

MINIMUM RADII FOR DESIGN SUPERELEVATION RATES,
DESIGN SPEEDS, AND $e_{max} = 4\%$

e%	DESIGN SPEED (MPH)																				
	30			35			40			45			50			55			60		
	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2
NC	2,830	0	0	3,730	0	0	4,770	0	0	5,930	0	0	7,220	0	0	8,650	0	0	10,300	0	0
RC	1,880	36	55	2,490	39	58	3,220	41	62	4,040	44	67	4,940	48	72	5,950	48	72	7,080	48	72
2.2	1,580	40	60	2,120	43	64	2,760	46	58	3,480	49	73	4,280	53	79	5,180	53	79	6,190	53	79
2.4	1,270	44	65	1,760	46	70	2,340	50	74	2,980	53	80	3,690	58	86	4,500	58	86	5,410	58	86
2.6	1,000	47	71	1,420	50	75	1,930	54	81	2,490	58	87	3,130	62	94	3,870	62	94	4,700	62	94
2.8	817	51	76	1,170	54	81	1,620	58	87	2,100	62	93	2,660	67	101	3,310	67	101	4,060	67	101
3.0	681	55	82	982	58	87	1,370	62	93	1,800	67	100	2,290	72	108	2,860	72	108	3,530	72	108
3.2	576	58	87	835	62	93	1,180	66	99	1,550	71	107	1,980	77	115	2,490	77	115	3,090	77	115
3.4	490	62	93	714	66	99	1,010	70	106	1,340	76	113	1,720	82	122	2,170	82	122	2,700	82	122
3.6	416	65	98	610	70	105	865	74	112	1,150	80	120	1,480	86	130	1,880	86	130	2,350	86	130
3.8	348	69	104	512	74	110	730	79	118	970	84	127	1,260	91	137	1,600	91	137	2,010	91	137
4.0	250	73	109	371	77	116	533	83	124	711	89	133	926	96	144	1,190	96	144	1,500	96	144

TABLE NOTES:

"NC" DENOTES NORMAL CROSS SLOPE.

"RC" DENOTES REMOVE ADVERSE CROSS SLOPE,
SUPERELEVATE AT NORMAL CROSS SLOPE.

"e" DENOTES THE SUPERELEVATION IN PERCENT (%).

"L" THE LENGTH OF SUPERELEVATION RUNOFF AND
WIDENING TRANSITION IN FEET FOR A 2 LANE
ROADWAY.

THE L1 COLUMN IS FOR 1 LANE ROTATED
THE L2 COLUMN IS FOR 2 LANES ROTATED

1 LANE ROTATED IS TYPICALLY FOR A 2-LANE HIGHWAY
2 LANE ROTATED IS TYPICALLY FOR A 4-LANE HIGHWAY

WHEN USING ONE OF THE TABLES FOR A GIVEN
RADIUS, INTERPOLATION IS NOT NECESSARY AS
THE SUPERELEVATION RATE SHOULD BE
DETERMINED FROM A RADIUS EQUAL TO, OR
SLIGHTLY SMALLER THAN, THE RADII
PROVIDED IN THE TABLE. THE RESULT IS A
SUPERELEVATION RATE THAT IS ROUNDED UP
TO THE NEAREST 0.2 OF A PERCENT.

EXAMPLE: A 50 MPH CURVE WITH A MAXIMUM
SUPERELEVATION RATE OF 8 PERCENT, AND A RADIUS
OF 1,910 FT, SHOULD USE THE RADIUS OF 1,830 FT
TO OBTAIN A SUPERELEVATION RATE OF 5.4 PERCENT.

