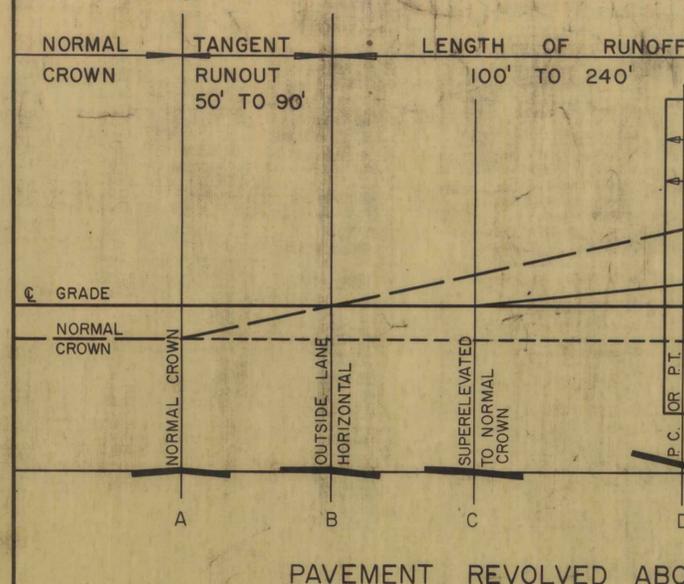


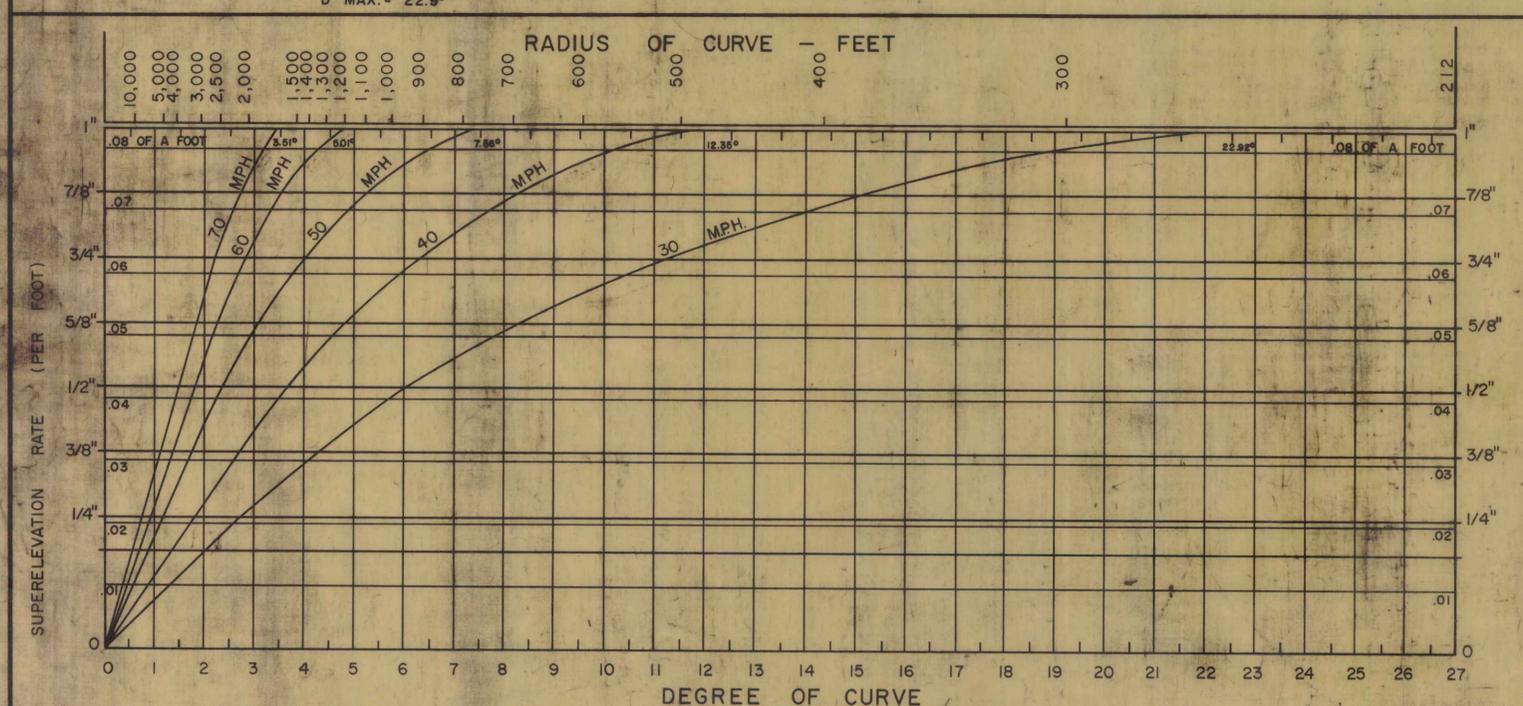
DEGREE	RADIUS	30 MPH		40 MPH		50 MPH		60 MPH		70 MPH	
		RATE	LENGTH								
0-15'	22,918'	NC	0	NC	0	NC	0	NC	0	RC	200
0-30'	11,459'	NC	0	NC	0	RC	150	RC	175	RC	200
0-45'	7,639'	NC	0	RC	125	RC	150	1/4"	175	1/4"	200
1°-00'	5,730'	NC	0	RC	125	1/4"	150	1/4"	175	5/16"	200
1°-30'	3,820'	RC	100	1/4"	125	5/16"	150	7/16"	175	1/2"	200
2°-00'	2,865'	1/4"	100	5/16"	125	7/16"	150	9/16"	175	11/16"	200
2°-30'	2,292'	1/4"	100	3/8"	125	1/2"	150	11/16"	175	13/16"	210
3°-00'	1,910'	5/16"	100	7/16"	125	5/8"	150	13/16"	180	15/16"	230
3°-30'	1,637'	5/16"	100	1/2"	125	11/16"	150	7/8"	190	1"	240
4°-00'	1,432'	3/8"	100	9/16"	125	3/4"	150	15/16"	210	1"	240
5°-00'	1,146'	7/16"	100	5/8"	125	13/16"	170	1"	220		
6°-00'	955'	1/2"	100	3/4"	125	15/16"	180	1"	220		
7°-00'	819'	9/16"	100	13/16"	140	15/16"	190				
8°-00'	716'	5/8"	100	7/8"	150	1"	190				
9°-00'	637'	5/8"	100	7/8"	160						
10°-00'	573'	11/16"	100	15/16"	160						
11°-00'	521'	3/4"	110	15/16"	170						
12°-00'	477'	3/4"	120	1"	170						
13°-00'	441'	13/16"	120	1"	170						
14°-00'	409'	13/16"	130								
16°-00'	358'	7/8"	130								
18°-00'	318'	15/16"	140								
20°-00'	286'	15/16"	140								
22°-00'	260'	1"	140								
22.9°	250'	1"	140								

