

STANDARD RATES OF SUPERELEVATION AND
MINIMUM LENGTH OF TRANSITION FOR URBAN HIGHWAYS

E MAX=0.04 DESIRABLE

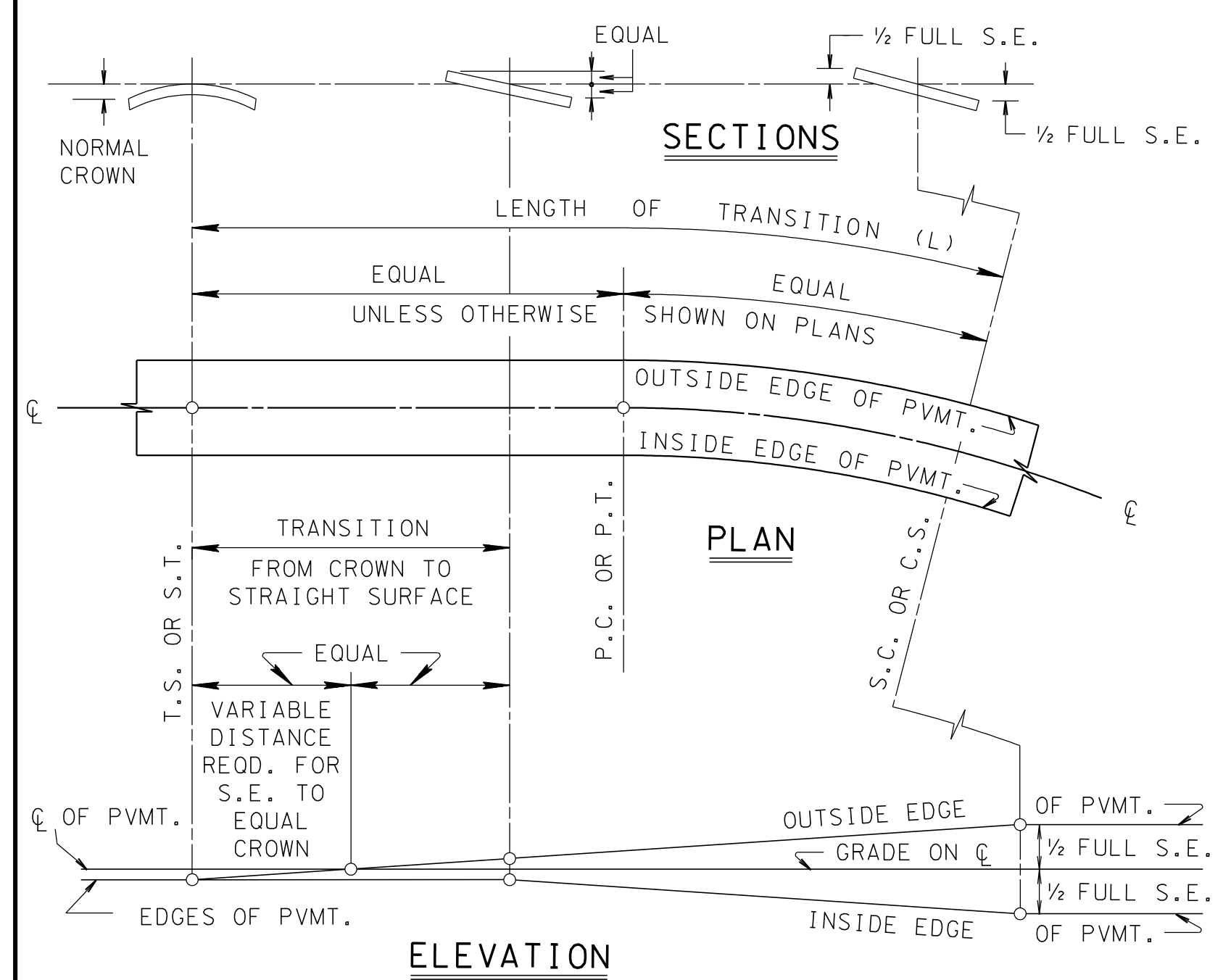
D	R (FT.)	V=20 (MPH)			V=30 (MPH)			V=40 (MPH)			V=50 (MPH)			V=60 (MPH)			
		e F/F	L (FT.)			e F/F	L (FT.)			e F/F	L (FT.)			e F/F	L (FT.)		
		2-LN	4-LN	6-LN	2-LN	4-LN	6-LN	2-LN	4-LN	6-LN	2-LN	4-LN	6-LN	2-LN	4-LN	6-LN	
0°-15'	22,918	NC	0	0	0	NC	0	0	0	NC	0	0	0	NC	0	0	0
0°-30'	11,459	NC	0	0	0	NC	0	0	0	NC	0	0	0	NC	0	0	0
0°-45'	7,639	NC	0	0	0	NC	0	0	0	RC	150	150	195	RC	175	175	215
1°-00'	5,730	NC	0	0	0	RC	100	110	145	RC	125	130	170	RC	150	150	195
1°-30'	3,820	NC	0	0	0	RC	100	110	145	.022	125	135	180	.027	150	170	230
2°-00'	2,865	NC	0	0	0	RC	100	110	145	.025	125	135	180	.030	150	170	230
2°-30'	2,292	NC	0	0	0	RC	100	110	145	.027	125	135	180	.033	150	170	230
3°-00'	1,910	NC	0	0	0	.020	100	110	145	.027	125	135	180	.033	150	170	230
3°-30'	1,637	NC	0	0	0	.022	100	115	155	.028	125	135	180	.035	150	170	230
4°-00'	1,432	NC	0	0	0	.024	100	120	160	.030	125	135	180	.037	150	170	230
5°-00'	1,146	RC	65	100	130	.026	100	125	170	.033	125	135	180	.039	150	170	230
6°-00'	955	.020	65	100	130	.028	100	130	175	.035	125	135	180	.040	150	170	230
