Design Speed Related Parameters

1.9 The Design Speed bands 120, 100, 85 km/h etc. dictate the minimum geometric parameters for the design according to Table 3. This shows Desirable Minimum values and values for certain Design Speed steps below Desirable Minimum. Desirable Minimum values represent the comfortable values dictated by the Design Speed

Table 3: Design Speed Related Parameters

DESIGN SPEED (km/h)	120	100	85	70	60	50	V^2/R
STOPPING SIGHT DISTANCE m							
Desirable Minimum Stopping Sight Distance	295	215	160	120	90	70	
One Step below Desirable Minimum	215	160	120	90	70	50	
Two Steps below Desirable Minimum	160	120	90	70	50	50	
HORIZONTAL CURVATURE m							
Minimum R* without elimination of Adverse Camber and Transitions	2880	2040	1440	1020	720	510	5
Minimum R* with Superelevation of 2.5%	2040	1440	1020	720	510	360	7 07
Minimum R with Superelevation of 3.5%	1440	1020	720	510	360	255	10
Desirable Minimum R with Superelevation of 5%	1020	720	510	360	255	180	14 14
One Step below Desirable Min R with Superelevation of 7%	720	510	360	255	180	127	20
Two Steps below Desirable Min R with Superelevation of 7%	510	360	255	180	127	90	28 28
VERTICAL CURVATURE – CREST							
Desirable Minimum Crest K Value	182	100	55	30	17	10	
One Step below Desirable Min Crest K Value	100	55	30	17	10	6 5	
Two Steps below Desirable Min Crest K Value	55	30	17	10	6.5	6 5	
VERTICAL CURVATURE – SAG							
Desirable Minimum Sag K Value	53	37	26	20	13	9	
One Step below Desirable Min Sag K Value	37	26	20	13	9	6 5	
Two Steps below Desirable Min Sag K Value	26	20	13	9	6.5	6.5	
OVERTAKING SIGHT DISTANCES							
Full Overtaking Sight Distance FOSD m	N/A	580	490	410	345	290	
FOSD Overtaking Crest K Value	N/A	400	285	200	142	100	

Notes

* Not to be used in the design of single carriageways (see Paragraphs 7.25 to 7.30).

The V2/R values simply represent a convenient means of identifying the relative levels of design parameters, irrespective of Design Speed

K Value = curve length divided by algebraic change of gradient (%). See Paragraph 4.5

1. DESIGN SPEED

General

1.1 The road alignment shall be designed so as to ensure that standards of curvature, visibility, superelevation, etc. are provided for a Design Speed which shall be consistent with the anticipated vehicle speeds on the road. A relatively straight alignment in flat country will generate higher speeds, and thus produce a higher Design Speed, than a more sinuous alignment in hilly terrain or amongst dense land use constraints. There is, therefore, always an inherent economic trade-off between the construction and environmental costs of alternative alignments of different Design Speeds, and their user benefits.

Factors Affecting Speed

1.2 Speeds vary according to the impression of constraint that the road alignment and layout impart to the driver. This constraint can be measured by the three factors given in Paragraphs 1.3 to 1.5.

1.3 Alignment Constraint, Ac: This measures the degree of constraint imparted by the road alignment, and is measured by:

Dual Carriageways: $Ac = 66 + B/10$

Single Carriageways: $Ac = 12 - VISI/60 + 2B/45$

where:

B = Bendiness (total angle the road turns through), degrees/km;

VISI = Harmonic Mean Visibility, m (see Annex A)

1.4 Layout Constraint, Lc: This measures the degree of constraint imparted by the road cross section, verge width and frequency of junctions and accesses. Table 1 shows the values of Lc relative to cross section features and density of access, expressed as the total number of junctions, laybys and direct accesses (other than single field accesses) per km (see TD 41), summed for both sides of the road, where:

L = Low Access numbering up to 5 per km;

M = Medium Access numbering 6 to 8 per km;

H = High Access numbering 9 or more per km.

