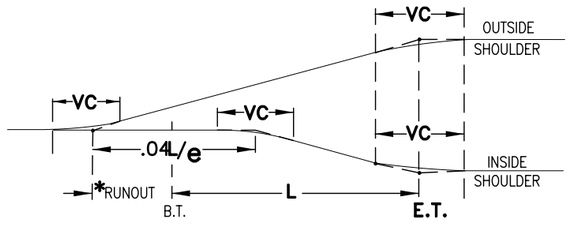

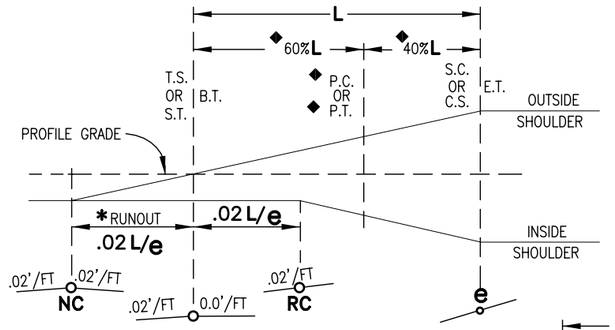

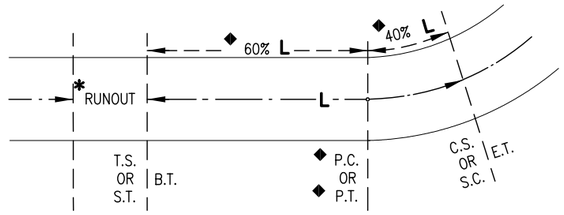

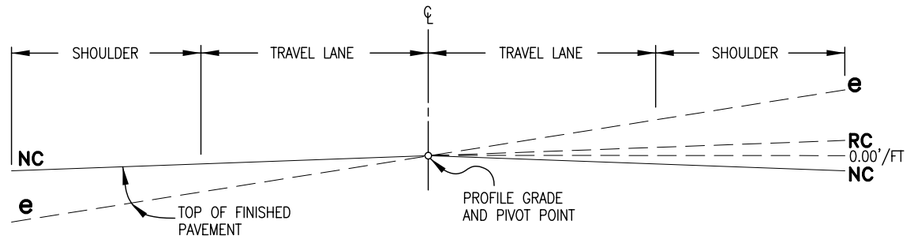

VC – TO OBTAIN SMOOTH PROFILES ON PAVEMENT EDGES, VERTICAL CURVES MAY BE INSERTED AT THE ANGULAR BREAK POINTS. UNLESS RESTRAINING CONDITIONS EXIST, THE LENGTH OF VERTICAL CURVE SELECTED, IN FEET, SHOULD BE AT LEAST NUMERICALLY EQUAL TO THE DESIGN SPEED, AND NO MORE THAN **.04L/e**.

***** RUNOUT LENGTH SHOULD USUALLY BE **.02L/e**. WHEN CONDITIONS ARE SUCH THAT THIS LENGTH IS NOT SUITABLE, THE DESIGNER SHALL CHOOSE ANOTHER LENGTH TO SUIT CONDITIONS.

○ = PIVOT

◆ = WHEN CURVE IS NOT SPIRALLED.

e = MAXIMUM RATE OF SUPERELEVATION IN FEET (PER FOOT OF WIDTH) FOR THE GIVEN RADIUS OF CURVE AND DESIGN SPEED.

SUPERELEVATION DIAGRAMS FOR CROWNED HIGHWAYS

e_{max} = 8% TABLE CONTINUED FROM SHEET 1.

