

2.11 Vertical Alignment

The Developer must consider the following when designing vertical curves on new developments. Generally, the maximum and minimum gradients allowable on new developments will be as detailed within the table below:

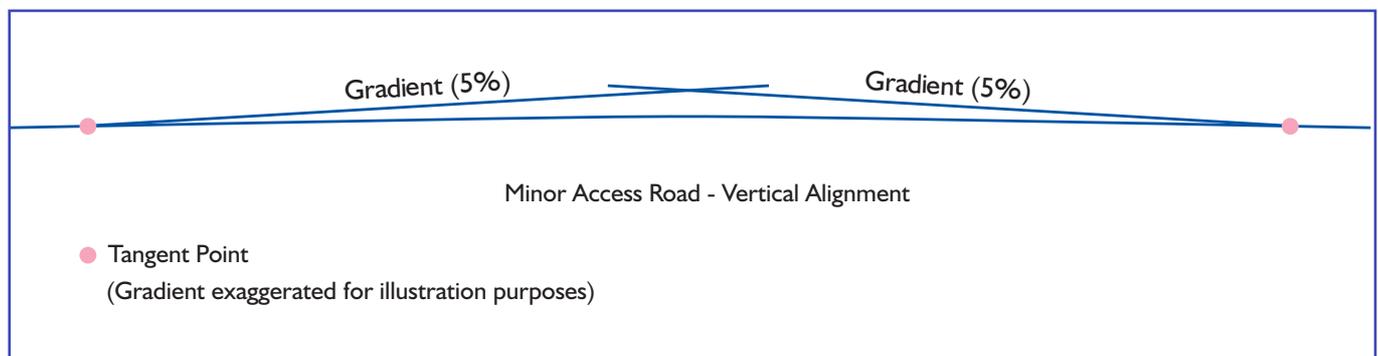
Category	Maximum Gradient	Minimum gradient
All road categories	1:20 (5%) desirable but consideration may be given to gradients up to 1:10 (10%)	1:150 (0.67%)
Cycletracks and Footways	1:20 (5%)	1:150 (0.67%)

Additionally, the Developer must consider the curvature of the new highway. The design curve length will be a function of the algebraic change of gradient, expressed as a percentage, multiplied by the 'K' value. 'K' values are provided in the table below:

Category	Minimum 'K' value
Major access and above	6
Minor access and below	2
Cycletrack	2

Example, Minor Access Road - Vertical Alignment:

The following example has been included to assist Developers in designing vertical curves.



The Developer should note that side road gradients into junctions should be set at a maximum of 1:20 (5%) for the first 10m. Additionally, the minimum vertical curve length of any section of road should be not less than 20m.

In the above example, assuming it is a Minor Access Road, and the curve length will be 20m

The 'K' Value is given by:

$$\begin{aligned} &\text{Design curve length} / \text{Algebraic change of gradient} \\ &= 20\text{m} / 10 \\ &= 2 \end{aligned}$$

Therefore the above example falls within the design criteria and would be acceptable.

Headroom

Additionally, the Developer must also consider in the design that the minimum allowable headroom for all new highways intended for adoption shall be as follows;

Category	Minimum headroom
All roads	5.3m
Cycletrack	2.7m
Footway	2.7m