Roose

STATE OF ARIZONA

STATE HIGHWAY DEPARTMENT

PLANS DIVISION

1971 "D"

ROADWAY STANDARDS

FOR USE IN

FIELD AND OFFICE

ISSUED TO

ARIZONA STATE HIGHWAY DEPARTMENT - PLANS DIVISION
INDEX TO DESIGN STANDARDS

STOPPING & SIGHT DISTANCES

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D-6.17	" " " a = 1 1/2	1-71
D-6.18	" " " a = 1 2/3	1-71
D-6.19	" " " a = 2	1-71
D-6.20	" " " a = 2 1/2	1-71
D-6.21	" " " a = 2 2/3	2-71
D-6.22	" " " a = 3	1-71
D-6.23	" " " a = 3 1/3	1-71
D-6.24	" " " a = 3 1/2	1-71
D-6.25	" " " a = 3 3/4	1-71
D-6.26	" " " a = 4	1-71
D-6.27	" " " a = 4 1/2	1-71
D-6.28	" " " a = 4 2/3	2-71
D-6.29	" " " a = 5	1-71
D-6.30	" " " a = 5 1/3	1-71
D-6.31	" " " a = 5 1/2	2-71
D-6.32	" " " a = 6	1-71
D-6.33	" " " a = 6 1/4	1-71
D-6.34	" " " a = 6 1/2	1-71
D-6.35	" " " a = 6 2/3	2-71
D-6.36	" " " a = 6 7/8	1-71
D-6.37	" " " a = 7	1-71
D-6.38	" " " a = 7 1/2	1-71
D-6.39	" " " a = 8	1-71
D-6.40	" " " a = 8 1/8	2-71
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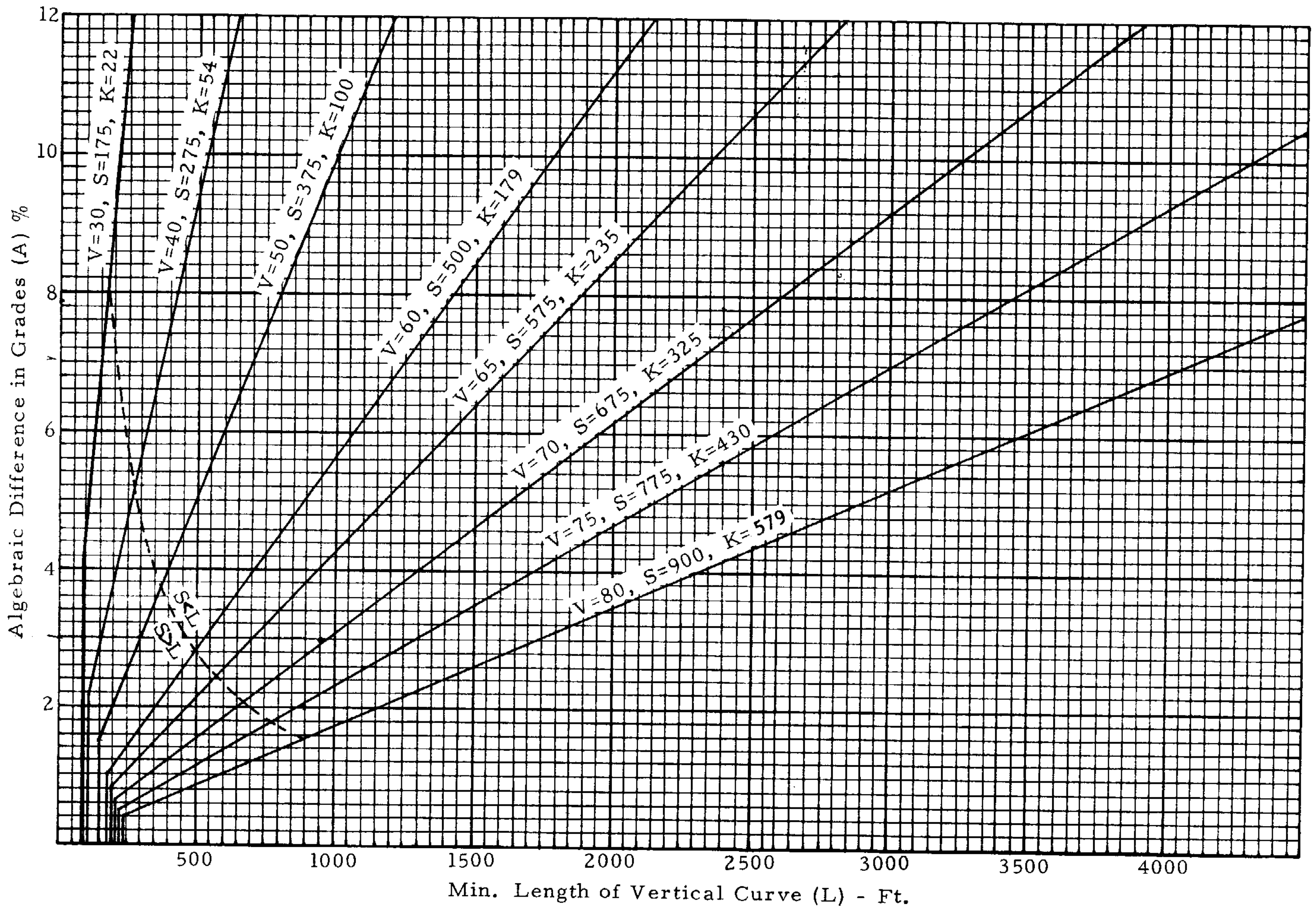
Design Speed	Assumed Speed For Wet Pvmt. Condition	Perception & Brake Reaction		Coefficient of Friction	Braking Distance on Level	Safe Stopping Distance (S)	
		Time	Distance			Computed	Rounded
M.P.H.	M.P.H.	Sec.	Ft.	f	Ft.	Ft.	Ft.
30	28	2.5	103	.36	73	176	175
40	36	2.5	132	.33	131	263	275
50	45	2.5	165	.31	218	383	375
60	54	2.5	198	.30	324	522	500
65	58	2.5	213	.30	374	587	575
70	63	2.5	231	.29	456	687	675
75	67	2.5	246	.28	534	780	775
80	72	2.5	264	.27	640	904	900

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev 4-71

STOPPING DISTANCE

Drawn	D.G.	9-70	Drawing No.
Traced	R.A.F.	9-70	**D-1.01**
Checked	JPO	10-70	
Approved Engr. Plans	[illegible]	10-70	



Height of Eye = 3.75'
Height of Object = 0.5'
V=Design Speed - M.P.H.
S=Safe Stopping Distance - Ft.
K=Length of Vertical Curve per % of A - Ft.
$L = AS^2/1398$ - Ft.
L=KA - Ft.
L(min.) = 3V

For SD values when L and A are given, see Std. D-1.03

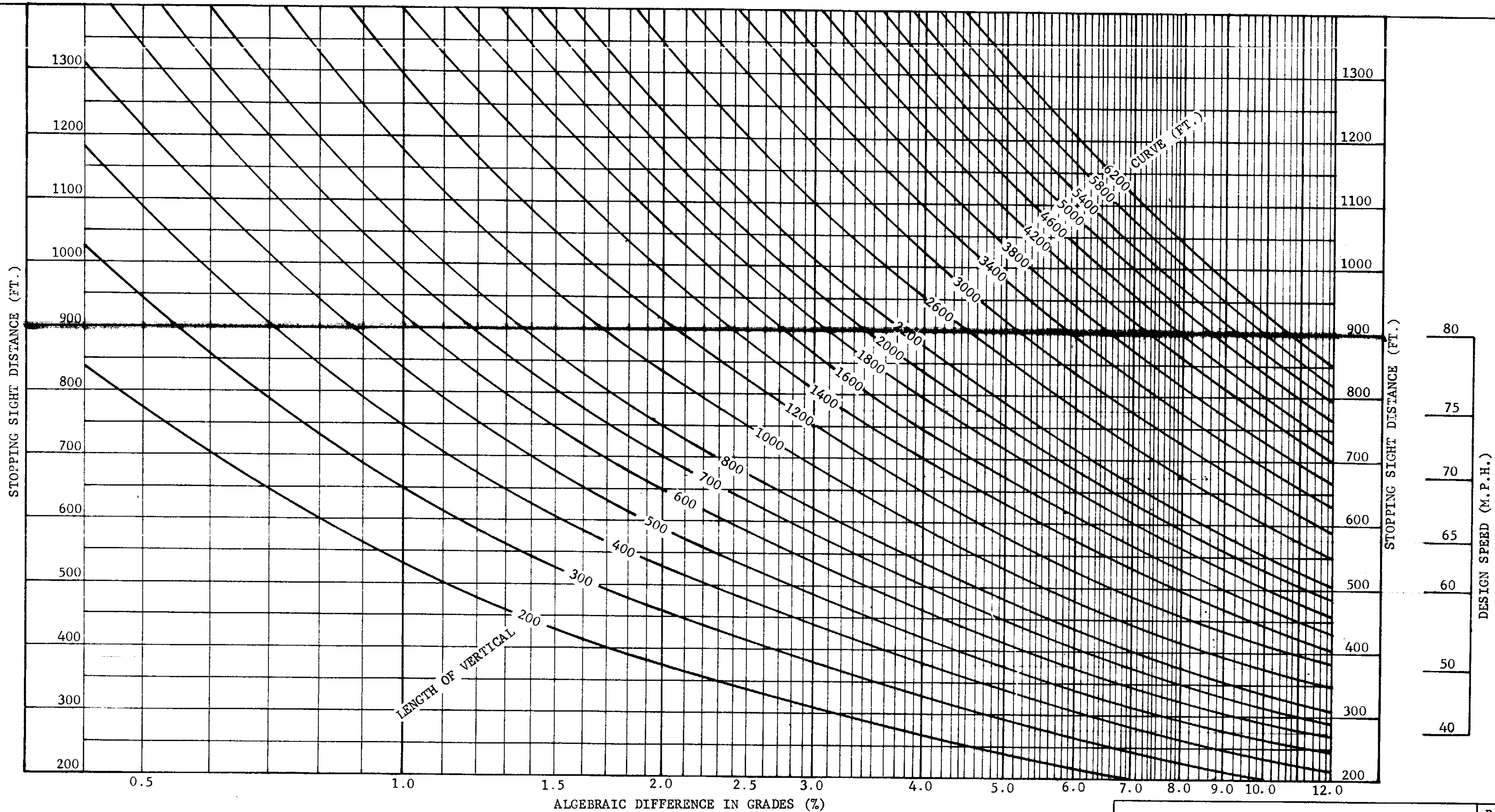
ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

LENGTH STANDARDS

CREST VERTICAL CURVES

Drawn	D.G. 7-70	Drawing No.
Traced	R.A.F. 9-70	
Checked	JPO 10-70	D-1.02
Approved Engr. Plans	G Heidecker 10-70	

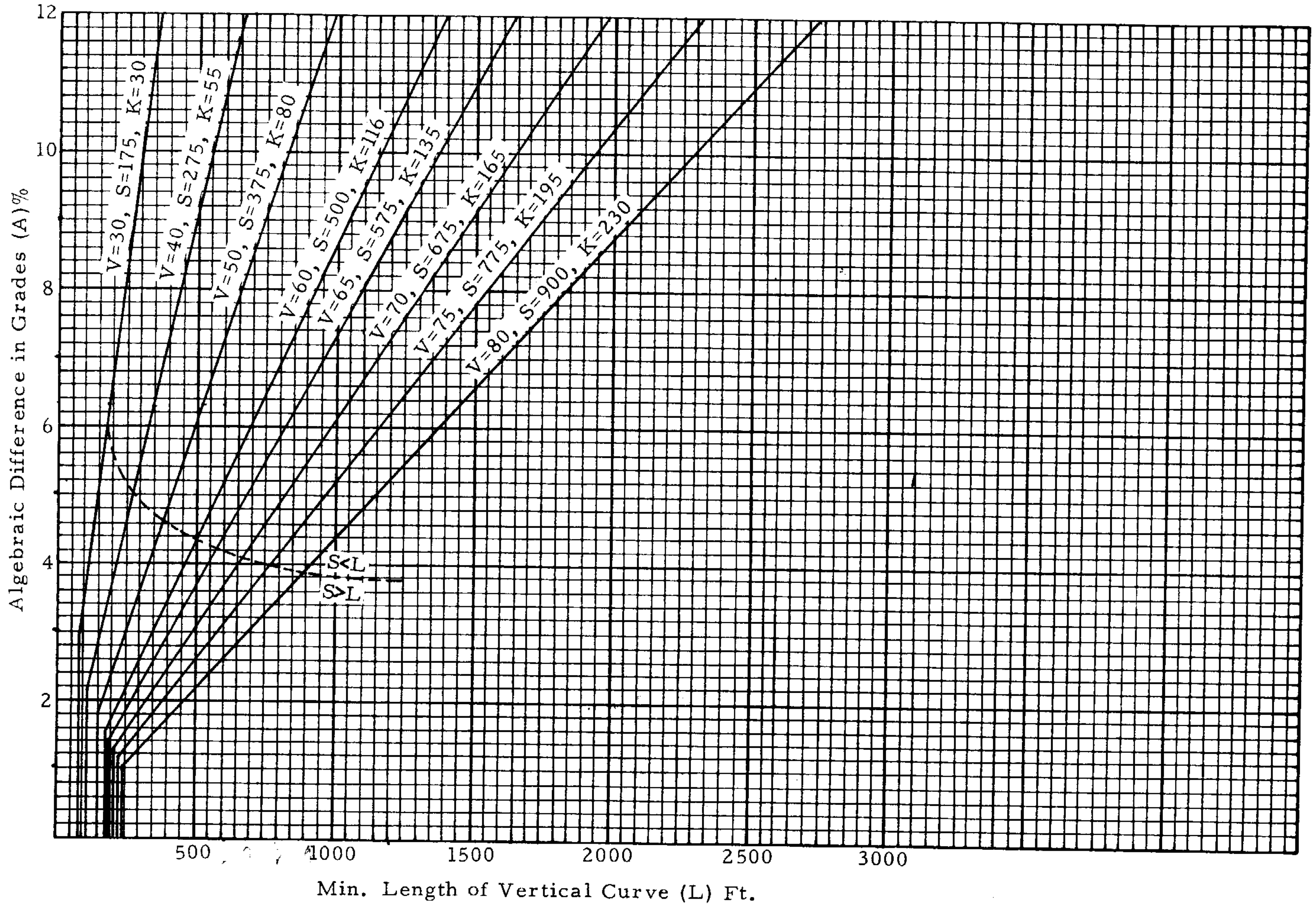
Rev 4-71



$SD_s = \sqrt{1398L/A}$

For Minimum Vertical Curve Lengths, See Std. D-1.02

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION		Rev.
STOPPING SIGHT DISTANCE CREST VERTICAL CURVES		
Drawn	D.G. 4-71	Drawing No.
Traced	D.G. 4-71	D-1.03
Checked		
Approved Engr. Plans		



V=Design Speed - M.P.H.
S=Safe Stopping Distance - Ft.
=Light Beam Distance - Ft.
K=Length of Vertical Curve per % of A - Ft.

$$L = \frac{AS^2}{400 + 3.5S} \text{ - Ft.}$$

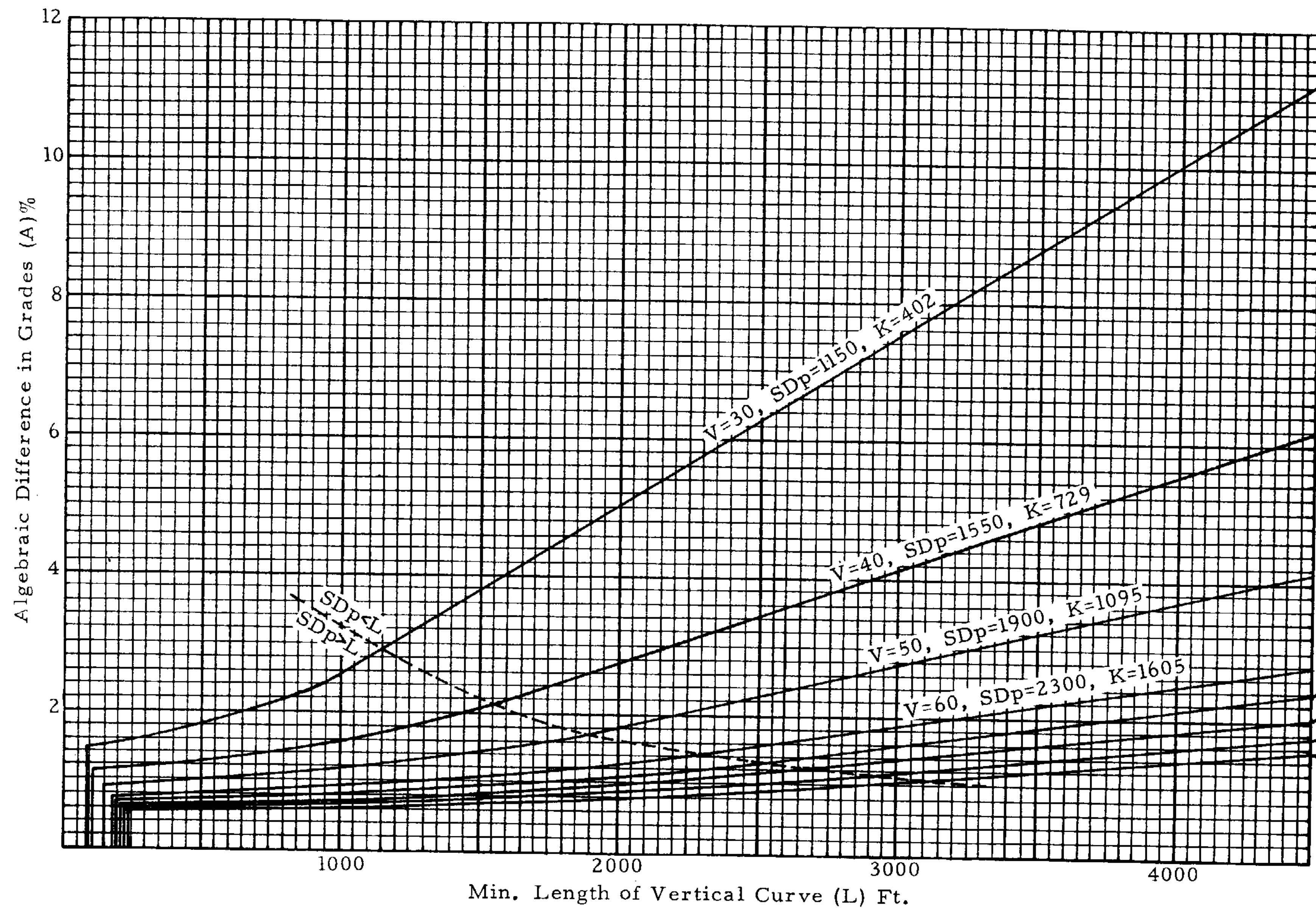
L=KA
L(min.)=3V

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

LENGTH STANDARDS
SAG VERTICAL CURVES

Drawn	D. G. 7-70	Drawing No.
Traced	R. A. F. 10-70	D-1.04
Checked	JPO 10-70	
Approved Engr. Plans	[illegible] 10-70	

Rev 4-71



Height of eye = 3.75'
Height of object = 4.5'
V=Design Speed - M.P.H.
SDp=Safe Passing Distance - Ft.
K=Length of Vertical Curve per % of A when SDp<L (Variable when SDp>L)
L=A (SDp)^2/3295 = KA when SDp<L
=2 SDp - 3295/A when SDp>L
L(min.) = 3V

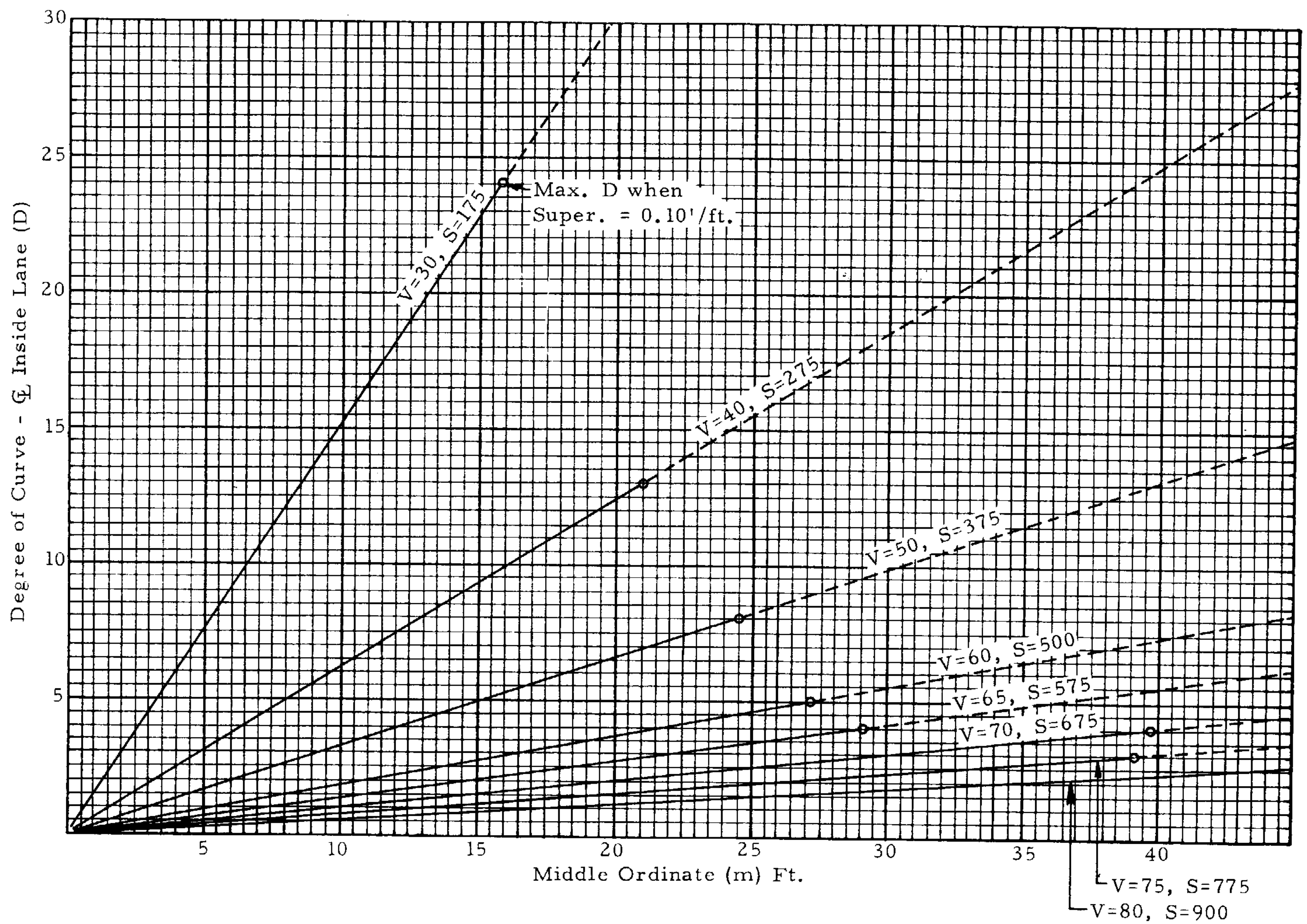
ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