	V_d = 50 mph			V_d = 55 mph			V_d = 60 mph			V_d = 65 mph			V_d = 70 mph			V_d = 75 mph			V_d = 80 mph			
		L (FT.)			L (FT.)			L (FT.)			L (FT.)			L (FT.)			L (FT.)			L (FT.)		
e (%)	R (FT.)	1 LN	2 LNS	R (FT.)	1 LN	2 LNS	R (FT.)	1 LN	2 LNS	R (FT.)	1 LN	2 LNS	R (FT.)	1 LN	2 LNS	R (FT.)	1 LN	2 LNS	R (FT.)	1 LN	2 LNS	e (%)
2.0	5990–<8150	48	72	7150–<9720	51	77	8440–<11500	53	80	9510–<12900	56	84	10700–<14500	60	90	12000–<16100	63	95	13300–<17800	69	103	2.0
2.2	5400–<5990	53	79	6450–<7150	56	84	7620–<8440	59	88	8600–<9510	61	92	9660–<10700	66	99	10800–<12000	69	104	12000–<13300	75	113	2.2
2.4	4910–<5400	58	86	5870–<6450	61	92	6930–<7620	64	96	7830–<8600	67	100	8810–<9660	72	108	9850–<10800	76	114	11000–<12000	82	123	2.4
2.6	4490–<4910	62	94	5370–<5870	66	100	6350–<6930	69	104	7180–<7830	73	109	8090–<8810	78	117	9050–<9850	82	123	10100–<11000	89	134	2.6
2.8	4130–<4490	67	101	4950–<5370	71	107	5850–<6350	75	112	6630–<7180	78	117	7470–<8090	84	126	8370–<9050	88	133	9340–<10100	96	144	2.8
3.0	3820–<4130	72	108	4580–<4950	77	115	5420–<5850	80	120	6140–<6630	84	126	6930–<7470	90	135	7780–<8370	95	142	8700–<9340	103	154	3.0
3.2	3550–<3820	77	115	4250–<4580	82	123	5040–<5420	85	128	5720–<6140	89	134	6460–<6930	96	144	7260–<7780	101	152	8130–<8700	110	165	3.2
3.4	3300–<3550	82	122	3970–<4250	87	130	4700–<5040	91	136	5350–<5720	95	142	6050–<6460	102	153	6800–<7260	107	161	7620–<8130	117	175	3.4
3.6	3090–<3300	86	130	3710–<3970	92	138	4400–<4700	96	144	5010–<5350	100	151	5680–<6050	108	162	6400–<6800	114	171	7180–<7620	123	185	3.6
3.8	2890–<3090	91	137	3480–<3710	97	146	4140–<4400	101	152	4710–<5010	106	159	5350–<5680	114	171	6030–<6400	120	180	6780–<7180	130	195	3.8
4.0	2720–<2890	96	144	3270–<3480	102	153	3890–<4140	107	160	4450–<4710	112	167	5050–<5350	120	180	5710–<6030	126	189	6420–<6780	137	206	4.0
4.2	2560–<2720	101	151	3080–<3270	107	161	3670–<3890	112	168	4200–<4450	117	176	4780–<5050	126	189	5410–<5710	133	199	6090–<6420	144	216	4.2
4.4	2410–<2560	106	158	2910–<3080	112	169	3470–<3670	117	176	3980–<4200	123	184	4540–<4780	132	198	5140–<5410	139	208	5800–<6090	151	226	4.4
4.6	2280–<2410	110	166	2750–<2910	117	176	3290–<3470	123	184	3770–<3980	128	193	4310–<4540	138	207	4890–<5140	145	218	5530–<5800	158	237	4.6
4.8	2160–<2280	115	173	2610–<2750	123	184	3120–<3290	128	192	3590–<3770	134	201	4100–<4310	144	216	4670–<4890	152	227	5280–<5530	165	247	4.8
5.0	2040–<2160	120	180	2470–<2610	128	191	2960–<3120	133	200	3410–<3590	140	209	3910–<4100	150	225	4460–<4670	158	237	5050–<5280	171	257	5.0
5.2	1930–<2040	125	187	2350–<2470	133	199	2820–<2960	139	208	3250–<3410	145	218	3740–<3910	156	234	4260–<4460	164	246	4840–<5050	178	267	5.2
5.4	1830–<1930	130	194	2230–<2350	138	207	2680–<2820	144	216	3110–<3250	151	226	3570–<3740	162	243	4090–<4260	171	256	4640–<4840	185	278	5.4
5.6	1740–<1830	134	202	2120–<2230	143	214	2550–<2680	149	224	2970–<3110	156	234	3420–<3570	168	252	3920–<4090	177	265	4460–<4640	192	288	5.6
5.8	1650–<1740	139	209	2010–<2120	148	222	2430–<2550	155	232	2840–<2970	162	243	3280–<3420	174	261	3760–<3920	183	275	4290–<4460	199	298	5.8
6.0	1560–<1650	144	216	1920–<2010	153	230	2320–<2430	160	240	2710–<2840	167	251	3150–<3280	180	270	3620–<3760	189	284	4140–<4290	206	309	6.0
6.2	1480–<1560	149	223	1820–<1920	158	237	2210–<2320	165	248	2600–<2710	173	260	3020–<3150	186	279	3480–<3620	196	294	3990–<4140	213	319	6.2
6.4	1400–<1480	154	230	1730–<1820	163	245	2110–<2210	171	256	2490–<2600	179	268	2910–<3020	192	288	3360–<3480	202	303	3850–<3990	219	329	6.4
6.6	1330–<1400	158	238	1650–<1730	169	253	2010–<2110	176	264	2380–<2490	184	276	2790–<2910	198	297	3240–<3360	208	313	3720–<3850	226	339	6.6
6.8	1260–<1330	163	245	1560–<1650	174	260	1910–<2010	181	272	2280–<2380	190	285	2690–<2790	204	306	3120–<3240	215	322	3600–<3720	233	350	6.8
7.0	1190–<1260	168	252	1480–<1560	179	268	1820–<1910	187	280	2180–<2280	195	293	2580–<2690	210	315	3010–<3120	221	332	3480–<3600	240	360	7.0
7.2	1120–<1190	173	259	1400–<1480	184	276	1720–<1820	192	288	2070–<2180	201	301	2470–<2580	216	324	2900–<3010	227	341	3370–<3480	247	370	7.2
7.4	1060–<1120	178	266	1320–<1400	189	283	1630–<1720	197	296	1970–<2070	207	310	2350–<2470	222	333	2780–<2900	234	351	3250–<3370	254	381	7.4
7.6	980–<1060	182	274	1230–<1320	194	291	1530–<1630	203	304	1850–<1970	212	318	2230–<2350	228	342	2650–<2780	240	360	3120–<3250	261	391	7.6
7.8	901–<980	187	281	1140–<1230	199	299	1410–<1530	208	312	1720–<1850	218	327	2090–<2230	234	351	2500–<2650	246	369	2970–<3120	267	401	7.8
8.0	758–<901	192	288	960–<1140	204	306	1200–<1410	213	320	1480–<1720	223	335	1810–<2090	240	360	2210–<2500	253	379	2670–<2970	274	411	8.0

