

## TxDOT Pre-Approved Statewide Crash Modification Factor Clearinghouse

CMF Name	Clearinghouse ID	CMF	Category	Star Rating	Crash Type	Crash Severity	Area Type	Facility Type	ADT Min.	ADT Max.	CMF Notes	Prior Condition
<b>Access Management</b>												
Convert open median to a directional median	5452	0.76	Access Management	3	All	K, A	Urban	Principal Arterial	27,000	96,000	NA	Roadway with full median openings
Convert open median to a directional median	5457	0.93	Access Management	3	All	All	Urban	Principal Arterial	27,000	96,000	NA	Roadway with full median openings
Install raised median	7789	0.81	Access Management	3	All	K, A, B, C	Urban	*Principal Arterial	1000	158,000	>2 Lanes	Roadways without raised medians
Install raised median	7792	0.76	Access Management	3	All	K, A, B, C	Rural	*Principal Arterial	1547	139,000	>2 Lanes	Roadways without raised medians
Install raised median	3034	0.61	Access Management	2	All	All	NA	Not Specified	10,000	55,000	NA	No raised median
Reduce driveways from 10-24 to less than 10 per mile	179	0.75	Access Management	3	All	A, B, C	Urban	Minor Arterial	NA	NA	NA	No prior conditions
Replace Direct Left-Turn with Right-Turn/U-Turn	351	0.80	Access Management	3	All	All	Not Specified	Principal Arterial	0	34000	4-8 Lanes	Stop-Controlled
		0.77	Access Management		Angle, Fixed Obj, Head On, Rear end, run off road, sideswipe, single vehicle	All	Urban	All				
Replace TWLTL with raised median	2514			4		All	Urban		4883	96,080	30-45 mph speed limit	TWLTL
<b>Alignment</b>												
Flatten crest vertical curve	720	0.8	Alignment	3	All	All	All	All	980	7830	NA	No prior conditions
Flatten crest vertical curve	721	0.49	Alignment	3	All	K, A, B, C	All	All	980	7830	NA	No prior conditions
Change Horizontal Alignment	7563	$CMF = e^{(273.899 \cdot (\frac{1}{R2} - \frac{1}{R1}))}$	Alignment	4	All	All	Not Specified	Principal Arterial and Expressways	4263	57699	R1 to R2 (in meters)	Change in horizontal alignment radius from R1 to R2 (in meters)
Change Negative Vertical Grade from G1 to G2	7564	$CMF = e^{(-0.0396 \cdot (G2 - G1))}$	Alignment	4	All	All	Not Specified	Principal Arterial and Expressways	4263	57699	NA	No prior conditions
Change Positive Vertical Grade from G1 to G2	7565	$CMF = e^{(-0.0535 \cdot (G2 - G1))}$	Alignment	4	All	All	Not Specified	Principal Arterial and Expressways	4263	57699	NA	No prior conditions
<b>Delineation</b>												
Install wider edgelines (4 in to 6 in)	4736	0.83	Delineation	4	All	All	Rural	Not Specified	NA	NA	Rural 2-lane highways. Crash type also excludes intersection/interchange crashes and winter month crashes	KS. 4 in. white edge lines
Install wider markings and edgeline rumble strips with resurfacing	4778	0.76	Delineation	4	All	K, A, B, C	Rural	Principal Arterial Other Freeways and Expressways	NA	NA	Divided by Median, 12,000 ADT	MO
Install wider markings and edgeline rumble strips with resurfacing	4779	0.9	Delineation	4	All	K, A, B, C	Urban	Principal Arterial Other Freeways and Expressways	NA	NA	Divided by Median, 32,200 ADT	MO
Install raised pavement markers	5494	0.91	Delineation	2	All	All	Rural	Principal Arterial Other Freeways and Expressways	NA	20,000	NA	Without raised pavement markers.
Install raised pavement markers	5496	0.81	Delineation	3	All	All	Rural	Principal Arterial Other Freeways and Expressways	20,000	60,000	NA	Without raised pavement markers.