RATE	PAVEMENT WIDTHS		
	20'	22'	24'
1/4"	5"	5 1/2"	6"
5/16"	6 1/4"	6 7/8"	7 1/2"
3/8"	7 1/2"	8 1/4"	9"
7/16"	8 3/4"	9 5/8"	10 1/2"
1/2"	10"	11"	12"
9/16"	11 1/4"	12 3/8"	13 1/2"
5/8"	12 1/2"	13 3/4"	15"
11/16"	13 3/4"	15 1/8"	16 1/2"
3/4"	15"	16 1/2"	18"
13/16"	16 1/4"	17 7/8"	19 1/2"
7/8"	17 1/2"	19 1/4"	21"
15/16"	18 3/4"	20 5/8"	22 1/2"
1"	20"	22"	24"

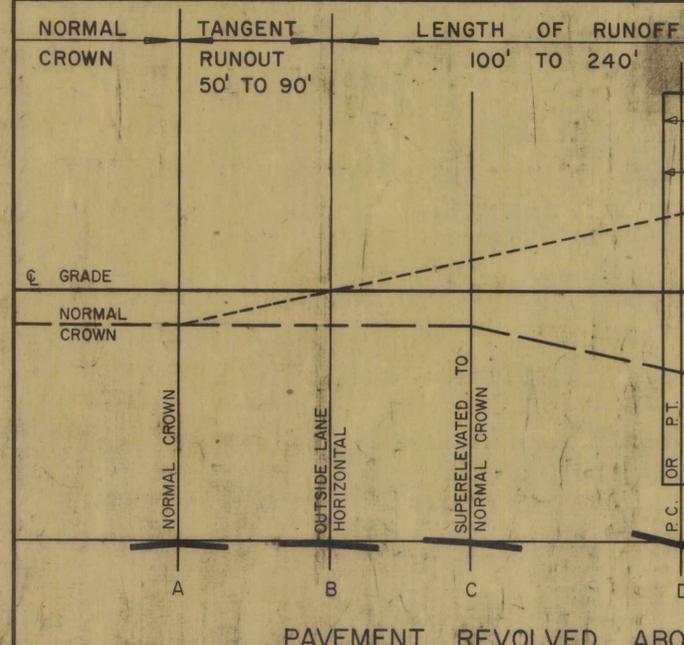
RATE = RATE OF SUPERELEVATION (PER FOOT)  
 LENGTH = MINIMUM LENGTH OF RUNOFF  
 NC = NORMAL CROWN SECTION  
 RC = REMOVE ADVERSE CROWN, SUPERELEVATE AT NORMAL CROWN SLOPE  
 RATES ARE FIGURED TO THE NEAREST SIXTEENTH INCH  
 BANKING FOR CURVES NOT LISTED IN TABLE MAY BE DETERMINED FROM GRAPH  
**DESIGN VALUES FOR RATE OF SUPERELEVATION AND MINIMUM LENGTH OF RUNOFF**



TANGENT RUNOUT: CONSISTS OF MAKING THE LANE OR LANES ON THE OUTSIDE OF THE CURVE TO BE FLAT USING 50 TO 90 FEET WHERE THE NORMAL CROWN IS USED.  
 LENGTH OF RUNOFF FROM 60 TO 80 PERCENT OF THE LENGTH OF RUNOFF.  
 BREAKS IN PROFILES FOR PAVEMENT EDGES SHOULD BE MADE AT THE MINIMUM VERTICAL CURVE LENGTH IN FEET CAN BE DETERMINED FROM THE GRAPH.