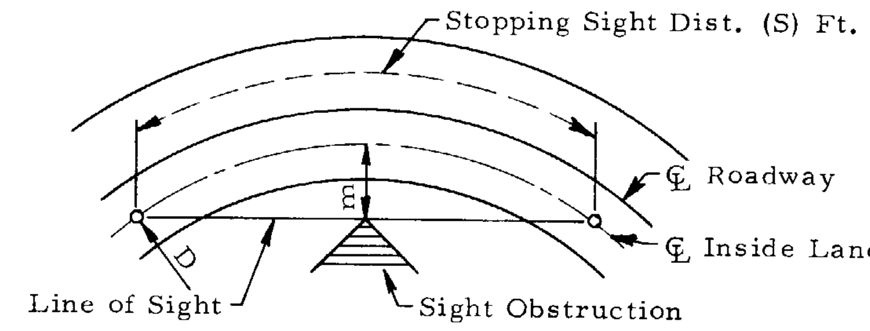
Rev 4-71

PASSING SIGHT DISTANCE DESIGN CONTROL

CREST VERTICAL CURVES 2-LANE ROADWAYS

Drawn	D. G. 7-70	Drawing No.
Traced	R.A.F. 10-70	
Checked	JPO 10-70	D-1.05
Approved Engr. Plans	G. Heidecker 10-70	





$$m = \frac{5730}{D} \text{ vers } \frac{SD}{200}$$

V=Design Speed M.P.H.

vers θ = 1 - cos θ

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

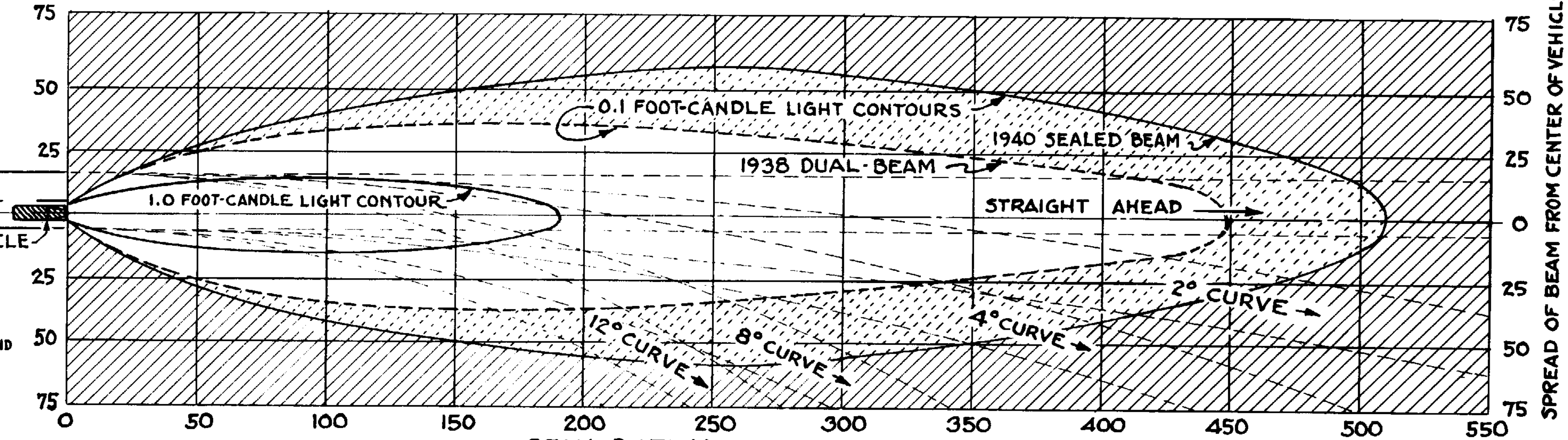
Rev
4-71

STOPPING SIGHT DISTANCE

HORIZONTAL CURVES

Drawn	D.G.	7-70	Drawing No.
Traced	R.A.F.	10-70	D-1.06
Checked	JPO	10-70	
Approved Engr. Plans	Gisdecker	10-70	

PLAN DIAGRAM - HEADLIGHT REALM OF VISIBILITY - NIGHT DRIVING



FROM STD. DRWG. NO. D-1-1

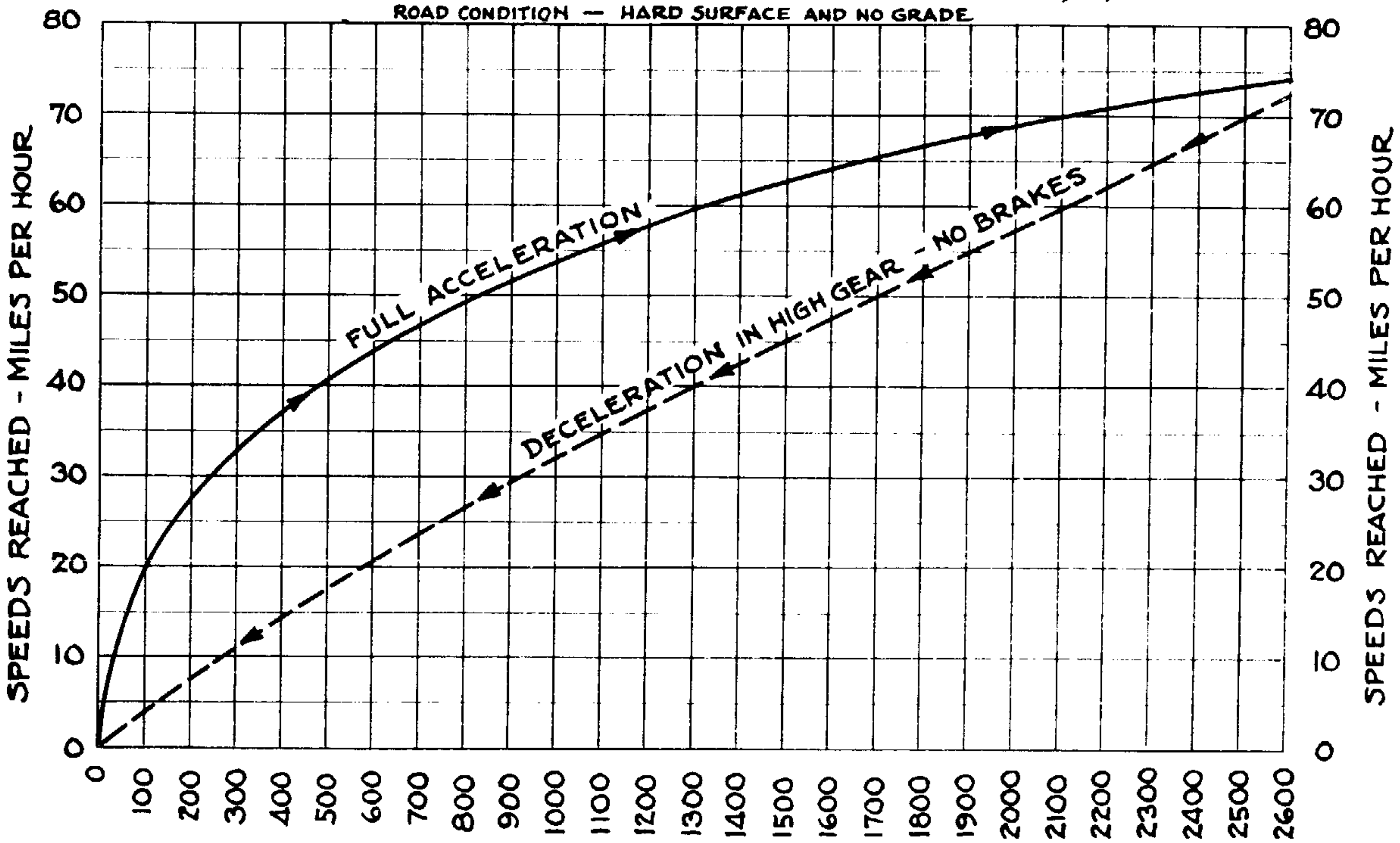
SPEED M.P.H.	STOPPING DISTANCE FEET
70	614
60	481
50	368
40	274
30	192
20	120
10	57

INCLUDES PERCEPTION, REACTION, AND BRAKING DISTANCES

PASSENGER VEHICLE ACCELERATION AND DECELERATION CHART

CALCULATED FROM A.A.S.H.O. RESEARCH DATA SECURED 1937

ROAD CONDITION — HARD SURFACE AND NO GRADE



DISTANCE TRAVELED - FEET
(CUMULATIVE OR DEDUCTIVE)

NOTES:

OBJECTS OUTSIDE OF THE 0.1 FOOT-CANDLE LIGHT CONTOUR ARE OBSCURE.

HEADLIGHT CONTOURS ARE BASED ON DATA CONTAINED IN A REPORT OF A COOPERATIVE INVESTIGATION BY COMMITTEE ON CURVATURE AND SPEED, HIGHWAY RESEARCH BOARD; COMMITTEE ON SPEED REGULATION, NATIONAL SAFETY COUNCIL; AND THE HIGHWAY RESEARCH STAFF, IOWA ENGINEERING EXPERIMENT STATION. PRESENTED AT HIGHWAY RESEARCH BOARD MEETING 1940.

GENERAL NOTE:

AVAILABLE RESEARCH DATA UPON WHICH THIS DRAWING IS BASED ARE MEAGRE. A MORE ABUNDANT AND EXACTING RESEARCH ON THESE SUBJECTS IS INDISPENSABLE TO GREATER ACCURACY IN CALCULATIONS.

ARIZONA STATE HIGHWAY DEPARTMENT
PLANS DIVISION

REV.

ACCELERATION & DECELERATION CHART, AND DIAGRAM SHOWING VISIBILITY WITH HEADLIGHTS AT NIGHT

CALCULATED AND DRAWN JUNE 1941 BY LESLIE McDOUGALL, HIGHWAY DESIGNER

CHECKED BY

APPROVED BY ENGINEER OF PLANS H H Wessel

STANDARD DRWG. NO.

D 1-2

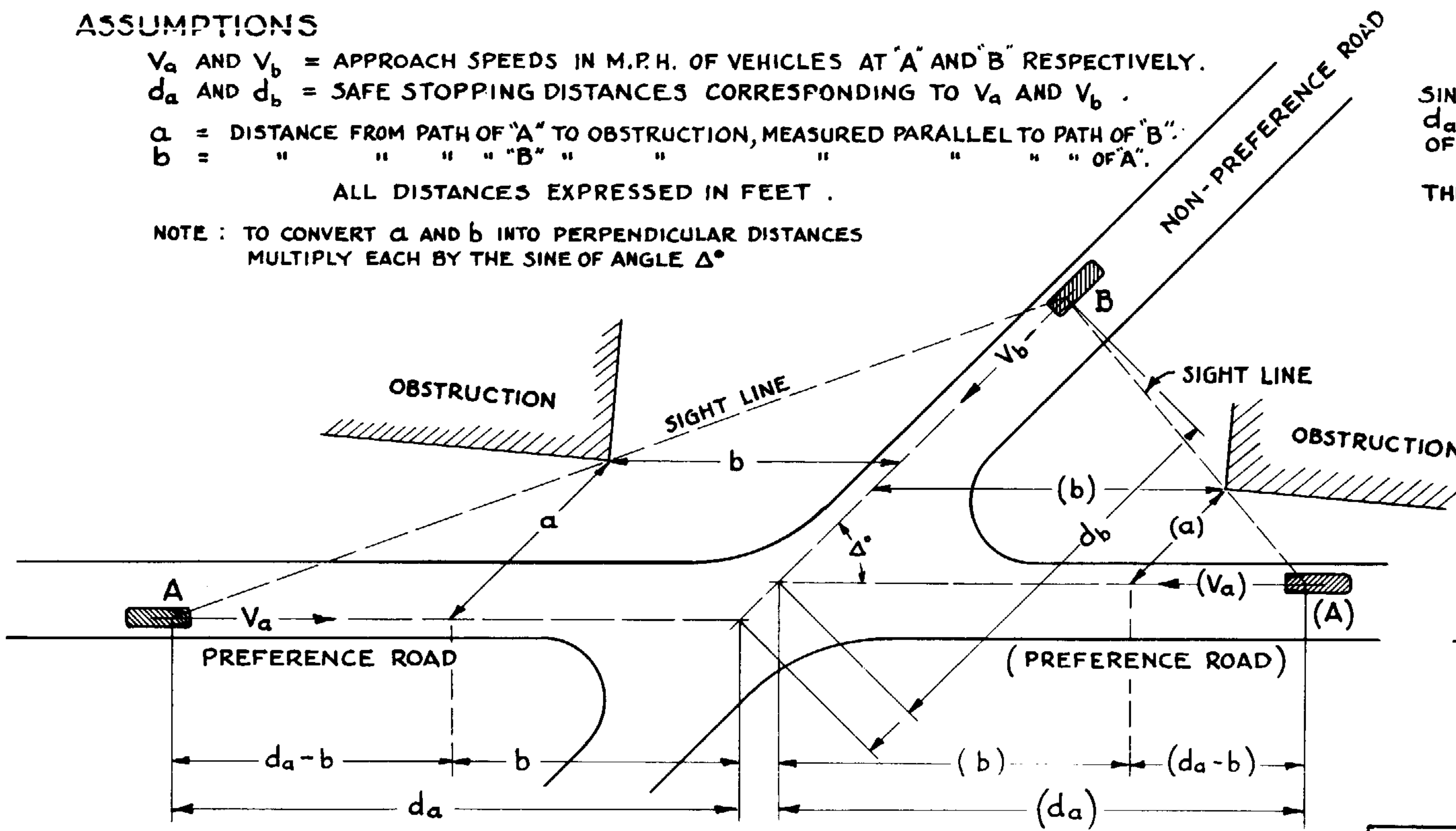
ASSUMPTIONS

V_a AND V_b = APPROACH SPEEDS IN M.P.H. OF VEHICLES AT "A" AND "B" RESPECTIVELY.
d_a AND d_b = SAFE STOPPING DISTANCES CORRESPONDING TO V_a AND V_b.

a = DISTANCE FROM PATH OF "A" TO OBSTRUCTION, MEASURED PARALLEL TO PATH OF "B".
b = " " " " "B" " " " " " OF "A".

ALL DISTANCES EXPRESSED IN FEET.

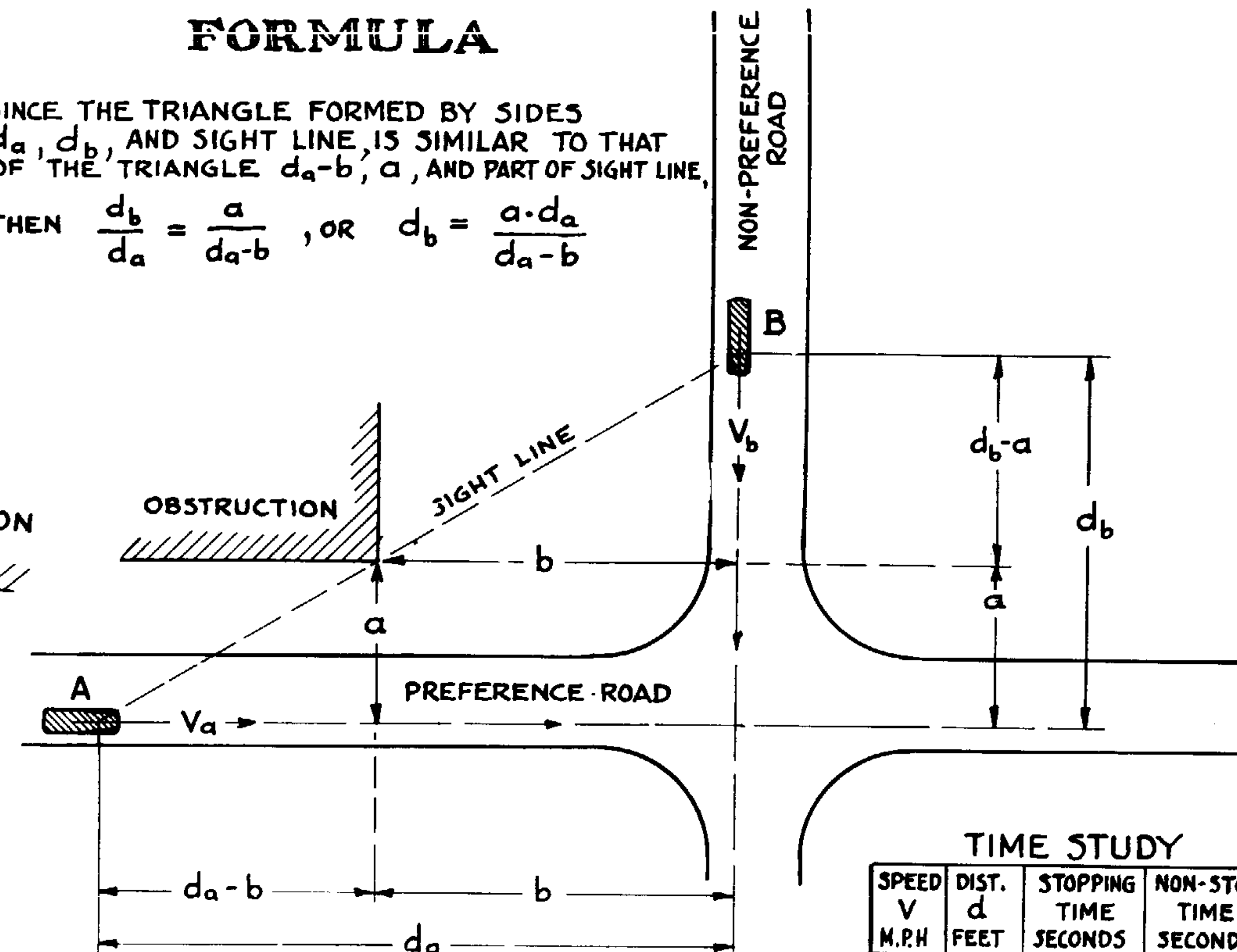
NOTE: TO CONVERT a AND b INTO PERPENDICULAR DISTANCES MULTIPLY EACH BY THE SINE OF ANGLE $\Delta°$



FORMULA

SINCE THE TRIANGLE FORMED BY SIDES d_a, d_b, AND SIGHT LINE, IS SIMILAR TO THAT OF THE TRIANGLE $d_a - b$, a, AND PART OF SIGHT LINE,

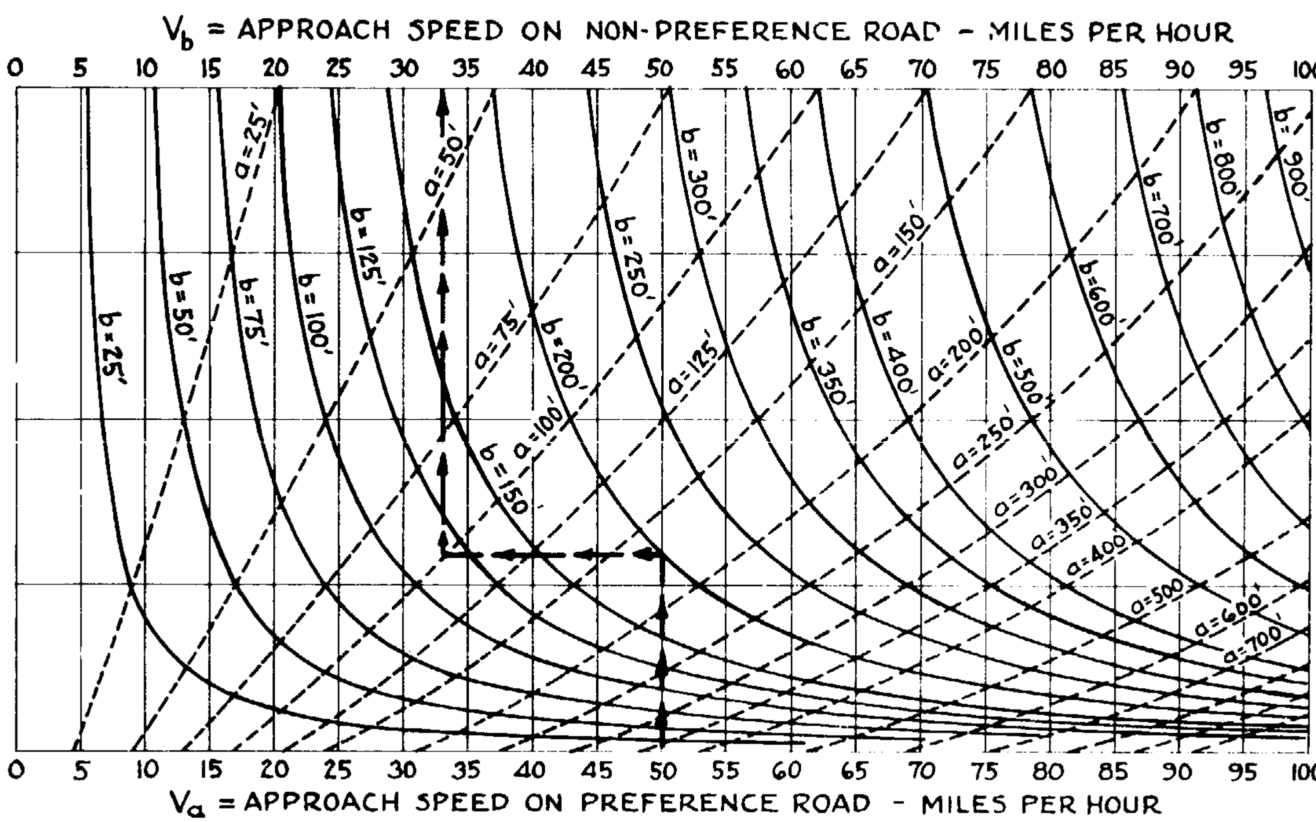
THEN $\dfrac{d_b}{d_a} = \dfrac{a}{d_a - b}$, OR $d_b = \dfrac{a \cdot d_a}{d_a - b}$



AT INTERSECTIONS NOT COVERED BY OTHER CRITERIA SUCH AS 10:1 TRAFFIC VOLUME RATIO, OR BY BLANKET REGULATIONS, THE FOLLOWING RULE IS ADVISABLE AS A SAFETY PRECAUTION: WHEN DESIGN OR APPROACH SPEED "V_a" ON PREFERENCE ROAD EXCEEDS 30 M.P.H. AND RELATED SIGHT OBSTRUCTIONS RESTRICT "V_b" ON NON-PREFERENCE ROAD TO 10 M.P.H. OR LOWER, IT IS ADVISABLE TO REQUIRE ALL TRAFFIC ON THE NON-PREFERENCE ROAD TO STOP BEFORE ENTERING OR CROSSING PREFERENCE ROAD, PENDING IMPROVEMENTS INCREASING SIGHT DISTANCE.

