural	All	All	2% Crash Decrease per Foot of Lane Widening (4% Max - Up to 12' Lane Widths)	Dec-20	May only be used to increase lane widths up to 12 feet (4%). HSM can be used for more accuracy.
RS-08	Road Segment	Lanes	Decrease Rural Lane Widths While Maintaining Shoulder Width	All	12'	Rural	All	All	2% Crash Increase Per Foot of Lane Reduction (Max 4% Increase)	Dec-20	May only be used to decrease to 11 feet (2%) of 10 feet (4%)
RS-09	Road Segment	Pavement	Pavement Resurfacing	Undivided	Poor Pavement Conditions	Rural	All	All	1.02	Dec-20	
RS-10	Road Segment	Pavement	Pavement Resurfacing	All	Poor Pavement Conditions	Urban	All	All	1.00	Dec-20	
RS-11	Road Segment	Pavement	Improve Pavement Friction (Diamond Grinding)	All	-	All	All	All	0.94	Dec-20	
RS-12	Road Segment	Pavement	Improve Pavement Friction (Microsurfacing)	All	-	All	All	All	1.06	Dec-20	
RS-13	Road Segment	Pavement	Improve Pavement Friction (Chip Seal)	All	-	All	All	All	0.97	Dec-20	
RS-14	Road Segment	Roadside	Flatten Sideslope	2 Lane	1V:2H to 1V:6H	Rural	All	All	See HSM Table 13-18	Dec-20	
RS-15	Road Segment	Rumble Strips	Install Centerline Rumble Strips	Undivided	No Centerline Rumble Strips	Rural	All	All	0.90	Dec-20	
RS-16	Road Segment	Rumble Strips	Install Edgeline or Shoulder Rumble Strips	-	No Rumble Strips	Rural	All	All	0.90	Dec-20	
RS-21	Road Segment	Rumble Strips	Install Edgeline or Shoulder Rumble Strips	-	No Rumble Strips	Rural	Edgeline Related	All	0.84	Dec-20	
RS-22	Road Segment	Rumble Strips	Install Centerline and Shoulder Rumble Strips	Undivided	No Rumble Strips	Rural	All	All	0.81	Dec-20	
RS-23	Road Segment	Shoulder Treatment	Installation of Safety Edge Treatment	Principal Arterial Other	No Safety Edge	Rural	All	All	0.94	Dec-20	

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RS-24	Road Segment	Shoulder Treatment	Install Wider Edgeline (6 in)	-	4 in Wide Edgeline	Rural	All	All	0.79	Dec-20	
RS-25	Road Segment	Shoulder Treatment	Install 4 Inch Edgeline Pavement Marking	-	No Edgelines	Rural	All	All	0.87	Dec-20	
RS-26	Road Segment	Shoulder Treatment	Provide Paved shoulder	2 Lane	No Paved Shoulder	Rural	All	All	USE HSM	Dec-20	Use the HSM Prediction Models for detailed results on potential crash reduction do to changes in shoulder types and widths
RS-27	Road Segment	Shoulder Treatment	Install Shoulder Rumble Strips and Widen Shoulder	-	No Rumble Strips	Rural	All	All	0.55	Dec-20	
RS-28	Road Segment	Shoulder Treatment	Widening Paved Shoulder (Maintaining Existing Lane Width)	Undivided	Paved Shoulder	Rural	All	All	6% Crash Decrease per Foot of Shoulder Widening (30% Max - Up to 8' Shoulder)	Dec-20	Only apply a crash reduction on up to 8 foot shoulder. Can use the HSM Prediction Model for more accurate results.