R – RADIUS OF CURVE
V_d – ASSUMED DESIGN SPEED
L – LENGTH OF SUPERELEVATION RUNOFF OR SPIRAL LENGTH
NC – NORMAL CROWN SECTION
RC – REMOVE ADVERSE CROWN, SUPERELEVATE AT NORMAL CROWN SLOPE
VC – VERTICAL CURVE

BT – BEGINNING OF TRANSITION
ET – ENDING OF TRANSITION
TS – TANGENT TO SPIRAL
ST – SPIRAL TO TANGENT
PC – POINT OF CURVATURE
PI – POINT OF INTERSECTION
PT – POINT OF TANGENT
CS – CURVE TO SPIRAL
SC – SPIRAL TO CURVE

SUPERELEVATION NOTES

1. THIS STANDARD PLAN SHOWS THE REQUIRED RATES OF SUPERELEVATION FOR THE VARIOUS RADIUS LENGTHS AT DIFFERENT DESIGN SPEEDS FOR THE MAXIMUM SUPERELEVATION RATE OF 8%. ALTERNATIVE MAXIMUM RATE OF SUPERELEVATION SHALL BE USED FOR CROWNED HIGHWAYS WHEN SPECIFIED ON THE PLANS.
2. VALUES ARE FOR DESIGN ELEMENTS RELATED TO DESIGN SPEED AND HORIZONTAL CURVATURE FOR 2–LANE AND 4–LANE HIGHWAYS.
3. NUMBER OF LANES ROTATED:
   A. ONE LANE ROTATED IS TYPICAL FOR A TWO–LANE HIGHWAY.
   B. TWO LANES ROTATED ARE TYPICAL FOR A FOUR–LANE HIGHWAY.
4. SPIRALS ARE RECOMMENDED BELOW THE HEAVY LINE IN THE TABLES. SPIRALS ARE PERMISSIBLE BUT NOT RECOMMENDED ABOVE THE HEAVY LINE. SPIRAL LENGTHS MAY BE ROUNDED TO MULTIPLES OF 50 FEET FOR CALCULATION CONVENIENCE.

Computer File Information	
Creation Date: 07/04/06	Initials: SJR
Last Modification Date: 07/04/06	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 2030110203.dwg	
CAD Ver.: MicroStation V8 Scale: Not to Scale	Units: English

(R–X) (R–X) (R–X) (R–X)

Sheet Revisions	
Date:	Comments

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SUPERELEVATION CROWNED AND DIVIDED HIGHWAYS

Issued By: Project Development Branch on July 04, 2006

STANDARD PLAN NO.
M-203-11