Install raised pavement markers	5498	0.87	Delineation	3	All	All	Rural	Principal Arterial Other Freeways and Expressways	60,000	NA	NA	Without raised pavement markers.
Install edgelines (tangents and curves)	10243	0.85	Delineation	4	All	All	Rural	All	400	1579	634	Route with ADT greater than 400 with only centerline striping.
Install in-lane curve warning pavement markings	10312	0.65	Delineation	5	All	All	Rural	Not Specified	100	15,998	2 lanes undivided.	CMF is for horizontal curves. Pavement marking showing the word "SLOW" and an arrow to alert drivers to an upcoming curve.

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Provide "STOP AHEAD" pavement markings	403	0.77	Delineation	4	All	All	Rural	Not Specified	NA	NA	4-leg stop-controlled, not interchange	No prior conditions
Place edgeline and centerline markings	101	0.76	Delineation	3	All	A, B, C	Rural	Not Specified	NA	NA	NA 2+ undivided lanes	No prior conditions

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<b>Highway Lighting</b>												
Install Intersection Lighting	4462	0.88	Highway Lighting	3	Nighttime	All	All	Not Specified	40	77430	3-leg/4-leg intersections, 2-4 lanes	Roadway without street lighting
Install Lighting	7776	0.68	Highway Lighting	4	All	All	All	All	NA	NA	Night crashes	Roadway without street lighting
Install Lighting	7774	0.63	Highway Lighting	4	All	K, A, B, C	All	All	NA	NA	Night crashes	Roadway without street lighting
Install Lighting	7783	0.74	Highway Lighting	4	All	All	Urban	Minor Arterial	NA	NA	Night crashes on 4 and 6-lane principal and minor arterials.	Roadway without street lighting
Install Lighting	7964	0.77	Highway Lighting	4	All	K, A, B, C	Urban	Minor Arterial	NA	NA	Night crashes on 4 and 6-lane principal and minor arterials.	Roadway without street lighting
Install Lighting at Interchanges	1284	0.74	Highway Lighting	3	All	K, A, B, C	All	All	NA	NA		No prior conditions
<b>Interchange Design</b>												
Provide an auxiliary lane between and entrance ramp and exit ramp	3898	0.8	Interchange Design	3	All	All	Not Specified	Principal Arterial Interstate	15,298	104,079	Minor Road traffic volume 84 to 31,495 ADT	Directional freeway segment containing a combination of an entrance ramp and an exit ramp without an auxiliary lane between the entrance and exit ramp.
Convert at-grade intersections to Diverging Diamond Interchanges	10300	0.76	Interchange Design	3	All	All	Not Specified	Not Specified	NA	NA	Signalized	No prior conditions
Convert diamond interchange to Diverging Diamond interchange (DDI) or Double Crossover Diamond (DCD)	10761	0.86	Interchange Design	4	All	All	Urban and suburban	Not Specified	1295	76,100	AADT values are for Arterials. Divided by median.	No prior conditions
Convert diamond interchange to Diverging Diamond interchange (DDI) or Double Crossover Diamond (DCD)	10762	0.56	Interchange Design	4	All	K, A, B, C	Urban and suburban	Not Specified	1295	76,100	AADT values are for Arterials. Divided by median.	No prior conditions
Extend accel lane by approx. 98 ft (30 m)	474	0.89	Interchange Design	3	All	All	Not Specified	Not Specified	NA	NA	NA	No prior conditions
Extend decel lane by approx. 100 ft	475	0.93	Interchange Design	3	All	All	Not Specified	Not Specified	NA	NA	NA	No prior conditions

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<b>Intersection Geometry</b>												
Change right-turn lane geometry to increase line of sight (Approach level)	8498	0.41	Intersection Geometry	4	All	All	Not Specified	All	15,558	29,992	CMF applies only to treated approaches. CMF applies to both stop-controlled and signalized intersections. Roadway both interchange and not-interchange related.	Traditional right turn lane design.
Improve left-turn lane offset to create positive offset	6095	0.66	Intersection Geometry	3	All	All	Not Specified	Not Specified	7150/2200	29,200/13,350	CMF of shifting the left-turn lane further away from the adjacent through lane and result in a less negative offset or no offset.	Left turn lanes with negative offset.
