STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	EDF-017-3(39)	130	194

VALUES FOR SUPERELEVATION RATES AND RUNOFF LENGTHS

D	30 M.P.H.			40 M.P.H.			50 M.P.H.			60 M.P.H.			70 M.P.H.			80 M.P.H.		
	S.E.	T	T'	S.E.	T	T'	S.E.	T	T'	S.E.	T	T'	S.E.	T	T'	S.E.	T	T'
0° - 15'	NC	0	0	NC	0	0	NC	0	0	NC	0	0	RC	200	200	RC	240	240
0° - 30'	NC	0	0	NC	0	0	NC	0	0	RC	175	175	.02	200	200	.02	240	240
0° - 45'	NC	0	0	NC	0	0	RC	150	150	.02	175	175	.03	200	200	.04	240	240
1°	NC	0	0	RC	125	125	.02	150	150	.03	175	175	.04	200	200	.05	240	250
1° - 30'	RC	100	100	.02	125	125	.03	150	150	.04	175	175	.05	200	240	.07	240	360
2°	.02	100	100	.03	125	125	.04	150	150	.05	175	210	.07	210	315	.08	260	400
2° - 30'	.02	100	100	.03	125	125	.05	150	180	.06	175	240	.07	210	315	.08	260	400
3°	.03	100	100	.04	125	135	.05	150	180	.07	190	285	.08	240	360			
3° - 30'	.03	100	100	.04	125	135	.06	150	225	.07	190	285						
4°	.03	100	100	.05	125	165	.06	150	225	.08	220	330						
5°	.04	100	120	.06	130	195	.07	170	255									
6°	.04	100	120	.06	130	195	.08	195	285									
7°	.05	100	135	.07	150	225	.08	195	285									
8°	.05	100	135	.07	150	225												
9°	.06	110	165	.08	170	255												
10°	.06	110	165	.08	170	255												
11°	.06	110	165	.08	170	255												
12°	.07	130	195	.08	170	255												
13° TO 16°	.07	130	195															
17° TO 22°	.08	150	225															

MAX. D = 22°-45' (30 M.P.H.): .08 | 150 | 225

MAX. D = 12°-15' (40 M.P.H.): .08 | 170 | 255

MAX. D = 7°-30' (50 M.P.H.): .08 | 195 | 285

MAX. D = 4°-45" (60 M.P.H.): .08 | 220 | 330

MAX. D = 3°-00' (70 M.P.H.)

MAX. D = 2°30' (80 M.P.H.)

NOTE: SPIRALS SELDOM USED ABOVE HEAVY LINE.

D = DEGREE OF CURVE

M.P.H. = ESTIMATED OPERATING SPEED, IN MILES PER HOUR

S.E. = RATE OF SUPERELEVATION, IN FEET PER FOOT

NC = NORMAL CROWN SLOPE

RC = REMOVE ADVERSE CROWN, SUPERELEVATE AT NORMAL CROWN SLOPE

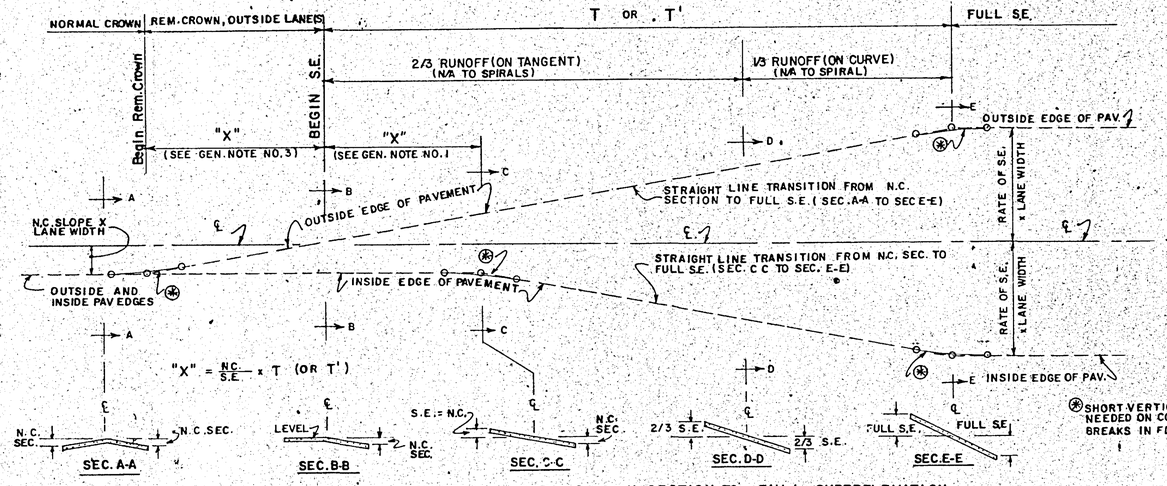
$$"X" = \frac{N.C.}{S.E.} \times T \text{ (OR T')}$$

