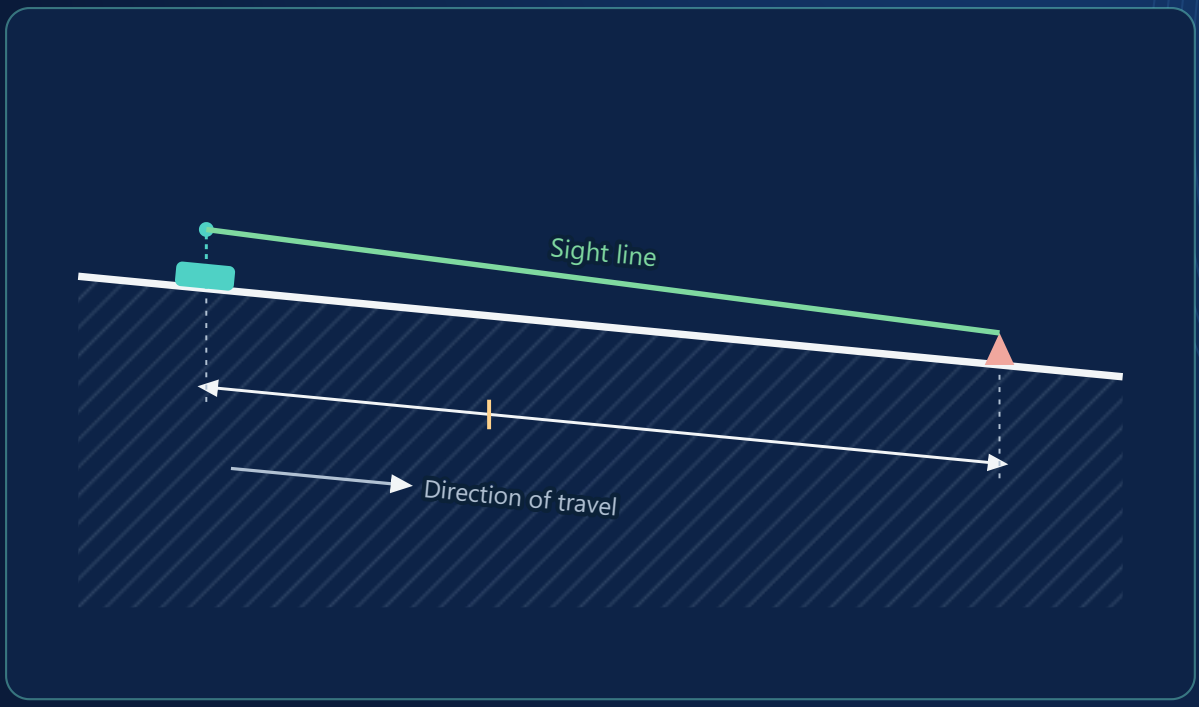
Stopping & Decision Sight Distance Report

Stopping and decision sight distance for the design speed and grade (AASHTO Green Book).



Sample Project

Client: Urban City

PREPARED & SUBMITTED BY

SP Consultant

in Joint Venture with USF Consultants
info@spconsultant.example
shahidpervaiz.net

ISSUE

November 2026

Stopping & Decision Sight Distance Calculator

Design report · Reference: AASHTO Green Book, 7th Ed. (2018) §3.2 Tables: 3-1 (SSD) · 3-2 (SSD on grades) · 3-3 (DSD) · Generated 11/5/2026 3:16:58 PM

1. Project

Project / road	Sample Project
Prepared by	SP Consultant
Date	11/5/2026

2. Stopping Sight Distance — AASHTO · Tables 3-1 & 3-2

DESIGN SPEED

Design Speed V (kph)	100

DRIVER & VEHICLE

Brake reaction time t (s)	2.5
Deceleration rate a (m/s²)	3.4

GRADE — ASCENDING & DESCENDING (TABLE 3-2)