Install left-turn lane	7996	0.75	Intersection Geometry	4	All	All	All	Not Specified	2981/972	18,248/13,880	2-lane signalized, 3-leg intersection. CMF was developed for both rural and suburban areas.	Intersections without left turn lanes.
Install left-turn lane	7997	0.92	Intersection Geometry	3	All	All	All	Not Specified	1360/746	17,566/8884	2-lane signalized, 4-leg intersection. CMF was developed for both rural and suburban areas.	Intersections without left turn lanes.
Install right-turn lane	5650	0.70	Intersection Geometry	3	Rear End	All	All	Principal Arterials and Expressways	NA	NA	CMF is for rear end crashes in right turn lane.	Unsignalized intersections or driveways without right turn lane.
Install right-turn lane	10992	0.83	Intersection Geometry	3	All	All	Rural	All	NA	NA	NA	No prior conditions
Convert intersection to restricted crossing u-turn (RCUT) intersection	10377	0.86	Intersection Geometry	2	All	All	All	Not Specified	7067	59,833	4-6 lanes, divided by median, >=55 mph. Crashes for RCUT section (including U-Turns)	Both signalized and stop-controlled intersections.
Convert intersection to restricted crossing u-turn (RCUT) intersection	10382	0.8	Intersection Geometry	4	All	All	All	Not Specified	7067	59,833	4-6 lanes, divided by median, >=55 mph. CMF is for Intersection only	Both signalized and stop-controlled intersections.
Convert intersection to restricted crossing u-turn (RCUT) intersection	10384	0.42	Intersection Geometry	4	All	All	All	Not Specified	NA	NA	59,833 ADT. CMF partial RCUT with 2 minor streets. Crashes for RCUT section (including U-turns).	Both signalized and stop-controlled intersections.
Conversion of intersection to roundabout	10082	0.62	Intersection Geometry	3	All	All	All	Not Specified	NA	NA	Conversion of stop and signal controlled, 4-leg intersections to a single-lane roundabout.	Intersections without roundabouts.
Conversion of intersection to roundabout	10422	1.55	Intersection Geometry	2	All	All	Urban	Not Specified	NA	NA	For double-lane roundabout, conversion of stop- and signal-controlled intersections	No prior conditions
Convert intersection to median u-turn (MUT) intersection	10851	0.63	Intersection Geometry	5	All	All	All	Not Specified	25,512/246	85,076/37,958	Signalized, divided by median. CMF is for Type A MUT intersection.	Conventional signalized intersection.
Convert intersection to median u-turn (MUT) intersection	10865	0.65	Intersection Geometry	5	All	All	Urban and suburban	Not Specified	19,267/1204	72,074/58,591	Signalized, divided by median. CMF is for Type B MUT intersection.	Conventional signalized intersection.
Install J-Turn intersection	5555	0.65	Intersection Geometry	3	All	All	Rural	Principal arterial other freeways and expressways	10,326/434	26,470/1389	65-70 mph, divided by median	Two way stop controlled intersection.
Install J-Turn intersection	5556	0.46	Intersection Geometry	2	All	A, B, C	Rural	Principal arterial other freeways and expressways	10,326/434	26,470/1389	65-70 mph, divided by median	Two way stop controlled intersection.