DESIGN SUPERELEVATION RATES

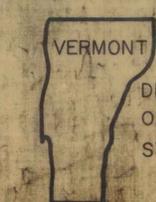


REVISIONS AND CORRECTIONS  
 APPROVED DATE May 26, 1958

*H.E. August*  
 CHIEF ENGINEER  
*G.M. Lane*  
 HIGHWAY ENGINEER  
*J.C. Costin*  
 CONSTRUCTION ENGINEER

DRAWN: L.C.J.  
 TRACED: GUS ADA

**BANKING TABLES**



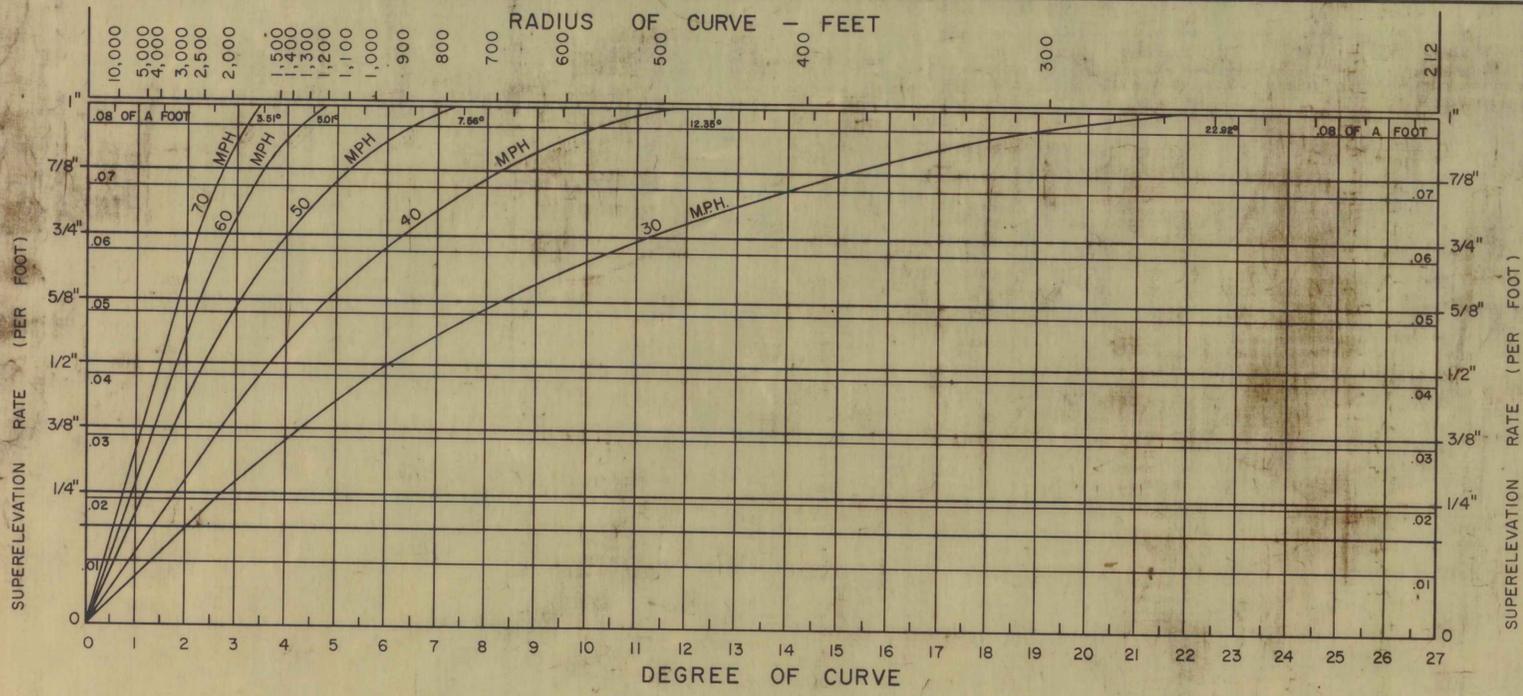
DEGREE	RADIUS	30 MPH		40 MPH		50 MPH		60 MPH		70 MPH	
		RATE	LENGTH	RATE	LENGTH	RATE	LENGTH	RATE	LENGTH	RATE	LENGTH
0-15'	22,918'	NC	0	NC	0	NC	0	NC	0	RC	200
0-30'	11,459'	NC	0	NC	0	RC	150	RC	175	RC	200
0-45'	7,639'	NC	0	RC	125	RC	150	1/4"	175	1/4"	200
1°-00'	5,730'	NC	0	RC	125	1/4"	150	1/4"	175	5/16"	200
1°-30'	3,820'	RC	100	1/4"	125	5/16"	150	7/16"	175	1/2"	200
2°-00'	2,865'	1/4"	100	5/16"	125	7/16"	150	9/16"	175	11/16"	200
2°-30'	2,292'	1/4"	100	3/8"	125	1/2"	150	11/16"	175	13/16"	210
3°-00'	1,910'	5/16"	100	7/16"	125	5/8"	150	13/16"	180	15/16"	230
3°-30'	1,637'	5/16"	100	1/2"	125	11/16"	150	7/8"	190	1"	240
4°-00'	1,432'	3/8"	100	9/16"	125	3/4"	150	15/16"	210	1"	240
5°-00'	1,146'	7/16"	100	5/8"	125	13/16"	170	1"	220	D MAX. = 3.5°	
6°-00'	955'	1/2"	100	3/4"	125	15/16"	180	1"	220	D MAX. = 5.0°	
7°-00'	819'	9/16"	100	13/16"	140	15/16"	190	D MAX. = 7.6°			
8°-00'	716'	5/8"	100	7/8"	150	1"	190	D MAX. = 12.4°			
9°-00'	637'	5/8"	100	7/8"	160	D MAX. = 22.9°					
10°-00'	573'	11/16"	100	15/16"	160	D MAX. = 22.9°					
11°-00'	521'	3/4"	110	15/16"	170	D MAX. = 22.9°					
12°-00'	477'	3/4"	120	1"	170	D MAX. = 22.9°					
13°-00'	441'	13/16"	120	1"	170	D MAX. = 22.9°					
14°-00'	409'	13/16"	130	D MAX. = 22.9°			D MAX. = 22.9°				
16°-00'	358'	7/8"	130	D MAX. = 22.9°			D MAX. = 22.9°				
18°-00'	318'	15/16"	140	D MAX. = 22.9°			D MAX. = 22.9°				
20°-00'	286'	15/16"	140	D MAX. = 22.9°			D MAX. = 22.9°				
22°-00'	260'	1"	140	D MAX. = 22.9°			D MAX. = 22.9°				
22.9°	250'	1"	140	D MAX. = 22.9°			D MAX. = 22.9°				

