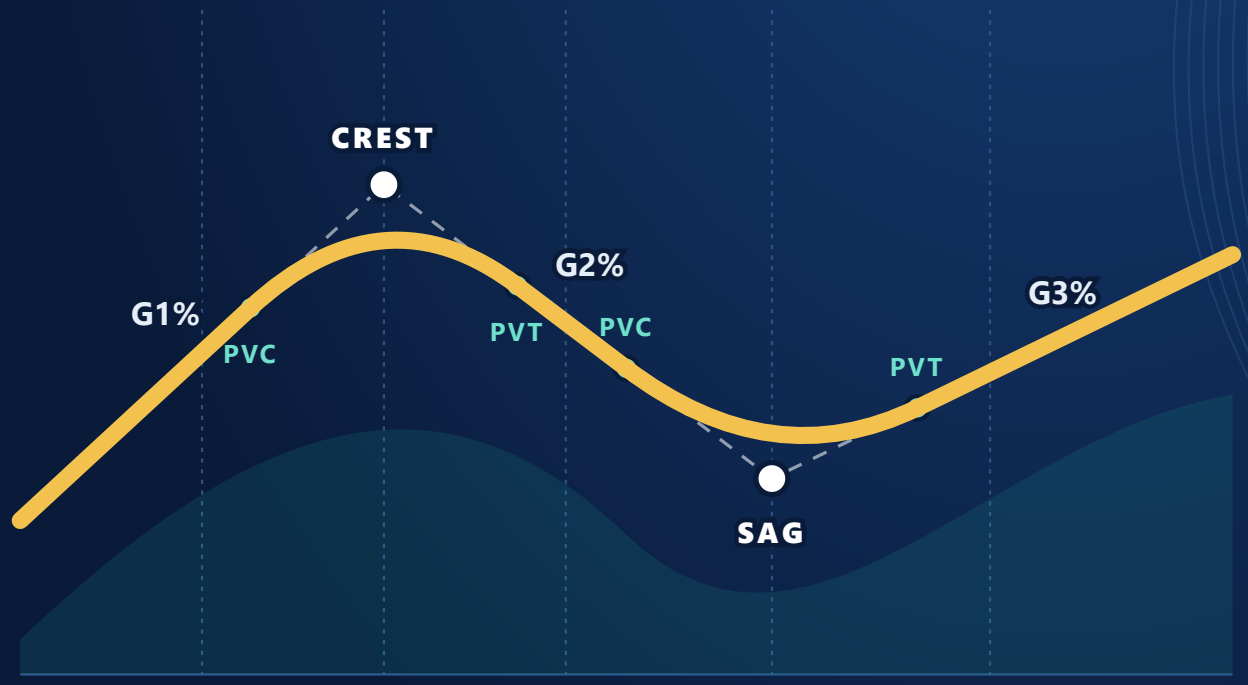
Vertical Curve Design Report

Parabolic crest and sag curves through a chain of PVIs (AASHTO K values).



Sample Road — Crest & Sag Demo

Client: Urban City

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Vertical Curve Design — Design Report

PVI chain & parabolic vertical curves · Generated 11/5/2026 3:17:46 PM

1. Project

Road name	Sample Road — Crest & Sag Demo
Design speed	60 kph
Number of PVIs	4
Alignment	0+000.000 to 0+950.000
Date	11/5/2026

2. Design criteria

Minimum K — crest (AASHTO, 60 kph)	11
Minimum K — sag (AASHTO, 60 kph)	18
Curves checked	2 (2 OK, 0 below minimum)

3. Method

Grades: G_1, G_2 = ΔElev / ΔSta between successive PVIs; algebraic difference $A = G_2 - G_1$ ($A < 0$ crest, $A > 0$ sag).

Curve: PVC = PVI − L/2, PVT = PVI + L/2; elevation within the curve $\text{Elev}(x) = \text{Elev}_{PVC} + G_1 \cdot x + (A / 2L) \cdot x^2$, x measured from the PVC.