Improve angle of channelized right turn lane	8428	0.56	Intersection Geometry	4	All	All	Not Specified	Not Specified	3300	41,300	Total intersection AADT range. Included both signalized and stop-controlled intersections. Changes made to the study approaches include: sharpening the flat approach angle typical in traditional designs, reducing the radius, adjusting the stop bar position, and modifying the corner island to increase the line of sight of approaching through traffic.	No prior conditions

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Improve angle of channelized right turn lane	8429	0.56	Intersection Geometry	4	All	K, A, B, C	Not Specified	Not Specified	3300	41,300	Total intersection AADT range. Included both signalized and stop-controlled intersections. Changes made to the study approaches include: sharpening the flat approach angle typical in traditional designs, reducing the radius, adjusting the stop bar position, and modifying the corner island to increase the line of sight of approaching through traffic.	No prior conditions
Install Texas U-turn (Texas turnaround)	11017	0.76	Intersection Geometry	4	All	All	Not Specified	All	NA	NA	2-4 lanes, divided by median, 35-55 mph. CMF is for locations where the right turn from the cross street originates from a shared lane and does not have a large turning radius or a raised island	No prior conditions
Install Texas U-turn (Texas turnaround)	11018	2.01	Intersection Geometry	4	All	All	Not Specified	All	NA	NA	2-4 lanes, divided by median, 35-55 mph. CMF is for adding additional frontage road lanes to frontage roads with 2-4 lanes.	No prior conditions
Install Texas U-turn (Texas turnaround)	11021	0.91	Intersection Geometry	4	All	All	Not Specified	All	NA	NA	CMF is for each additional 10% increase in turning radius of the U-Turn.	No prior conditions
Convert intersection with minor-road stop control to modern roundabout	229	0.29	Intersection Geometry	3	All	All	Rural	Not Specified	NA	NA	4-leg stop controlled, one lane	No prior conditions
Convert intersection with minor-road stop control to modern roundabout	231	0.71	Intersection Geometry	3	All	All	Urban	Not Specified	NA	NA	4-leg stop controlled, one to two lanes	No prior conditions
Convert intersection with minor-road stop control to modern roundabout	236	0.68	Intersection Geometry	3	All	All	Suburban	Not Specified	NA	NA	4-leg stop controlled, one to two lanes	No prior conditions

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<b>Intersection Traffic Control</b>												
Add 3-inch yellow retroreflective sheeting to signal backplates	1410	0.85	Intersection Traffic Control	4	All	All	Urban	Not Specified	NA	NA	Not interchange related. Study areas varied from urban to suburban, and posted speed limits from 30-55 mph.	No prior conditions
Implement systemic signing and visibility improvements at signalized intersections	8922	0.96	Intersection Traffic Control	4	All	All	All	All	4272/111	41,100/20,000	Replace all signal heads, pedestrian signal heads, pushbuttons and signs. Install backplates with retroreflective borders on all signal heads. Re-stripe crosswalks, install advance warning signs, overhead signs and curb ramps.	No prior conditions
Implement systemic signing and visibility improvements at signalized intersections	8923	0.89	Intersection Traffic Control	4	All	K, A, B, C	All	All	4272/111	41,100/20,000	Replace all signal heads, pedestrian signal heads, pushbuttons and signs. Install backplates with retroreflective borders on all signal heads. Re-stripe crosswalks, install advance warning signs, overhead signs and curb ramps.	No prior conditions
Improve signal visibility	3941	0.71	Intersection Traffic Control	3	All	K, A, B, C	Urban	Not Specified	NA	NA	Includes such treatments as larger signal heads and reflective backboards	No prior conditions
Increase retroreflectivity of stop signs	6068	0.86	Intersection Traffic Control	4	All	All	Urban	All	344/206	57,353/9,178	3-leg, 4-leg stop-controlled.	Stop signs with low retroreflectivity
Increase retroreflectivity of stop signs	6081	0.77	Intersection Traffic Control	4	All	All	Rural	All	344/206	57,353/9,178	3-leg, 4-leg stop-controlled.	Stop signs with low retroreflectivity
Install dynamic signal warning flashers	4198	0.81	Intersection Traffic Control	4	All	All	All	Not Specified	7500/40	99,000/20,100	DSWF provide drivers with advance notice of the phase change from green to yellow	Signalized intersection without advance warning flashers
Provide flashing beacons at stop controlled intersections	446	0.95	Intersection Traffic Control	4	All	All	All	Not Specified	250/90	42,520/13,270	2-lane, 4-leg stop controlled	No prior conditions
Replace 8-inch red signal heads with 12-inch	2333	0.58	Intersection Traffic Control	5	Angle	All	Specified	Not Specified	NA	NA	NA	No prior conditions
Replace 8-inch red signal heads with 12-inch	2334	0.97	Intersection Traffic Control	4	All	All	Specified	Not Specified	NA	NA	NA	No prior conditions
Install a traffic signal	325	0.56	Intersection Traffic Control	5	All	All	Rural	Not Specified	3261/101	29,926/10,300	3-leg, 4-leg previously stop-controlled.	Stop controlled
Install a traffic signal	326	0.23	Intersection Traffic Control	5	Angle	All	Rural	Not Specified	3261/101	29,926/10,300	3-leg, 4-leg previously stop-controlled.	No prior conditions
Install a traffic signal	327	0.4	Intersection Traffic Control	5	Left Turn	All	Rural	Not Specified	3261/101	29,926/10,300	3-leg, 4-leg previously stop-controlled.	No prior conditions
Install a traffic signal	7848	0.61	Intersection Traffic Control	4	All	All	Urban	Not Specified	NA	NA	4-leg previously stop-controlled.	Stop controlled intersections
Install a traffic signal	7981	0.72	Intersection Traffic Control	4	All	All	All	Not Specified	3475/972	18,025/6829	3-leg, previously stop-controlled. CMF was developed for both Ruran and Suburban areas.	Intersections with a stop sign on minor roads.