T = MINIMUM LENGTH (FT.) OF TRANSITIONAL RUNOFF (OR SPIRAL) FOR PAVEMENTS 2 LANES WIDE — OR FOR 4-LANE PAVEMENTS DIVIDED BY A 20 FT. OR WIDER MEDIAN WITH EACH PAVEMENT SECTION BEING 2-LANES WIDE (FOR 3-LANES MULTIPLY T BY 1.2)

T' = MINIMUM LENGTH FT. OF TRANSITIONAL RUNOFF (OR SPIRAL) EITHER FOR 4-LANE PAVEMENTS DIVIDED BY A MEDIAN LESS THAN 20' WIDE INTO TWO 2-LANE PAVEMENTS — OR FOR 4-LANE UNDIVIDED PAVEMENTS (FOR 5-LANES & 6-LANES MULTIPLY T' BY 1 1/6 & 1 1/3 RESPECTIVELY AND ROUND OFF).

FOR DIVIDED HIGHWAYS NOT HAVING THE SAME NUMBER OF LANES ON BOTH SIDES OF THE MEDIAN, BOTH T AND T' MAY BE UTILIZED.

WHERE FUTURE ADDITION OF LANES IS ANTICIPATED TRANSITIONAL RUNOFF (OR SPIRAL) LENGTHS SHOULD BE BASED UPON THE EVENTUAL NUMBER OF LANES.



(*) SHORT VERTICAL CURVES ARE TO BE USED WHERE NEEDED ON CONSTRUCTION TO AVOID ANGULAR BREAKS IN EDGE PROFILE

SECTION	LOCATION, IF CURVE IS CIRCULAR	LOCATION, IF CURVE IS SPIRAL
SEC. A-A	ON TANGENT	ON TANGENT
SEC. B-B	2/3 T PRIOR TO P.C. OR PAST P.T.	AT T.S. OR S.T.
SEC. C-C	ON TRANSITIONAL RUNOFF	ON SPIRAL TRANSITION
SEC. D-D	ON P.C. OR P.T.	ON SPIRAL TRANSITION
SEC. E-E	1/3 T PAST P.C. TO 1/3 T PRIOR TO P.T.	S.C. THRU C.S.

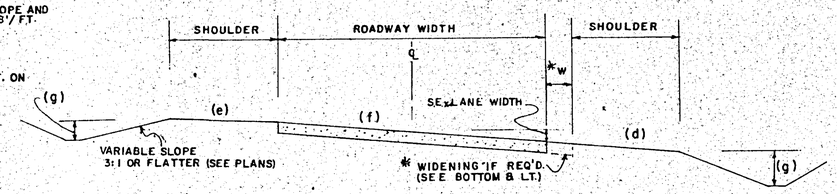
RELATIVE PROFILE DIAGRAM OF TRANSITION FROM CROWN SECTION TO FULL SUPERELEVATION

(d) — RATE OF S.E. OR NORMAL SHOULDER SLOPE WHICHEVER IS GREATER (BUT NOT LESS THAN 3/4" PER FT. FOR UNPAVED SHOULDERS.)

(e) — ALGEBRIAC DIFFERENCE IN PAVING SLOPE AND SHOULDER SLOPE NOT TO EXCEED .08'/FT.

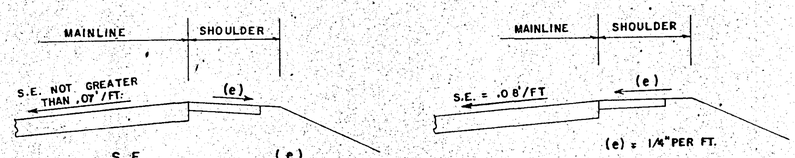
(f) — SLOPED AT THE RATE OF S.E.

(g) — DESIRED MINIMUM DITCH DEPTHS: 2 FT. ON S.E. LOW SIDE; 3' ON HIGH SIDE.



TYPICAL SECTION AT FULL SUPERELEVATION

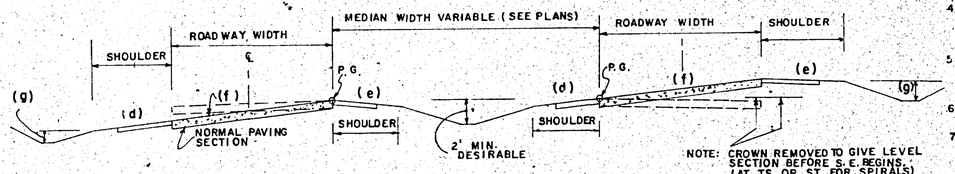
NOTE: GRADING TEMPLATES SHALL BE PARALLEL TO THE PLANE OF SUPERELEVATION



S.E.	(e)
.02'/FT. OR .03'/FT.	1/2" PER FT.
.04/FT. OR .05'/FT.	1/4" PER FT.
.06/FT. OR .07'/FT	1/8" PER FT.

