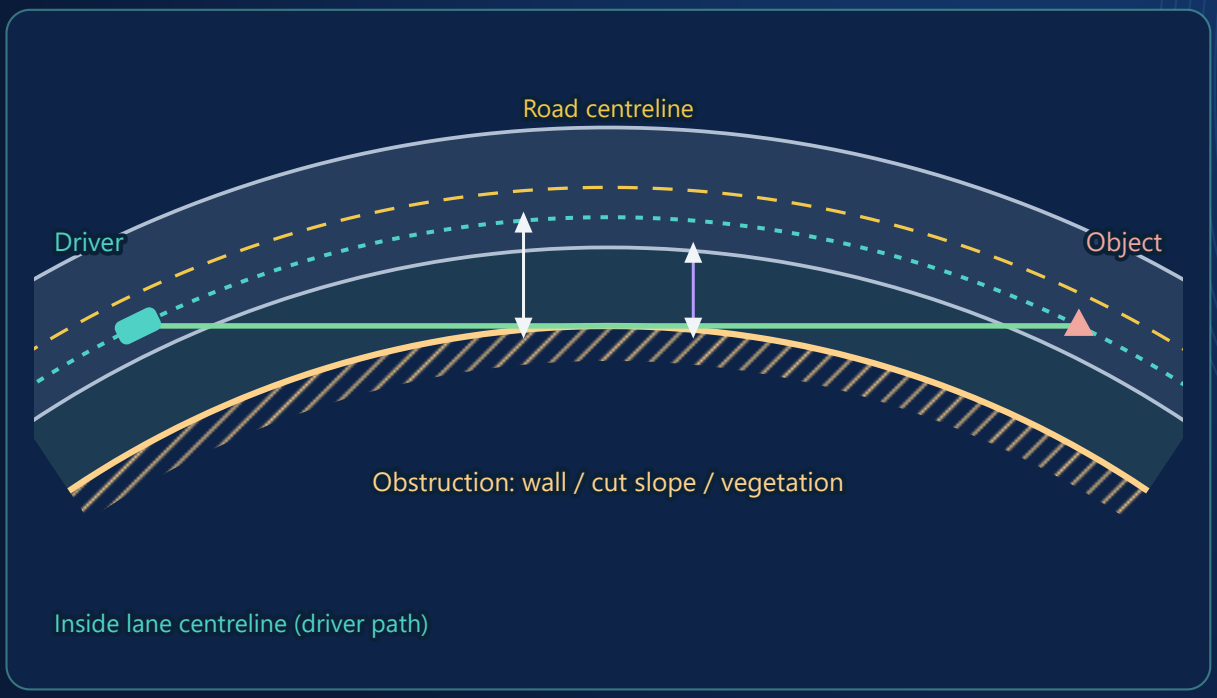
Horizontal Sight Offset Report

Clearance needed on the inside of curves
for stopping sight distance (AASHTO Green Book).



Sample Project

Client: Urban City

PREPARED & SUBMITTED BY

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ISSUE

November 2026

Horizontal Sight Line Offset Calculator

Design report · Reference: AASHTO Green Book, 7th Ed. (2018) §3.3.12 Basis: Stopping sight distance · eye 1.08 m · object 0.60 m · Generated 11/5/2026 3:16:12 PM

1. Project

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

2. Required Horizontal Sight Line Offset

DESIGN SPEED & GRADE

Design Speed V (kph)	100
Grade G (%)	0 % level
Brake reaction time t (s)	2.5
Deceleration rate a (m/s²)	3.4

HORIZONTAL CURVE

Curve radius (m)	500
Radius measured to	Inside lane centreline
Lane width w (m)	3.65
Curve length L (m) — optional	–

CALCULATION

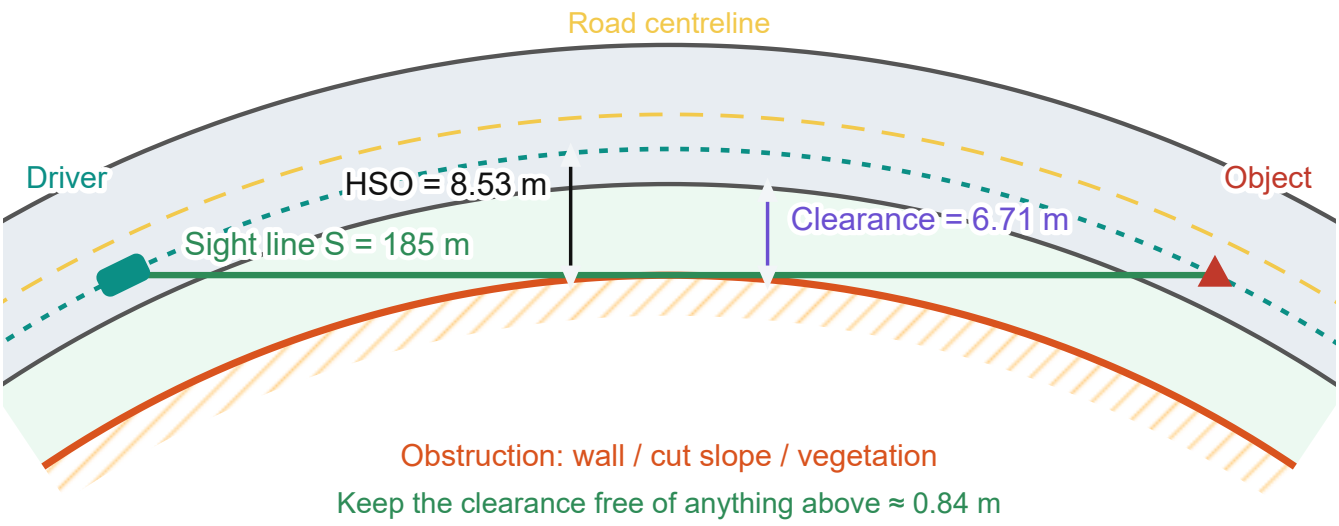
Stopping sight distance S, 0 % level (m)	185
Radius to centreline of inside lane R (m)	500.0
Sight line angle 28.65·S/R (°)	10.60
Formula used	S within the curve