US-01	Unsignalized Intersection	Geometry	Install Reduced Conflict Intersection (S-Island or J-Turn)	Stop-Controlled 3-Leg, 4-Leg	Stop-Controlled	Rural	All	All	0.66	Dec-20	
US-02	Unsignalized Intersection	Geometry	Install Reduced Conflict Intersection (S-Island or J-Turn)	Stop-Controlled 3-Leg, 4-Leg	Stop-Controlled	Rural	All	Fatal and Injury (K,A,B,C)	0.49	Dec-20	
US-03	Unsignalized Intersection	Geometry	Install Reduced Conflict Intersection (S-Island, J-Turn, or RCUT)	4-Leg	Signalized and Stop Controlled Intersections	Urban	All	All	0.81	Dec-20	
US-04	Unsignalized Intersection	Lanes	Install Left-Turn Lanes When Warranted	Stop-Controlled 3-Leg, 4-Leg	Minor Approach Stop-Controlled without Left-Turn Lanes	Rural	All	All	0.75	Dec-20	
US-05	Unsignalized Intersection	Lanes	Install Left-Turn Lanes with Positive Offset When Warranted	Stop-Controlled 4-Leg	Minor Approach Stop-Controlled without Left-Turn Lanes	Rural	All	All	0.66	Dec-20	
US-06	Unsignalized Intersection	Lanes	Install Left-Turn Lanes When Warranted	Stop-Controlled 3-Leg, 4-Leg	Minor Approach Stop-Controlled without Left-Turn Lanes	Urban	All	All	0.64	Dec-20	
US-07	Unsignalized Intersection	Lanes	Install Right-Turn Lanes When Warranted	Stop-Controlled 3-Leg, 4-Leg	Minor Approach Stop-Controlled Intersection without Right-Turn Lanes	All	All	All	0.78	Dec-20	
US-08	Unsignalized Intersection	Lanes	Install Offset Right-Turn Lanes When Warranted	Stop-Controlled 4-Leg	Intersection without Right-Turn Lanes	Rural	All	All	0.98	Dec-20	
US-09	Unsignalized Intersection	Lighting	Install Destination Lighting at Unsignalized Intersection	Stop-Controlled 3-Leg, 4-Leg	No Lighting	Rural	Nighttime	All	0.30	Dec-20	
US-10	Unsignalized Intersection	Lighting	Install Intersection Lighting	3-Leg, 4-Leg	No Lighting	Urban	Nighttime	All	0.90	Dec-20	
US-11	Unsignalized Intersection	Roundabout	Convert Non-Signalized Rural Intersection to Roundabout	3-Leg, 4-Leg	Unsignalized	Rural	All	All	0.35	Dec-20	
US-12	Unsignalized Intersection	Roundabout	Convert Non-Signalized Rural Intersection to Roundabout	3-Leg, 4-Leg	Unsignalized	Rural	All	Fatal and Injury (K,A,B,C)	0.22	Dec-20	
US-13	Unsignalized Intersection	Roundabout	Convert Non-Signalized Urban Intersection to Roundabout	3-Leg, 4-Leg	Unsignalized	Urban	All	All	0.56	Dec-20	

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US-14	Unsignalized Intersection	Roundabout	Convert Non-Signalized Urban Intersection to Roundabout	3-Leg, 4-Leg	Unsignalized	Urban	All	Fatal and Injury (K,A,B,C)	0.29	Dec-20	
US-15	Unsignalized Intersection	Rumble Strips	Install Transverse Rumble Strips on Stop-Controlled Approaches	Stop-Controlled 3-Leg, 4-Leg	No Transverse Rumble Strips	Rural	All	All	0.94	Dec-20	
US-16	Unsignalized Intersection	Sight Distance	Increase Triangle Sight Distance	Unsignalized 3-Leg, 4-Leg	-	All	All	Fatal and Injury (K,A,B,C)	0.53	Dec-20	
US-17	Unsignalized Intersection	Signs and Markings	Implementing Systemic Signing and Marking Improvements at Stop-Controlled Intersections	Unsignalized 3-Leg, 4-Leg	No Systemic Signing and Marking Improvements	Rural	All	All	0.75	Dec-20	
US-18	Unsignalized Intersection	Signs and Markings	Increase Retroreflectivity of Stop Signs	Unsignalized 3-Leg, 4-Leg	Stop Signs with Low Retroreflectivity	All	All	All	0.91	Dec-20	
US-19	Unsignalized Intersection	Traffic Control	Install Intersection Conflict Warning System (ICWS)	4-Leg	No ICWS - Stop Controlled (2-Lane and/or 4-Lane)	Rural	All	All	0.73	Dec-20	
US-20	Unsignalized Intersection	Traffic Control	Install Intersection Conflict Warning System (ICWS)	4-Leg	No ICWS - Stop Controlled (2-Lane and/or 4-Lane)	Rural	All	Fatal and Injury (K,A,B,C)	0.69	Dec-20	
US-21	Unsignalized Intersection	Traffic Control	Install a Traffic Signal When Warrants are Met	3-Leg, 4-Leg	Unsignalized Intersection	All	All	All	USE HSM	Dec-20	This is too broad to develop and use a single CMF. The HSM should be used to determine the percent change in crashes for installing a traffic signal as it can include AADT values.
