

CREST VERTICAL CURVE DESIGN GUIDANCE FOR BIKEWAYS (20 mph)

V = speed, mph		20	20	20	20	20	20	20	20	20	20
f = .25 due to braking		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
g = grade decending		0	-0.01	-0.02	-0.03	-0.04	-0.05	-0.06	-0.07	-0.08	-0.083
f + g		0.25	0.24	0.23	0.22	0.21	0.2	0.19	0.18	0.17	0.167
$V^2V/[30(f+g)]$		53.33	55.56	57.97	60.61	63.49	66.67	70.18	74.07	78.43	79.84
3.67^2V		73.40	73.40	73.40	73.40	73.40	73.40	73.40	73.40	73.40	73.40
S = $V^2V / [30(f + g)] + 3.67V$		126.73	128.96	131.37	134.01	136.89	140.07	143.58	147.47	151.83	153.24
2S		253.47	257.91	262.74	268.01	273.78	280.13	287.15	294.95	303.66	306.48
(S * S) / 900		17.85	18.48	19.18	19.95	20.82	21.80	22.90	24.17	25.61	26.09
A* = algebraic difference between grades	A*	Length of Curve (minimum 40 feet)									
	2	40	40	40	40	40	40	40	40	40	40
	2.5	40	40	40	40	40	40	40	40	40	40
	3	40	40	40	40	40	40	40	40	40	40
	3.5	40	40	40	40	40	40	40	40	47	49
When S>L, $L = 2S - 900 / A$	4	40	40	40	43	49	55	62	70	79	81
	4.5	53	58	63	68	74	80	87	95	104	106
	5	73	78	83	88	94	100	107	115	124	126
	5.5	90	94	99	104	110	116	124	131	140	143
	6.00	103	108	113	118	124	130	137	145	154	157
	6.5	115	119	124	130	135	142	149	157	166	170
	7	125	129	134	140	146	153	160	169	179	183
When L>S, $L = A^*S^2 / 900$	7.5	134	139	144	150	156	163	172	181	192	196
	8	143	148	153	160	167	174	183	193	205	209
	8.5	152	157	163	170	177	185	195	205	218	222
	9	161	166	173	180	187	196	206	217	231	235
	9.5	170	176	182	190	198	207	218	230	243	248
	10	178	185	192	200	208	218	229	242	256	261
	11	196	203	211	219	229	240	252	266	282	287
	12	214	222	230	239	250	262	275	290	307	313
	13	232	240	249	259	271	283	298	314	333	339
	14	250	259	268	279	292	305	321	338	359	365
	15	268	277	288	299	312	327	344	362	384	391
	16	286	296	307	319	333	349	366	387	410	417
	16.6	296	307	318	331	346	362	380	401	425	433