MINIMUM RADII FOR DESIGN SUPERELEVATION RATES,
DESIGN SPEEDS, AND $e_{max} = 8\%$

e%	DESIGN SPEED (MPH)																										
	30			35			40			45			50			55			60			65			70		
	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2			
NC	3,240	0	0	4,260	0	0	5,410	0	0	6,710	0	0	8,150	0	0	9,720	0	0	11,500	0	0	12,900	0	0	14,500	0	0
RC	2,370	36	55	3,120	39	58	3,970	41	62	4,930	44	67	5,990	48	72	7,150	48	72	8,440	48	72	9,510	48	72	10,700	48	72
2.2	2,130	40	60	2,800	43	64	3,570	46	58	4,440	49	73	5,400	53	79	6,450	53	79	7,620	53	79	8,600	53	79	9,660	53	79
2.4	1,930	44	65	2,540	46	70	3,240	50	74	4,030	53	80	4,910	58	86	5,870	58	86	6,930	58	86	7,830	58	86	8,810	58	86
2.6	1,760	47	71	2,320	50	75	2,960	54	81	3,690	58	87	4,490	62	94	5,370	62	94	6,350	62	94	7,180	62	94	8,090	62	94
2.8	1,610	51	76	2,130	54	81	2,720	58	87	3,390	62	93	4,130	67	101	4,950	67	101	5,850	67	101	6,630	67	101	7,470	67	101
3.0	1,480	55	82	1,960	58	87	2,510	62	93	3,130	67	100	3,820	72	108	4,580	72	108	5,420	72	108	6,140	72	108	6,930	72	108
3.2	1,370	58	87	1,820	62	93	2,330	66	99	2,900	71	107	3,550	77	115	4,250	77	115	5,040	77	115	5,720	77	115	6,460	77	115
3.4	1,270	62	93	1,690	66	99	2,170	70	106	2,700	76	113	3,300	82	122	3,970	82	122	4,700	82	122	5,350	82	122	6,050	82	122
3.6	1,180	65	98	1,570	70	105	2,020	74	112	2,520	80	120	3,090	86	130	3,710	86	130	4,400	86	130	5,010	86	130	5,680	86	130
3.8	1,100	69	104	1,470	74	110	1,890	79	118	2,360	84	127	2,890	91	137	3,480	91	137	4,140	91	137	4,700	91	137	5,350	91	137
4.0	1,030	73	109	1,370	77	116	1,770	83	124	2,220	89	133	2,720	96	144	3,270	96	144	3,890	96	144	4,450	96	144	5,050	96	144
4.2	955	76	115	1,280	81	122	1,660	87	130	2,080	93	140	2,560	101	151	3,080	101	151	3,670	101	151	4,200	101	151	4,780	101	151
4.4	893	80	120	1,200	85	128	1,560	91	137	1,960	98	147	2,410	106	158	2,910	106	158	3,470	106	158	3,980	106	158	4,540	106	158
4.6	834	84	125	1,130	89	134	1,470	95	143	1,850	102	153	2,280	110	166	2,750	110	166	3,290	110	166	3,770	110	166	4,310	110	166
4.8	779	87	131	1,060	93	139	1,390	99	149	1,750	107	160	2,160	115	173	2,610	115	173	3,120	115	173	3,590	115	173	4,100	115	173
5.0	727	91	136	991	97	145	1,310	103	155	1,650	111	167	2,040	120	180	2,470	120	180	2,960	120	180	3,410	120	180	3,910	120	180
5.2	676	95	142	929	101	151	1,230	108	161	1,560	116	173	1,930	125	187	2,350	125	187	2,820	125	187	3,250	125	187	3,740	125	187
5.4	627	98	147	870	105	157	1,160	112	168	1,480	120	180	1,830	130	194	2,230	130	194	2,680	130	194	3,110	130	194	3,570	130	194
5.6	582	102	153	813	108	163	1,090	116	174	1,390	124	187	1,740	134	202	2,120	134	202	2,550	134	202	2,970	134	202	3,420	134	202
5.8	542	105	158	761	112	168	1,030	120	180	1,320	129	193	1,650	139	209	2,010	139	209	2,430	139	209	2,840	139	209	3,280	139	209
6.0	506	109	164	713	116	174	965	124	186	1,250	133	200	1,560	144	216	1,920	144	216	2,320	144	216	2,710	144	216	3,150	144	216
6.2	472	113	169	669	120	180	909	128	192	1,180	138	207	1,480	149	223	1,820	149	223	2,210	149	223	2,600	149	223	3,020	149	223
6.4	442	116	175	628	124	186	857	132	199	1,110	142	213	1,400	154	230	1,730	154	230	2,110	154	230	2,490	154	230	2,910	154	230
6.6	413	120	180	590	128	192	808	137	205	1,050	147	220	1,330	158	238	1,650	158	238	2,010	158	238	2,380	158	238	2,790	158	238
6.8	386	124	185	553	132	197	761	141	211	990	151	227	1,260	163	245	1,560	163	245	1,910	163	245	2,280	163	245	2,690	163	245
7.0	360	127	191	518	135	203	716	145	217	933	156	233	1,190	168	252	1,480	168	252	1,820	168	252	2,180	168	252	2,580	168	252
7.2	336	131	196	485	139	209	672	149	223	878	160	240	1,120	173	259	1,400	173	259	1,720	173	259	2,070	173	259	2,470	173	259
7.4	312	135	202	451	143	215	628	153	230	822	164	247	1,060	178	266	1,320	178	266	1,630	178	266	1,970	178	266	2,350	178	266
7.6	287	138	207	417	147	221	583	157	236	765	169	253	980	182	274	1,230	182	274	1,530	182	274	1,850	182	274	2,230	182	274
7.8	261	142	213	380	151	226	533	161	242	701	173	260	901	187	281	1,140	187	281	1,410	187	281	1,720	187	281	2,090	187	281
8.0	214	145	218	314	155	232	444	166	248	587	178	267	758	192	288	960	192	288	1,200</								