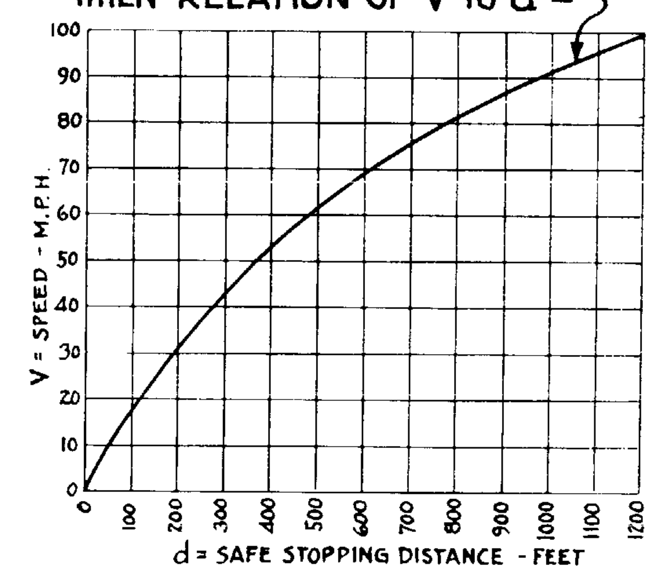
TIME STUDY

SPEED V M.P.H	DIST. d FEET	STOPPING TIME SECONDS	NON-STOP TIME SECONDS
100	1208	15.2	8.2
90	969	13.2	7.3
80	775	11.7	6.6
70	614	9.9	6.0
60	481	8.7	5.5
50	368	7.6	5.0
40	274	6.6	4.6
30	192	5.7	4.4
20	120	5.0	4.1
10	57	4.3	3.9



EXAMPLE: WHEN $V_a = 50$, $b = 200$, AND $a = 100$, THEN $V_b = 33$

INTER-RELATION OF V_a, V_b, a, AND b WHEN RELATION OF V TO d =



WHEN $V_a = 50$; $d_a = 368$, & WHEN $V_b = 33$; $d_b = 219$

NOTE: THE DIAGRAMS, CHARTS, AND FORMULA SHOWN ON THIS DRAWING CONFORM TO 1940 A.A.S.H.O. POLICY ON INTERSECTIONS AT GRADE.

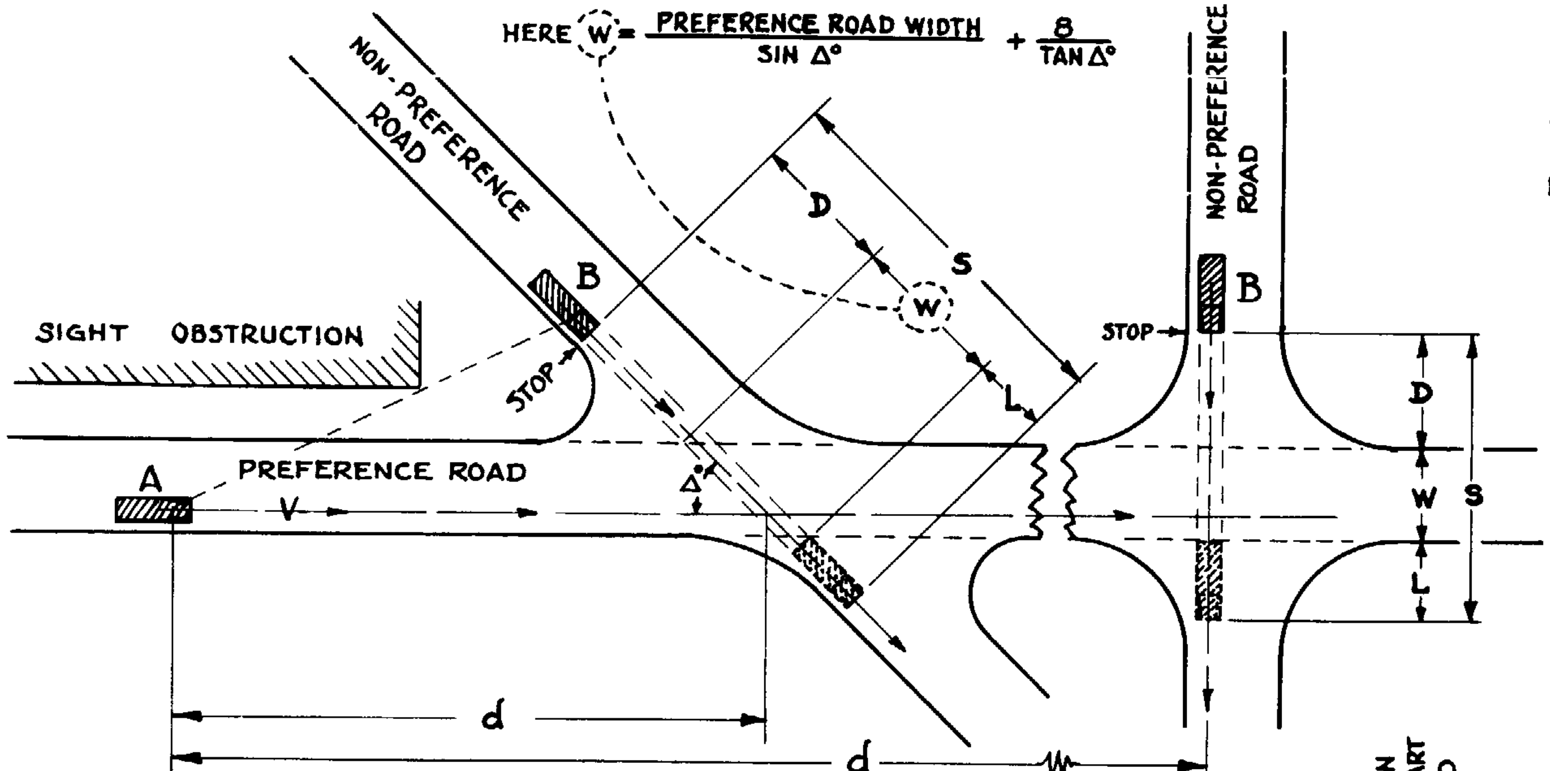
ARIZONA STATE HIGHWAY DEPARTMENT
PLANS DIVISION

MINIMUM SAFE SIGHT RESTRICTIONS AT INTERSECTIONS AS RELATED TO INTERSECTION APPROACH SPEEDS ON PREFERENCE ROAD AND ON NON-PREFERENCE ROAD, BASED ON AVAILABLE SAFE STOPPING DISTANCES

REV.

CALCULATED AND DRAWN APRIL 1940 BY LESLIE McDOUGALL - HIGHWAY DESIGNER
TRACED BY L.McD.
CHECKED BY
APPROVED BY ENGINEER OF PLANS H H Wessel

STANDARD DRWG. NO.
D 1-3
NON-STOP INTERSECTION



FORMULA

VEHICLE AT "A" TRAVELS NON-STOP AT DESIGN SPEED OF PREFERENCE ROAD.
VEHICLE AT "B" STARTS FROM STOPPED POSITION ON NON-PREFERENCE ROAD AND TRAVELS DISTANCE "S" IN THE TIME "t" IT TAKES VEHICLE "A" TO TRAVEL DISTANCE "d"

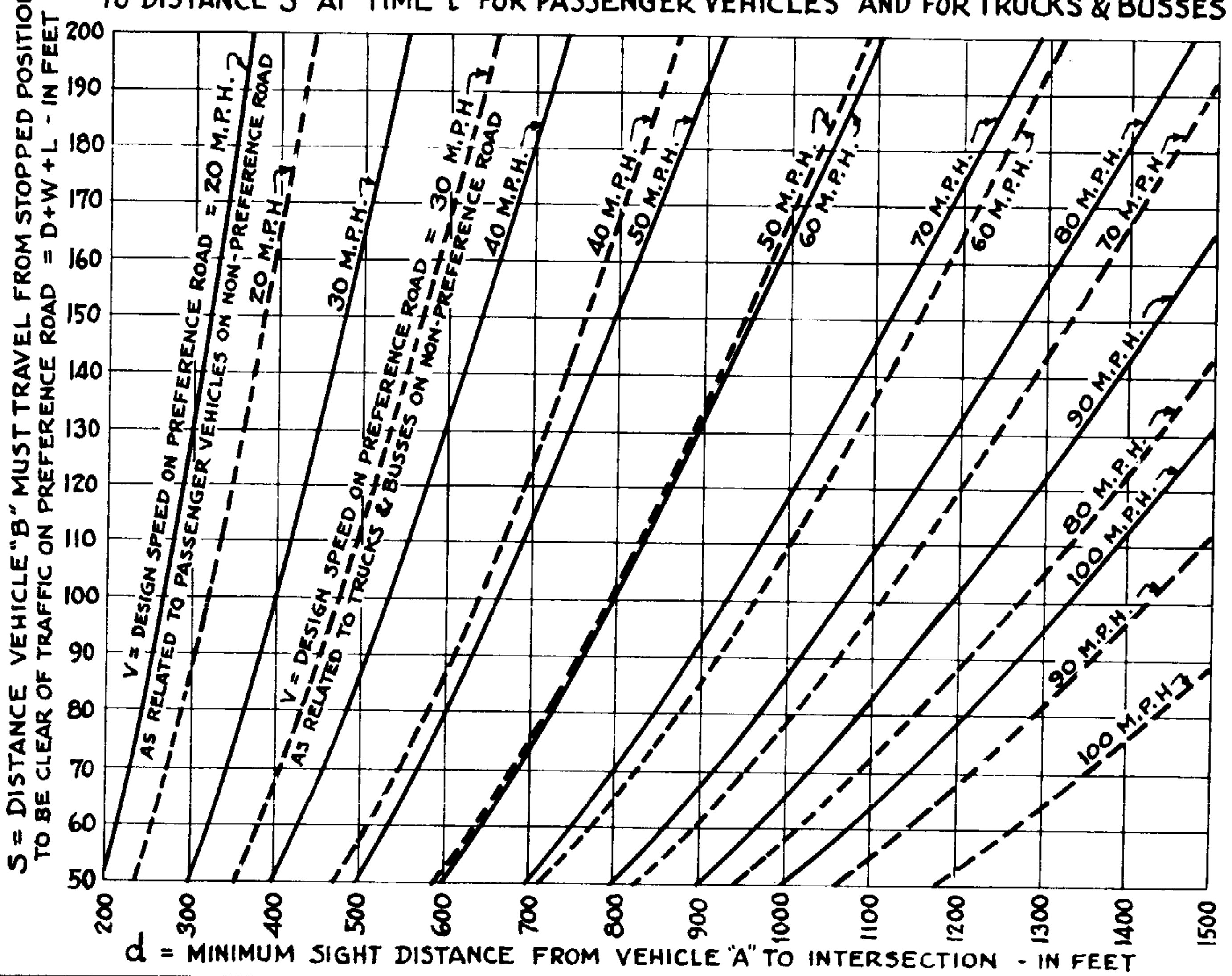
LET :

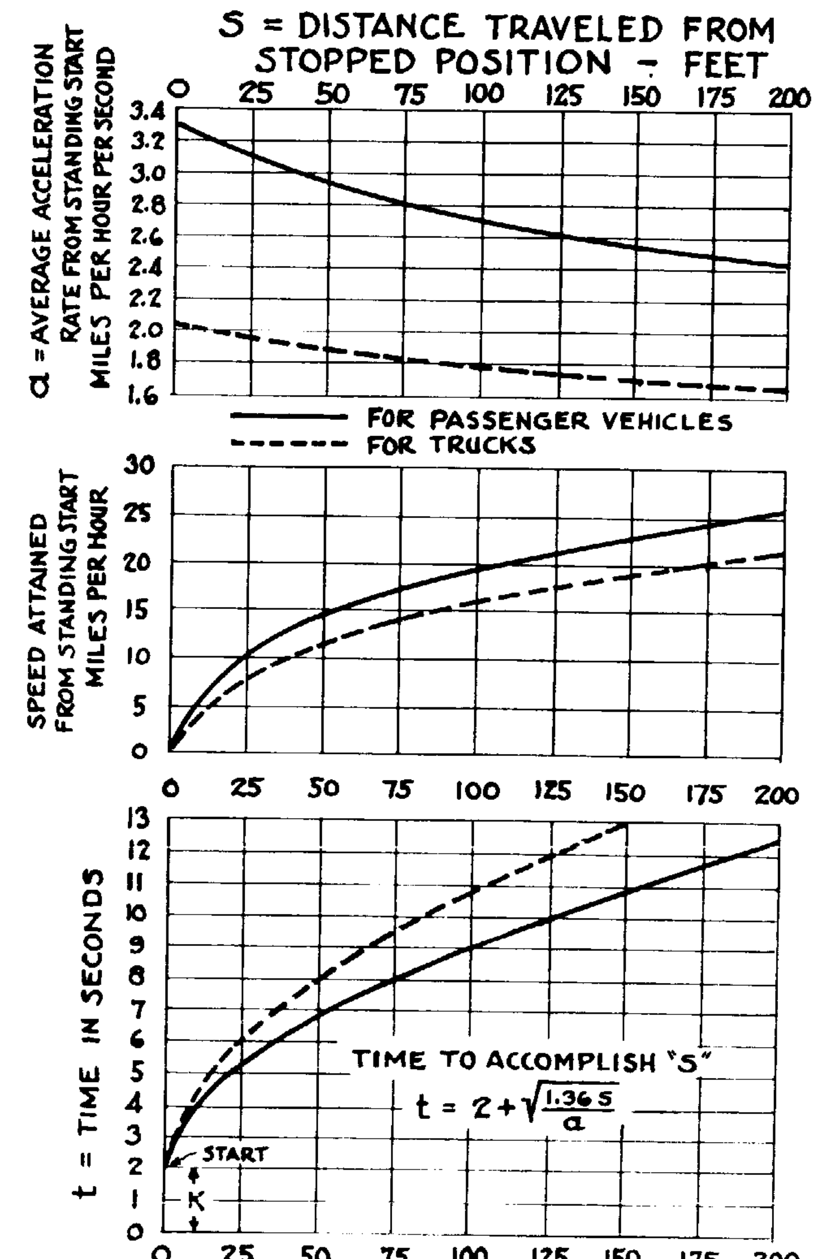
- D = DISTANCE FROM NEAR EDGE OF PAVEMENT TO FRONT OF VEHICLE "B" WHEN STOPPED, IN FEET.
- W = WIDTH OF PAVEMENT ALONG PATH OF CROSSING VEHICLE "B" - IN FEET
- L = OVER-ALL LENGTH OF VEHICLE "B" - IN FEET (SEE TABULATION LISTING VARIOUS DESIGN LENGTHS).
- S = THE DISTANCE VEHICLE "B" MUST TRAVEL TO BE CLEAR OF TRAFFIC ON PREFERENCE ROAD, = D+W+L.
- t = THE REQIRED TIME TO ACCOMPLISH "S", IN SECONDS.
- a = THE AVERAGE OVER-ALL RATE OF ACCELERATION FROM A STOPPED POSITION - MILES PER HOUR PER SECOND.
- K = THE SUM OF PERCEPTION TIME AND TIME REQUIRED TO SHIFT TO FIRST GEAR. ASSUMED AT 2 SECONDS.
- V = THE DESIGN SPEED ON THE PREFERENCE ROAD, IN MILES PER HOUR. $V = d \div 1.47t$
- d = THE MINIMUM SIGHT DISTANCE FROM "A" TO INTERSECTION, IN FEET. $d = 1.47Vt$

THEN: $$t = K+\sqrt{\frac{2S}{1.47a}}, \text{ OR } = K+\sqrt{\frac{1.36S}{a}}, \text{ OR } = 2+\sqrt{\frac{1.36S}{a}}$$

AND: $$d = 1.47V\left[2+\sqrt{\frac{1.36S}{a}}\right], \text{ OR } V = \frac{d}{1.47\left[2+\sqrt{\frac{1.36S}{a}}\right]}$$

INTER-RELATION OF "d" AND DESIGN SPEEDS ON PREFERENCE ROAD TO DISTANCE "S" AT TIME "t" FOR PASSENGER VEHICLES AND FOR TRUCKS & BUSSES





OVER-ALL LENGTHS FOR VARIOUS VEHICLES

TYPE OF VEHICLE	SIGNIFICANT LENGTH GROUPS	OCCASIONAL LENGTHS	DESIGN LENGTH
PASSENGER VEHICLE	A.A.S.H.O. DATA UNDER 17'	A.A.S.H.O. 17+	20'
SINGLE-UNIT TRUCK OR BUS	H.P.S. DATA UNDER 30'	H.P.S. DATA 35+	30'
TRACTOR TRUCK - SEMITRAILER	UNDER 40'	60'+	45'
TRUCK & TRAILER COMBINATION	UNDER 60'	70'-	65'

NOTE: Over-all lengths are limited by law in Arizona as follows:
Single unit vehicles -- 33 Feet
Combination vehicles -- 85 Feet

NOTES:

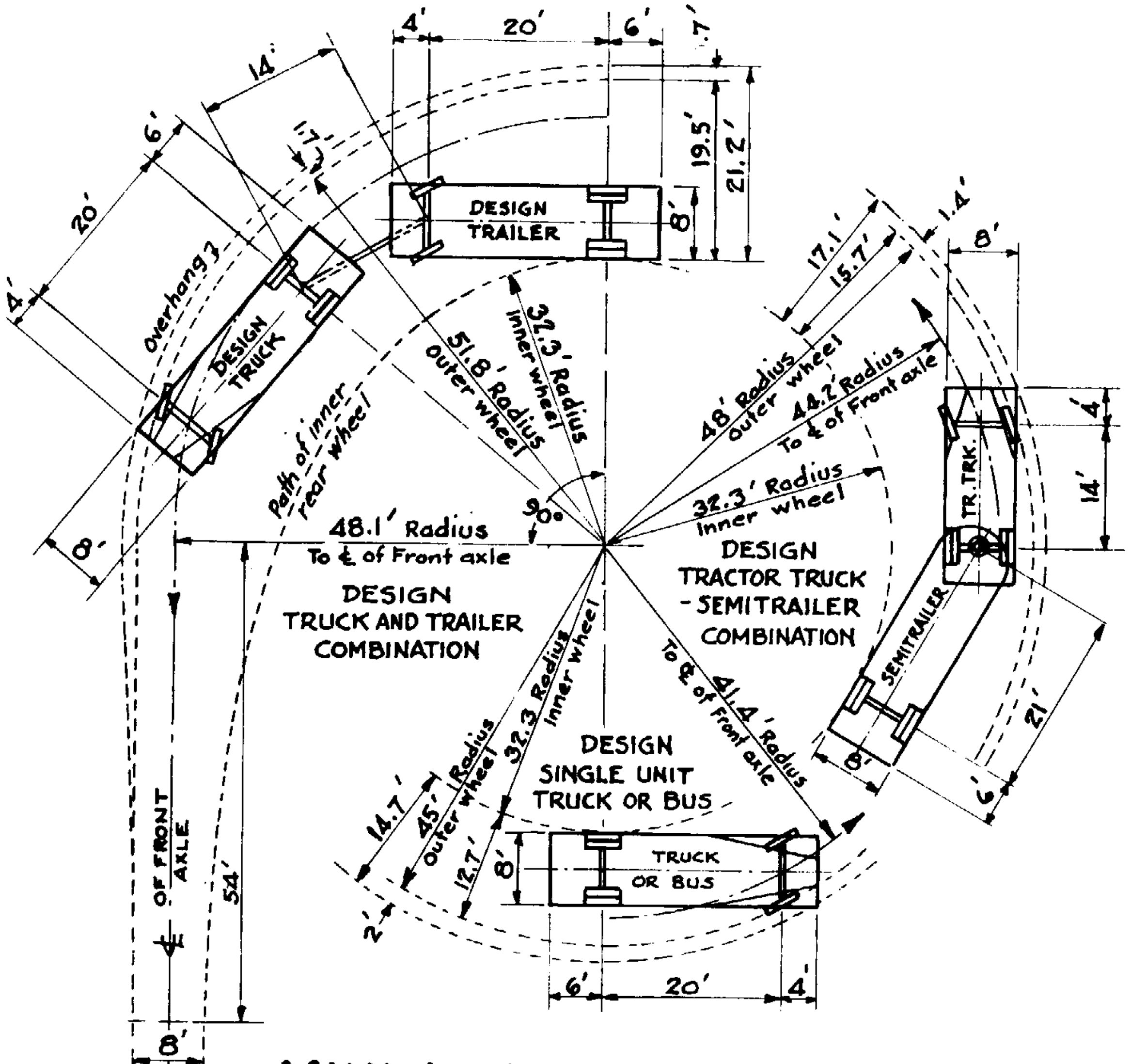
THE VALUES SHOWN FOR "a" & "K" ARE ASSUMED VALUES USED BY A.A.S.H.O. AND BASED ON RESEARCH. VALUES FOR "L" ARE BASED ON ANALYSIS OF HIGHWAY PLANNING SURVEY DATA FOR TRUCKS & BUSSES, AND ON A.A.S.H.O. DATA FOR PASSENGER VEHICLES.