NOTE: THESE SECTIONS ARE APPLICABLE TO EITHER PAVED OR UNPAVED SHOULDERS, INSIDE OR OUTSIDE SHOULDERS.

TYPICAL SHOULDER SECTIONS ON THE HIGH SIDE OF SUPERELEVATION



TYPICAL SECTION OF SUPERELEVATION FOR DIVIDED HIGHWAYS

DISREGARD VALUES LESS THAN 2 FT. (ABOVE HEAVY LINE) FOR 2-LANE (ONE-WAY OR TWO-WAY TRAFFIC) PAVEMENTS. FOR 3-LANES OR 4-LANES UNDIVIDED, MULTIPLY VALUES BY 1.5 & 2 RESPECTIVELY AND ROUND TO NEAREAST 1/2 FOOT. IF RESULT IS LESS THAN 2 FT. DO NOT WIDEN.

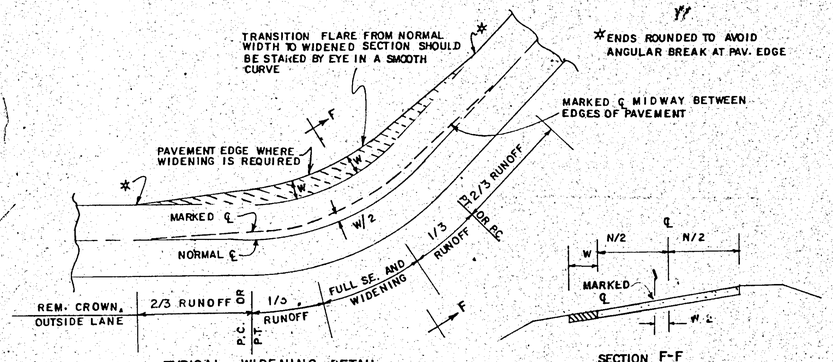
PAVEMENT WIDENING ON OPEN HIGHWAY CURVES

VALUES (IN FEET) FOR TWO-LANE ROADWAYS - ONE-WAY OR TWO-WAY TRAFFIC

D	24 FOOT ROADWAY M.P.H. 30	40	50	60	70	80	22 FOOT ROADWAY M.P.H. 30	40	50	60	70	20 FOOT ROADWAY M.P.H. 30	40	50	60
TO 0°-45'	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0
1°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	1.0	1.0	1.5	1.5	1.5	2.0
1°-30'	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	1.0	1.0	1.0	1.5	1.5	2.0	2.0
2°	0.0	0.0	0.0	0.5	0.5	0.5	1.0	1.0	1.0	1.5	1.5	2.0	2.0	2.0	2.0
2°-30'	0.0	0.0	0.0	0.5	0.5	1.0	1.0	1.0	1.0	1.5	1.5	2.0	2.0	2.0	2.0
3°	0.0	0.0	0.5	0.5	1.0		1.0	1.0	1.5	1.5	2.0	2.0	2.0	2.5	2.5
3°-30'	0.0	0.0	0.5	0.5	1.0		1.0	1.0	1.5	2.0	2.0	2.0	2.0	2.5	2.5
4°	0.0	0.5	0.5	1.0			1.0	1.5	1.5	2.0		2.0	2.5	2.5	3.0
5°	0.5	0.5	1.0	1.0			1.5	1.5	2.0	2.0		2.5	2.5	3.0	3.0
6°	0.5	1.0	1.0				1.5	2.0	2.0			2.5	3.0	3.0	
7°	0.5	1.0	1.5				1.5	2.0	2.5			2.5	3.0	3.5	
8°	1.0	1.0	1.5				2.0	2.0	2.5			3.0	3.0	3.5	
9°	1.0	1.5					2.0	2.5				3.0	3.5		
10°-11°	1.0	1.5					2.0	2.5				3.0	3.5		
12°-14°	1.5	2.0					2.5	3.0				3.5	4.0		
15°-18°	2.0						3.0					4.0			
19°-21°	2.5						3.5					4.5			
22°-25°	3.0						4.0					5.0			

NOTE:
PAVEMENT WIDENING ON CURVES IS INTENDED FOR UTILIZATION WHERE TRUCK TRAFFIC IS SIGNIFICANT AND THE INCREASE IN PAVEMENT WIDTH IS TO BE 2 FT. OR GREATER.