Install a traffic signal	7982	0.61	Intersection Traffic Control	4	All	All	All	Not Specified	2480/746	17,566/5803	4-leg, previously stop-controlled. CMF was developed for both Ruran and Suburban areas.	Intersections with a stop sign on minor roads.
Install a traffic signal and left turn lanes	7968	0.56	Intersection Traffic Control	4	All	All	All	Not Specified	1360/1036	18,248/13,880	3-leg, 4-leg previously stop-controlled.	No prior conditions
Install left turn flashing yellow arrow signals and supplemental traffic signs	7730	0.86	Intersection Traffic Control	4	Left Turn	All	Urban	All	3250/63	37,500/14,700	Applies to left turns on approaches with PPLT phasing before and after, prior condition is permissive phase of PPLT control operated with a circular green indication	No prior conditions
Change from permissive only to flashing yellow arrow permissive only	7700	0.5	Intersection Traffic Control	3	Left Turn	All	Not Specified	Not Specified	3500/500	39,000/14,500	Target crashes are left-turn same roadway Increase in all red time to a minimum of 1.0	No prior conditions
Increase all red clearance interval	4211	0.8	Intersection Traffic Control	4	All	All	Urban	Not Specified	5950/2650	31,600/20,225	second and maximum of 2.0 seconds	No prior conditions
Install pedestrian countdown timer	10119	0.91	Intersection Traffic Control	4	Vehicle/Pedestrian	All	Urban	Not Specified	NA	NA	3-leg, 4-leg signalized intersections.	No prior conditions
Modify signal phasing (implement a leading pedestrian interval)	9901	0.9	Intersection Traffic Control	5	All	All	Urban and Suburban	All	6650/1850	32,363/25,883	NA	No prior conditions
Replace night-time flash with steady operation	2027	0.73	Intersection Traffic Control	4	All	All	Specified	Not Specified	NA	NA	Night time crashes.	Late night flash operations.