IN THE CALCULATIONS PRESENTED HERE IT IS ASSUMED THAT "V" THE SPEED OF VEHICLE ON THE PREFERENCE ROAD IS CONSTANT. SHOULD VEHICLE "A" REDUCE SPEED BELOW DESIGN SPEED OF PREFERECE ROAD UPON SIGHTING VEHICLE "B", ADDITIONAL SAFETY IS INTRODUCED. (COMPARE VALUES FOR "d" with SAFE STOPPING DISTANCE FOR "V".)

ARIZONA STATE HIGHWAY DEPARTMENT PLANS DIVISION	REV.
MINIMUM SAFE SIGHT RESTRICTIONS AT INTERSECTIONS WHERE TRAFFIC ON PREFERENCE ROAD PROCEEDS AT DESIGN SPEED, AND TRAFFIC ON NON-PREFERENCE ROAD STOPS BEFORE CROSSING PREFERENCE ROAD	
CALCULATED AND DRAWN APRIL 1941 BY LESLIE McDOUGALL - HIGHWAY DESIGNER	STANDARD DRWG. NO. D 1-4
TRACED BY L. McD.	
CHECKED BY	
APPROVED BY ENGINEER OF PLANS H.H. Wessel	STOP INTERSECTION

DESIGN POLICY FOR HIGHWAY CURVE WIDENING

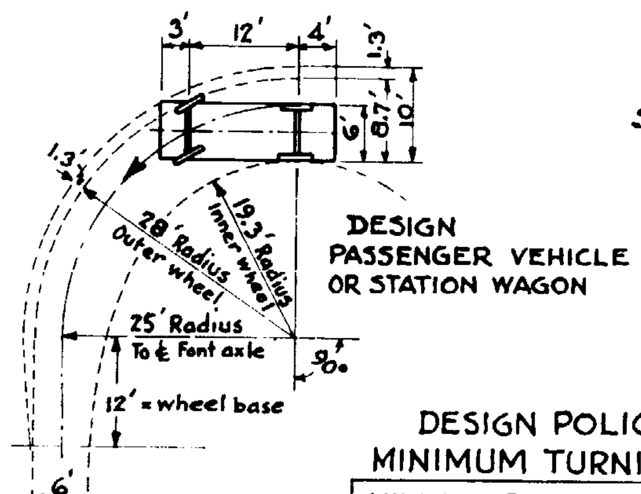
TO NORMAL TRAFFIC LANE WIDTHS ADD 0.1 FOOT PER LANE PER DEGREE OF CURVATURE.
(NO PAVEMENT WIDENING REQUIRED FOR CURVES OF 5 DEGREES OR LESS.)



MINIMUM TURNING SPACE FOR VARIOUS DESIGN VEHICLE TYPES

NOTE: DIMENSIONS OF DESIGN VEHICLES SHOWN HERE CONFORM TO A.A.S.H.O DESIGN STANDARDS AS OF 1940

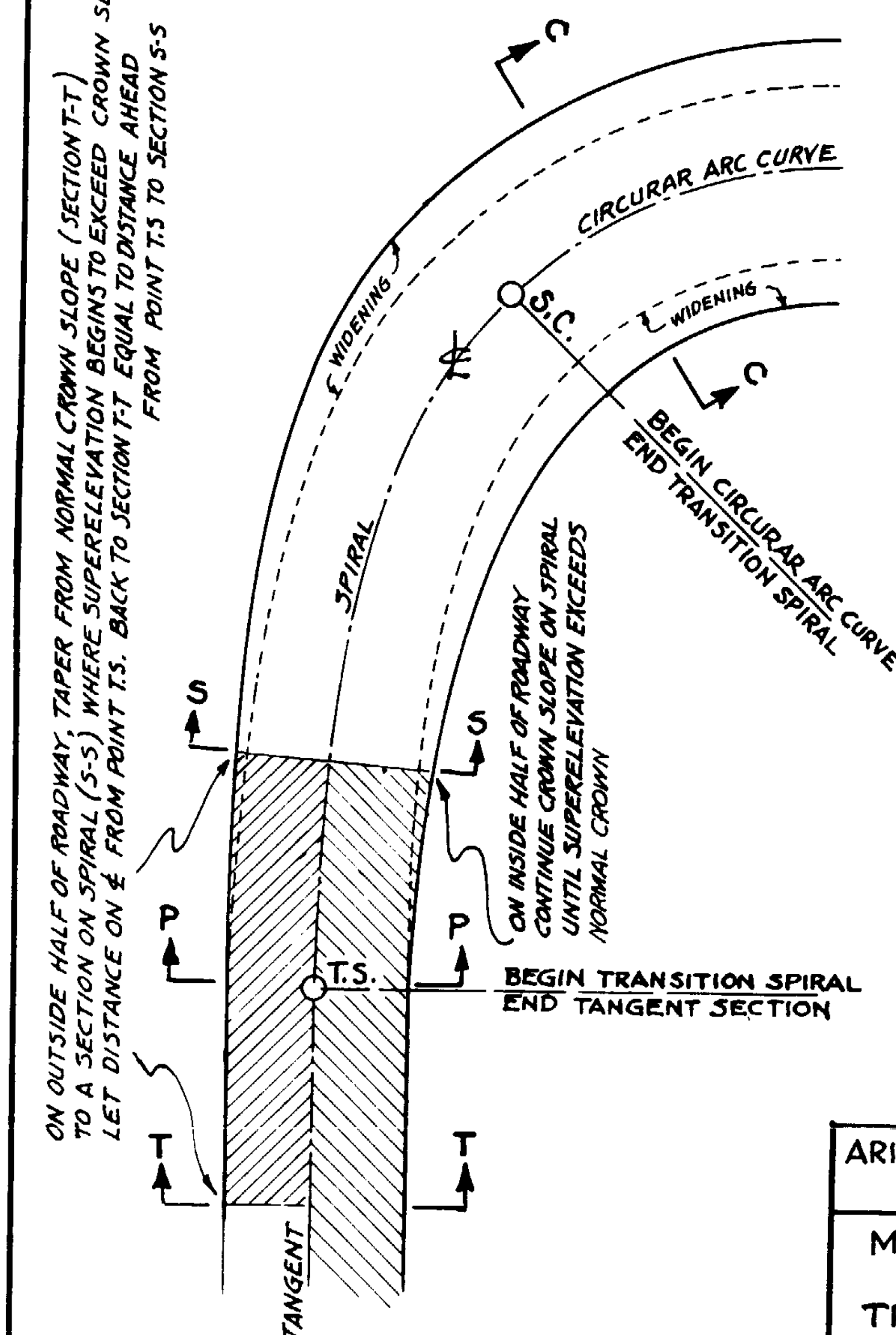
Scale 1" = 20'

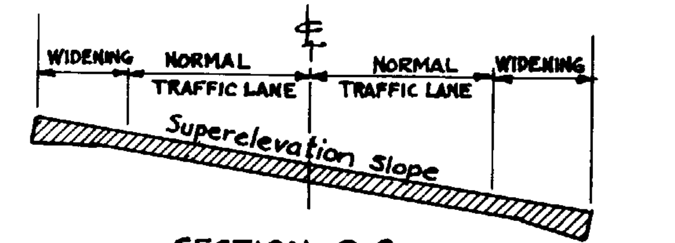


DESIGN POLICY FOR MINIMUM TURNING SPACE

	MINIMUM DESIRABLE DIMENSIONS	
	CURB RADIUS	TURNING LANE WIDTH
FOR HEAVY TRUCK COMBINATIONS	30 Feet	26 Feet
FOR MEDIUM TRUCKS & BUSSES	30 Feet	20 Feet
FOR PASSENGER VEHICLES	20 Feet	16 Feet

SPIRAL TRANSITION OF SUPERELEVATION AND WIDENING FROM TANGENT SECTION TO CURVE SECTION





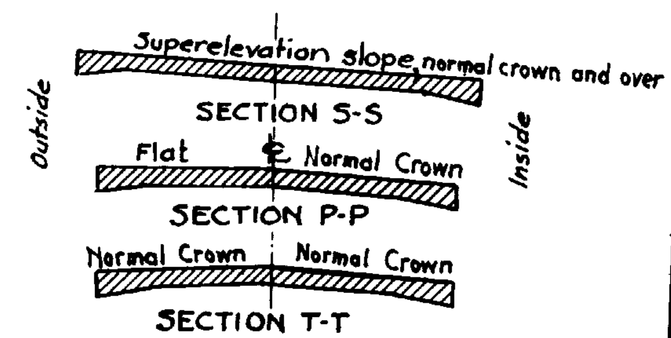
SECTION C-C

NOTE: SUPERELEVATION SLOPE AT ANY GIVEN POINT ON SPIRAL OR CURVE IS COMPUTED ACCORDING TO DEGREE OF CURVATURE AND DESIGN SPEED SEE CHART AND FORMULA STANDARD DRAWING NO. D 2-1
(Refer to adjusted values of "S")
TO COMPUTE DEGREE OF CURVATURE AT ANY POINT ON SPIRAL ℄:

$$d_s = \frac{l_s D_c}{L_s}, \text{ IN WHICH}$$

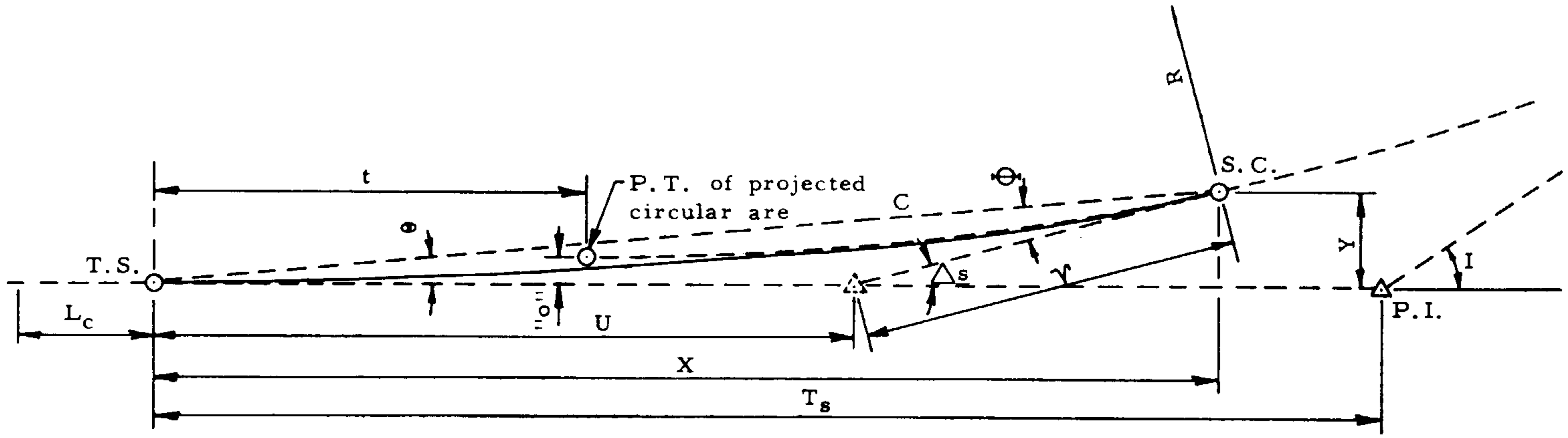
d_s = DEGREE OF CURVATURE ON SPIRAL
D_c = DEGREE OF CIRCULAR ARC CURVE
L_s = LENGTH OF SPIRAL FROM T.S. TO S.C.
l_s = LENGTH ON SPIRAL FROM T.S. TO POINT

WIDENING IS ALSO DETERMINED BY DEGREE OF CURVATURE AS STATED AT THE TOP OF THIS SHEET



NOTE: THE ABOVE INSTRUCTIONS WITH REFERENCE TO TAPERING SLOPES FROM CROWN TO SUPERELEVATED SECTION, APPLY ONLY TO CURVES FOLLOWING A TANGENT. IN THE CASE OF REVERSE CURVES SUPERELEVATION STARTS AT BEGINNING OF SPIRAL.

ARIZONA STATE HIGHWAY DEPARTMENT PLANS DIVISION	REV.
MINIMUM TURNING SPACE CURVE WIDENING AND TRANSITION OF SUPERELEVATION FROM TANGENT TO CURVE SECTION	
CALCULATED AND DRAWN APRIL 1941 BY LESLIE McDOUGALL - HIGHWAY DESIGNER	STANDARD DRWG. NO.
CHECKED BY	D 2-2
APPROVED BY ENGINEER OF PLANS H H Wessel	



Determine values of L_s and a, for design speed and D, from Drwg. Nos. D-6.05 through D-6.11. These values may be checked by the following applicable formulae.

L_s(sta.)= Spiral distance from T.S. to S.C.=D/a

a(degrees)=Rate of change in degree of curvature per 100' of spiral=D/L_s

D(degrees)=Degree of curvature of circular curve $=aL_s=5729.58/R$

R(ft.)=Radius of circular curve=5729.58/D

"o"(ft.)=Radial offset$=0.0727aL_s^3$

t(ft.)$=50L_s-0.000127a^2L_s^5$

Δ_s(degrees)=Full spiral deviation angle$=\frac{1}{2}aL_s^2$ $=\frac{1}{2}DL_s=\frac{1}{2}(D^2/a)=L_s/2(D)$

Θ(degrees)=Full spiral deflection angle at T. S. $=(1/3\Delta_s)$◑$=1/6aL_s^2$◑$=1/6DL_s$◑$=1/6D^2/a$◑

Φ(degrees)=Full spiral deflection angle at S.C. $=\Delta_s-\Theta$

C(ft.)$=100\ L_s-0.00034a^2L_s^5$

V(ft.)$=C\sin\Theta/\sin\Delta_s$

U(ft.)$=C\sin\Phi/\sin\Delta_s$

X(ft.)$=C\cos\Theta$

Y(ft.)$=C\sin\Theta$

T_s(ft.)$=[(\tan\frac{1}{2}I)(R+\text{"o"})]+t$

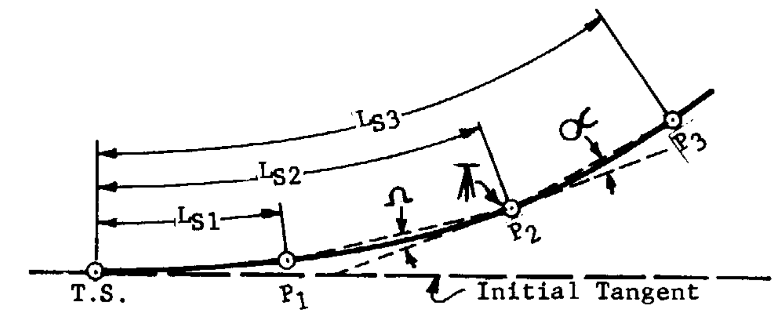
SPIRAL FORMULAE

Reduce Θ formulae values by C_n according to the following table:

Δ_s	C_n	Δ_s	C_n	Δ_s	C_n
16°	0.2'	31°	1.6'	46°	5.1'
17	0.3	32	1.7	47	5.5
18	0.3	33	1.9	48	5.8
19	0.4	34	2.1	49	6.2
20	0.4	35	2.3	50	6.6
21	0.5	36	2.5	51	7.0
22	0.6	37	2.7	52	7.4
23	0.6	38	2.9	53	7.9
24	0.7	39	3.1	54	8.3
25	0.8	40	3.4	55	8.8
26	0.9	41	3.6	56	9.3
27	1.0	42	3.9	57	9.8
28	1.2	43	4.2	58	10.3
29	1.3	44	4.5	59	10.8
30	1.4	45	4.8	60	11.4

◑ VALUES OF C_n IN Θ DETERMINATION FORMULAE

(C_n is negligible and may be ignored for Δ_s values less than 16°.)



$$\alpha=\tfrac{1}{2}aL_{S2}(L_{S3}-L_{S2})+1/6a(L_{S3}-L_{S2})^2$$

$$\Omega=\tfrac{1}{2}aL_{S2}(L_{S2}-L_{S1})-1/6a(L_{S2}-L_{S1})^2$$

DEFLECTION ANGLE FORMULAE FOR SET-UP AT POINT ON SPIRAL

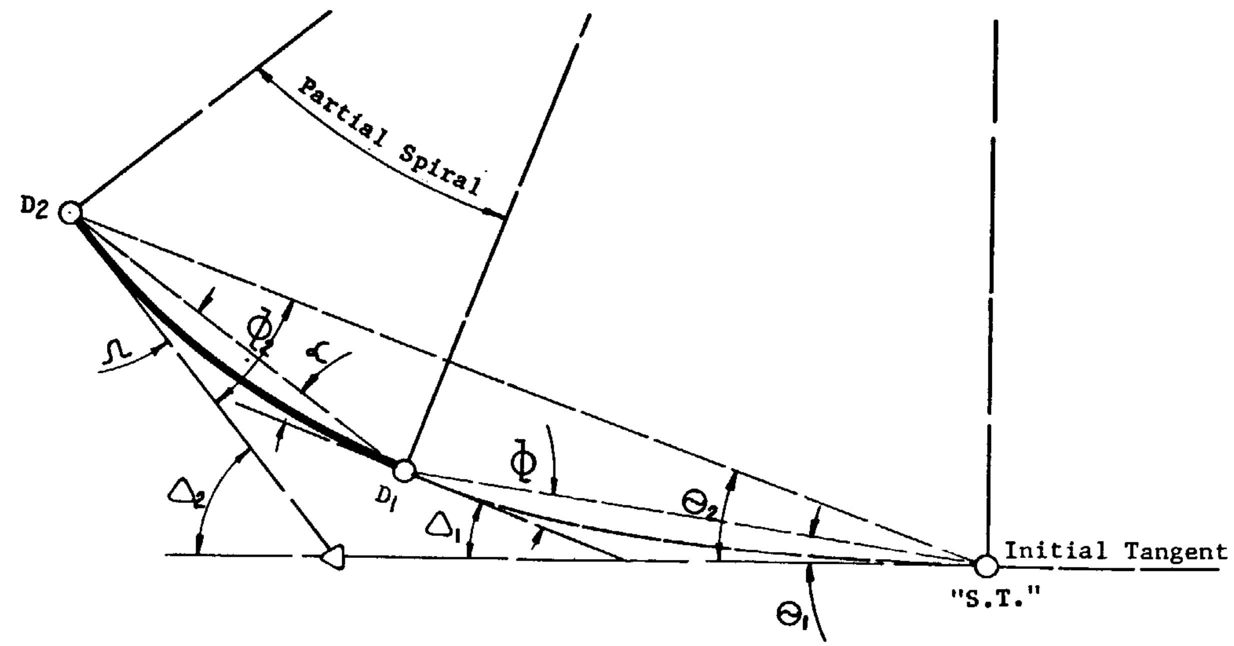
ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION			Rev
FULL TRANSITION SPIRAL			
Drawn	D.G. 6-70	Drawing No.	
Traced	D.G. 6-70	D-6.01	
Checked	J.P.O. JPO 1-71		
Approved Engr. Plans	G. Heidecker 1-71		

Select L_s and a from Drwg. No. D-6.05 through D-6.11 for the specified design speed and $D=D_2$. These values may be checked by the applicable following formulae.