Table 1: Layout Constraint, Lc km/h

Road Type	S2						WS2		D2AP				D3AP	D2M		D3M
Carriageway Width (ex hard strips)	6m		7.0m		7.3m		10m		Dual 7.0m		Dual 7.5m		Dual 10.5m or 11.25m	Dual 7.0m	Dual 7.5m	Dual 10.5m or 11.25m
Degree of Access and Junctions	H	M	M	H	M	L	M	L	M	L	M	L	L	L	L	L
With hard shoulders					21	19	17	15	10	9	8	7	5	5	4	0
Without hard shoulders:																
With 3.0m Verge	(29)	(26)	25	23	(23)	(21)	(19)	(17)	(12)	(11)	(10)	(9)	(6)			
With 1.5m Verge	(31)	(28)		(27)			(25)	(23)	( ) : Non-standard cross-section							
With 0.5m Verge	(33)	(30)	There are no research data available for 4 lane Single Carriageway roads between 12 and 15m width. In the limited circumstances for their use described in this document, Design Speed should be estimated assuming a normal D2AP with a Layout Constraint of 15 - 13km/h													

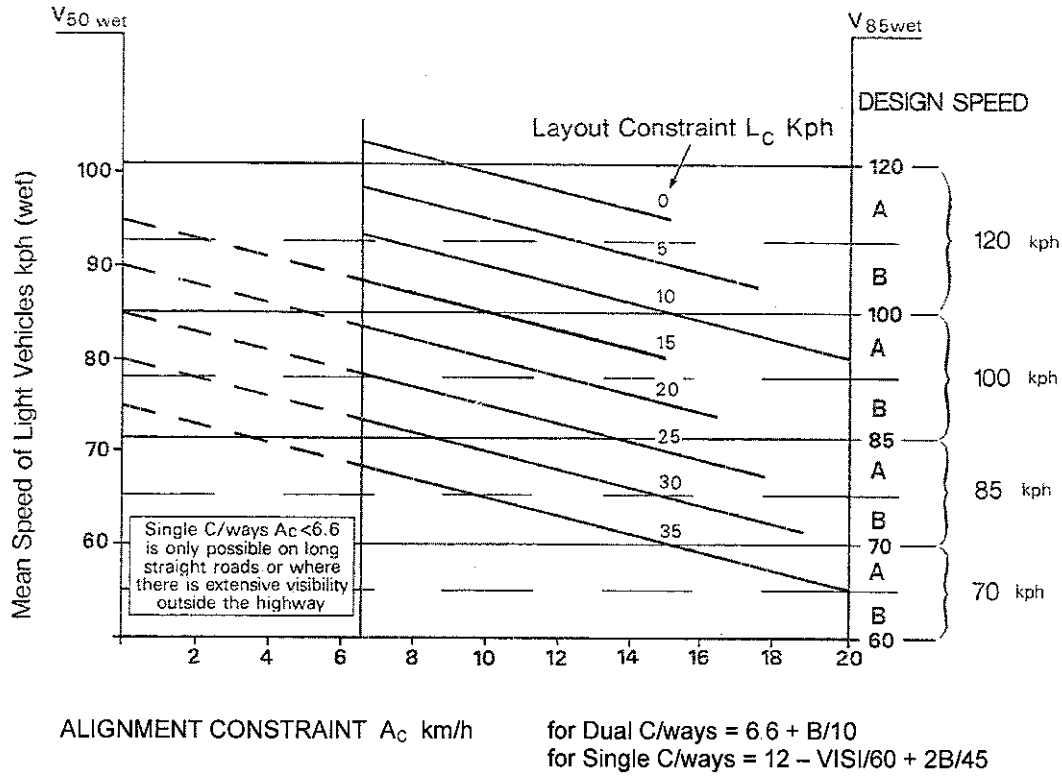

Figure 1: Selection of Design Speed (Rural Roads)