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<b><i>Pedestrians</i></b>												
Install a pedestrian hybrid beacon (PHB or HAWK)	10585	0.88	Pedestrians	5	All	All	Urban and Suburban	All	5400	47,627	NA	No prior conditions
Install a pedestrian hybrid beacon (PHB or HAWK)	10591	0.57	Pedestrians	5	Vehicle/Pedestrian	All	Urban and Suburban	All	5400	47,627	NA	No prior conditions
Install advanced yield or stop markings and signs	9018	0.89	Pedestrians	3	All	All	Urban and Suburban	Minor Arterial	340	52,892	NA	No prior conditions
Install advanced yield or stop markings and signs	9017	0.75	Pedestrians	3	Vehicle/Pedestrian	All	Urban and Suburban	Minor Arterial	340	52,892	NA	No prior conditions
Install high-visibility yellow, continental type crosswalks at schools	2697	0.63	Pedestrians	4	Vehicle/Pedestrian	All	Urban	Not Specified	567	43,199	NA	No prior conditions
Install raised median with marked crosswalk (uncontrolled)	175	0.54	Pedestrians	3	Vehicle/Pedestrian	All	Urban and Suburban	Principal Arterial Other	15,000	NA	3-8 lanes	Marked crosswalk with no raised median at an uncontrolled pedestrian crossing
Install rectangular rapid flashing beacon (RRFB)	9024	0.53	Pedestrians	3	Vehicle/Pedestrian	All	Urban and Suburban	Minor Arterial	533	49,402	2-8 lanes	No prior conditions
<b><i>Railroad Grade Crossings</i></b>												
Installing gates at crossings with signs	489	0.06	Railroad Grade Crossings	4	All	All	Not Specified	Minor Arterial	NA	NA	NA	No prior conditions
Upgrade signs to flashing lights	483	0.22	Railroad Grade Crossings	4	All	All	Not Specified	Minor Arterial	NA	NA	NA	No prior conditions
<b><i>Roadside</i></b>												
New guardrail along embankment	37	0.56	Roadside	3	Run off road	K	Not Specified	Not Specified	NA	NA	NA	No prior conditions
New guardrail along embankment	38	0.53	Roadside	3	Run off road	A, B, C	Not Specified	Not Specified	NA	NA	NA	No prior conditions
New guardrail along embankment	39	0.93	Roadside	3	Run off road	All	Not Specified	Not Specified	NA	NA	NA	No prior conditions
Install cable median barrier	47	0.71	Roadside	3	All	A, B, C	Rural	Principal Arterial Other	20,000	60,000	Multi-lane divided	No prior conditions
Install cable median barrier	9388	0.46	Roadside	3	All	K	Not Specified	Not Specified	NA	NA	NA	No prior conditions
Flatten sideslope from 1V:3H to 1V:4H	26	0.58	Roadside	3	All	A, B, C	Rural	Not Specified	NA	NA	2-lane undivided.	No prior conditions
Flatten sideslope from 1V:3H to 1V:4H	27	0.71	Roadside	3	All	O	Rural	Not Specified	NA	NA	2-lane undivided.	No prior conditions
Flatten sideslope from 1V:4H to 1V:6H	29	0.78	Roadside	3	All	A, B, C	Rural	Not Specified	NA	NA	2-lane undivided.	No prior conditions
Flatten sideslope from 1V:4H to 1V:6H	30	0.76	Roadside	3	All	O	Rural	Not Specified	NA	NA	2-lane undivided.	No prior conditions



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<b>Roadway</b>												
Install centerline and shoulder rumble strips	6850	0.8	Roadway	5	All	All	Rural	Not Specified	154	25,796	CMF for total crashes (all types and all severity levels) for 2-lane rural roads excludes intersection-related and animal	No prior conditions
Install centerline and shoulder rumble strips	6851	0.77	Roadway	5	All	K, A, B, C	Rural	Not Specified	154	25,796	CMF for injury crashes (K, A, B, C) for 2-lane rural roads excludes intersection-related	No prior conditions
Install centerline rumble strips	3361	0.91	Roadway	5	All	All	Rural	Not Specified	574	20,784	2-lane undivided.	No prior conditions
Install edgeline rumble strips	3398	0.86	Roadway	4	Run off road	K, A, B, C	Not Specified	Not Specified	180	92,757	NA	No prior conditions
Improve pavement friction (HFS-High Friction Surface)	7900	0.76	Roadway	3	All	All	All	Not Specified	NA	NA	NA CMF is for HFS treatment at curves.	Individual curve with perceived friction-related crash problem.
Improve pavement friction (HFS-High Friction Surface)	7901	0.48	Roadway	3	Wet road	All	All	Not Specified	NA	NA	NA CMF is for HFS treatment at curves.	Individual curve with perceived friction-related crash problem.
Improve pavement friction (HFS-High Friction Surface)	7898	0.65	Roadway	3	All	All	All	Not Specified	NA	NA	NA CMF is for HFS treatment at ramps.	Ramp with perceived problem with friction-related crashes.