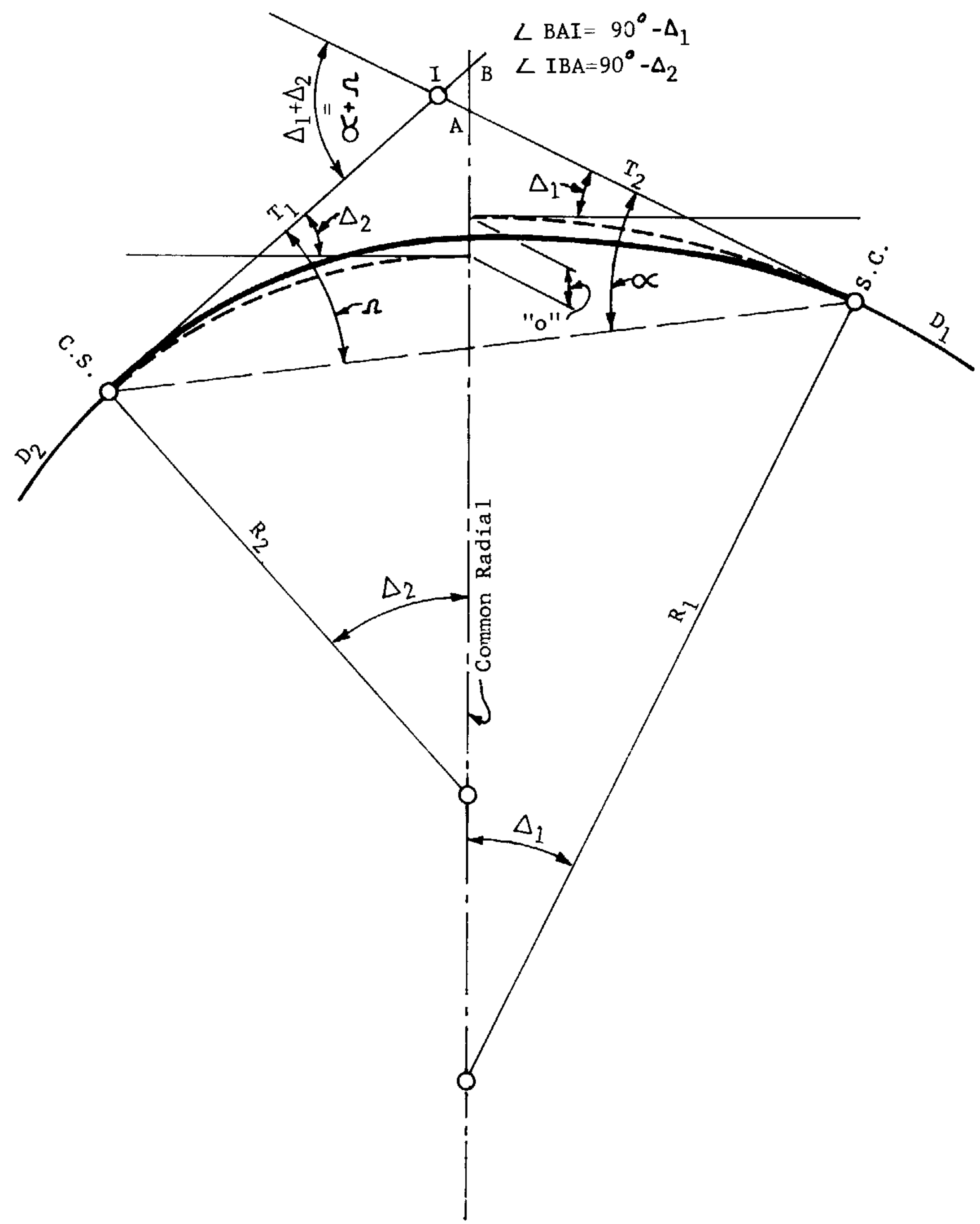
L_s(sta.)=Length of spiral from D_2 to S.T.$=D_2/a$
a(degrees)=Rate of change in degree of curvature per 100' of spiral$=D_1/L_1=D_2/L_s$
Θ(degrees)=Deflection for spiral having values of a and $L_s-L_1=1/6a(L_s-L_1)^2$
L_1(sta.)=Length of spiral from D_1 to S.T.$=D_1/a$
L_s-L_1(sta.)=Length of spiral from D_2 to $D_1=D_2-D_1/a$
D_1(degrees)=Culminating degree of curvature at $D_1=aL_1=D_2-a(L_s-L_1)$
D_2(degrees)=Culminating degree of curvature at $D_2=aL_s=D_1+a(L_s-L_1)$
α(degrees)$=\frac{1}{2}aL_1(L_s-L_1)+1/6a(L_s-L_1)^2=\frac{1}{2}D_1\left[\frac{D_2-D_1}{a}\right]+1/6a\left[\frac{D_2-D_1}{a}\right]^2=\frac{1}{2}D\ (L_s-L_1)+\Theta$

Ω(degrees)$=\frac{1}{2}aL_s(L_s-L_1)-1/6a(L_s-L_1)^2$
$=\frac{1}{2}D_2\left[\frac{D_2-D_1}{a}\right]-1/6a\left[\frac{D_2-D_1}{a}\right]^2$
$=\frac{1}{2}D_2(L_s-L_1)-\Theta$

<u>Example</u>:
Given: $D_1=2^\circ$, $D_2=3^\circ$ and design speed = 70 M.P.H.
Find: Length of partial spiral (L_s-L_1), Θ and Ω.
<u>Solution</u>:
From Drwg. No. D-6.10; L =3.5 and a=0 51'25"=0.857 .
$L_s-L_1=3-2/0.857=1.1669$
$L_1=2/0.857=2.3331$
$L_s=2.3331+1.1669=3.5$ (check).
$\alpha=\frac{1}{2}(0.857)(3.3331)(1.1669)+1/6(0.857)(1.1669)^2=1.3616=1^\circ 21'42''$.
$\Omega=\frac{1}{2}(0.857)(3.5)(1.1669)-1/6(0.857)\left[\frac{3-2}{0.857}\right]^2=1.5555=1^\circ 33'20''$



ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION		Rev
PARTIAL TRANSITION SPIRAL		
Drawn	D.G. 6-70	Drawing No.
Traced	D.G. 6-70	
Checked	JPO 1-71	D-6.02
Approved Engr. Plans	G. Heidecke 1-71	



Intermediate Spiral Transition is basically the same as Partial Transition Spiral illustrated by Drwg. No. D-6.02.

Select L_s and a from Drwg. No. D-6.05 through Drwg. No. D-6.11 for design speed and $D=D_1-D_2$. These values are applied throughout the following formulae.

L_s(sta.)$=(D_2-D_1)/a$

a(degrees)$=(D_2-D_1)L_s$

D_p(sta.)=Degree of curvature at any point on spiral.

$=D_2-(a)$(distance in sta. from C.S. to point).

$=D_1+(a)$(distance in sta. from S.C. to point).

"o" (ft.)$=0.0727(D_2-D_1)\left(\frac{D_2-D_1}{a}\right)^2$

Ω (degrees)$=1/2\ D_2\left(\frac{D_2-D_1}{a}\right)-1/6\ a\left(\frac{D_2-D_1}{a}\right)^2$

α (degrees)$=1/2\ D_1\left(\frac{D_2-D_1}{a}\right)+1/6a\left(\frac{D_2-D_1}{a}\right)^2$

To calculate deflections and spiral distance to any point on spiral, substitute D_p for D_1 or D_2

$\Delta_1 =$ (degrees)$=D_1(L_s/2)$

$\Delta_2 =$ (degrees)$=D_2(L_s/2)$

$AB=R_2$ in feet (exsec. Δ_2)$-R_1$ in feet (exsec. Δ_1)-"O"

AI (ft.)$=AB\left[\frac{\cos\Delta_2}{\sin(\Delta_1+\Delta_2)}\right]$

BI(ft.)$=AB\left[\frac{\cos\Delta_1}{\sin(\Delta_1+\Delta_2)}\right]$

T_1(ft.)$=R_1$in feet $(\tan\Delta_1)$ + AI

T_2(ft.)$=R_2$in feet $(\tan\Delta_2)$ - BI

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

SPIRAL TRANSITION COMPOUND CURVES

Drawn	D.G.	6-70	Drawing No.	Rev
Traced	D.G.	6-70	D-6.03	
Checked	[illegible]	[illegible]		
Approved Engr. Plans	[illegible]			

	V=30				V=40				V=50				V=60				V=65				V=70				V=80			
D	e	a	Lc	Ls	e	a	Lc	Ls	e	a	Lc	Ls	e	a	Lc	Ls	e	a	Lc	Ls	e	a	Lc	Ls	e	a	Lc	Ls
0-15	NC	-	0	0	NC	-	0	0	NC	-	0	0	NC	-	0	0	NC	-	0	0	NC	-	0	0	RC	1/8	100	200
0-30	NC	-	0	0	NC	-	0	0	NC	-	0	0	RC	1/3	75	150	RC	1/3	75	100	RC	1/3	75	150	.023	1/4	100	200
0-45	NC	-	0	0	NC	-	0	0	RC	1/2	50	150	.021	1/2	75	150	.023	1/2	75	150	.026	1/2	75	150	.033	1/3	100	225
1-00	NC	-	0	0	RC	1	50	100	.020	2/3	50	150	.027	2/3	75	150	.029	1/2	75	200	.033	1	75	200	.041	1/3	100	300
1-30	RC	1 1/2	50	100	.020	1 1/2	50	100	.028	1	50	150	.036	1	75	150	.040	3/4	75	200	.044	3/4	75	200	.053	1/2	100	300
2-00	RC	2	50	100	.026	2.0	50	100	.035	1 1/3	50	150	.044	1	75	200	.048	1	75	200	.052	1	75	200	.059	2/3	100	300
2-30	.020	2 1/2	50	100	.031	2 1/2	50	100	.040	1 2/3	50	150	.050	1 1/4	75	200	.053	1 1/4	75	200	.057	1	75	250	.060	2/3	100	375
3-00	.023	3	50	100	.035	2 1/2	50	120	.044	2	50	150	.054	1 1/2	75	200	.057	1 1/4	75	240	.060	1	75	300				
3-30	.026	3 1/2	50	100	.038	2 1/2	50	140	.048	2	50	175	.057	1 2/3	75	210	.059	1 1/4	75	280								
4-00	.029	4	50	100	.041	2 2/3	50	150	.051	2	50	200	.059	1 2/3	75	240	.060	1 1/3	75	300								
5-00	.034	5	50	100	.046	3 1/3	50	150	.056	2 1/2	50	200	.060	2	75	250												
6-00	.038	6	50	100	.050	4	50	150	.059	3	50	200																
7-00	.041	7	50	100	.054	4 2/3	50	150	.060	3 1/2	50	200																
8-00	.043	8	50	100	.056	5	50	160																				
9-00	.046	7 1/2	50	120	.058	5	50	180																				
10-00	.048	6 2/3	50	150	.059	5	50	200																				
11-00	.050	6 7/8	50	160	.060	5 1/2	50	200																				
12-00	.052	7 1/2	50	160																								
13-00	.053	8 1/8	50	160																								
14-00	.055	8 3/4	50	160																								
16-00	.058	10	50	160																								
18-00	.059	10	50	180																								
20-00	.060	10	50	200																								

D max. = 20° (V=30)

D max. = 11° (V=40)

D max. = 7° (V=50)

D max. = 5° (V=60)

D max. = 4° (V=65)

D max. = 3° (V=70)

D max. = 2° 30' (V=80)

Use spirals below heavy line, circular curves above.

NOTE: Tabular Lc and Ls values are for a 1 or 2 lane roadway with the axis of rotation at the construction ℄ or either edge.

For Lc and Ls values for other lane multiples and for super distribution data, see Std. D-6.02

Interpolate for values not shown.

Use judgment combined with local climatic information in the choice of a maximum superelevation for borderline roadway elevations.

a = Increase in degree of curvature per 100' of spiral
D = Degree of curvature
e = Superelevation in ft./ft.
Lc = Normal crown runoff in feet
Ls = Superelevation runoff in feet
NC = Maintain normal crown
RC = Remove adverse crown and superelevate to normal crown slope

For elevations over 6000'

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION			Rev
CURVATURE, SUPERELEVATION & SUPERELEVATION TRANSITION SNOW & ICE CONDITIONS MAX. SUPER = 0.06 ft./ft.			
Drawn	D. G. 2-71	Drawing No.	
Traced	R. A. F. 2-71	D-6.04	
Checked	[illegible] 2-71		
Approved Engr. Plans	G. Heidecker 2-71		

	V=30				V=40				V=50				V=60				V=65				V=70				V=80			
D	e	a	Lc	Ls	e	a	Lc	Ls	e	a	Lc	Ls	e	a	Lc	Ls	e	a	Lc	Ls	e	a	Lc	Ls	e	a	Lc	Ls
0-15	NC	-	0	0	NC	-	0	0	NC	-	0	0	NC	-	0	0	NC	-	0	0	NC	-	0	0	RC	1/4	100	200
0-30	NC	-	0	0	NC	-	0	0	NC	-	0	0	RC	1/3	75	150	RC	1/3	75	150	RC	1/3	75	150	.024	1/3	100	200
0-45	NC	-	0	0	NC	-	0	0	RC	1/2	50	150	.022	1/2	75	150	.025	1/2	75	150	.029	1/2	75	150	.036	1/3	100	225
1-00	NC	-	0	0	RC	1	50	100	.021	2/3	50	150	.029	2/3	75	150	.033	2/3	75	150	.038	2/3	75	150	.047	1/3	100	300
1-30	RC	1-1/2	50	100	.021	1-1/2	50	100	.030	1	50	150	.040	1	75	150	.046	1	75	150	.053	1	75	150	.065	1/2	100	300
2-00	RC	2	50	100	.027	2	50	100	.038	1-1/3	50	150	.051	1-1/3	75	150	.057	1	75	200	.065	1	75	200	.076	2/3	100	300
2-30	.021	2-1/2	50	100	.033	2-1/2	50	100	.046	1-2/3	50	150	.060	1-1/4	75	200	.066	1-1/4	75	200	.073	1	75	250	.080	2/3	100	375
3-00	.025	3	50	100	.038	2-1/2	50	120	.053	2	50	150	.067	1-1/2	75	200	.073	**1-1/3**	75	225	.078	1	75	300				
3-30	.028	3-1/2	50	100	.043	2-1/2	50	140	.058	2	50	175	.073	1-2/3	75	210	.077	**1-1/4**	75	280	.080	1	75	350				
4-00	.032	4	50	100	.047	3-1/3	50	140	.063	2	50	200	.077	1-2/3	75	240	.079	**1-1/3**	75	300								
5-00	.038	5	50	100	.055	3-1/3	50	150	.071	2-1/2	50	200	.080	1-2/3	75	300	.080	**1-2/3**	75	300								
6-00	.043	5	50	120	.061	3-3/4	50	160	.077	3	50	200																
7-00	.048	5	50	140	.067	4	50	175	.079	3-1/3	50	210																
8-00	.052	5-1/3	50	150	.071	4	50	200	.080	3-1/3	50	240																
9-00	.056	6	50	150	.075	4-1/2	50	200																				
10-00	.059	6-1/4	50	160	.077	5	50	200																				
11-00	.063	6-7/8	50	160	.079	5	50	220																				
12-00	.066	7-1/2	50	160	.080	5	50	240																				
13-00	.068	6-1/2	50	200																								
14-00	.070	7	50	200																								
16-00	.074	8	50	200																								
18-00	.077	9	50	200																								
20-00	.079	10	50	200																								
22-00	.080	10	50	220																								

V=30: D max. = 22°

V=40: D max. = 12°

V=50: D max. = 8°

V=60: D max. = 5°

V=65: D max. = 5°

V=70: D max. = 3°-30'

V=80: D max. = 2°-30'

Use spirals below heavy line, circular curves above.

NOTE: Tabular Lc and Ls values are for a 1 or 2 lane roadway with the axis of rotation at the construction ℄ or either edge.

For Lc and Ls values for other lane multiples and for super distribution data, see Std. D-6.02

Interpolate for values not shown.

Use judgment combined with local climatic information in the choice of a maximum superelevation for borderline roadway elevations.

a = Increase in degree of curvature per 100' of spiral
D = Degree of curvature
e = Superelevation in ft./ft.
Lc = Normal crown runoff in feet
Ls = Superelevation runoff in feet
NC = Maintain normal crown
RC = Remove adverse crown and superelevate to normal crown slope

For elevations from 4000' to 6000'

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

CURVATURE, SUPERELEVATION & SUPERELEVATION TRANSITION
SNOW & ICE CONDITIONS
MAX. SUPER = 0.08 ft./ft.

Drawn	D. G.	12-70	Drawing No. D-6.05
Traced	R. A. F.	1-71	
Checked	JPO	1-71	
Approved Engr. Plans	G Heidecke	1-71	

Rev

V=30 (D max. = 25°)

D	e	a	Lc	Ls
0-15	NC	-	0	0
0-30	NC	-	0	0
0-45	NC	-	0	0
1-00	NC	-	0	0
1-30	RC	1 1/2	50	100
2-00	RC	2	50	100
2-30	.021	2-1/2	50	100
3-00	.025	3	50	100
3-30	.029	3-1/2	50	100
4-00	.033	4	50	100
5-00	.040	5	50	100
6-00	.046	5	50	120
7-00	.053	5	50	140
8-00	.059	5-1/3	50	150
9-00	.064	6	50	150
10-00	.068	6-1/4	50	160
11-00	.073	6-7/8	50	160
12-00	.077	7-1/2	50	160
13-00	.080	6-1/2	50	200
14-00	.083	7	50	200
16-00	.089	8	50	200
18-00	.093	9	50	200
20-00	.097	10	50	200
22-00	.099	10	50	220
24-00	.100	10	50	240
25-00	.100	10	50	250

D max. = 25°

V=40

D	e	a	Lc	Ls
0-15	NC	-	0	0
0-30	NC	-	0	0
0-45	NC	-	0	0
1-00	RC	1	50	100
1-30	.021	1-1/2	50	100
2-00	.028	2	50	100
2-30	.034	2-1/2	50	100
3-00	.040	2-1/2	50	120
3-30	.046	2-1/2	50	140
4-00	.051	3-1/3	50	140
5-00	.061	3-1/3	50	150
6-00	.070	3-3/4	50	160
7-00	.077	4	50	175
8-00	.084	4	50	200
9-00	.089	4-1/2	50	200
10-00	.093	5	50	200
11-00	.097	5	50	220
12-00	.099	5	50	240
13-00	.100	5	50	260

D max. = 13°

V=50

D	e	a	Lc	Ls
0-15	NC	-	0	0
0-30	NC	-	0	0
0-45	RC	1/2	50	150
1-00	.023	2/3	50	150
1-30	.033	1	50	150
2-00	.042	1-1/3	50	150
2-30	.051	1-2/3	50	150
3-00	.059	2	50	150
3-30	.067	2	50	175
4-00	.073	2	50	200
5-00	.084	2-1/2	50	200
6-00	.092	2-1/2	50	240
7-00	.098	2-1/2	50	280
8-00	.100	2-1/2	50	320

D max. = 8°

V=60

D	e	a	Lc	Ls
0-15	NC	-	0	0
0-30	RC	1/2	75	150
0-45	.024	2/3	75	150
1-00	.032	2/3	75	150
1-30	.046	1	75	150
2-00	.058	1-1/4	75	160
2-30	.069	1-1/4	75	200
3-00	.079	1-1/2	75	200
3-30	.087	1-1/4	75	280
4-00	.093	1-1/3	75	300
5-00	.099	1-2/3	75	300
6-00	.100	1-2/3	75	360

D max. = 6°

V=65

D	e	a	Lc	Ls
0-15	NC	-	0	0
0-30	RC	1/3	75	150
0-45	.027	1/2	75	150
1-00	.035	2/3	75	150
1-30	.052	1	75	150
2-00	.066	1	75	200
2-30	.077	1	75	250
3-00	.087	1	75	300
3-30	.093	1	75	350
4-00	.098	1	75	400
5-00	.100	1	75	500

D max. = 5°

V=70

D	e	a	Lc	Ls
0-15	NC	-	0	0
0-30	RC	1/3	75	150
0-45	.029	1/2	75	150
1-00	.039	2/3	75	150
1-30	.058	3/4	75	200
2-00	.074	1	75	200
2-30	.086	1	75	250
3-00	.094	1	75	300
3-30	.099	2/3	75	375
4-00	.100	1	75	400

D max. = 4°

V=80

D	e	a	Lc	Ls
0-15	RC	1/4	100	200
0-30	.024	1/3	100	200
0-45	.036	1/3	100	225
1-00	.048	1/3	100	300
1-30	.071	1/2	100	300
2-00	.089	2/3	100	300
2-30	.099	2/3	100	375
3-00	.100	2/3	100	450

D max. = 3°

Use spirals below heavy line, circular curves above.

NOTE: Tabular Lc and Ls values are for a 1 or 2 lane roadway with the axis of rotation at the construction ℄ or either edge.

For Lc and Ls values for other lane multiples and for super distribution data, see Std. D-6.02

Interpolate for values not shown.

Use judgment combined with local climatic information in the choice of a maximum superelevation for borderline roadway elevations.

a = Increase in degree of curvature per 100' of spiral
D = Degree of curvature
e = Superelevation in ft./ft.
Lc = Normal crown runoff in feet
Ls = Superelevation runoff in feet
NC = Maintain normal crown
RC = Remove adverse crown and superelevate to normal crown slope

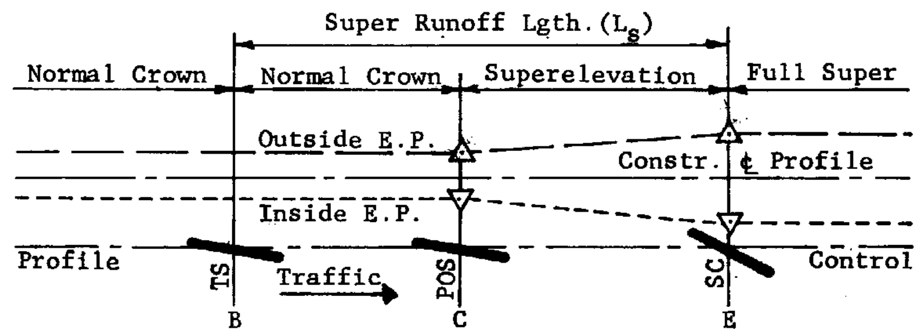
For elevations under 4000'

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

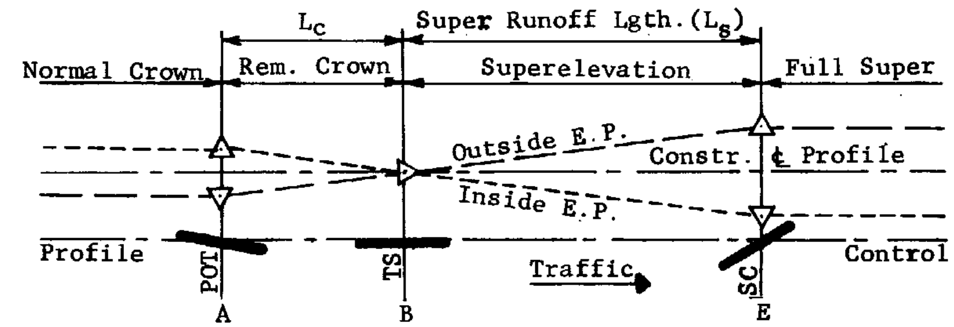
CURVATURE, SUPERELEVATION & SUPERELEVATION TRANSITION
NO SNOW & ICE CONDITIONS
MAX. SUPER = 0.10 ft./ft.