K = L / |A%|; middle ordinate M = |A%| · L / 800; high/low point at $x = -G_1 \cdot L / A$ where it falls within the curve.

4. PVI chain

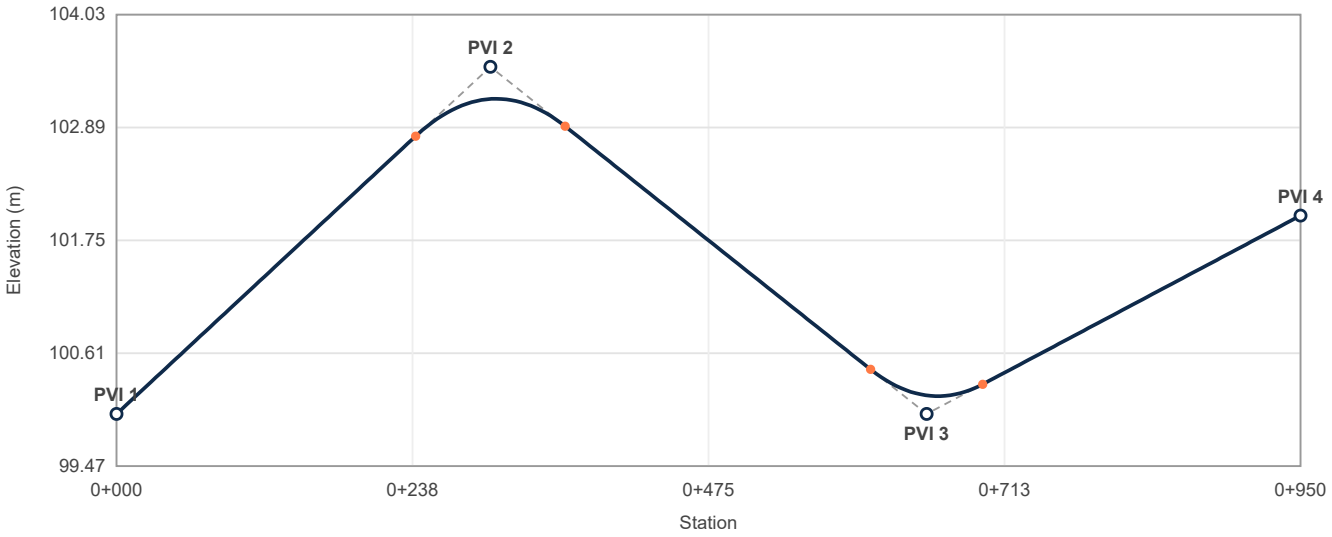
PVI	Role	Station	Elevation	Curve L
1	Start	0+000.000	100.000	–
2	Interior	0+300.000	103.500	120.000
3	Interior	0+650.000	100.000	90.000
4	End	0+950.000	102.000	–

5. Curve data

PVI	Type	G1	G2	A	L	K	Min K	Check	PVC Sta / Elev	PVT Sta / Elev	M	High / low point
2	Crest	1.167%	-1.000%	-2.167%	120.000	55.4	11	OK	0+240.000 / 102.800	0+360.000 / 102.900	0.325	High 0+304.615 / 103.177
3	Sag	-1.000%	0.667%	1.667%	90.000	54.0	18	OK	0+605.000 / 100.450	0+695.000 / 100.300	0.188	Low 0+659.000 / 100.180

6. Profile

Sample report: illustrative data, not for design use



Solid line: finished profile · dashed: tangents through the PVIs · orange dots: PVC / PVT.

7. Elevations

4+025.000 → Elevation = **122.500 m** (tangent)

Generated with the Vertical Curve Design Calculator — https://shahidpervaiz.net/EngineeringDesignTools/vertical_curve_design_calculator.
Results should be checked by a qualified engineer before use.

Sample report: illustrative data, not for design use