Improve pavement friction (HFS-High Friction Surface)	7899	0.14	Roadway	3	Wet road	All	All	Not Specified	NA	NA	NA CMF is for HFS treatment at ramps.	Ramp with perceived problem with friction-related crashes.
Install periodic passing lanes on rural two-lane highways	4083	0.58	Roadway	5	All	K, A, B, C	Rural	Principal Arterial Other	1655	7031	NA	2-lane rural highway with no passing lane.
Provide truck climbing lane	10074	0.57	Roadway	4	All	All	Not Specified	Principal Arterial	NA	NA	Divided by median	No prior conditions
Provide truck climbing lane	10075	0.54	Roadway	3	Truck related	All	Not Specified	Principal Arterial	NA	NA	Divided by median	No prior conditions
Widen narrow pavement	6862	0.69	Roadway	5	All	All	Rural	Not Specified	487	7417	Undivided 2-lane. CMF applies to narrow pavements with an initial condition of 9 to 11 foot travel lanes and no shoulder. The after condition consists of additional lane width and/or a narrow shoulder to increase the directional width by 1 to 9 ft.	No prior conditions
Converting four-lane roadways to three-lane roadways with center turn lane (Road Diet)	5554	0.81	Roadway	4	All	All	Urban	Not Specified	2030	15,350	CMF calculation is for reduction in crash rate.	4 lane roadway



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<b>Shoulder Treatments</b>												
Upgrade narrow unpaved shoulder (<5 ft) to wide unpaved shoulder (>5 ft)	5402	0.71	Shoulder Treatments	3	All	All	Rural	Major Collector	65	4950	2-lane undivided	No prior conditions
Upgrade narrow unpaved shoulder (<5 ft) to wide unpaved shoulder (>5 ft)	5403	0.35	Shoulder Treatments	3	All	K, A, B, C	Rural	Major Collector	65	4950	2-lane undivided	No prior conditions
Widen shoulder	6657	0.77	Shoulder Treatments	4	All	All	Rural	Not Specified	2000	50,000	NA	No prior conditions
Widen shoulder width to 5 feet or greater	3653	0.64	Shoulder Treatments	3	Run off road	K, A, B, C	Urban	Principal Arterial Other Freeways and Expressways	11,254	92,757	Divided by median	No prior conditions
Widen shoulder width to 5 feet or greater	3657	0.73	Shoulder Treatments	2	Run off road	K, A, B, C	Rural	Not Specified	180	12,776	2-lane undivided	No prior conditions
Upgrade narrow unpaved shoulder (<5 ft) to wide paved shoulder (>5 ft)	5409	0.58	Shoulder Treatments	3	All	All	Rural	Major Collector	65	4950	2-lane undivided	No prior conditions
Upgrade narrow unpaved shoulder (<5 ft) to wide paved shoulder (>5 ft)	5410	0.28	Shoulder Treatments	3	All	K, A, B, C	Rural	Major Collector	65	4950	2-lane undivided	No prior conditions
Install shoulder rumble strips	10449	0.68	Shoulder Treatments	5	All	All	Rural	All	NA	NA	CMF is for total crashes.	No prior conditions
Install alternative audible lane departure warning treatments	9716	0.68	Shoulder Treatments	3	Head on, Run off road, sideswipe	K, A, B, C	Rural	Not Specified	237	3880	are too narrow for milled rumble strips. 2-lane undivided. CMF for single vehicle run-off-road crashes and opposite direction crashes. Treatment includes profile (audible) pavement markings and preformed rumble bars similar to rumble strips. Commonly used on chip seal road surfaces where milled rumble strips cannot be utilized or on roadways where shoulders	No prior conditions
Install alternative audible lane departure warning treatments	9685	0.79	Shoulder Treatments	3	Head on, Run off road, sideswipe	All	Rural	Not Specified	237	3880	are too narrow for milled rumble strips. Excludes intersection-related crashes and	No prior conditions
Install safety edge treatment	9205	0.89	Shoulder Treatments	5	All	K, A, B	Rural	Principal Arterial Other	10	18,600	animal-related crashes	Drop-off pavement edge Rural highways prior to resurfacing and installation of safety edge treatment.