US-22	Unsignalized Intersection	Traffic Control	Convert Two-Way Stop-Control to All-Way Stop-Control When Warranted	4-Leg	Two-Way Stop-Controlled	All	All	All	0.41	Dec-20	
US-23	Unsignalized Intersection	Traffic Control	Convert Two-Way Stop-Control to All-Way Stop-Control When Warranted	4-Leg	Two-Way Stop-Controlled	All	All	Fatal and Injury (K,A,B,C)	0.27	Dec-20	
US-24	Unsignalized Intersection	Traffic Control	Provide Flashing Beacons at Stop-Controlled Intersections	Stop-Controlled 4-Leg	No Flashing Beacons	All	All	All	0.95	Dec-20	
SI-01	Signalized Intersection	Geometry	Install Reduced Conflict Intersection (S-Island, J-Turn, or RCUT)	4-Leg	Signalized and Stop Controlled Intersections	Urban	All	All	0.81	Dec-20	
SI-02	Signalized Intersection	Geometry	Convert a Signalized Intersection to a CFI	4-Leg	Conventional Signalized Intersection	Urban	All	All	0.88	Dec-20	
SI-03	Signalized Intersection	Lanes	Install Left-Turn Lanes When Warranted	Signalized 4-Leg	Intersection without Left-Turn Lanes	Urban	All	All	0.76	Dec-20	
SI-04	Signalized Intersection	Lanes	Install Right-Turn Lanes When Warranted	Signalized 3-Leg, 4-Leg	Intersection without Right-Turn Lanes	All	All	All	0.94	Dec-20	
SI-05	Signalized Intersection	Roundabout	Convert Signalized Urban Intersection to Roundabout	3-Leg, 4-Leg	Signalized	Urban	All	All	0.78	Dec-20	
SI-06	Signalized Intersection	Roundabout	Convert Signalized Urban Intersection to Roundabout	3-Leg, 4-Leg	Signalized	Urban	All	Fatal and Injury (K,A,B,C)	0.34	Dec-20	

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#	Facility Type	Countermeasure Type	Countermeasure	Intersection or Roadway Type	Prior Condition	Area Type	Crash Type	Crash Severity	Nevada CMF Value	Last Updated	Notes
SI-07	Signalized Intersection	Signal Phasing	Change From Permitted-Protected to Protected on Major Approach	Signalized 3-Leg, 4-Leg or More	Permitted or Permitted-Protected Left-Turn Phase	Urban	All	All	0.58	Dec-20	
SI-08	Signalized Intersection	Signal Phasing	Add Flashing Yellow Arrow Left-Turn Phase	Signalized 3-Leg, 4-Leg	Permissive Phasing	Urban	All	All	0.85	Dec-20	
SI-09	Signalized Intersection	Signal Visibility	Convert Signal From Pedestal-Mounted to Mast Arm	Signalized	Pedestal-Mounted Traffic Signal	Urban	All	All	0.66	Dec-20	
SI-10	Signalized Intersection	Signal Visibility	Add 3-Inch Yellow Retroreflective Sheeting to Signal Backplates	Signalized	No Retroreflective Sheeting	Urban	All	All	0.85	Dec-20	
SI-11	Signalized Intersection	Signal Visibility	Add Additional Signal Heads and Upgrade to 12-Inch Lenses	Signalized 4-Leg	-	Urban	All	All	0.76	Dec-20	
SI-12	Signalized Intersection	Signal Visibility	Replace 8-Inch Signal Heads with 12-Inch	Signalized	8-Inch Signal Heads	All	All	All	0.97	Dec-20	
SI-13	Signalized Intersection	Signs and Markings	Install Advance Street Name Signs	Signalized 3-Leg, 4-Leg	No Advanced Signs at a Signalized Intersection	All	All	All	1.00	Dec-20	Under certain circumstances this can be selected with a CMF value of 0.98 when the advanced sign can easily be seen and does not cause sign clutter or is installed in a location without existing sign clutter.