"W"																					
CALCULATED AND DESIGN VALUES FOR TRAVELED WAY WIDENING ON OPEN HIGHWAY CURVES (TWOLANE HIGHWAYS, ONE-WAY OR TWO-WAY)[WB-67 ADJUSTMENT]																					
CURVE RADIUS (FT)	24' ROADWAY WIDTH						22' ROADWAY WIDTH						20' ROADWAY WIDTH								
	DESIGN SPEED (MPH)						DESIGN SPEED (MPH)						DESIGN SPEED (MPH)								
	30	35	40	45	50	55	60	30	35	40	45	50	55	60	30	35	40	45	50	55	60
7000	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	0.8	0.9	0.9	1.0	1.1	1.1	1.8	1.8	1.9	1.9	2.0	2.1	2.1
6500	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.8	0.9	0.9	1.0	1.1	1.1	1.2	1.8	1.9	1.9	2.0	2.1	2.1	2.2
6000	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.8	0.9	1.0	1.0	1.1	1.2	1.2	1.8	1.9	2.0	2.0	2.1	2.2	2.3
5500	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.9	1.0	1.0	1.1	1.2	1.2	1.3	1.9	2.0	2.0	2.1	2.2	2.2	2.4
5000	0.1	0.1	0.1	0.2	0.2	0.3	0.5	1.0	1.0	1.1	1.2	1.2	1.3	1.4	2.0	2.0	2.1	2.2	2.2	2.3	2.5
4500	0.1	0.1	0.2	0.2	0.3	0.4	0.6	1.0	1.1	1.2	1.2	1.3	1.4	1.5	2.0	2.1	2.2	2.2	2.3	2.4	2.6
4000	0.1	0.2	0.3	0.3	0.4	0.5	0.7	1.1	1.2	1.3	1.3	1.4	1.5	1.6	2.1	2.2	2.3	2.3	2.4	2.5	2.7
3500	0.2	0.3	0.4	0.5	0.6	0.6	0.8	1.2	1.3	1.4	1.5	1.6	1.6	1.7	2.2	2.3	2.4	2.5	2.6	2.6	2.8
3000	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.4	1.5	1.5	1.6	1.7	1.8	1.9	2.4	2.5	2.5	2.6	2.7	2.8	2.9
2500	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.7	2.8	2.9	3.0	3.1	3.2	3.3
2000	0.9	1.1	1.2	1.3	1.4	1.5	1.6	1.9	2.1	2.2	2.3	2.4	2.5	2.6	2.9	3.1	3.2	3.3	3.4	3.5	3.6
1800	1.1	1.2	1.3	1.5	1.6	1.7	1.8	2.1	2.2	2.3	2.5	2.6	2.7	2.8	3.1	3.2	3.3	3.5	3.6	3.7	3.8
1600	1.3	1.4	1.5	1.7	1.8	1.9	2.0	2.3	2.4	2.5	2.7	2.8	2.9	3.0	3.3	3.4	3.5	3.7	3.8	3.9	4.0
1400	1.6	1.8	1.9	2.0	2.2	2.3	2.4	2.6	2.8	2.9	3.0	3.2	3.3	3.4	3.6	3.8	3.9	4.0	4.4	4.3	4.4
1200	2.0	2.1	2.2	2.4	2.5	2.7	2.8	3.0	3.1	3.2	3.4	3.5	3.7	3.8	4.0	4.1	4.2	4.4	4.5	4.7	4.8
1000	2.5	2.7	2.8	3.0	3.1	3.3	3.4	3.5	3.7	3.8	4.0	4.1	4.3	4.4	4.5	4.7	4.8	5.0	5.1	5.3	5.4
900	2.8	3.0	3.1	3.3	3.5	3.6		3.8	4.0	4.1	4.3	4.5	4.6		4.8	5.0	5.1	5.3	5.5	5.6	
800	3.2	3.4	3.6	3.8	4.0	4.1		4.2	4.4	4.6	4.8	5.0	5.1		5.2	5.4	5.6	5.8	6.0	6.1	
700	3.8	4.0	4.2	4.4	4.6			4.8	5.0	5.2	5.4	5.6			5.8	6.0	6.2	6.4	6.6		
600	4.5	4.7	4.9	5.1	5.3			5.5	5.7	5.9	6.1	6.3			6.5	6.7	6.9	7.1	7.3		
500	5.4	5.7	5.9	6.1				6.4	6.7	6.9	7.1				7.4	7.7	7.9	8.1			
450	6.1	6.3	6.6					7.1	7.3	7.6					8.1	8.3	8.6				
400	6.9	7.1	7.4					7.9	8.1	8.4					8.9	9.1	9.4				
350	7.9	8.1	8.4					8.9	9.1	9.4					9.9	10.1	10.4				
300	9.2	9.5						10.2	10.5						11.2	11.5					
250	11.2							12.2							13.2						
200	14.0							15.0							16.0						

TABLE NOTES:

"W" THE WIDENING IN FEET FOR SURFACING AT INSIDE SHOULDERS.

VALUES SHOWN ARE FOR WB-67 DESIGN VEHICLE AND REPRESENT WIDENING IN FEET.

VALUES LESS THAN 2.0 FEET MAY BE DISREGARDED.

FOR 3-LANE ROADWAYS, MULTIPLY ABOVE VALUES BY 1.5.

FOR 4-LANE ROADWAYS, MULTIPLY ABOVE VALUES BY 2.0.

	MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
		<p style="text-align: center;">SUPERELEVATION, SPIRALS AND WIDENING</p>
DATE EFFECTIVE: 4/1/2024 DATE PREPARED: 1/16/2024	<p style="text-align: center; font-size: 1.2em;">203.22A</p>	SHEET NO. <p style="text-align: center; font-size: 1.2em;">2 OF 2</p>