



PLANNING-LEVEL CRASH REDUCTION FACTOR (CRF) LIST

Version 1.0

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Questions can be emailed to DOT-SafetyAnalysis@iowadot.us

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.

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CRF #	Existing Facility Type	Countermeasure Type	Countermeasure Name	Intersection or Roadway Type	Prior Condition	Area Type	Crash Type	Crash Severity	CRF Value
US-01	Unsignalized Intersection	Signs and Markings	Install Flashing Beacon on Existing Stop Signs	4-leg	Stop-Controlled	All	All	All	5
US-05	Unsignalized Intersection	Signs and Markings	Implement Systemic Signing and Marking Improvements	3-leg, 4-leg	Unsignalized	All	All	All	8
US-10	Unsignalized Intersection	Rumble Strips	Install Transverse Rumble Strips	3-leg, 4-leg	Stop-Controlled	Rural	All	All	13
US-20	Unsignalized Intersection	Lighting	Install Destination Lighting	3-leg, 4-leg	Stop-Controlled Intersection without Lighting	Rural	Dark Lighting Conditions	All	50
US-30	Unsignalized Intersection	Traffic Control	Convert to All-Way Stop-Controlled when Warranted	4-leg	Two-Way Stop-Controlled	All	All	All	55
US-30A	Unsignalized Intersection	Traffic Control	Convert to All-Way Stop-Controlled when Warranted	4-leg	Two-Way Stop-Controlled	All	All	Fatal and Injury (K,A,B,C)	70
US-33	Unsignalized Intersection	Traffic Control	Install Traffic Signal when Warranted	3-leg, 4-leg	Unsignalized	All	All	All	0
US-35	Unsignalized Intersection	Traffic Control	Install Intersection Conflict Warning System (ICWS)	4-leg 2-lane or 4-lane	Two-Way Stop-Controlled	Rural	All	All	25
US-35A	Unsignalized Intersection	Traffic Control	Install Intersection Conflict Warning System (ICWS)	4-leg 2-lane or 4-lane	Two-Way Stop-Controlled	Rural	All	Fatal and Injury (K,A,B,C)	30
US-40	Unsignalized Intersection	Lanes	Install Left-Turn Lane on Major Approach(es) when Warranted	3-leg, 4-leg	Minor Approach Stop-Controlled	Rural	All	All	30
US-41	Unsignalized Intersection	Lanes	Install Left-Turn Lane on Major Approach(es) when Warranted	3-leg, 4-leg	Minor Approach Stop-Controlled	Urban	All	All	35
US-42	Unsignalized Intersection	Lanes	Install Offset Left-Turn Lanes when Warranted	4-leg	Minor Approach Stop-Controlled without Left-Turn Lanes	Rural	All	All	35
US-43	Unsignalized Intersection	Lanes	Install Right-Turn Lanes on Major Approaches when Warranted	3-leg, 4-leg	Minor Approach Stop-Controlled	All	All	All	15
US-44	Unsignalized Intersection	Lanes	Install Offset Right-Turn Lanes on Major Approaches when Warranted	4-leg	Minor Approach Stop-Controlled without Right-Turn Lanes	Rural	All	All	20
US-50	Unsignalized Intersection	Geometry	Install Reduced Conflict Intersection	3-leg, 4-leg	Stop-Controlled	Rural	All	All	30
US-50A	Unsignalized Intersection	Geometry	Install Reduced Conflict Intersection	3-leg, 4-leg	Stop-Controlled	Rural	All	Fatal and Injury (K,A,B,C)	45

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US-60	Unsignalized Intersection	Roundabouts	Install Roundabout	3-leg, 4-leg	Unsignalized	Rural	All	All	65
US-60A	Unsignalized Intersection	Roundabouts	Install Roundabout	3-leg, 4-leg	Unsignalized	Rural	All	Fatal and Injury (K,A,B,C)	85
US-61	Unsignalized Intersection	Roundabouts	Install Roundabout	3-leg, 4-leg	Unsignalized	Urban	All	All	45
US-61A	Unsignalized Intersection	Roundabouts	Install Roundabout	3-leg, 4-leg	Unsignalized	Urban	All	Fatal and Injury (K,A,B,C)	75

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SI-01	Signalized Intersection	Signs and Markings	Install Advanced Street Name Signs	3-leg, 4-leg	Signalized	All	All	All	0
SI-10	Signalized Intersection	Signal Visibility	Add Retroreflective Sheeting to Signal Backplates	-	-	Urban	All	All	5
SI-11	Signalized Intersection	Signal Visibility	Upgrade to 12-inch Lenses	-	8-inch Lenses	All	All	All	3
SI-12	Signalized Intersection	Signal Visibility	Add Additional Signal Heads and Upgrade to 12-inch Lenses	4-leg	-	Urban	All	All	15
SI-13	Signalized Intersection	Signal Visibility	Convert Signal to Mast-Arm-Mounted	-	Pedestal-Mounted Signal	Urban	All	All	20
SI-20	Signalized Intersection	Signal Phasing	Convert to Flashing Yellow Arrow Left-Turn Display	3-leg, 4-leg	Permissive Left-Turn Phasing	Urban	All	All	10
SI-21	Signalized Intersection	Signal Phasing	Change to Protected Left-Turn Phasing on Major Approach(es) when Warranted	3-leg, 4-leg 45 mph or greater	Permissive or Protected-Permissive Left-Turn Phasing	Urban?	All	All	25
SI-41	Signalized Intersection	Lanes	Install Left-Turn Lane on Major Approach when Warranted	4-leg	Signalized	Urban	All	All	25
SI-43	Signalized Intersection	Lanes	Install Right-Turn Lane on Major Approach when Warranted	3-leg, 4-leg	Signalized	All	All	All	6
SI-61	Signalized Intersection	Roundabouts	Install Roundabout	3-leg, 4-leg	Signalized	Urban	All	All	20
SI-61A	Signalized Intersection	Roundabouts	Install Roundabout	3-leg, 4-leg	Signalized	Urban	All	Fatal and Injury (K,A,B,C)	65