7°-00'	819	.022	70	105	135	.030	100	135	180	.037	125	135	180	D(MAX)=6°-00'			
8°-00'	716	.023	70	105	140	.031	100	140	185	.039	125	135	180	D(MAX)=10°-00'			
9°-00'	637	.024	75	110	145	.033	100	145	195	.040	130	135	180	D(MAX)=19°-00'			
10°-00'	573	.025	75	110	145	.034	100	150	195	.040	130	135	180	D(MAX)=45°-00'			
11°-00'	521	.026	75	115	150	.035	100	150	200	D(MAX)=45°-00'							
12°-00'	477	.027	80	115	155	.036	105	155	205	D(MAX)=45°-00'							
13°-00'	441	.028	80	120	155	.037	105	155	210	D(MAX)=45°-00'							
14°-00'	409	.028	80	120	155	.038	105	160	210	D(MAX)=45°-00'							
16°-00'	358	.030	80	120	160	.039	110	160	215	D(MAX)=45°-00'							
18°-00'	318	.031	85	125	165	.040	110	165	220	D(MAX)=45°-00'							
19°-00'	302	.032	85	125	170	.040	110	165	220	D(MAX)=45°-00'							
20°-00'	286	.032	85	125	170	D(MAX)=45°-00'											
24°-00'	239	.035	90	135	180	D(MAX)=45°-00'											
28°-00'	205	.036	90	135	180	D(MAX)=45°-00'											
32°-00'	179	.038	95	140	190	D(MAX)=45°-00'											
36°-00'	159	.039	95	145	190	D(MAX)=45°-00'											
40°-00'	143	.040	100	145	195	D(MAX)=45°-00'											
44°-00'	130	.040	100	145	195	D(MAX)=45°-00'											