Grade G (%)	−3 % descending

CALCULATION

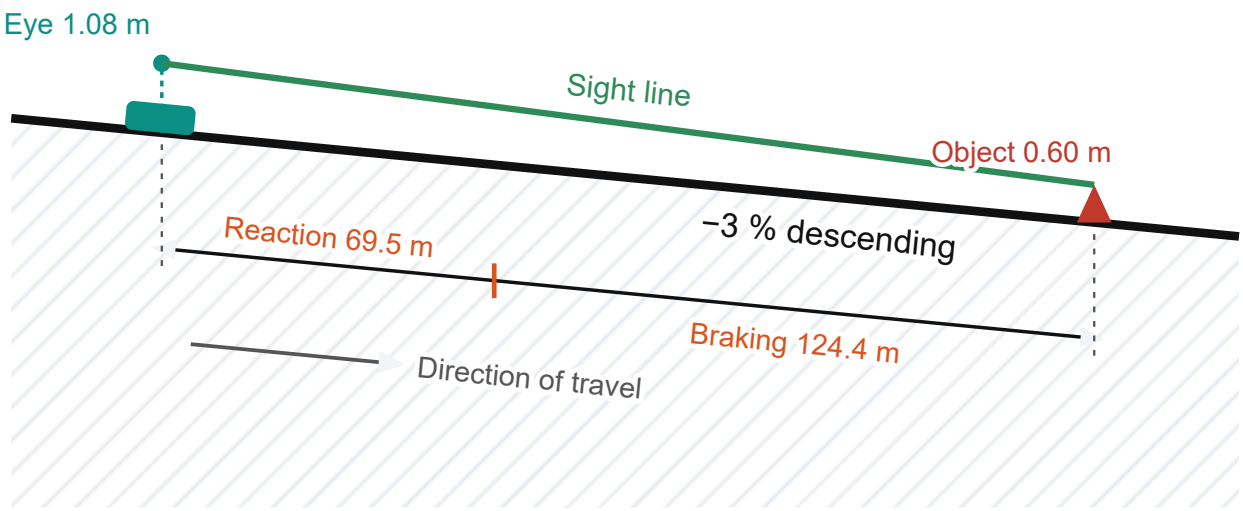
Brake reaction distance (m)	69.5
Braking distance on −3 % descending (m)	124.4
Braking distance, opposite direction +3 % ascending (m)	104.5
Braking distance level, 0 % (m) — reference	114.7
SSD calculated: −3 % descending / opposite / level (m)	193.9 / 174.0 / 184.2

RESULTS

Design Stopping Sight Distance, −3 % descending (m) — governs on two-way roads	**195 m**
Opposite direction, +3 % ascending (m)	**175 m**

Sample report: illustrative data, not for design use

SKETCH — STOPPING SIGHT DISTANCE ON THE SELECTED GRADE (NOT TO SCALE)



SSD = 195 m on −3 % descending

COMPUTED VALUES

Design Speed	100 kph
Reaction Distance	69.5 m
Braking −3 % descending	124.4 m
SSD Level	185 m
SSD −3 % descending	195 m
SSD +3 % ascending	175 m
Grade Effect vs Level	+10 m vs level

SSD = 0.278·V·t + 0.039·V²/a (AASHTO Eq. 3-2), V in kph, t in s, a in m/s².
On a grade: **SSD = 0.278·V·t + V² / [254·((a/9.81) ± G)]** (Eq. 3-3), G as a decimal (+ ascending / upgrade, − descending / downgrade). Design values are the calculated distance rounded up to the next 5 m.
The grade changes only the **braking** part; the brake reaction distance is the same in both directions.
Verified: V = 100 kph, t = 2.5 s, a = 3.4 m/s² → 69.5 + 114.7 = 184.2 → **SSD = 185 m** ✓ (Table 3-1)

STOPPING SIGHT DISTANCE ON LEVEL ROADWAYS — AASHTO TABLE 3-1

Calculated with the t and a entered on the left (AASHTO defaults reproduce Table 3-1). `highlighted` = current selection.

Design Speed (kph)	Brake Reaction Distance (m)	Braking Distance on Level (m)	SSD Calculated (m)	SSD Design (m)
20	13.9	4.6	18.5	**20**
30	20.9	10.3	31.2	**35**
40	27.8	18.4	46.2	**50**
50	34.8	28.7	63.4	**65**
60	41.7	41.3	83.0	**85**
70	48.7	56.2	104.9	**105**
80	55.6	73.4	129.0	**130**
90	62.6	92.9	155.5	**160**

Sample report: illustrative data, not for design use

Design Speed (kph)	Brake Reaction Distance (m)	Braking Distance on Level (m)	SSD Calculated (m)	SSD Design (m)
100	**69.5**	**114.7**	**184.2**	**185**
110	76.5	138.8	215.2	**220**
120	83.4	165.2	248.6	**250**
130	90.3	193.9	284.2	**285**

STOPPING SIGHT DISTANCE ON GRADES — AASHTO TABLE 3-2 (M)

Design Speed (kph)	Downgrades			Upgrades		
	-9 %	-6 %	-3 %	+3 %	+6 %	+9 %
20	20	19	19	18	18	18
30	35	33	32	30	30	29
40	52	50	48	45	43	42
50	73	69	66	61	59	57
60	97	91	86	79	77	74
70	124	116	110	100	96	93
80	154	144	135	123	118	113
90	187	174	163	147	141	136
100	223	207	**194**	174	166	160
110	262	243	227	203	194	186
120	304	281	262	234	223	213
130	350	323	301	267	254	243