Drawn	D. G.	12-70	Drawing No.
Traced	R. A. F.	1-71	D-6.06
Checked	JPO	1-71	
Approved Engr. Plans	G. Heidecker	1-71	

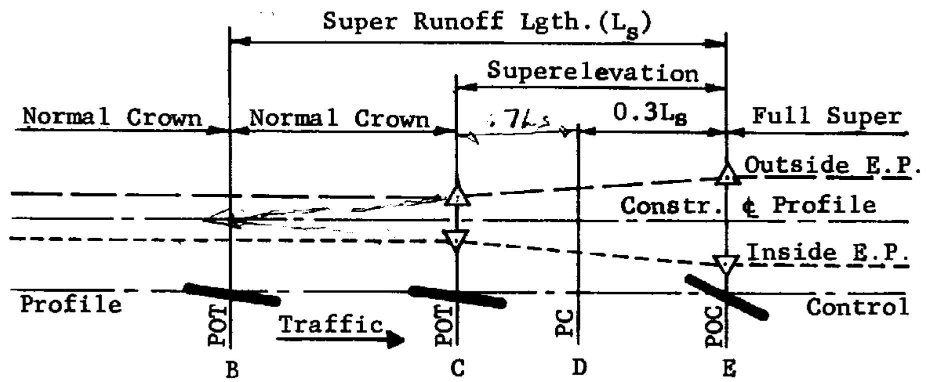
Rev



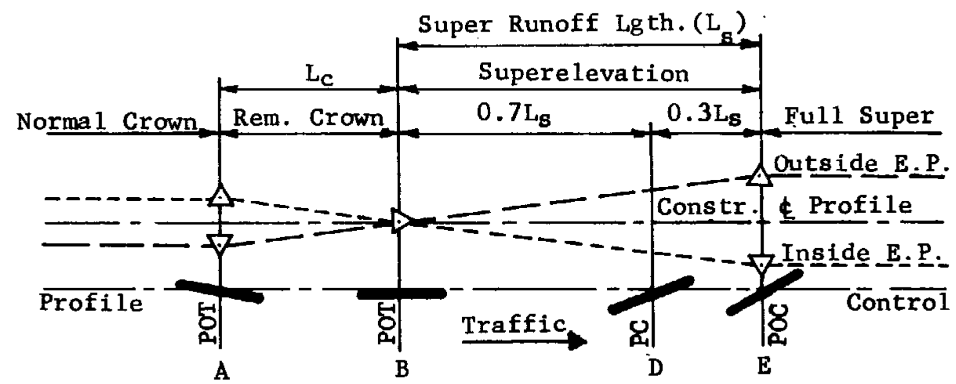
Spiral Curve Transition



Spiral Curve Transition



Circular Curve Transition



Circular Curve Transition

1-WAY RDWY. AXIS OF ROTATION AT CONSTR. ¢
HIGH POINT OF NORMAL CROWN ON OUTSIDE OF CURVE
RIGHT TURNING ROADWAY

1-WAY RDWY. AXIS OF ROTATION AT CONSTR. ¢
HIGH POINT OF NORMAL CROWN ON INSIDE OF CURVE
LEFT TURNING ROADWAY

A is point at which adverse crown removal begins.
B is point at which superelevation transition begins.
C is point of equality between superelevation and normal crown.
D is P.C. location for circular curve transition.
E is the point at which full superelevation is reached.

GENERAL NOTES

Round edge profile intersections with vertical curves having length in feet equal to V in m.p.h.

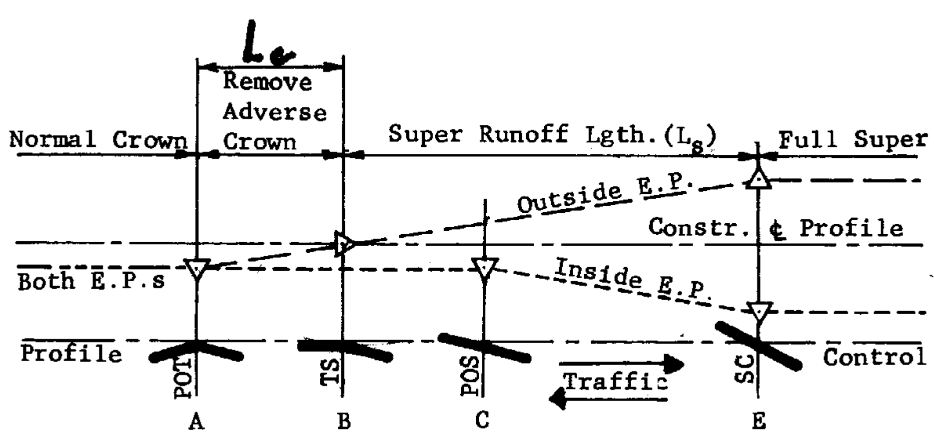
For main roadway curves without spirals, L_c and L_s are the same as for spiraled curves but with 0.7 L_s on tangent and 0.3 L_s on curve.

For other single axis main roadway widths, modify Std. D-6.04 and D-6.05 tabular L_c and L_s values as follows:

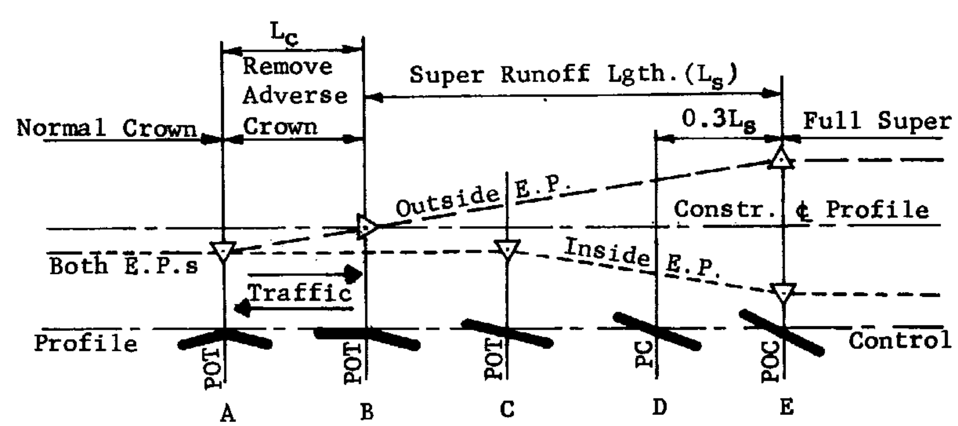
3-lanes, increase 20% to nearest 25'.
4-lanes, " 50% " " " .
6-lanes, " 100% " " " .

For ~~ramps, reduce Std. D-6.04~~ and D-6.05 L_c and L_s values by 30% to nearest 10'.

For modified values, compute spiral variables using Std. D-6.01 formulae.



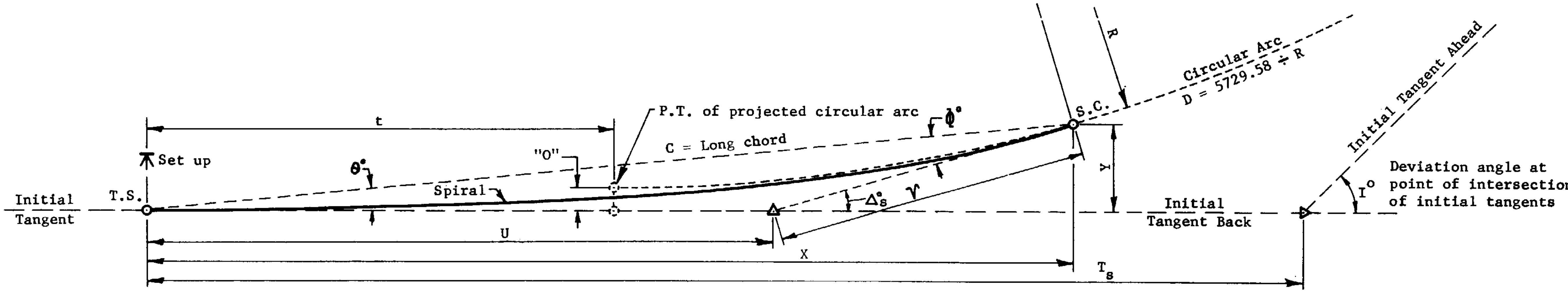
Spiral Curve Transition



Circular Curve Transition

2-WAY RDWY. AXIS OF ROTATION AT ¢
(FOR OPPOSITE DEFLECTING CURVE, E.P. PROFILES ARE REVERSED)

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION		Rev
SUPERELEVATION DISTRIBUTION		
Drawn	D. G. 1-71	Drawing No.
Traced	D. G. 1-71	D-6.07
Checked	JPO 1-71	
Approved Engr. Plans	[illegible] 1-71	



L_s	D	R	"O"	t	Δ°_s	θ°	ϕ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0- 1-53	183346.49	0.00	12.50	0- 0-14	0- 0- 5	0- 0- 9	8.33	16.67	25.00	25.00	0.00
50	0- 3-45	91673.25	0.00	25.00	0- 0-56	0- 0-19	0- 0-37	16.67	33.33	50.00	50.00	0.00
75	0- 5-38	61115.50	0.00	37.50	0- 2- 7	0- 0-42	0- 1-24	25.00	50.00	75.00	75.00	0.02
100	0- 7-30	45836.62	0.01	50.00	0- 3-45	0- 1-15	0- 2-30	33.33	66.67	100.00	100.00	0.04
125	0- 9-23	36669.30	0.02	62.50	0- 5-52	0- 1-57	0- 3-54	41.67	83.33	125.00	125.00	0.07
150	0-11-15	30557.75	0.03	75.00	0- 8-26	0- 2-49	0- 5-38	50.00	100.00	150.00	150.00	0.12
175	0-13- 8	26192.36	0.05	87.50	0-11-29	0- 3-50	0- 7-39	58.33	116.67	175.00	175.00	0.19
200	0-15- 0	22918.31	0.07	100.00	0-15- 0	0- 5- 0	0-10- 0	66.67	133.33	200.00	200.00	0.29

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

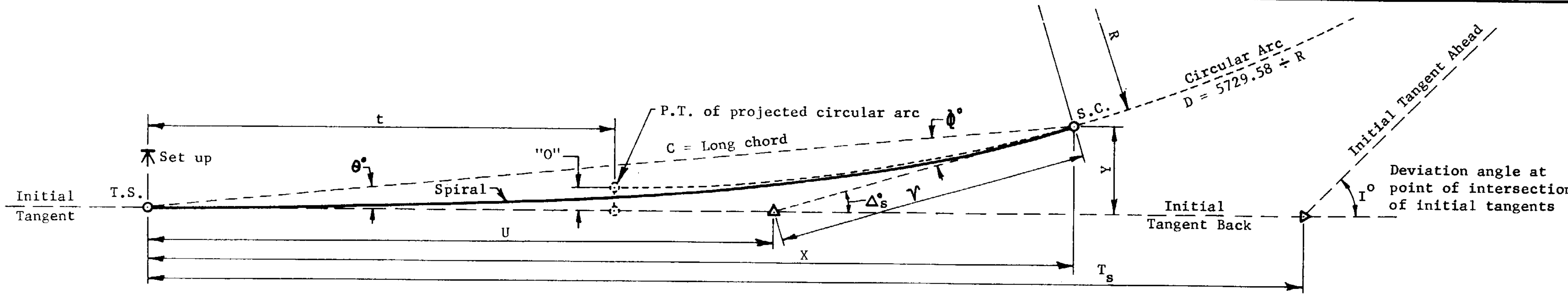
For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compound curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION		Rev
TRANSITION SPIRAL TABLE FOR a = 1/8		
Drawn	R.A.F. 1-71	Drawing No. D-6.08
Traced	R.A.F. 1-71	
Checked	JPS 2-71	
Approved Engr. Plans	G Heidecker 2-71	



L_s	D	R	"O"	t	Δ°_s	θ°	ϕ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0- 3-45	91673.25	0.00	12.50	0- 0-28	0- 0- 9	0- 0-19	8.33	16.67	25.00	25.00	0.00
50	0- 7-30	45836.62	0.00	25.00	0- 1-53	0- 0-38	0- 1-15	16.67	33.33	50.00	50.00	0.01
75	0-11-15	30557.75	0.01	37.50	0- 4-13	0- 1-24	0- 2-49	25.00	50.00	75.00	75.00	0.03
100	0-15- 0	22918.31	0.02	50.00	0- 7-30	0- 2-30	0- 5- 0	33.33	66.67	100.00	100.00	0.07
125	0-18-45	18334.65	0.04	62.50	0-11-43	0- 3-54	0- 7-49	41.67	83.33	125.00	125.00	0.14
150	0-22-30	15278.87	0.06	75.00	0-16-53	0- 5-38	0-11-15	50.00	100.00	150.00	150.00	0.25

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

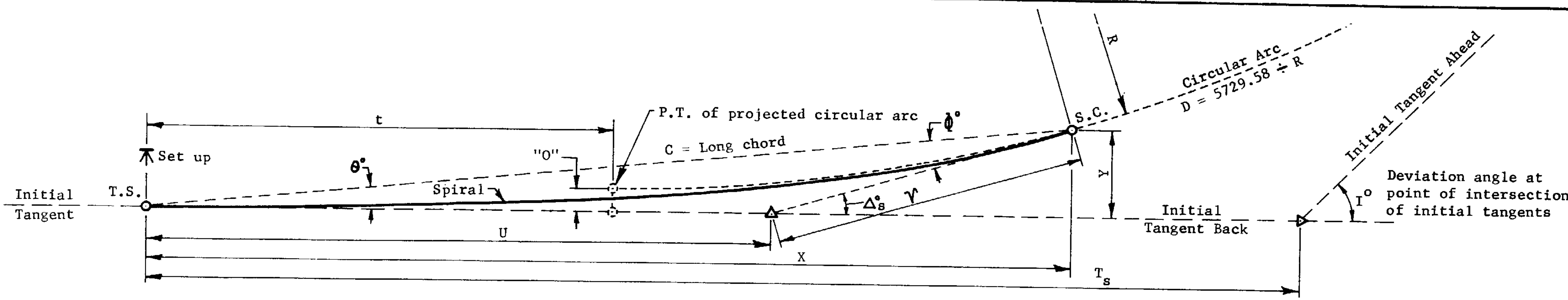
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 1/4

		Drawing No.
Drawn	R.A.F. 1-71	D-6.09
Traced	R.A.F. 1-71	
Checked	JPO 1-71	
Approved Engr. Plans	D. Heidecker 1-71	

Rev



L_s	D	R	"O"	t	Δ°_s	θ°	ϕ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0- 5- 0	68754.94	0.00	12.50	0- 0-37	0- 0-12	0- 0-25	8.33	16.67	25.00	25.00	0.00
50	0-10- 0	34377.47	0.00	25.00	0- 2-30	0- 0-50	0- 1-40	16.67	33.33	50.00	50.00	0.01
75	0-15- 0	22918.31	0.01	37.50	0- 5-37	0- 1-52	0- 3-45	25.00	50.00	75.00	75.00	0.04
100	0-20- 0	17188.73	0.02	50.00	0-10- 0	0- 3-20	0- 6-40	33.33	66.67	100.00	100.00	0.10
125	0-25- 0	13750.99	0.05	62.50	0-15-37	0- 5-12	0-10-25	41.67	83.33	125.00	125.00	0.19
150	0-30- 0	11459.16	0.08	75.00	0-22-30	0- 7-30	0-15- 0	50.00	100.00	150.00	150.00	0.33
175	0-35- 0	9822.13	0.13	87.50	0-30-37	0-10-12	0-20-25	58.33	116.67	175.00	175.00	0.52
200	0-40- 0	8594.37	0.19	100.00	0-40- 0	0-13-20	0-26-40	66.67	133.33	200.00	200.00	0.78
225	0-45- 0	7639.44	0.28	112.50	0-50-37	0-16-52	0-33-45	75.00	150.00	225.00	225.00	1.10
250	0-50- 0	6875.49	0.38	125.00	1- 2-30	0-20-50	0-41-40	83.34	166.67	250.00	249.99	1.52
275	0-55- 0	6250.45	0.50	137.50	1-15-37	0-25-12	0-50-25	91.67	183.34	274.99	274.99	2.02
300	1- 0- 0	5729.58	0.65	150.00	1-30- 0	0-30- 0	1- 0- 0	100.01	200.01	299.99	299.98	2.62
325	1- 5- 0	5288.84	0.83	162.49	1-45-37	0-35-12	1-10-25	108.34	216.68	324.99	324.97	3.33
350	1-10- 0	4911.07	1.04	174.99	2- 2-30	0-40-50	1-21-40	116.68	233.35	349.98	349.96	4.16
375	1-15- 0	4583.66	1.28	187.49	2-20-37	0-46-52	1-33-45	125.02	250.02	374.97	374.94	5.11
400	1-20- 0	4297.18	1.55	199.99	2-40- 0	0-53-20	1-46-40	133.36	266.69	399.96	399.91	6.20
425	1-25- 0	4044.41	1.86	212.48	3- 0-37	1- 0-12	2- 0-25	141.71	283.37	424.95	424.88	7.44
450	1-30- 0	3819.72	2.21	224.97	3-22-30	1- 7-30	2-15- 0	150.05	300.05	449.93	449.84	8.83
475	1-35- 0	3618.68	2.60	237.47	3-45-37	1-15-12	2-30-25	158.40	316.73	474.91	474.80	10.39
500	1-40- 0	3437.75	3.03	249.96	4-10- 0	1-23-20	2-46-40	166.76	333.42	499.88	499.74	12.12
525	1-45- 0	3274.04	3.51	262.44	4-35-37	1-31-52	3- 3-45	175.12	350.11	524.85	524.66	14.03
550	1-50- 0	3125.22	4.03	274.93	5- 2-30	1-40-50	3-21-40	183.48	366.80	549.81	549.57	16.12
575	1-55- 0	2989.35	4.61	287.41	5-30-37	1-50-12	3-40-25	191.85	383.50	574.76	574.47	18.42
600	2- 0- 0	2864.79	5.23	299.89	6- 0- 0	2- 0- 0	4- 0- 0	200.23	400.21	599.71	599.34	20.93

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compound curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

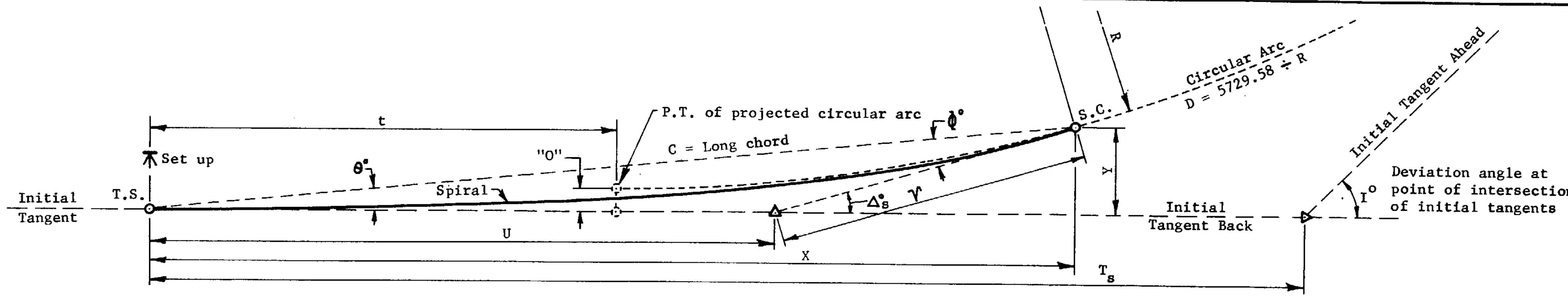
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev

TRANSITION SPIRAL TABLE FOR a = 1/3

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.10
Checked	1-71	
Approved Engr. Plans	1-71	