RATE	PAVEMENT WIDTHS		
	20'	22'	24'
1/4"	5"	5 1/2"	6"
5/16"	6 1/4"	6 7/8"	7 1/2"
3/8"	7 1/2"	8 1/4"	9"
7/16"	8 3/4"	9 5/8"	10 1/2"
1/2"	10"	11"	12"
9/16"	11 1/4"	12 3/8"	13 1/2"
5/8"	12 1/2"	13 3/4"	15"
11/16"	13 3/4"	15 1/8"	16 1/2"
3/4"	15"	16 1/2"	18"
13/16"	16 1/4"	17 7/8"	19 1/2"
7/8"	17 1/2"	19 1/4"	21"
15/16"	18 3/4"	20 5/8"	22 1/2"
1"	20"	22"	24"

RATE = RATE OF SUPERELEVATION (PER FOOT)  
 LENGTH = MINIMUM LENGTH OF RUNOFF  
 NC = NORMAL CROWN SECTION  
 RC = REMOVE ADVERSE CROWN, SUPERELEVATE AT NORMAL CROWN SLOPE

RATES ARE FIGURED TO THE NEAREST SIXTEENTH INCH  
 BANKING FOR CURVES NOT LISTED IN TABLE MAY BE DETERMINED FROM GRAPH

DESIGN VALUES FOR RATE OF SUPERELEVATION  
 AND MINIMUM LENGTH OF RUNOFF



DESIGN SUPERELEVATION RATES

REVISIONS AND CORRECTIONS

APPROVED DATE May 26, 1958

*H.E. August*  
 CHIEF ENGINEER  
*G.M. Lane*  
 HIGHWAY ENGINEER  
*W. J. Conti*  
 CONSTRUCTION ENGINEER

DRAWN: L.C.J.  
 TRACED: GUS A.J.A.

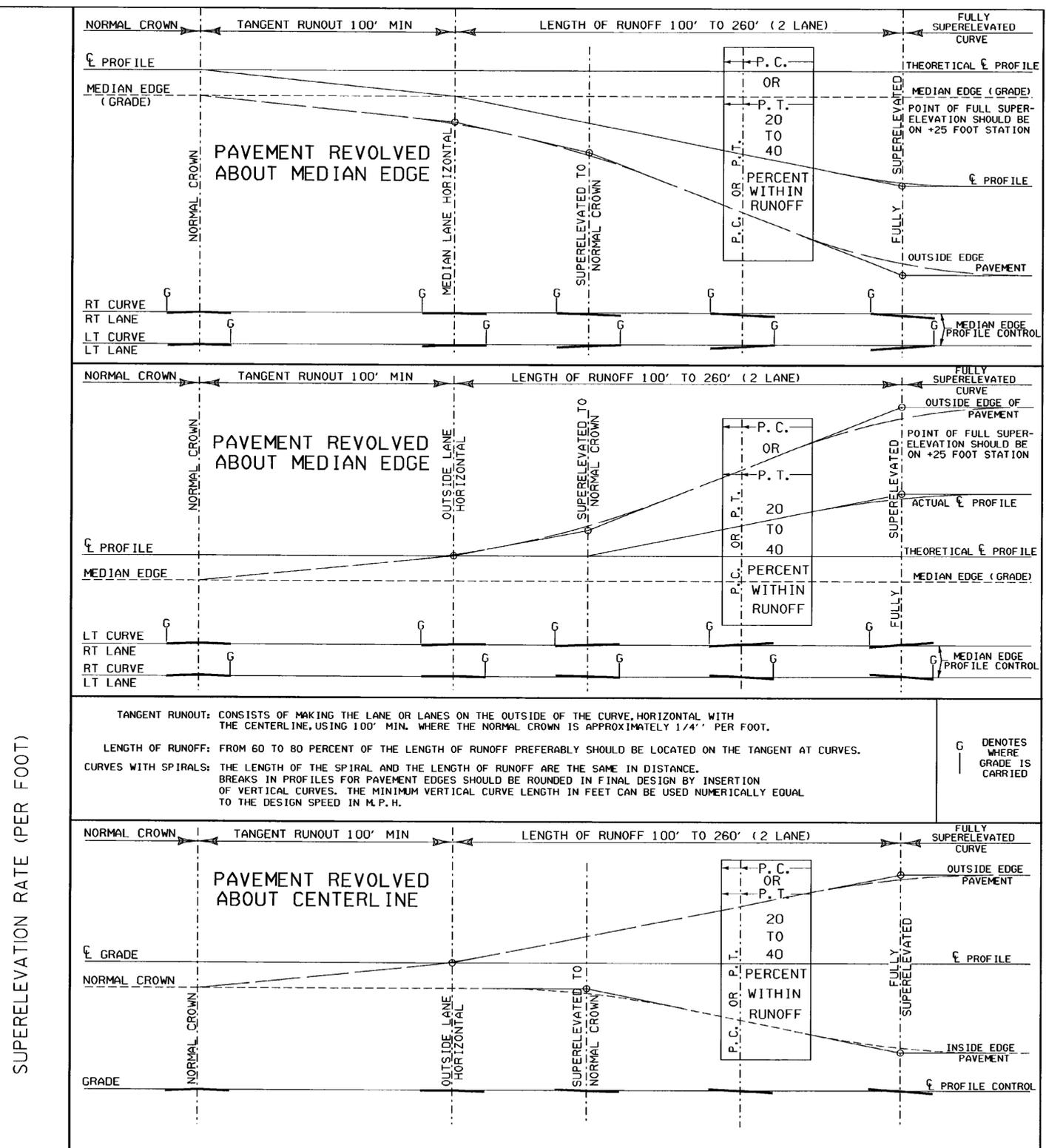
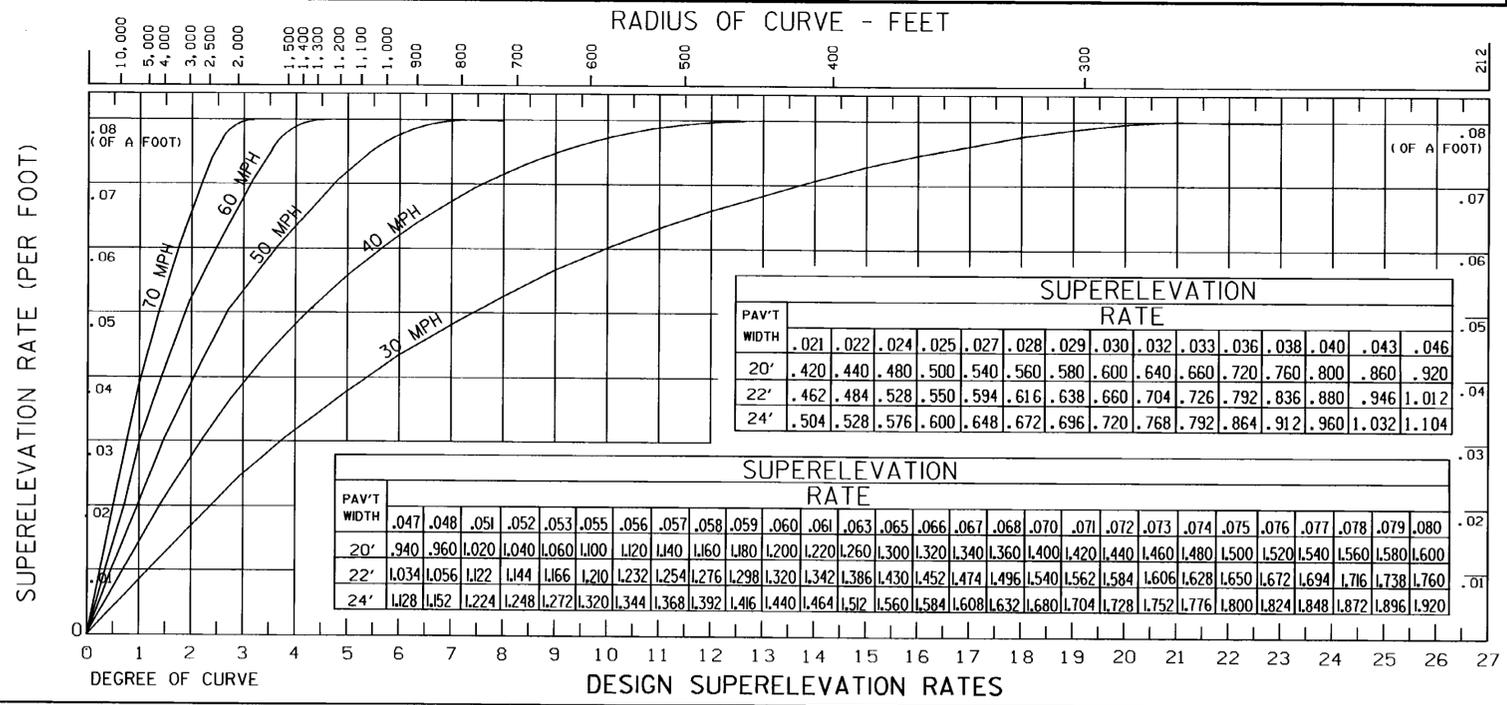
BANKING TA