LEGEND	
D	DEGREE OF CURVE
R	RADIUS OF CURVE
V	ASSUMED DESIGN SPEED
e	RATE OF SUPERELEVATION
L	MINIMUM LENGTH OF TRANSITION
NC	NORMAL CROWN
RC	REMOVE ADVERSE CROWN, SUPERELEVATE AT NORMAL CROWN SLOPE

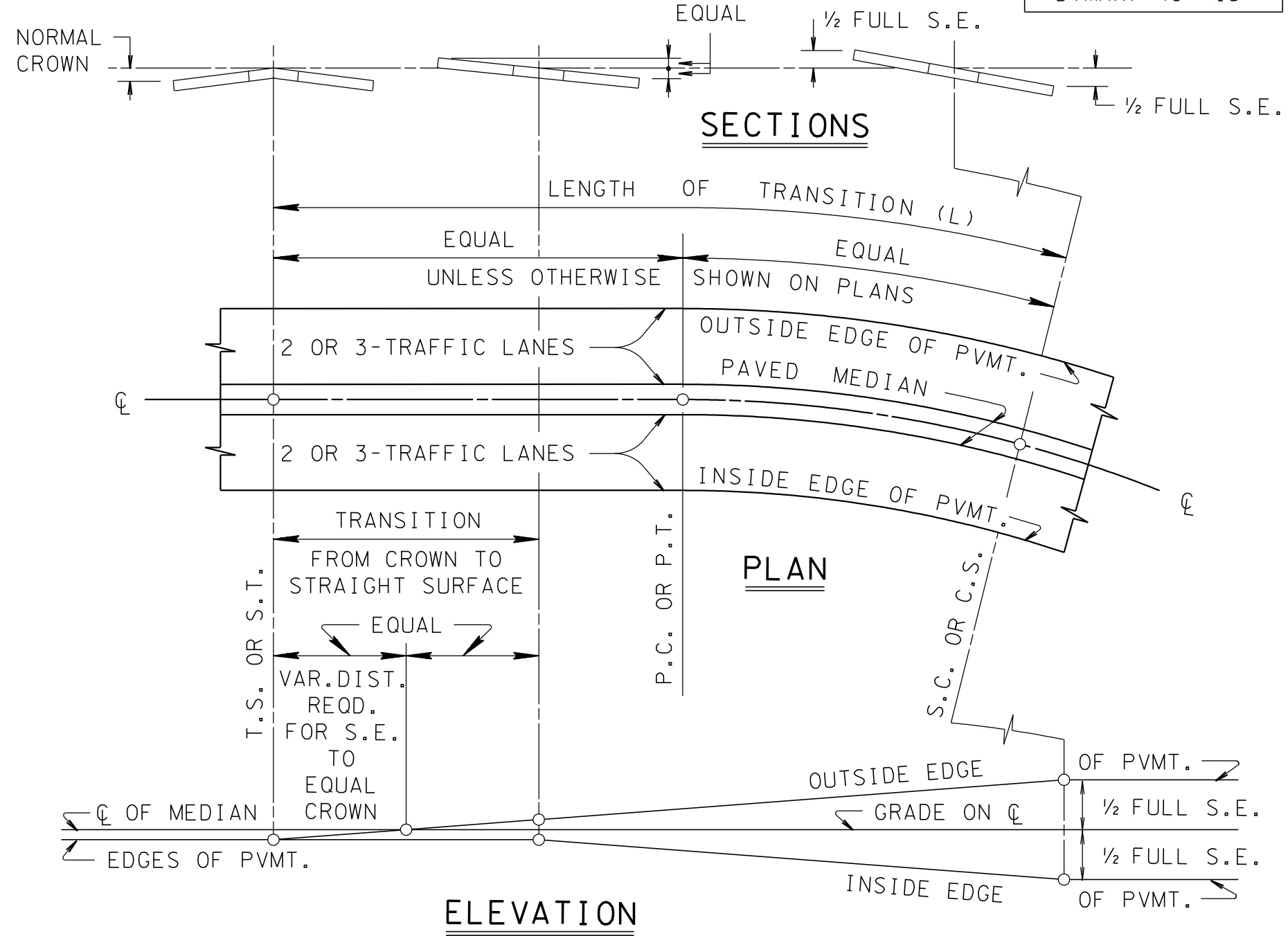
E MAX=0.06 ALLOWABLE

D	R (FT.)	V=20 (MPH)			V=30 (MPH)			V=40 (MPH)			V=50 (MPH)			V=60 (MPH)			V=70 (MPH)				
		e F/F	L (FT.)			e F/F	L (FT.)			e F/F	L (FT.)			e F/F	L (FT.)			e F/F	L (FT.)		
		2-LN	4-LN	6-LN	2-LN	4-LN	6-LN	2-LN	4-LN	6-LN	2-LN	4-LN	6-LN	2-LN	4-LN	6-LN	2-LN	4-LN	6-LN		
0°-15'	22,918	NC	0	0	0	NC	0	0	0	NC	0	0	0	NC	0	0	0	0	0	0	
0°-30'	11,459	NC	0	0	0	NC	0	0	0	NC	0	0	0	NC	0	0	0	RC	175	175	215
0°-45'	7,639	NC	0	0	0	NC	0	0	0	NC	0	0	0	NC	0	0	0	.021	175	175	220
1°-00'	5,730	NC	0	0	0	RC	100	110	145	.020	125	130	170	.028	150	175	235	.037	175	190	255
1°-30'	3,820	NC	0	0	0	RC	100	110	145	.020	125	130	170	.028	150	175	235	.037	175	190	255
2°-00'	2,865	NC	0	0	0	RC	100	110	145	.025	125	135	180	.035	150	170	230	.045	175	190	255
2°-30'	2,292	NC	0	0	0	.020	100	110	145	.030	125	135	180	.040	150	170	230	.051	190	285	380
3°-00'	1,910	RC	65	100	130	.023	100	120	155	.030	125	135	180	.045	160	235	315	.055	200	300	400
3°-30'	1,637	RC	65	100	130	.026	100	125	170	.038	125	135	180	.048	165	245	330	.058	210	315	420
4°-00'	1,432	RC	65	100	130	.029	100	135	180	.041	130	135	180	.052	175	260	350	.060	215	320	430
5°-00'	1,146	.020	65	100	130	.034	100	150	195	.046	140	145	195	.056	185	275	365	D(MAX)=4°-15'			