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RS-01	Road Segment	Signs and Markings	Install 4-inch Edgeline Pavement Markings	2-lane	No Edgelines	Rural	All	All	10
RS-02	Road Segment	Signs and Markings	Install 6-inch Edgeline Pavement Markings	2-lane	4-inch Edgelines	Rural	All	All	7
RS-10	Road Segment	Rumble Strips	Install Centerline Rumble Strips	Undivided	No Centerline Rumble Strips	Rural	All	All	10
RS-11	Road Segment	Rumble Strips	Install Edgeline Rumble Strips or Shoulder Rumble Strips	-	No Edgeline Rumble Strips or Shoulder Rumble Strips	Rural	All	All	15
RS-12	Road Segment	Rumble Strips	Install Centerline Rumble Strips and Edgeline/Shoulder Rumble Strips	Undivided	No Rumble Strips	Rural	All	All	20
RS-20	Road Segment	Barriers	Install Cable Median Barrier	Freeway and Expressway	No Cable Median Barrier	All	All	Fatal and Serious Injury (K,A)	40
RS-20A	Road Segment	Barriers	Install Cable Median Barrier	Freeway and Expressway	No Cable Median Barrier	All	All	Minor Injury, Possible Injury, and PDO (B,C,O)	-60 (an increase)
RS-30	Road Segment	Shoulder Treatments	Add or Widen Paved Shoulder (to no greater than 10 feet)	2-lane	Unpaved Shoulder or Partially Paved Shoulder	Rural	All	All	1% reduction per foot widened (max 10%)
RS-31	Road Segment	Shoulder Treatments	Install Safety Edge	-	No Safety Edge	Rural	All	All	6
RS-35	Road Segment	Lanes	Convert to 3-lane Roadway with Two-Way Left-Turn Lane	Undivided	4-lane	All	All	All	30
RS-36	Road Segment	Lanes	Add Two-Way Left-Turn Lane	Undivided	2-lane	All	All	All	25
RS-38	Road Segment	Lanes	Provide Passing Lane	2-lane	No Passing Lanes	Rural	All	All	25
RS-40	Road Segment	Lanes	Increase Lane Widths (to no greater than 12 feet)	2-lane?	Lane Widths less than 12 Feet	Rural	All	All	4% Reduction per foot widened (max 8%)
RS-50	Road Segment	Pavement	Resurfacing	Undivided	Poor Pavement Conditions	Rural	All	All	0
RS-55	Road Segment	Pavement	Diamond Grinding	All	-	All	All	All	5

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RS-56	Road Segment	Pavement	Microsurfacing	All	-	All	All	All	0
RS-67	Road Segment	Roadside	Flatten Foreslope to 4:1	2-lane	2:1 or 3:1 Foreslope	Rural	All	All	6
RS-68	Road Segment	Roadside	Flatten Foreslope to 6:1	2-lane	4:1 Foreslope	Rural	All	All	6
RS-69	Road Segment	Roadside	Flatten Foreslope to 6:1	2-lane	2:1 or 3:1 Foreslope	Rural	All	All	12

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CS-01	Curve Segment	Signs and Markings	Upgrade Existing Chevron and Curve Warning Signs (Fluorescent Sheeting and/or Oversized Signs)	-	Curve Warning Sign and Chevron Signs	Rural	All	All	10
CS-02	Curve Segment	Signs and Markings	Install Chevron Signs when Warranted	-	Curve Warning Sign but no Chevron Signs	Rural	All	All	15
CS-03	Curve Segment	Signs and Markings	Install Chevron and Curve Warning Signs when Warranted	-	No Curve Delineation Treatment	Rural	All	All	20
CS-55	Curve Segment	Pavement	Install High-Friction Surface Treatment	All	History of Friction-Related Crashes	All	All	All	25
IN-50	Interchange	Geometry	Install Grade-Separated Interchange	4-leg	At-Grade Intersection	All	All	All	45
RR-30	Railroad	Traffic Control	Install Flashing Lights	At-Grade Railroad Crossing	Signs Only	All	Vehicle/Train	All	60
RR-31	Railroad	Traffic Control	Install Automatic Gates	At-Grade Railroad Crossing	Flashing Lights and Signs	All	Vehicle/Train	All	45
RR-32	Railroad	Traffic Control	Install Automatic Gates	At-Grade Railroad Crossing	Signs Only	All	Vehicle/Train	All	85
BP-30	Pedestrian	Traffic Control	Install Pedestrian Countdown Timer	Signalized	-	-	Vehicle/Pedestrian	All	45
BP-31	Pedestrian	Traffic Control	Install Rectangular Rapid Flashing Beacon (RRFB)	Minor Arterial	No RRFB	Urban	Vehicle/Pedestrian	All	40
BP-32	Pedestrian	Traffic Control	Install a Pedestrian Hybrid Beacon (PHB or HAWK)	Minor Arterial	No PHB or HAWK	Urban	Vehicle/Pedestrian	All	60
BP-40	Bicycle	Lanes	Install On-Street Bike Facility	-	No Bike Lanes	Urban	Vehicle/Bicycle	All	40