Install safety edge treatment	4303	0.92	Shoulder Treatments	4	All	All	Rural	Principal Arterial Other	397	18,697	2-lane undivided	This is a combined CMF for multiple NA treatments
Install safety edge treatment with 1-2 ft. lane widening	10283	0.51	Shoulder Treatments	3	All	All	All	All	NA	NA	NA treatments	No prior conditions
Install shoulder rumble stripe, widen shoulder from 0 to 2 feet, and pavement resurfacing	8016	0.78	Shoulder Treatments	3	All	A, B, C	Rural	Not Specified	8000	17,223	shoulder	Prior condition is roadway without paved shoulder
Install shoulder rumble stripe, widen shoulder from 0 to 2 feet, and pavement resurfacing	8020	0.92	Shoulder Treatments	3	All	All	Rural	Not Specified	8000	17,223	shoulder	Prior condition is roadway without paved shoulder
Install shoulder rumble strips and widen shoulder	6665	0.61	Shoulder Treatments	4	All	All	Rural	Not Specified	2000	50,000	shoulder width is 4-12 ft.	Multi-lane. Prior condition of original shoulder width is 4-12 ft.

## TxDOT Pre-Approved Statewide Crash Modification Factor Clearinghouse

CMF Name	Clearinghouse ID	CMF	Category	Star Rating	Crash Type	Crash Severity	Area Type	Facility Type	ADT Min.	ADT Max.	CMF Notes	Prior Condition
<i>Signs</i>												
Improve curve delineation	10609	0.91	Signs	4	Non-intersection	All	Rural	All	354	20,479	2-lane undivided. Treatments can include new chevrons, horizontal arrows, and advance warning signs as well as the improvement of existing signs using fluorescent yellow sheeting.	No prior conditions
Improve curve delineation	10612	0.82	Signs	5	Non-intersection	K, A, B, C	Rural	All	354	20,479	2-lane undivided. Treatments can include new chevrons, horizontal arrows, and advance warning signs as well as the improvement of existing signs using fluorescent yellow sheeting.	No prior conditions
Install a "Vehicles Entering When Flashing" (VEWF) system (advance post mounted signs on major and loops on minor)	4916	0.68	Signs	4	All	All	All	Not Specified	3000	30,000	45-55 mph, stop-controlled	Stop-controlled
Install a "Vehicles Entering When Flashing" (VEWF) system (advance post mounted signs on major and loops on minor)	4918	0.73	Signs	4	All	K, A, B, C	All	Not Specified	3000	30,000	45-55 mph, stop-controlled	Stop-controlled
Install combination horizontal alignment/advisory speed signs	73	0.87	Signs	3	All	A, B, C	Not Specified	Not Specified	NA	NA	NA	No prior conditions
Install intersection conflict warning systems (ICWS) for four-lane at two-lane intersections	8453	0.83	Signs	5	All	All	Rural	Not Specified	NA	NA	4-leg stop controlled	No intersection conflict warning system
Install intersection conflict warning systems (ICWS) for two-lane at two-lane intersections	8441	0.73	Signs	5	All	All	Rural	Not Specified	NA	NA	4-leg stop controlled	No intersection conflict warning system
Install new fluorescent curve signs or upgrade existing curve signs to fluorescent sheeting	2431	0.82	Signs	5	Non-intersection	All	Rural	All	895	20,479	2-lane undivided. Treatments can include enhancing delineation along curves by installing new or replacing existing warning signs, curve delineation signs, and/or post mounted delineators. Warning signs include curve ahead or suggested speed limit and curve delineation signs include chevrons and horizontal arrows.	No sign or sign without fluorescent sheeting
Install chevron signs on horizontal curves	2439	0.75	Signs	5	Nighttime, Non-intersections	All	Rural	All	261	14,790	2-lane undivided	No sign
Install chevron signs on horizontal curves	2436	0.96	Signs	4	Non-intersection	All	Rural	All	261	14,790	2-lane undivided	No sign