DEGREE OF CURVE	RADIUS	V= 30 M. P. H.			V= 40 M. P. H.			V= 50 M. P. H.			V= 60 M. P. H.			V= 65 M. P. H.			V= 70 M. P. H.		
		e	L - FEET		e	L - FEET		e	L - FEET		e	L - FEET		e	L - FEET		e	L - FEET	
			2 LANE	4 LANE		2 LANE	4 LANE		2 LANE	4 LANE		2 LANE	4 LANE		2 LANE	4 LANE		2 LANE	4 LANE
0° 15'	22918'	NC	0	0	NC	0	0	NC	0	0	NC	0	0	NC	0	0	NC	0	0
0° 30'	11459'	NC	0	0	NC	0	0	NC	0	0	NC	175	175	RC	190	190	NC	200	200
0° 45'	7639'	NC	0	0	NC	0	0	RC	150	150	.022	175	175	.025	190	190	.028	200	200
1° 00'	5730'	NC	0	0	NC	125	125	.021	150	150	.029	175	175	.032	190	190	.038	200	200
1° 30'	3820'	RC	100	100	.021	125	125	.030	150	150	.041	175	175	.046	190	200	.051	200	240
2° 00'	2865'	RC	100	100	.027	125	125	.038	150	150	.051	175	210	.058	190	250	.065	200	290
2° 30'	2292'	.021	100	100	.033	125	125	.046	150	170	.061	175	240	.068	190	300	.075	220	330
3° 00'	1910'	.025	100	100	.038	125	125	.053	150	190	.068	180	270	.075	210	320	.080	230	350
3° 30'	1637'	.028	100	100	.043	125	140	.058	150	210	.074	200	300	.079	220	330	D MAX. = 3' - 0'		
4° 00'	1432'	.031	100	100	.047	125	150	.063	150	230	.078	210	310	D MAX. = 3' 45'					
5° 00'	1146'	.038	100	100	.055	125	170	.071	170	260	D MAX. = 4' 45'								
6° 00'	955'	.043	100	120	.062	130	190	.077	180	280									
7° 00'	819'	.048	100	130	.067	140	210	.080	190	280									
8° 00'	716'	.053	100	140	.071	150	220	D MAX. = 7° 30'											
9° 00'	637'	.056	100	150	.075	160	240												
10° 00'	573'	.060	110	160	.078	160	240												
11° 00'	521'	.063	110	170	.079	170	250												
12° 00'	477'	.065	120	180	.080	170	250												
13° 00'	441'	.068	120	180	D MAX. = 12° 15'														
14° 00'	409'	.070	130	190															
16° 00'	358'	.074	130	200															
18° 00'	318'	.077	140	210															
20° 00'	286'	.079	140	210															
22° 00'	260'	.080	140	220															
		.080	140	220	D MAX. = 22° 45'														