3. Decision Sight Distance — AASHTO · Table 3-3

DESIGN SPEED

Design Speed V (kph)	100

AVOIDANCE MANEUVER

Maneuver	C – Change, rural
Pre-maneuver / reaction time t (s)	10.2 – 11.2

GRADE — ASCENDING & DESCENDING

Grade G (%)	−3 % descending

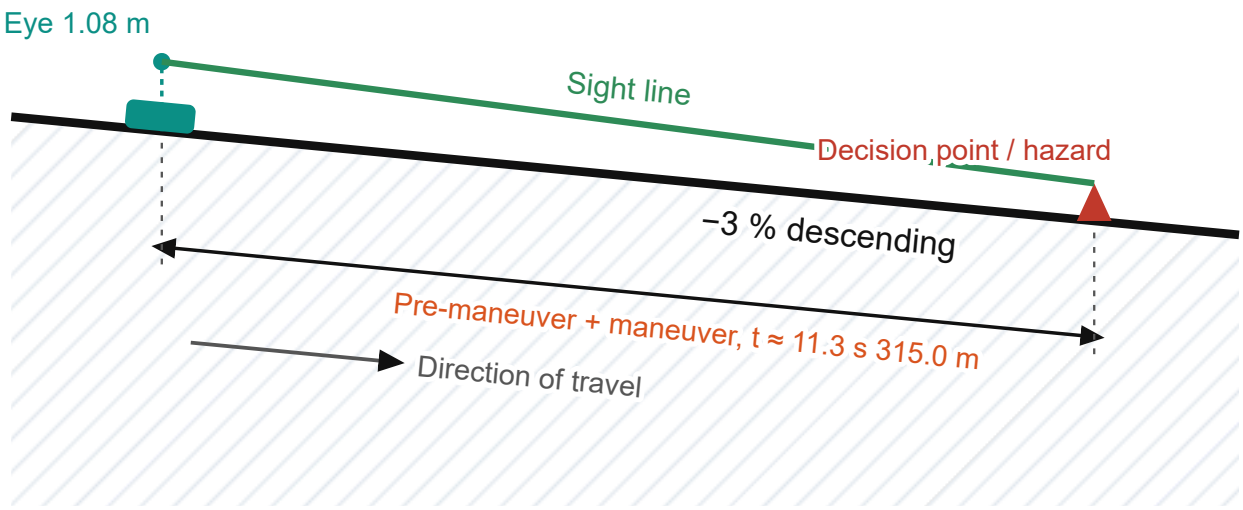
CALCULATION

Pre-maneuver distance, 0.278·V·t (m)	315.0
Decision sight distance on level, calculated (m)	315.0
DSD, opposite direction +3 % ascending (m)	315
DSD on −3 % descending (m)	315

RESULTS

Decision Sight Distance, −3 % descending (m)	315 m
Opposite direction, +3 % ascending (m)	315 m
Stopping sight distance at same speed, level (m)	185 m

SKETCH — DECISION SIGHT DISTANCE ON THE SELECTED GRADE (NOT TO SCALE)



DSD (maneuver C) = 315 m on −3 % descending

COMPUTED VALUES

Design Speed	100 kph
Maneuver	C
Time t (implied)	11.3 s
DSD Level (Table 3-3)	315 m
SSD (Table 3-1)	185 m
DSD −3 % descending	315 m

Maneuvers A & B (stop): DSD = 0.278·V·t + 0.039·V²/a (Eq. 3-5), with t = 3.0 s (A) or 9.1 s (B), a = 3.4 m/s².
Maneuvers C, D & E (speed/path/direction change): DSD = 0.278·V·t (Eq. 3-6), with pre-maneuver time t = 10.2–11.2 s (C), 12.1–12.9 s (D) or 14.0–14.5 s (E), increasing with speed.
The design value is AASHTO Table 3-3; the time shown for C–E is the one implied by that table.

DECISION SIGHT DISTANCE — AASHTO TABLE 3-3 (M)

`highlighted` = current selection.

Design Speed (kph)	Decision Sight Distance (m) — Avoidance Maneuver				
	A	B	C	D	E
50	70	155	145	170	195
60	95	195	170	205	235
70	115	235	200	235	275
80	140	280	230	270	315

Design Speed (kph)	Decision Sight Distance (m) — Avoidance Maneuver				
	A	B	C	D	E
90	170	325	270	315	360
100	200	370	**315**	355	400
110	235	420	330	380	430
120	265	470	360	415	470
130	305	525	390	450	510

Generated with the Stopping & Decision Sight Distance Calculator — https://shahidpervaiz.net/EngineeringDesignTools/sight_distance_calculator. Results should be checked by a qualified engineer before use.

Sample report: illustrative data, not for design use