

County of San Diego

Sight Distance Standards

Revised 2024-10-04 MK

Design Sight Distance

CORNER SIGHT DISTANCE ON LEVEL ROADWAYS	
Speed (mph)	Minimum Corner Sight Distance (feet)
15	150
20	200
25	250
30	300
35	350
40	400
45	450
50	500
55	550

Corner sight distance measured along the direction of travel from a point on the minor road at least 10 feet from the edge of the major road pavement and measured from a height of eye of 3.5 feet on the minor road to a height of object of 4.25 feet on the major road (see County Road Standard Drawings DS-20A and DS-20B). The design speed used to determine the minimum sight distance requirement shall be the greater of the current prevailing speed (if known) and the minimum design speed of the respective road classification. Additional corner intersection sight distance may be required for left turns at divided highways, left turns onto two-way highways with more than two lanes, or grades which exceed 3 percent, as per the 2018 American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets" (Green Book).

SIGHT DISTANCE (SD) FOR DESIGN ON LEVEL ROADWAYS $t_{PR} = 2.5 \text{ sec}$, $a = 11.2 \text{ ft/sec}^2$			
Speed (V) (mph)	Reaction (feet)	Breaking (feet)	Total SD (feet)
15	55	22	77
20	73	38	112
25	92	60	152
30	110	86	196
35	128	118	246
40	147	154	300
45	165	194	359
50	183	240	423
55	202	290	492

Sight distance for design is for new construction. This calculation assumes a conservative 2.5 second perception-reaction time that exceeds the 90th percentile of reaction time for all drivers and 11.2 ft/sec² deceleration rate threshold for design sight distance, per Section 3.2, "Sight Distance" of the Green Book.

Basis for Calculation of Green Book Sight Distance

Sight distance values are based on sight distance equations from Section 3.2 of the Green Book.

ON LEVEL ROADWAYS:

$$SD = 1.47Vt_{PR} + 1.075 \frac{V^2}{a}$$

ON GRADES:

$$SD = 1.47Vt_{PR} + \frac{V^2}{30 \left[\left(\frac{a}{32.2} \right) \pm G \right]}$$

Sight Distance for Operation

SIGHT DISTANCE (SD) FOR OPERATION									
$t_{PR} = 1.5 \text{ sec}, a = 14.8 \text{ ft/sec}^2$									
	ON LEVEL ROADWAYS			ON UPGRADES (G)			ON DOWNGRADES (G)		
				3%	6%	9%	-3%	-6%	-9%
Speed (V) (mph)	Reaction (feet)	Breaking (feet)	Total SD (feet)	Total SD (feet)	Total SD (feet)	Total SD (feet)	Total SD (feet)	Total SD (feet)	Total SD (feet)
15	33	16	49	48	47	47	50	52	53
20	44	29	73	71	70	68	75	77	80
25	55	45	100	98	95	93	104	107	111
30	66	65	131	127	124	121	136	141	147
35	77	89	166	161	156	151	172	179	188
40	88	116	204	197	191	185	212	222	233
45	99	147	246	237	229	222	256	268	282
50	110	182	292	281	271	262	304	319	336
55	121	220	341	327	315	305	356	374	394

Sight distance for operation is measured from a point on the minor road 8 feet from the edge of travelled way of the major road (distance from the front of the vehicles to the driver's eye is nearly always 8 feet per Green Book Section 9.5 "Intersection Sight Distance") and 2 feet right of the center of the minor road (per DS-20A) at the height of the driver's eye, 3.5 feet, on the minor road to a height of an object, another vehicle, 3.5 feet, on the major road (Green Book Section 3.2). This calculation assumes a 1.5 second perception-reaction time that encompasses the 90th percentile of drivers and a 14.8 ft/sec^2 deceleration rate based on studies that show most drivers decelerate at a greater rate than 14.8 ft/sec^2 (Green Book Section 3.2).

Sight Distance for Emergency Stopping

SIGHT DISTANCE (SD) FOR EMERGENCY STOPPING									
$t_{PR} = 1.5 \text{ sec}, a = 16.1 \text{ ft/sec}^2$									
	ON LEVEL ROADWAYS			ON UPGRADES (G)			ON DOWNGRADES (G)		
				3%	6%	9%	-3%	-6%	-9%
Speed (V) (mph)	Reaction (feet)	Breaking (feet)	Total SD (feet)	Total SD (feet)	Total SD (feet)	Total SD (feet)	Total SD (feet)	Total SD (feet)	Total SD (feet)
15	33	15	48	47	46	46	49	50	51
20	44	27	71	69	68	67	72	74	77
25	55	42	97	94	92	90	99	102	106
30	66	60	126	123	120	117	130	134	139
35	77	82	159	154	150	146	164	170	177
40	88	107	195	189	183	179	202	209	218
45	99	135	234	227	220	214	243	253	264
50	110	167	277	268	259	252	288	300	314
55	121	202	323	312	301	292	336	351	367

Sight distance for emergency stopping is based on a greater deceleration rate of 16.1 ft/sec^2 . Multiple studies completed on County maintained roads indicated the ability to decelerate with a gravitational force of 0.5g based on road conditions. Sight distance for emergency is measured in the same manner as "Sight Distance for Operation".