RESULTS

Required HSO from centreline of inside lane (m)	**8.53 m**
Clear distance from inside edge of travelled way (m)	**6.71 m**

Sample report: illustrative data, not for design use

SKETCH — HORIZONTAL CURVE & CLEARANCE (NOT TO SCALE)



COMPUTED VALUES

Design Speed	100 kph
SSD 0 % level	185 m
Radius R (inside lane)	500.0 m
HSO Required	8.53 m
Clear from Lane Edge	6.71 m
Sight-line Height at Obstruction	≈ 0.84 m

HSO = R·[1 − cos(28.65·S / R)] (sight distance shorter than the curve), angle in degrees, R = radius to the centreline of the inside lane (m), S = stopping sight distance (m).
When the curve is shorter than S: **HSO = R·[1 − cos(28.65·L / R)] + ½(S − L)·sin(28.65·L / R)**.
The sight line runs from a 1.08 m eye height to a 0.60 m object, so at the obstruction it is about **0.84 m** above the road: anything higher than that within the HSO blocks the view.

REQUIRED HSO (M) — RADIUS VS DESIGN SPEED, LEVEL GRADE

Stopping sight distance for each speed on level grade with the t and a entered on the left. `highlighted` = current speed column. "—" = sight line longer than half the circle (use a larger radius).

Radius R (m) ↓ V (kph) →	30 SSD 35	40 SSD 50	50 SSD 65	60 SSD 85	70 SSD 105	80 SSD 130	90 SSD 160	100 SSD 185	110 SSD 220	120 SSD 250	130 SSD 285
50	3.0	6.1	10.2	17.0	25.1	36.6	–	**–**	–	–	–
75	2.0	4.1	6.9	11.7	17.6	26.5	38.8	**50.2**	67.2	–	–
100	1.5	3.1	5.2	8.9	13.5	20.4	30.3	**39.8**	54.6	68.5	85.5
150	1.0	2.1	3.5	6.0	9.1	13.9	20.8	**27.6**	38.6	49.1	62.8
200	0.8	1.6	2.6	4.5	6.9	10.5	15.8	**21.0**	29.5	37.8	48.7
250	0.6	1.2	2.1	3.6	5.5	8.4	12.7	**16.9**	23.8	30.6	39.5
300	0.5	1.0	1.8	3.0	4.6	7.0	10.6	**14.1**	19.9	25.7	33.2
400	0.4	0.8	1.3	2.3	3.4	5.3	8.0	**10.6**	15.0	19.4	25.1
500	0.3	0.6	1.1	1.8	2.8	4.2	6.4	**8.5**	12.1	15.5	20.2

Radius R (m) ↓ V (kph) →	30 SSD 35	40 SSD 50	50 SSD 65	60 SSD 85	70 SSD 105	80 SSD 130	90 SSD 160	100 SSD 185	110 SSD 220	120 SSD 250	130 SSD 285
600	0.3	0.5	0.9	1.5	2.3	3.5	5.3	**7.1**	10.1	13.0	16.8
800	0.2	0.4	0.7	1.1	1.7	2.6	4.0	**5.3**	7.6	9.7	12.7
1000	0.2	0.3	0.5	0.9	1.4	2.1	3.2	**4.3**	6.0	7.8	10.1
1500	0.1	0.2	0.4	0.6	0.9	1.4	2.1	**2.9**	4.0	5.2	6.8
2000	0.1	0.2	0.3	0.5	0.7	1.1	1.6	**2.1**	3.0	3.9	5.1

3. Sight Distance Available Past an Obstruction

DESIGN SPEED & GRADE

Design Speed V (kph)	80
Grade G (%)	0 % level

CURVE & OBSTRUCTION

Curve radius (m)	300
Radius measured to	Inside lane centreline
Lane width w (m)	3.65
Clearance to obstruction (m)	6
Clearance measured from	Inside lane edge