6°-00'	955	.023	70	105	140	.038	105	160	210	.050	150	155	205	.059	190	285	380	D(MAX)=6°-45'			
7°-00'	819	.026	75	110	145	.041	110	165	220	.053	155	160	210	D(MAX)=6°-45'							
8°-00'	716	.029	80	120	160	.043	115	175	230	.056	160	165	210	D(MAX)=6°-45'							
9°-00'	637	.031	85	125	165	.046	120	180	240	.058	165	170	210	D(MAX)=6°-45'							
10°-00'	573	.033	85	130	170	.048	125	185	245	.059	170	175	210	D(MAX)=6°-45'							
11°-00'	521	.035	90	135	180	.050	130	190	255	.060	170	175	210	D(MAX)=6°-45'							
12°-00'	477	.037	95	140	185	.052	130	195	260	D(MAX)=11°-15'											
13°-00'	441	.038	95	140	190	.054	135	200	270	D(MAX)=11°-15'											
14°-00'	409	.039	95	145	190	.055	135	205	270	D(MAX)=11°-15'											
16°-00'	358	.041	100	150	200	.058	145	215	285	D(MAX)=11°-15'											
18°-00'	318	.044	105	155	205	.059	145	215	285	D(MAX)=11°-15'											
20°-00'	286	.046	110	160	215	.060	145	220	290	D(MAX)=11°-15'											
21°-00'	273	.047	110	165	215	.060	145	220	290	D(MAX)=11°-15'											
24°-00'	239	.049	115	170	225	D(MAX)=21°-00'															
28°-00'	205	.052	120	175	235	D(MAX)=21°-00'															
32°-00'	179	.055	120	180	240	D(MAX)=21°-00'															
36°-00'	159	.057	125	185	250	D(MAX)=21°-00'															
40°-00'	143	.059	130	190	255	D(MAX)=21°-00'															
44°-00'	130	.060	130	195	260	D(MAX)=21°-00'															
48°-00'	119	.060	130	195	260	D(MAX)=21°-00'															