$e_{max.} = 0.08$

V - ASSUMED DESIGN SPEED  
 E - RATE OF SUPERELEVATION  
 L - MINIMUM LENGTH OF RUNOFF OF SPIRAL CURVE  
 NC - NORMAL CROWN SECTION  
 RC - REMOVE ADVERSE CROWN, SUPERELEVATE AT NORMAL CROWN SLOPE  
 SPIRALS DESIRABLE BUT NOT AS ESSENTIAL ABOVE HEAVY LINE  
 LENGTH ROUNDED IN MULTIPLES OF 25 OR 50 FEET PERMIT SIMPLER CALCULATIONS  
 LENGTH OF RUNOFF FOR A 4 LANE HIGHWAY IS BASED ON A ROADWAY WITH 16 FEET OR LESS MEDIAN

BANKING FOR CURVES NOT LISTED IN TABLES MAY BE DETERMINED FROM GRAPH.  
 DESIGN VALUES FOR RATE OF SUPERELEVATION AND MINIMUM LENGTH OF RUNOFF



REVISIONS AND CORRECTIONS  
 DEC. 8, 1971 - ORIGINAL APPROVAL DATE  
 OCT. 25, 1985 - REVISED TO CONFORM TO A.A.S.H.T.O. POLICY OF GEOMETRIC DESIGN, 1984.  
 JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.