CALCULATION

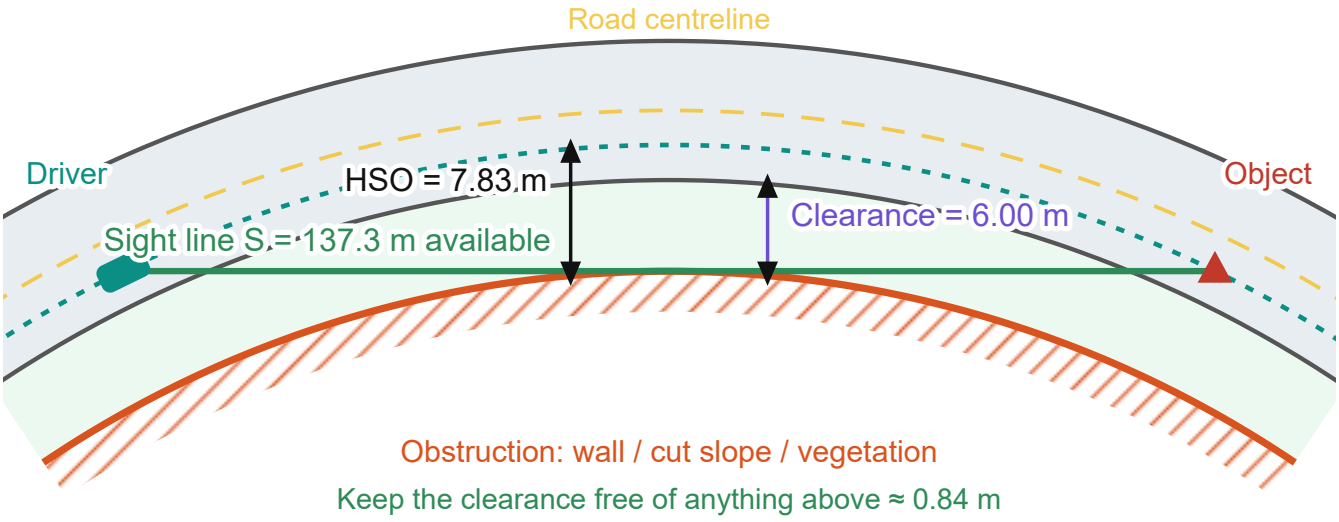
Radius to centreline of inside lane R (m)	300.0
Offset from centreline of inside lane M (m)	7.83
Sight distance available (m)	137.3
Stopping sight distance required, 0 % level (m)	130

RESULTS

Sight distance check at 80 kph, 0 % level	**PASS**
Highest design speed this clearance supports	**80 kph**
Clearance needed for this speed, from lane edge (m)	**5.19 m**

Sample report: illustrative data, not for design use

SKETCH — HORIZONTAL CURVE & CLEARANCE (NOT TO SCALE)



COMPUTED VALUES

Available SSD	137.3 m
Required SSD	130 m
Margin	+7.3 m
Max Design Speed	80 kph

S available = (R / 28.65) · $\cos^{-1}$[(R − M) / R] ($\cos^{-1}$ in degrees), M = clearance from the centreline of the inside lane.
The check passes when the sight distance available is at least the stopping sight distance required for the design speed on the chosen grade. If it fails: increase the clearance (cut back the slope, move the wall or clear vegetation), reduce the design speed, or increase the curve radius.

SIGHT DISTANCE AVAILABLE (M) — RADIUS VS CLEARANCE FROM LANE EDGE

`highlighted` = at least the required stopping sight distance for the selected speed and grade.

Radius R (m) ↓ Clearance from lane edge (m) →	1	2	3	4	5	6	8	10	12	15
50	34	39	44	49	53	57	64	70	76	85
75	41	48	54	60	64	69	78	85	93	102
100	48	55	62	69	74	80	89	98	106	118
150	58	68	76	84	91	97	109	120	130	**143**
200	67	78	88	97	105	112	126	**138**	**150**	**165**
250	75	88	98	108	117	125	**141**	**154**	**167**	**184**
300	82	96	108	118	128	**137**	**154**	**169**	**183**	**202**
400	95	111	124	**137**	**148**	**158**	**178**	**195**	**211**	**233**
500	106	124	**139**	**153**	**165**	**177**	**199**	**218**	**236**	**260**
600	116	**136**	**152**	**167**	**181**	**194**	**217**	**239**	**258**	**285**
800	**134**	**157**	**176**	**193**	**209**	**224**	**251**	**275**	**298**	**329**
1000	**150**	**175**	**197**	**216**	**234**	**250**	**281**	**308**	**333**	**367**
1500	**184**	**214**	**241**	**264**	**286**	**307**	**344**	**377**	**408**	**450**

Radius R (m) ↓ Clearance from lane edge (m) →	1	2	3	4	5	6	8	10	12	15
2000	213	247	278	305	331	354	397	435	471	519

Generated with the Horizontal Sight Line Offset Calculator — https://shahidpervaiz.net/EngineeringDesignTools/horizontal_sight_offset_calculator. Results should be checked by a qualified engineer before use.