L_s	D	R	"O"	t	Δ_s°	θ°	ϕ°	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0- 7-30	45836.62	0.00	12.50	0- 0-56	0- 0-19	0- 0-37	8.33	16.67	25.00	25.00	0.00
50	0-15- 0	22918.31	0.00	25.00	0- 3-45	0- 1-15	0- 2-30	16.67	33.33	50.00	50.00	0.02
75	0-22-30	15278.87	0.02	37.50	0- 8-26	0- 2-49	0- 5-38	25.00	50.00	75.00	75.00	0.06
100	0-30- 0	11459.16	0.04	50.00	0-15- 0	0- 5- 0	0-10- 0	33.33	66.67	100.00	100.00	0.15
125	0-37-30	9167.32	0.07	62.50	0-23-26	0- 7-49	0-15-37	41.67	83.33	125.00	125.00	0.28
150	0-45- 0	7639.44	0.12	75.00	0-33-45	0-11-15	0-22-30	50.00	100.00	150.00	150.00	0.49
175	0-52-30	6548.09	0.19	87.50	0-45-56	0-15-19	0-30-37	58.33	116.67	175.00	175.00	0.78
200	1- 0- 0	5729.58	0.29	100.00	1- 0- 0	0-20- 0	0-40- 0	66.67	133.34	200.00	199.99	1.16
225	1- 7-30	5092.96	0.41	112.50	1-15-56	0-25-19	0-50-38	75.00	150.00	225.00	224.99	1.66
250	1-15- 0	4583.66	0.57	125.00	1-33-45	0-31-15	1- 2-30	83.34	166.67	249.99	249.98	2.27
275	1-22-30	4166.97	0.76	137.50	1-53-26	0-37-49	1-15-37	91.68	183.34	274.99	274.97	3.02
300	1-30- 0	3819.72	0.98	149.99	2-15- 0	0-45- 0	1-30- 0	100.02	200.01	299.98	299.95	3.93
325	1-37-30	3525.89	1.25	162.49	2-38-26	0-52-49	1-45-37	108.36	216.69	324.97	324.93	4.99
350	1-45- 0	3274.04	1.56	174.98	3- 3-45	1- 1-15	2- 2-30	116.70	233.37	349.96	349.90	6.23
375	1-52-30	3055.77	1.92	187.48	3-30-56	1-10-19	2-20-38	125.05	250.05	374.94	374.86	7.67
400	2- 0- 0	2864.79	2.33	199.97	4- 0- 0	1-20- 0	2-40- 0	133.40	266.73	399.91	399.80	9.31
425	2- 7-30	2696.27	2.79	212.46	4-30-56	1-30-19	3- 0-37	141.76	283.42	424.88	424.74	11.16
450	2-15- 0	2546.48	3.31	224.94	5- 3-45	1-41-15	3-22-30	150.12	300.11	449.84	449.65	13.25
475	2-22-30	2412.45	3.90	237.42	5-38-26	1-52-49	3-45-37	158.49	316.81	474.79	474.54	15.58
500	2-30- 0	2291.83	4.54	249.90	6-15- 0	2- 5- 0	4-10- 0	166.87	333.52	499.73	499.40	18.17

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

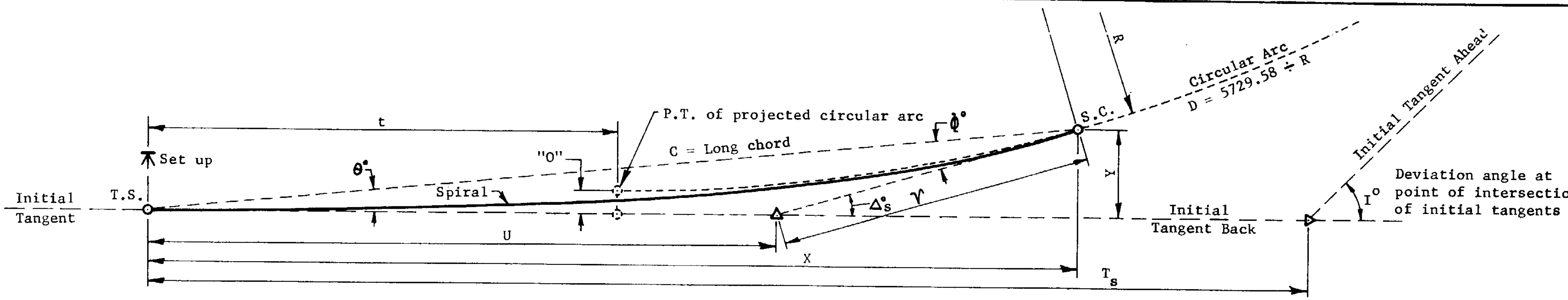
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev

TRANSITION SPIRAL TABLE FOR a =1/2

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	
Checked	JPD 1-71	D-6.11
Approved Engr. Plans	G Weidecker 1-71	



L_s	D	R	"O"	t	Δ_s°	θ°	ϕ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0-10- 0	34377.47	0.00	12.50	0- 1-15	0- 0-25	0- 0-50	8.33	16.67	25.00	25.00	0.00
50	0-20- 0	17188.73	0.01	25.00	0- 5- 0	0- 1-40	0- 3-20	16.67	33.33	50.00	50.00	0.02
75	0-30- 0	11459.16	0.02	37.50	0-11-15	0- 3-45	0- 7-30	25.00	50.00	75.00	75.00	0.08
100	0-40- 0	8594.37	0.05	50.00	0-20- 0	0- 6-40	0-13-20	33.33	66.67	100.00	100.00	0.19
125	0-50- 0	6875.49	0.09	62.50	0-31-15	0-10-25	0-20-50	41.67	83.33	125.00	125.00	0.38
150	1- 0- 0	5729.58	0.16	75.00	0-45- 0	0-15- 0	0-30- 0	50.00	100.00	150.00	150.00	0.65
175	1-10- 0	4911.07	0.26	87.50	1- 1-15	0-20-25	0-40-50	58.34	116.67	175.00	174.99	1.04
200	1-20- 0	4297.18	0.39	100.00	1-20- 0	0-26-40	0-53-20	66.67	133.34	200.00	199.99	1.55
225	1-30- 0	3819.72	0.55	112.50	1-41-15	0-33-45	1- 7-30	75.01	150.01	224.99	224.98	2.21
250	1-40- 0	3437.75	0.76	124.99	2- 5- 0	0-41-40	1-23-20	83.34	166.68	249.99	249.97	3.03
275	1-50- 0	3125.22	1.01	137.49	2-31-15	0-50-25	1-40-50	91.69	183.35	274.98	274.95	4.03
300	2- 0- 0	2864.79	1.31	149.99	3- 0- 0	1- 0- 0	2- 0- 0	100.03	200.03	299.96	299.92	5.24
325	2-10- 0	2644.42	1.66	162.48	3-31-15	1-10-25	2-20-50	108.38	216.71	324.95	324.88	6.66
350	2-20- 0	2455.53	2.08	174.97	4- 5- 0	1-21-40	2-43-20	116.73	233.39	349.92	349.82	8.31
375	2-30- 0	2291.83	2.56	187.46	4-41-15	1-33-45	3- 7-30	125.09	250.08	374.89	374.75	10.22
400	2-40- 0	2148.59	3.10	199.94	5-20- 0	1-46-40	3-33-20	133.45	266.78	399.85	399.65	12.40
425	2-50- 0	2022.20	3.72	212.42	6- 1-15	2- 0-25	4- 0-50	141.83	283.48	424.79	424.53	14.88
450	3- 0- 0	1909.86	4.42	224.90	6-45- 0	2-15- 0	4-30- 0	150.22	300.20	449.72	449.37	17.66
475	3-10- 0	1809.34	5.19	237.36	7-31-15	2-30-25	5- 0-50	158.62	316.93	474.63	474.18	20.76

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

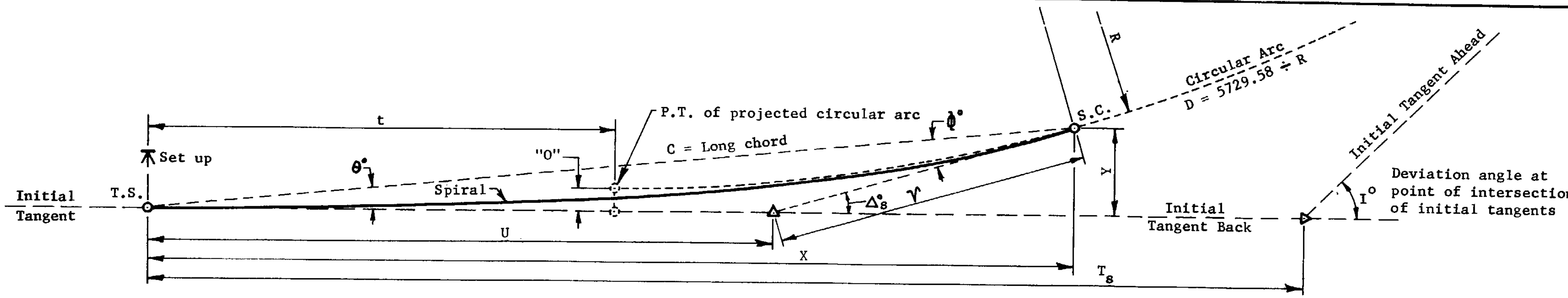
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 2/3

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.12
Checked	JPD 1-71	
Approved Engr. Plans	G. Heidecker 1-71	

Rev



L_s	D	R	"O"	t	Δ°_s	θ°	ϕ°	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0-11-15	30557.75	0.00	12.50	0- 1-24	0- 0-28	0- 0-56	8.33	16.67	25.00	25.00	0.00
50	0-22-30	15278.87	0.01	25.00	0- 5-38	0- 1-53	0- 3-45	16.67	33.33	50.00	50.00	0.03
75	0-33-45	10185.92	0.02	37.50	0-12-39	0- 4-13	0- 8-26	25.00	50.00	75.00	75.00	0.09
100	0-45- 0	7639.44	0.05	50.00	0-22-30	0- 7-30	0-15- 0	33.33	66.67	100.00	100.00	0.22
125	0-56-15	6111.55	0.11	62.50	0-35- 9	0-11-43	0-23-26	41.67	83.33	125.00	125.00	0.43
150	1- 7-30	5092.96	0.18	75.00	0-50-38	0-16-53	0-33-45	50.00	100.00	150.00	150.00	0.74
175	1-18-45	4365.39	0.29	87.50	1- 8-54	0-22-58	0-45-56	58.34	116.67	175.00	174.99	1.17
200	1-30- 0	3819.72	0.44	100.00	1-30- 0	0-30- 0	1- 0- 0	66.67	133.34	199.99	199.99	1.75

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compound curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

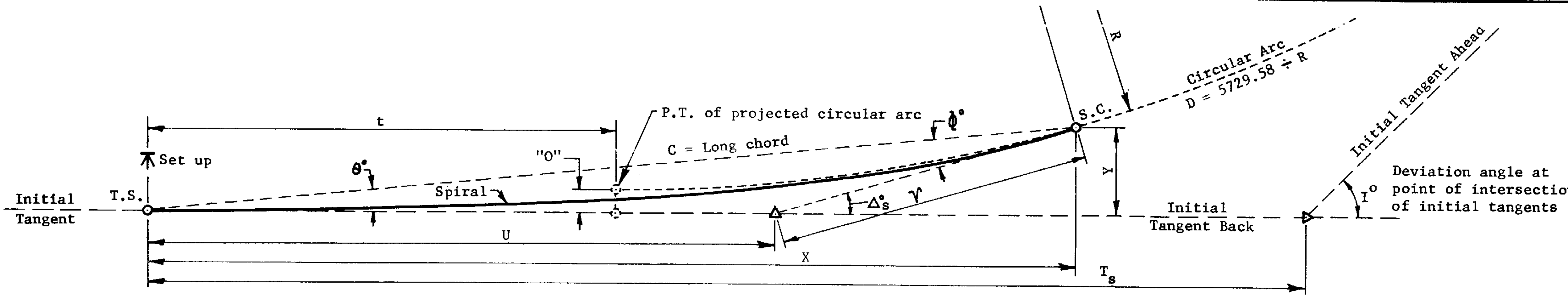
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev

TRANSITION SPIRAL TABLE FOR $a = 3/4$

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.13
Checked	1-71	
Approved Engr. Plans	1-71	



L_s	D	R	"O"	t	$\Delta_s°$	$\theta°$	$\phi°$	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0-15- 0	22918.31	0.00	12.50	0- 1-53	0- 0-38	0- 1-15	8.33	16.67	25.00	25.00	0.00
50	0-30- 0	11459.16	0.01	25.00	0- 7-30	0- 2-30	0- 5- 0	16.67	33.33	50.00	50.00	0.04
75	0-45- 0	7639.44	0.03	37.50	0-16-53	0- 5-38	0-11-15	25.00	50.00	75.00	75.00	0.12
100	1- 0- 0	5729.58	0.07	50.00	0-30- 0	0-10- 0	0-20- 0	33.33	66.67	100.00	100.00	0.29
125	1-15- 0	4583.66	0.14	62.50	0-46-53	0-15-38	0-31-15	41.67	83.33	125.00	125.00	0.57
150	1-30- 0	3819.72	0.25	75.00	1- 7-30	0-22-30	0-45- 0	50.00	100.00	150.00	149.99	0.98
175	1-45- 0	3274.04	0.39	87.50	1-31-53	0-30-38	1- 1-15	58.34	116.67	174.99	174.99	1.56
200	2- 0- 0	2864.79	0.58	100.00	2- 0- 0	0-40- 0	1-20- 0	66.68	133.34	199.99	199.98	2.33
225	2-15- 0	2546.48	0.83	112.49	2-31-53	0-50-38	1-41-15	75.02	150.01	224.98	224.96	3.31
250	2-30- 0	2291.83	1.14	124.99	3- 7-30	1- 2-30	2- 5- 0	83.36	166.69	249.97	249.93	4.54
275	2-45- 0	2083.48	1.51	137.48	3-46-53	1-15-38	2-31-15	91.71	183.37	274.95	274.88	6.05
300	3- 0- 0	1909.86	1.96	149.97	4-30- 0	1-30- 0	3- 0- 0	100.06	200.06	299.92	299.81	7.85
325	3-15- 0	1762.95	2.50	162.45	5-16-53	1-45-38	3-31-15	108.43	216.76	324.88	324.72	9.98
350	3-30- 0	1637.02	3.12	174.93	6- 7-30	2- 2-30	4- 5- 0	116.80	233.46	349.82	349.60	12.46
375	3-45- 0	1527.89	3.83	187.41	7- 1-53	2-20-38	4-41-15	125.20	250.18	374.75	374.43	15.33
400	4- 0- 0	1432.39	4.65	199.87	8- 0- 0	2-40- 0	5-20- 0	133.60	266.92	399.65	399.22	18.59
425	4-15- 0	1348.14	5.58	212.32	9- 1-53	3- 0-38	6- 1-15	142.03	283.67	424.53	423.94	22.30

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

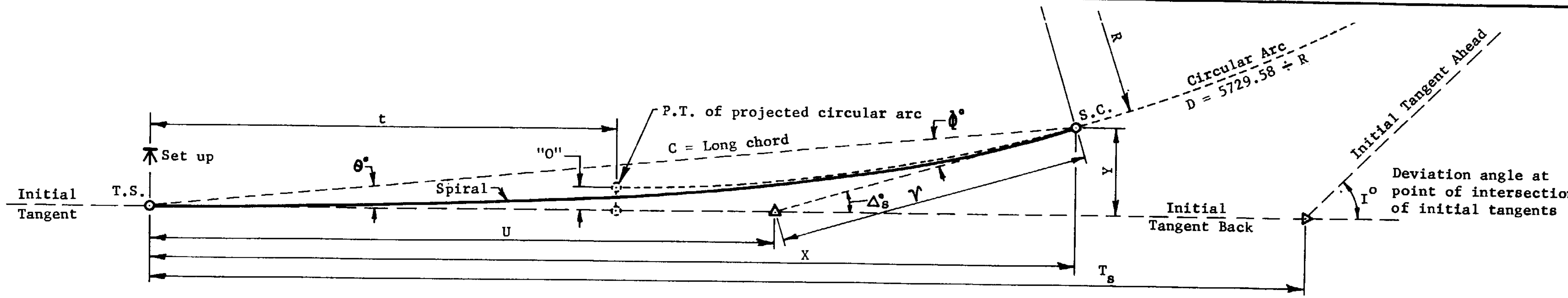
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev

TRANSITION SPIRAL TABLE FOR a = 1

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	
Checked	JPO 1-71	D-6.14
Approved Engr. Plans		



L_s	D	R	"O"	t	$\Delta_s°$	$\theta°$	$\phi°$	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	0- 7-30	45836.62	0.00	5.00	0- 0-22	0- 0- 8	0- 0-15	3.33	6.67	10.00	10.00	0.00
20	0-15- 0	22918.31	0.00	10.00	0- 1-30	0- 0-30	0- 1- 0	6.67	13.33	20.00	20.00	0.00
30	0-22-30	15278.87	0.00	15.00	0- 3-22	0- 1- 8	0- 2-15	10.00	20.00	30.00	30.00	0.01
40	0-30- 0	11459.16	0.01	20.00	0- 6- 0	0- 2- 0	0- 4- 0	13.33	26.67	40.00	40.00	0.02
50	0-37-30	9167.32	0.01	25.00	0- 9-23	0- 3- 8	0- 6-15	16.67	33.33	50.00	50.00	0.05
60	0-45- 0	7639.44	0.02	30.00	0-13-30	0- 4-30	0- 9- 0	20.00	40.00	60.00	60.00	0.08
70	0-52-30	6548.09	0.03	35.00	0-18-22	0- 6- 8	0-12-15	23.33	46.67	70.00	70.00	0.12
80	1- 0- 0	5729.58	0.05	40.00	0-24- 0	0- 8- 0	0-16- 0	26.67	53.33	80.00	80.00	0.19
90	1- 7-30	5092.96	0.07	45.00	0-30-22	0-10- 8	0-20-15	30.00	60.00	90.00	90.00	0.27
100	1-15- 0	4583.66	0.09	50.00	0-37-30	0-12-30	0-25- 0	33.33	66.67	100.00	100.00	0.36
110	1-22-30	4166.97	0.12	55.00	0-45-22	0-15- 8	0-30-15	36.67	73.33	110.00	110.00	0.48
120	1-30- 0	3819.72	0.16	60.00	0-54- 0	0-18- 0	0-36- 0	40.00	80.00	120.00	120.00	0.63
130	1-37-30	3525.89	0.20	65.00	1- 3-22	0-21- 8	0-42-15	43.33	86.67	130.00	130.00	0.80
140	1-45- 0	3274.04	0.25	70.00	1-13-30	0-24-30	0-49- 0	46.67	93.34	140.00	139.99	1.00
150	1-52-30	3055.77	0.31	75.00	1-24-23	0-28- 8	0-56-15	50.00	100.00	150.00	149.99	1.23
160	2- 0- 0	2864.79	0.37	80.00	1-36- 0	0-32- 0	1- 4- 0	53.34	106.67	159.99	159.99	1.49
170	2- 7-30	2696.27	0.45	85.00	1-48-22	0-36- 8	1-12-15	56.67	113.34	169.99	169.98	1.79
180	2-15- 0	2546.48	0.53	90.00	2- 1-30	0-40-30	1-21- 0	60.01	120.01	179.99	179.98	2.12
190	2-22-30	2412.45	0.62	95.00	2-15-22	0-45- 8	1-30-15	63.34	126.68	189.99	189.97	2.49
200	2-30- 0	2291.83	0.73	99.99	2-30- 0	0-50- 0	1-40- 0	66.68	133.35	199.98	199.96	2.91
210	2-37-30	2182.70	0.84	104.99	2-45-22	0-55- 8	1-50-15	70.02	140.02	209.98	209.95	3.37
220	2-45- 0	2083.48	0.97	109.99	3- 1-30	1- 0-30	2- 1- 0	73.35	146.69	219.97	219.94	3.87
230	2-52-30	1992.90	1.11	114.99	3-18-22	1- 6- 8	2-12-15	76.69	153.36	229.97	229.92	4.42
240	3- 0- 0	1909.86	1.26	119.98	3-36- 0	1-12- 0	2-24- 0	80.03	160.03	239.96	239.91	5.03
250	3- 7-30	1833.46	1.42	124.98	3-54-23	1-18- 8	2-36-15	83.37	166.70	249.95	249.88	5.68
260	3-15- 0	1762.95	1.60	129.98	4-13-30	1-24-30	2-49- 0	86.72	173.38	259.94	259.86	6.39
270	3-22-30	1697.65	1.79	134.97	4-33-22	1-31- 8	3- 2-15	90.06	180.05	269.92	269.83	7.15
280	3-30- 0	1637.02	1.99	139.97	4-54- 0	1-38- 0	3-16- 0	93.40	186.73	279.91	279.79	7.98

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compound curves, see Std. D-6.03.