APPROVED

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

*Stephen D. MacArthur, P.E.*  
 DIRECTOR OF ENGINEERING

*John M. Murphy, P.E.*  
 DESIGN ENGINEER

# BANKING TABLES



# STANDARD B-1

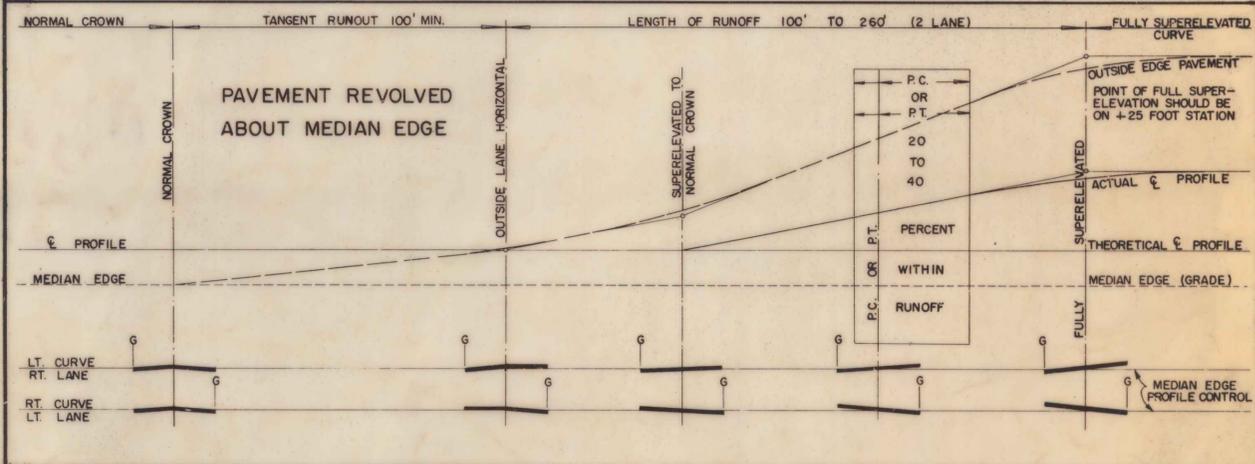
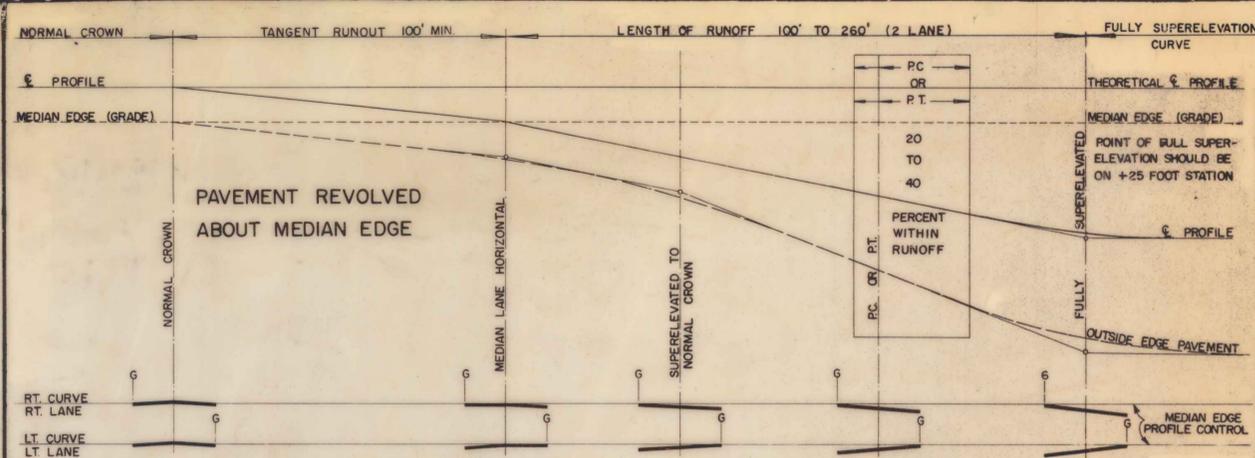
DEGREE OF CURVE	RADIUS	V = 30 MPH		V = 40 MPH		V = 50 MPH		V = 60 MPH		V = 65 MPH		V = 70 MPH		V = 75 MPH		V = 80 MPH									
		L- FEET 2 LANE 4 LANE		L- FEET 2 LANE 4 LANE		L- FEET 2 LANE 4 LANE		L- FEET 2 LANE 4 LANE		L- FEET 2 LANE 4 LANE		L- FEET 2 LANE 4 LANE		L- FEET 2 LANE 4 LANE											
0° 15'	22918'	NC	0	0	NC	0	0	NC	0	0	NC	0	0	NC	0	0	RC	240	240						
0° 30'	11459'	NC	0	0	NC	0	0	RC	175	175	RC	190	190	RC	200	200	1/4	220	220	5/16	240	240			
0° 45'	7639'	NC	0	0	NC	0	0	RC	150	150	1/4	175	175	5/16	190	190	3/8	200	200	3/8	220	220	7/16	240	240
1° 00'	5730'	NC	0	0	RC	125	125	1/4	150	150	3/8	175	175	3/8	190	190	7/16	200	200	1/2	220	220	9/16	240	240
1° 30'	3820'	RC	100	100	1/4	125	125	3/8	150	150	1/2	175	175	9/16	190	200	5/8	200	240	3/4	220	290	3/4	240	320
2° 00'	2865'	RC	100	100	5/16	125	125	7/16	150	150	5/8	175	210	11/16	190	250	3/4	200	290	7/8	230	340	15/16	250	380
2° 30'	2292'	1/4	100	100	3/8	125	125	9/16	150	170	3/4	175	240	13/16	190	290	7/8	220	330	15/16	250	370	1	260	400
3° 00'	1910'	5/16	100	100	7/16	125	125	5/8	150	190	13/16	180	270	7/8	210	320	15/16	230	350	1	250	380	1	260	400
3° 30'	1637'	5/16	100	100	1/2	125	140	11/16	150	210	7/8	200	300	15/16	220	330	1	240	360	1	250	380	1	260	400
4° 00'	1432'	3/8	100	100	9/16	125	150	3/4	150	230	15/16	210	310	15/16	230	340	1	240	360	1	250	380	1	260	400
5° 00'	1146'	7/16	100	100	11/16	125	170	7/8	170	260	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
6° 00'	955'	1/2	100	120	3/4	130	190	15/16	180	280	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
7° 00'	819'	9/16	100	130	13/16	140	210	15/16	190	280	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
8° 00'	716'	5/8	100	140	7/8	150	220	1	190	290	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
9° 00'	637'	11/16	100	150	15/16	160	240	1	190	290	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
10° 00'	573'	11/16	110	160	15/16	160	240	1	190	290	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
11° 00'	521'	3/4	110	170	15/16	170	250	1	190	290	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
12° 00'	477'	13/16	120	180	15/16	170	250	1	190	290	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
13° 00'	441'	13/16	120	180	1	170	250	1	190	290	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
14° 00'	409'	13/16	130	190	1	170	250	1	190	290	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
16° 00'	358'	7/8	130	200	1	170	250	1	190	290	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
18° 00'	318'	15/16	140	210	1	170	250	1	190	290	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
20° 00'	286'	15/16	140	210	1	170	250	1	190	290	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400
22° 00'	260'	15/16	140	220	1	170	250	1	190	290	1	220	320	1	230	350	1	240	360	1	250	380	1	260	400

V - ASSUMED DESIGN SPEED  
e - RATE OF SUPERELEVATION  
L - MINIMUM LENGTH OF RUNOFF OF SPIRAL CURVE  
NC - NORMAL CROWN SECTION  
RC - REMOVE ADVERSE CROWN, SUPERELEVATE AT NORMAL CROWN SLOPE  
SPIRALS DESIRABLE BUT NOT AS ESSENTIAL ABOVE HEAVY LINE  
LENGTHS ROUNDED IN MULTIPLES OF 25 OR 50 FEET PERMIT SIMPLER CALCULATIONS  
LENGTH OF RUNOFF FOR A 4 LANE HIGHWAY IS BASED ON A ROADWAY WITH 16 FEET OR LESS MEDIAN