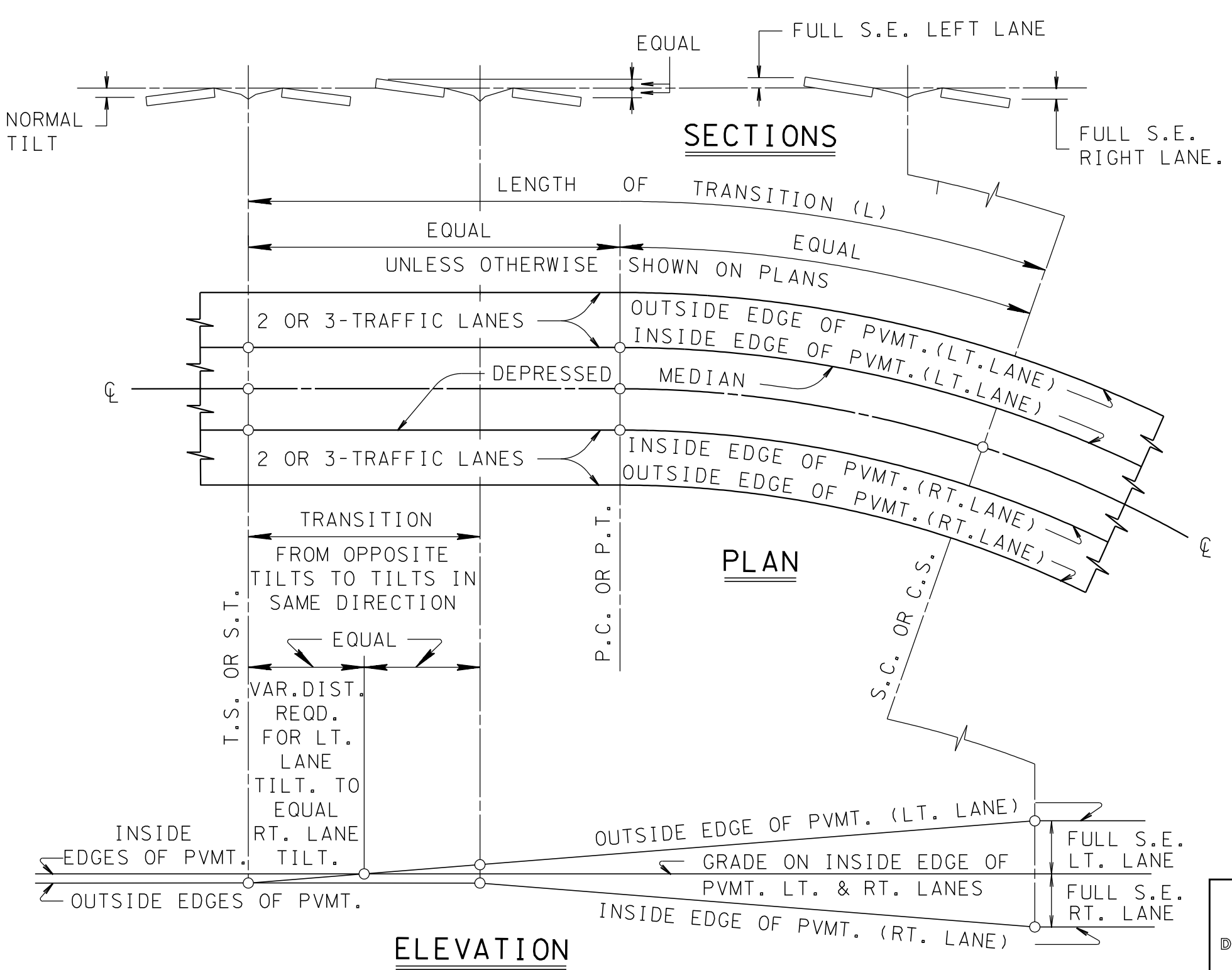
- GENERAL NOTES**
- (A) ALL HORIZONTAL CURVES SHALL BE SUPERELEVATED IN ACCORDANCE WITH THIS TABULATION, UNLESS OTHERWISE SHOWN ON THE PLANS.
 - (B) SPIRALS ARE NOT REQUIRED BELOW 50 MPH AND ABOVE THE HEAVY LINE FOR HIGHER SPEEDS.
 - (C) LENGTHS ROUNDED IN MULTIPLES OF 25 OR 50 FEET PERMIT SIMPLER CALCULATIONS.
 - (D) ALIGNMENT DESIGNS SHOULD BE SO ARRANGED AS TO AVOID SUPERELEVATION TRANSITIONS ON BRIDGE DECKS, IN ORDER TO PREVENT PONDING IN THE AREAS OF ZERO SUPERELEVATION IN THE CROWN CHANGE ZONE.
 - (E) USE RURAL SUPERELEVATION RATES ON ALL URBAN FREEWAYS AND EXPRESSWAYS EXCEPT VIADUCTS.



TYPICAL TRANSITION IN SUPERELEVATION
2-LANE HIGHWAY



TYPICAL TRANSITION IN SUPERELEVATION
4 OR 6-LANE HIGHWAY WITH PAVED MEDIAN



TYPICAL TRANSITION IN SUPERELEVATION
4 OR 6-LANE HIGHWAY WITH DEPRESSED MEDIAN

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

URBAN
SUPERELEVATION
DETAILS