LOCATIONS FOR WIDENING SHALL BE SHOWN IN THE PLANS OR SPECIFIED BY THE ENGINEER.



TYPICAL WIDENING DETAIL

SECTION F-F

GENERAL NOTES.

1. — CIRCULAR CURVES: THE CROWN ON THE OUTSIDE SECTION OF ROADWAY SHALL BE REMOVED (SEC. B-B) TO GIVE LEVEL OUTSIDE SECTION PRIOR TO RUNOFF. 2/3 OF THE RUNOFF SHALL BE ON THE TANGENT. THE INSIDE SECTION OF ROADWAY SHALL MAINTAIN THE NORMAL CROWN UNTIL THE OUTSIDE SECTION IS SUPERELEVATED AT THE SAME RATE (SEC. C-C). SEC. D-D IS AT THE P.C. OR P.T. WITH 1/3 OF RUNOFF ON THE CURVE.

— SPIRAL CURVES: THE CROWN ON THE OUTSIDE SECTION OF ROADWAY SHALL BE REMOVED ON THE TANGENT (SEC. B-B AT THE T.S. OR S.T.) TO GIVE A LEVEL OUTSIDE SECTION. THE SUPERELEVATION RUNOFF SHALL BE EFFECTED OVER THE WHOLE OF THE TRANSITIONAL SPIRAL. THE INSIDE SECTION OF ROADWAY SHALL MAINTAIN THE NORMAL CROWN UNTIL THE OUTSIDE SECTION IS SUPERELEVATED AT THE SAME RATE (SEC. C-C). FULL SUPERELEVATION SHALL BE OBTAINED AT THE END OF THE TRANSITIONAL SPIRAL. (SEC. E-E IS AT THE S.C. THRU THE C.S.)

2. — UNDIVIDED HIGHWAYS: IN GENERAL, SUPERELEVATION SHALL BE ATTAINED BY ROTATION ABOUT THE CENTERLINE, HOWEVER, WHERE DESIRABLE, THE POINT OF ROTATION MAY BE EITHER THE INSIDE OR OUTSIDE EDGE OF PAVEMENT WITH SIMILAR GEOMETRICS TO THE DIAGRAM ABOVE.

— DIVIDED HIGHWAYS: IN GENERAL, THE POINT OF ROTATION SHALL BE THE PROFILE GRADE OR INSIDE EDGES OF THE MEDIAN, BUT WHERE DESIRABLE, ROTATION MAY BE MADE (1) ABOUT THE CENTERLINE OF EACH ROADWAY SEPARATELY OR (2) ABOUT THE CENTERLINE OF THE MEDIAN. WHERE METHOD (2) IS USED, THE RUNOFF LENGTH T OR T' SHALL BE INCREASED IN PROPORTION TO THE TOTAL WIDTH INCLUDING THE MEDIAN.

3. CROWN WIPEOUT LENGTH MAY BE REDUCED, IF NEEDED. (SEE NOTE 4)

4. MODIFICATIONS MAY BE MADE TO THE HERE SHOWN DETAILS, S.E. RATES, TRANSITIONS, SHOULDER SLOPES, WIDENING ETC., AT INDIVIDUAL LOCATIONS PROVIDED SUCH MODIFICATIONS ARE IN ACCORDANCE WITH CURRENT AASHTO GEOMETRIC DESIGN POLICY.

5. T AND T' VALUES ARE BASED UPON 12' LANES AND ARE DESIRABLE FOR 11' & 10' LANES, HOWEVER IF SHORTER LENGTHS ARE NEEDED BETWEEN REVERSE CURVES OR AT BRIDGES, T AND T' MAY BE REDUCED BY APPROXIMATELY 8% AND 17% FOR 11' AND 10' LANES RESPECTIVELY.

6. DOWNGRADE LANES OF DIVIDED HIGHWAYS MAY BE SUPERELEVATED FOR HIGHER SPEEDS THAN UPGRADE LANES WHERE DESIRABLE.

7. CAREFUL ATTENTION SHOULD BE GIVEN TO GEOMETRICS WHERE IT IS NECESSARY TO SUPERELEVATE ON VERTICAL CURVES, AT INTERSECTIONS, ON CLOSE REVERSE CURVES, AT TURNOUTS, AT TURN LANES, ON STEEP GRADES OR WHERE OTHER POTENTIAL INTERFERING ELEMENTS ARE PRESENT.

SHLDR. SL. HIGH SIDE S.E.	9-6-85
GEN. REVISIONS	11-3-85

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

STANDARD
SUPERELEVATION
RATES, DETAILS, & RUNOFF LENGTHS

NO SCALE — REV. & REDR. MAY 1983

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STATE HIGHWAY ENGINEER

NUMBER 9028-C

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