SI-14	Signalized Intersection	Signs and Markings	Implement Systemic Signing and Visibility Improvements at Signalized Intersections	Signalized 3-Leg, 4-Leg	No Systemic Signing and Visibility Improvements	All	All	All	0.96	Dec-20	
CS-01	Curve Segment	Curve Treatments	Install Dynamic Speed Feedback Signs	Undivided	High Crash Curve Sites with Identified Speeding Problem	Rural	All	All	0.95	Dec-20	
CS-02	Curve Segment	Pavement	Improve Pavement Friction - High Friction Surface Treatment (HFST)	All	History of Friction Related Crashes	All	All	All	0.65	Dec-20	
CS-03	Curve Segment	Rumble Strips	Install Centerline Rumble Strips on Horizontal Curves	All-Undivided	No Centerline Rumble Strips	Rural	All	All	0.97	Dec-20	
CS-04	Curve Segment	Rumble Strips	Install Edgeline Rumble Strips at Horizontal Curve	All-Undivided	No Rumble Strips	Rural	All	All	0.77	Dec-20	
CS-05	Curve Segment	Signs and Markings	Install Chevron Signs and Curve Warning Signs When Warranted	-	No Curve Delineation Treatment	-	All	All	0.61	Dec-20	
CS-06	Curve Segment	Signs and Markings	Install Chevron Signs on Horizontal Curves	All	Curve Warning Sign but No Chevron Signs	Rural	All	All	0.77	Dec-20	
CS-07	Curve Segment	Signs and Markings	Upgrade Existing Curve Warning and Chevron Signs (Flourescent Sheeting and/or Oversized Signs)	-	-	Rural	All	All	0.88	Dec-20	
CS-08	Curve Segment	Signs and Markings	Install Edgelines on Curves	All	2-Lane Roadway without Edgeline	Rural	All	All	0.74	Dec-20	
CS-09	Curve Segment	Signs and Markings	Install In-Line Curve Warning Pavement Markings	All - Undivided	No Pavement Markings	Rural	All	All	0.63	Dec-20	

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#	Facility Type	Countermeasure Type	Countermeasure	Intersection or Roadway Type	Prior Condition	Area Type	Crash Type	Crash Severity	Nevada CMF Value	Last Updated	Notes
IN-01	Interchange	Geometry	Convert At-Grade Intersection into Grade-Separated Interchange	3-Leg, 4-Leg	At Grade Intersection	All	All	All	0.72	Dec-20	
IN-02	Interchange	Geometry	Convert Diamond Interchange to Diverging Diamond Interchange (DDI)	-	Diamond Interchange	Urban	All	All	0.62	Dec-20	
IN-03	Interchange	Metering	Install Ramp Meter	-	Freeway On-Ramp with No Ramp Meter	Urban	All	All	0.64	Dec-20	
IN-04	Interchange	Roundabout	Convert Interchange Ramp Terminals to Single-Lane Roundabout	Interchange Ramp Terminal	Interchange without Roundabouts	All	All	All	0.76	Dec-20	
RR-01	Railroad	Crossings	Upgrade Railroad Crossings Signs to Include Flashing Lights	At Grade Roadway/ Railroad Crossing	Signs Only	All	Vehicle/ Train	All	0.37	Dec-20	
RR-02	Railroad	Crossings	Install Automatic Gates at Railroad Crossings	At Grade Roadway/ Railroad Crossing	Flashing Lights and Signs	All	Vehicle/ Train	All	0.55	Dec-20	
RR-03	Railroad	Crossings	Install Automatic Gates at Railroad Crossings	At Grade Roadway/ Railroad Crossing	Signs Only	All	Vehicle/ Train	All	0.14	Dec-20	
RR-04	Railroad	Crossings	Install Railroad Crossings Signs	At Grade Roadway/ Railroad Crossing	Unprotected Crossing - Crossbuck Only Signs	All	Vehicle/ Train	All	0.72	Dec-20	
BP-01	Bicycle	Lanes	Install On-Street Bike Facility	-	No Bike Lanes	Urban	Vehicle/ Bicycle	All	0.40	Dec-20	
BP-02	Pedestrian	Crossing	Install a Pedestrian Hybrid Beacon (PHB or HAWK)	Minor Arterial	No PHB	Urban	Vehicle/ Pedestrian	All	0.40	Dec-20	
BP-03	Pedestrian	Crossing	Install RRFB	Minor Arterial	No RRFB	Urban	Vehicle/ Pedestrian	All	0.53	Dec-20	
BP-04	Pedestrian	Crossing	Install Pedestrian Countdown Timer	Signalized	No Pedestrian Countdown Timer	All	Vehicle/ Pedestrian	All	0.30	Dec-20	
BP-05	Pedestrian	Crossing	Implement Leading Pedestrian Interval	Signalized	Signalized Intersection without Leading	All	Vehicle/ Pedestrian	All	0.64	Dec-20	