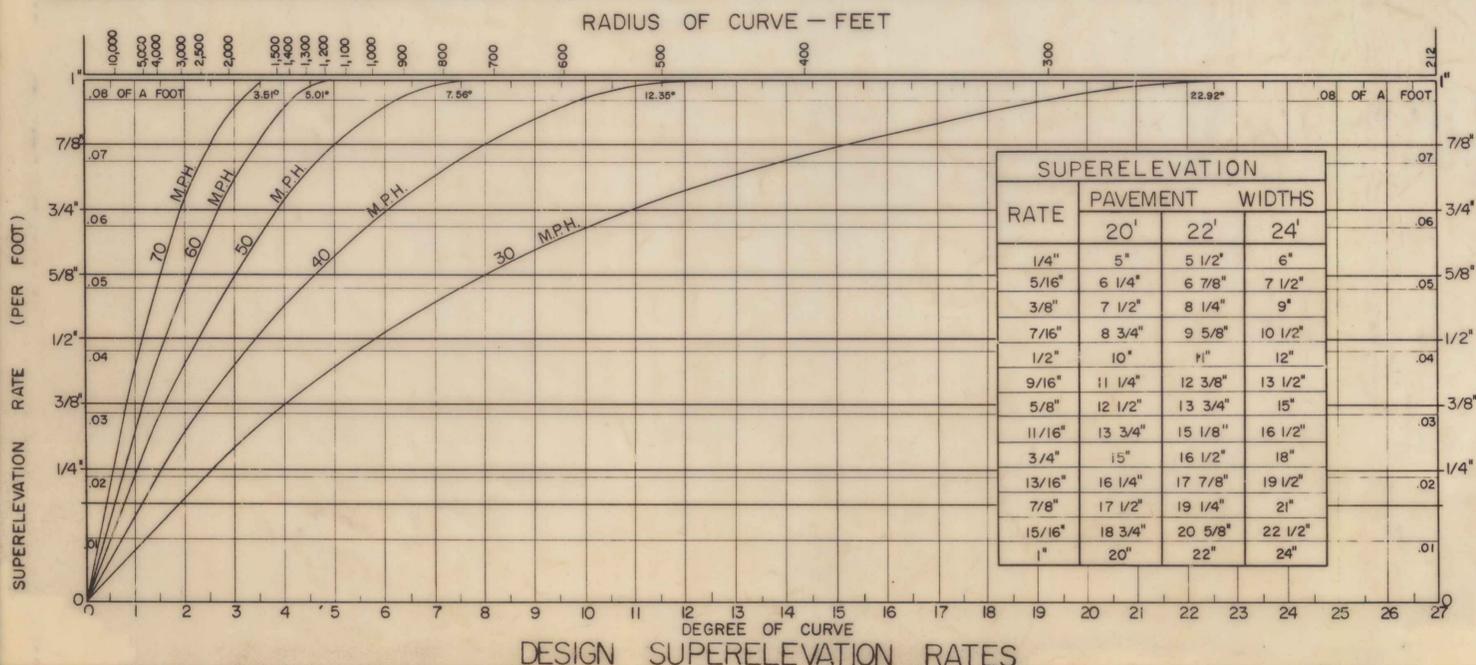
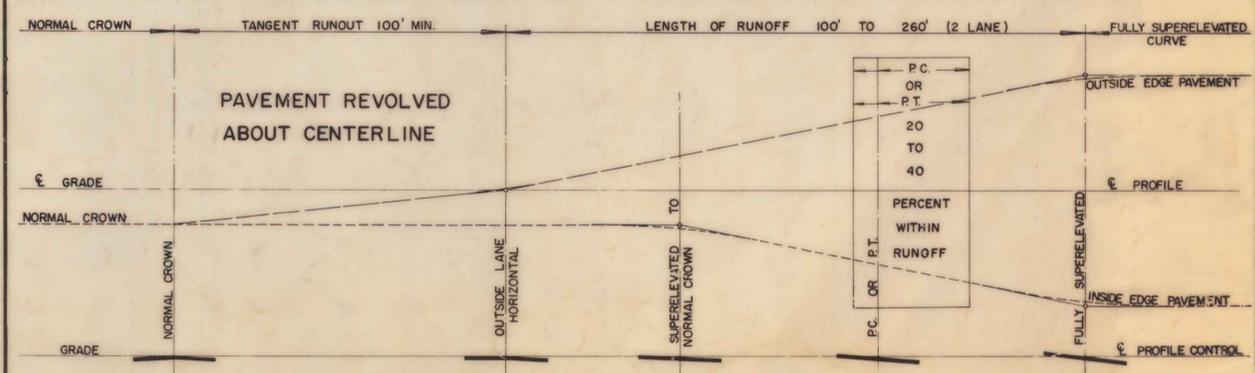
RATES ARE FIGURED TO THE NEAREST SIXTEENTH INCH.  
BANKING FOR CURVES NOT LISTED IN TABLES MAY BE DETERMINED FROM GRAPH.

DESIGN VALUES FOR RATE OF SUPERELEVATION AND MINIMUM LENGTH OF RUNOFF

1	140	220
D MAX = 23.0°		



TANGENT RUNOUT: CONSISTS OF MAKING THE LANE OR LANES ON THE OUTSIDE OF THE CURVE, HORIZONTAL WITH THE CENTERLINE, USING 100' MIN. WHERE THE NORMAL CROWN IS APPROXIMATELY 1/4 INCH PER FOOT.  
LENGTH OF RUNOFF: FROM 60 TO 80 PERCENT OF THE LENGTH OF RUNOFF PREFERABLY SHOULD BE LOCATED ON THE TANGENT AT CURVES.  
CURVES WITH SPIRALS: THE LENGTH OF THE SPIRAL AND THE LENGTH OF RUNOFF ARE THE SAME IN DISTANCE.  
BREAKS IN PROFILES FOR PAVEMENT EDGES SHOULD BE ROUNDED IN FINAL DESIGN BY INSERTION OF VERTICAL CURVES. THE MINIMUM VERTICAL CURVE LENGTH IN FEET CAN BE USED NUMERICALLY EQUAL TO THE DESIGN SPEED IN M.P.H.

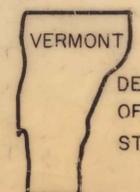


REVISIONS AND CORRECTIONS  
MAR 1, 1965... REVISED COMPLETE "PAVEMENT REVOLVING" SECTION  
JULY 17, 1967... REVISED BANKING AND LENGTH OF RUNOFF IN ACCORDANCE WITH 1965 BLUE BOOK

APPROVED DATE MARCH 10, 1965  
*G. S. Bishop*  
CHIEF ENGINEER  
*G. M. Lane*  
HIGHWAY ENGINEER  
*E. H. Stebbins*  
CONSTRUCTION ENGINEER

DRAWN: L.C.  
TRACED: GUS AJA

BANKING TABLES



VERMONT  
DEPARTMENT OF HIGHWAYS  
STANDARD

B-1