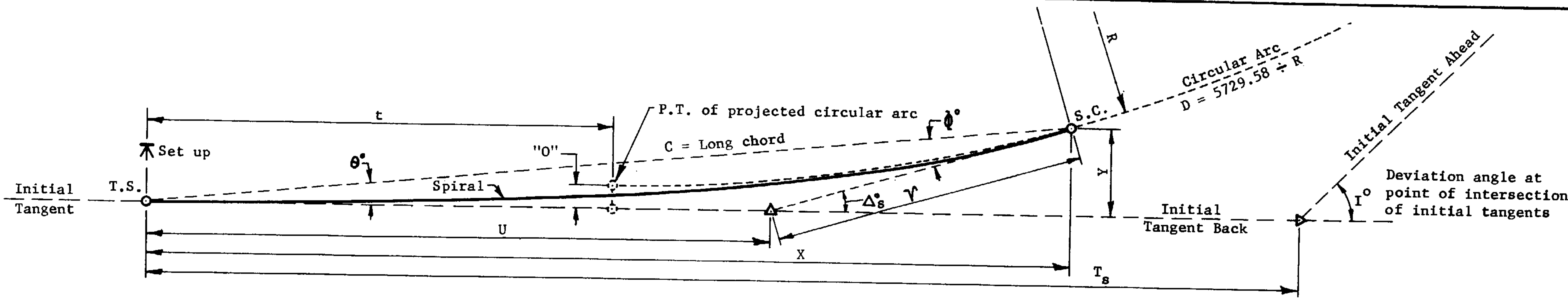
For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 1 1/4

Rev		
Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	
Checked	JPD 1-71	D-6.15
Approved Engr. Plans	G. Gleichreb 1-71	



L_s	D	R	"O"	t	$\Delta_s°$	$\theta°$	$\phi°$	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0-20- 0	17188.74	0.00	12.50	0- 2-30	0- 0-50	0- 1-40	8.33	16.67	25.00	25.00	0.01
50	0-40- 0	8594.37	0.01	25.00	0-10- 0	0- 3-20	0- 6-40	16.67	33.33	50.00	50.00	0.05
75	1- 0- 0	5729.58	0.04	37.50	0-22-30	0- 7-30	0-15- 0	25.00	50.00	75.00	75.00	0.16
100	1-20- 0	4297.18	0.10	50.00	0-40- 0	0-13-20	0-26-40	33.33	66.67	100.00	100.00	0.39
125	1-40- 0	3437.75	0.19	62.50	1- 2-30	0-20-50	0-41-40	41.67	83.33	125.00	125.00	0.76
150	2- 0- 0	2864.79	0.33	75.00	1-30- 0	0-30- 0	1- 0- 0	50.00	100.00	150.00	149.99	1.31
175	2-20- 0	2455.53	0.52	87.50	2- 2-30	0-40-50	1-21-40	58.34	116.67	174.99	174.98	2.08
200	2-40- 0	2148.59	0.78	99.99	2-40- 0	0-53-20	1-46-40	66.68	133.35	199.98	199.96	3.10
225	3- 0- 0	1909.86	1.10	112.49	3-22-30	1- 7-30	2-15- 0	75.03	150.02	224.97	224.92	4.42
250	3-20- 0	1718.87	1.51	124.98	4-10- 0	1-23-20	2-46-40	83.38	166.71	249.94	249.87	6.06
275	3-40- 0	1562.61	2.02	137.46	5- 2-30	1-40-50	3-21-40	91.74	183.40	274.90	274.79	8.06
300	4- 0- 0	1432.39	2.62	149.95	6- 0- 0	2- 0- 0	4- 0- 0	100.11	200.11	299.85	299.67	10.46
325	4-20- 0	1322.21	3.33	162.42	7- 2-30	2-20-50	4-41-40	108.50	216.82	324.78	324.51	13.30
350	4-40- 0	1227.77	4.16	174.88	8-10- 0	2-43-20	5-26-40	116.91	233.56	349.68	349.29	16.61
375	5- 0- 0	1145.92	5.11	187.33	9-22-30	3- 7-30	6-15- 0	125.35	250.32	374.55	373.99	20.42

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compound curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

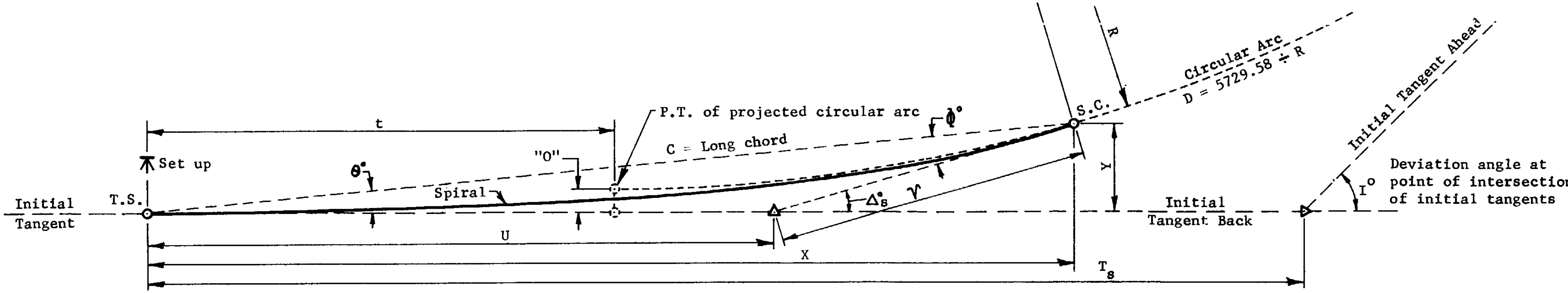
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev

TRANSITION SPIRAL TABLE FOR a = 1 1/3

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.16
Checked	JHb 1-71	
Approved Engr. Plans	G Heidecker	



L_s	D	R	"O"	t	Δ°_s	θ°	ϕ°	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0-22-30	15278.87	0.00	12.50	0- 2-49	0- 0-56	0- 1-53	8.33	16.67	25.00	25.00	0.01
50	0-45- 0	7639.44	0.01	25.00	0-11-15	0- 3-45	0- 7-30	16.67	33.33	50.00	50.00	0.05
75	1- 7-30	5092.96	0.05	37.50	0-25-19	0- 8-26	0-16-53	25.00	50.00	75.00	75.00	0.18
100	1-30- 0	3819.72	0.11	50.00	0-45- 0	0-15- 0	0-30- 0	33.33	66.67	100.00	100.00	0.44
125	1-52-30	3055.77	0.21	62.50	1-10-19	0-23-26	0-46-53	41.67	83.34	125.00	124.99	0.85
150	2-15- 0	2546.48	0.37	75.00	1-41-15	0-33-45	1- 7-30	50.00	100.00	149.99	149.99	1.47
175	2-37-30	2182.70	0.58	87.50	2-17-49	0-45-56	1-31-53	58.34	116.68	174.99	174.97	2.34
200	3- 0- 0	1909.86	0.87	99.99	3- 0- 0	1- 0- 0	2- 0- 0	66.69	133.35	199.98	199.95	3.49

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

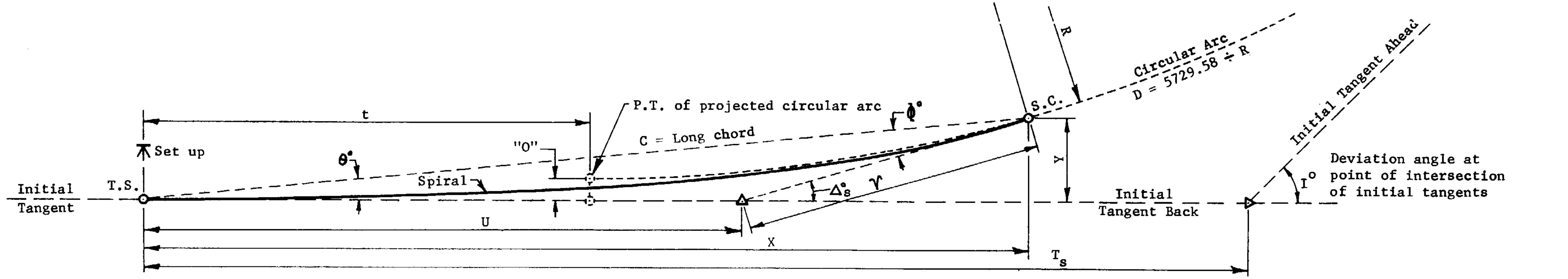
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 1 1/2

Rev

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.17
Checked	JPO 1-71	
Approved Engr. Plans	H Meineke 1-71	



L_s	D	R	"O"	t	Δ°_s	θ°	Φ°	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	0-10- 0	34377.48	0.00	5.00	0- 0-30	0- 0-10	0- 0-20	3.33	6.67	10.00	10.00	0.00
20	0-20- 0	17188.74	0.00	10.00	0- 2- 0	0- 0-40	0- 1-20	6.67	13.33	20.00	20.00	0.00
30	0-30- 0	11459.16	0.00	15.00	0- 4-30	0- 1-30	0- 3- 0	10.00	20.00	30.00	30.00	0.01
40	0-40- 0	8594.37	0.01	20.00	0- 8- 0	0- 2-40	0- 5-20	13.33	26.67	40.00	40.00	0.03
50	0-50- 0	6875.50	0.02	25.00	0-12-30	0- 4-10	0- 8-20	16.67	33.33	50.00	50.00	0.06
60	1- 0- 0	5729.58	0.03	30.00	0-18- 0	0- 6- 0	0-12- 0	20.00	40.00	60.00	60.00	0.10
70	1-10- 0	4911.07	0.04	35.00	0-24-30	0- 8-10	0-16-20	23.33	46.67	70.00	70.00	0.17
80	1-20- 0	4297.19	0.06	40.00	0-32- 0	0-10-40	0-21-20	26.67	53.33	80.00	80.00	0.25
90	1-30- 0	3819.72	0.09	45.00	0-40-30	0-13-30	0-27- 0	30.00	60.00	90.00	90.00	0.35
100	1-40- 0	3437.75	0.12	50.00	0-50- 0	0-16-40	0-33-20	33.33	66.67	100.00	100.00	0.48
110	1-50- 0	3125.23	0.16	55.00	1- 0-30	0-20-10	0-40-20	36.67	73.33	110.00	110.00	0.65
120	2- 0- 0	2864.79	0.21	60.00	1-12- 0	0-24- 0	0-48- 0	40.00	80.00	120.00	119.99	0.84
130	2-10- 0	2644.42	0.27	65.00	1-24-30	0-28-10	0-56-20	43.34	86.67	130.00	129.99	1.07
140	2-20- 0	2455.53	0.33	70.00	1-38- 0	0-32-40	1- 5-20	46.67	93.34	139.99	139.99	1.33
150	2-30- 0	2291.83	0.41	75.00	1-52-30	0-37-30	1-15- 0	50.01	100.01	149.99	149.98	1.64
160	2-40- 0	2148.59	0.50	80.00	2- 8- 0	0-42-40	1-25-20	53.34	106.67	159.99	159.98	1.99
170	2-50- 0	2022.20	0.60	84.99	2-24-30	0-48-10	1-36-20	56.68	113.34	169.99	169.97	2.38
180	3- 0- 0	1909.86	0.71	89.99	2-42- 0	0-54- 0	1-48- 0	60.01	120.01	179.98	179.96	2.83
190	3-10- 0	1809.34	0.83	94.99	3- 0-30	1- 0-10	2- 0-20	63.35	126.68	189.98	189.95	3.32
200	3-20- 0	1718.87	0.97	99.99	3-20- 0	1- 6-40	2-13-20	66.69	133.35	199.97	199.93	3.88
210	3-30- 0	1637.02	1.12	104.99	3-40-30	1-13-30	2-27- 0	70.03	140.03	209.96	209.91	4.49
220	3-40- 0	1562.61	1.29	109.98	4- 2- 0	1-20-40	2-41-20	73.37	146.70	219.95	219.89	5.16
230	3-50- 0	1494.67	1.47	114.98	4-24-30	1-28-10	2-56-20	76.71	153.38	229.94	229.86	5.90
240	4- 0- 0	1432.40	1.68	119.97	4-48- 0	1-36- 0	3-12- 0	80.06	160.05	239.92	239.83	6.70
250	4-10- 0	1375.10	1.89	124.97	5-12-30	1-44-10	3-28-20	83.40	166.73	249.91	249.79	7.57
260	4-20- 0	1322.21	2.13	129.96	5-38- 0	1-52-40	3-45-20	86.75	173.41	259.89	259.75	8.52
270	4-30- 0	1273.24	2.38	134.95	6- 4-30	2- 1-30	4- 3- 0	90.10	180.10	269.86	269.70	9.54
280	4-40- 0	1227.77	2.66	139.94	6-32- 0	2-10-40	4-21-20	93.46	186.78	279.84	279.64	10.63
290	4-50- 0	1185.43	2.96	144.93	7- 0-30	2-20-10	4-40-20	96.82	193.47	289.81	289.57	11.81
300	5- 0- 0	1145.92	3.27	149.91	7-30- 0	2-30- 0	5- 0- 0	100.18	200.16	299.77	299.49	13.08
310	5-10- 0	1108.95	3.61	154.90	8- 0-30	2-40-10	5-20-20	103.54	206.86	309.73	309.39	14.43
320	5-20- 0	1074.30	3.97	159.88	8-32- 0	2-50-40	5-41-20	106.91	213.56	319.68	319.29	15.86
330	5-30- 0	1041.74	4.35	164.86	9- 4-30	3- 1-30	6- 3- 0	110.29	220.27	329.63	329.17	17.40
340	5-40- 0	1011.10	4.76	169.84	9-38- 0	3-12-40	6-25-20	113.67	226.97	339.57	339.04	19.02
350	5-50- 0	982.21	5.20	174.81	10-12-30	3-24-10	6-48-20	117.05	233.69	349.50	348.89	20.74
360	6- 0- 0	954.93	5.65	179.79	10-48- 0	3-36- 0	7-12- 0	120.44	240.41	359.43	358.72	22.57

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

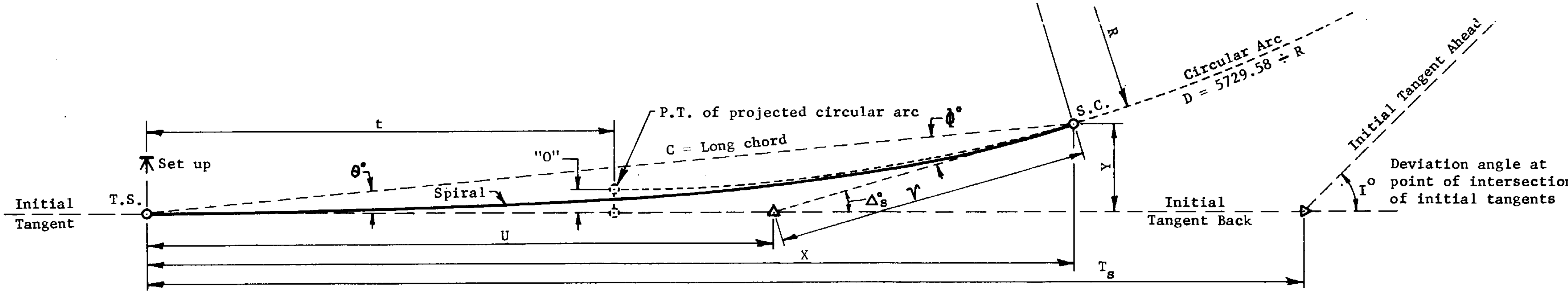
For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compound curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION		Rev
TRANSITION SPIRAL TABLE FOR a = 1 2/3		
Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.18
Checked	RO 1-71	
Approved Engr. Plans	H Weidecker 1-71	



L_s	D	R	"O"	t	$\Delta°_s$	$\theta°$	$\phi°$	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0-30- 0	11459.16	0.00	12.50	0- 3-45	0- 1-15	0- 2-30	8.33	16.67	25.00	25.00	0.01
50	1- 0- 0	5729.58	0.02	25.0C	0-15- 0	0- 5- 0	0-10- 0	16.67	33.33	50.00	50.00	0.07
75	1-30- 0	3819.72	0.06	37.50	0-33-45	0-11-15	0-22-30	25.00	50.00	75.00	75.00	0.25
100	2- 0- 0	2864.79	0.15	50.00	1- 0- 0	0-20- 0	0-40- 0	33.33	66.67	100.00	100.00	0.58
125	2-30- 0	2291.83	0.28	62.50	1-33-45	0-31-15	1- 2-30	41.67	83.34	125.00	124.99	1.14
150	3- 0- 0	1909.86	0.49	75.00	2-15- 0	0-45- 0	1-30- 0	50.01	100.01	149.99	149.98	1.96
175	3-30- 0	1637.02	0.78	87.49	3- 3-45	1- 1-15	2- 2-30	58.35	116.68	174.98	174.95	3.12
200	4- 0- 0	1432.39	1.16	99.98	4- 0- 0	1-20- 0	2-40- 0	66.70	133.36	199.96	199.90	4.65
225	4-30- 0	1273.24	1.66	112.47	5- 3-45	1-41-15	3-22-30	75.06	150.06	224.92	224.82	6.62
250	5- 0- 0	1145.92	2.27	124.95	6-15- 0	2- 5- 0	4-10- 0	83.44	166.76	249.87	249.70	9.08
275	5-30- 0	1041.74	3.02	137.42	7-33-45	2-31-15	5- 2-30	91.83	183.49	274.79	274.52	12.09
300	6- 0- 0	954.93	3.93	149.88	9- 0- 0	3- 0- 0	6- 0- 0	100.26	200.24	299.67	299.26	15.68
325	6-30- 0	881.47	4.99	162.32	10-33-45	3-31-15	7- 2-30	108.72	217.02	324.51	323.89	19.93
350	7- 0- 0	818.51	6.23	174.73	12-15- 0	4- 5- 0	8-10- 0	117.22	233.85	349.29	348.40	24.87
375	7-30- 0	763.94	7.67	187.12	14- 3-45	4-41-15	9-22-30	125.78	250.73	373.99	372.74	30.56

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

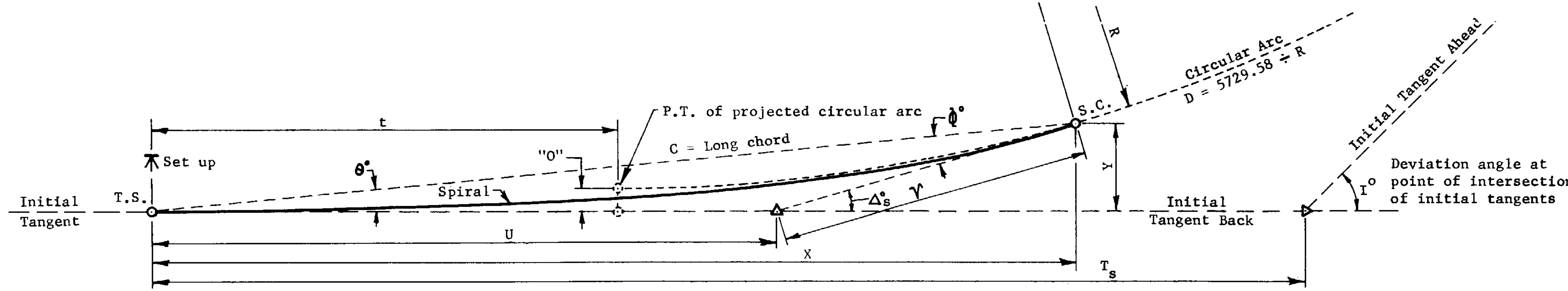
For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION		Rev
TRANSITION SPIRAL TABLE FOR a = 2		
Drawn	R.A.F. 1-71	Drawing No. D-6.19
Traced	R.A.F. 1-71	
Checked	JPS 1-71	
Approved Engr. Plans	G. Weidenbar 1-71	



L_s	D	R	"O"	t	$\Delta_s°$	$\theta°$	$\phi°$	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	0-15- 0	22918.31	0.00	5.00	0- 0-45	0- 0-15	0- 0-30	3.33	6.67	10.00	10.00	0.00
20	0-30- 0	11459.16	0.00	10.00	0- 3- 0	0- 1- 0	0- 2- 0	6.67	13.33	20.00	20.00	0.01
30	0-45- 0	7639.44	0.00	15.00	0- 6-45	0- 2-15	0- 4-30	10.00	20.00	30.00	30.00	0.02
40	1- 0- 0	5729.58	0.01	20.00	0-12- 0	0- 4- 0	0- 8- 0	13.33	26.67	40.00	40.00	0.05
50	1-15- 0	4583.66	0.02	25.00	0-18-45	0- 6-15	0-12-30	16.67	33.33	50.00	50.00	0.09
60	1-30- 0	3819.72	0.04	30.00	0-27- 0	0- 9- 0	0-18- 0	20.00	40.00	60.00	60.00	0.16
70	1-45- 0	3274.04	0.06	35.00	0-36-45	0-12-15	0-24-30	23.33	46.67	70.00	70.00	0.25
80	2- 0- 0	2864.79	0.09	40.00	0-48- 0	0-16- 0	0-32- 0	26.67	53.33	80.00	80.00	0.37
90	2-15- 0	2546.48	0.13	45.00	1- 0-45	0-20-15	0-40-30	30.00	60.00	90.00	90.00	0.53
100	2-30- 0	2291.83	0.18	50.00	1-15- 0	0-25- 0	0-50- 0	33.33	66.67	100.00	100.00	0.73
110	2-45- 0	2083.48	0.24	55.00	1-30-45	0-30-15	1- 0-30	36.67	73.34	110.00	109.99	0.97
120	3- 0- 0	1909.86	0.31	60.00	1-48- 0	0-36- 0	1-12- 0	40.00	80.00	119.99	119.99	1.26
130	3-15- 0	1762.95	0.40	65.00	2- 6-45	0-42-15	1-24-30	43.34	86.67	129.99	129.98	1.60
140	3-30- 0	1637.02	0.50	70.00	2-27- 0	0-49- 0	1-38- 0	46.68	93.34	139.99	139.97	2.00
150	3-45- 0	1527.89	0.61	74.99	2-48-45	0-56-15	1-52-30	50.01	100.01	149.98	149.96	2.45
160	4- 0- 0	1432.39	0.74	79.99	3-12- 0	1- 4- 0	2- 8- 0	53.35	106.68	159.98	159.95	2.98
170	4-15- 0	1348.14	0.89	84.99	3-36-45	1-12-15	2-24-30	56.69	113.35	169.97	169.93	3.57
180	4-30- 0	1273.24	1.06	89.99	4- 3- 0	1-21- 0	2-42- 0	60.03	120.03	179.96	179.91	4.24
190	4-45- 0	1206.23	1.25	94.98	4-30-45	1-30-15	3- 0-30	63.37	126.70	189.95	189.88	4.99
200	5- 0- 0	1145.92	1.45	99.97	5- 0- 0	1-40- 0	3-20- 0	66.72	133.38	199.93	199.85	5.81
210	5-15- 0	1091.35	1.68	104.97	5-30-45	1-50-15	3-40-30	70.07	140.06	209.91	209.81	6.73
220	5-30- 0	1041.74	1.94	109.96	6- 3- 0	2- 1- 0	4- 2- 0	73.42	146.75	219.89	219.75	7.74
230	5-45- 0	996.45	2.21	114.95	6-36-45	2-12-15	4-24-30	76.77	153.43	229.86	229.69	8.84
240	6- 0- 0	954.93	2.51	119.94	7-12- 0	2-24- 0	4-48- 0	80.13	160.12	239.83	239.62	10.04
250	6-15- 0	916.73	2.84	124.92	7-48-45	2-36-15	5-12-30	83.49	166.82	249.79	249.53	11.35
260	6-30- 0	881.47	3.19	129.91	8-27- 0	2-49- 0	5-38- 0	86.86	173.51	259.75	259.43	12.76
270	6-45- 0	848.83	3.58	134.89	9- 6-45	3- 2-15	6- 4-30	90.24	180.22	269.70	269.32	14.29
280	7- 0- 0	818.51	3.99	139.86	9-48- 0	3-16- 0	6-32- 0	93.62	186.93	279.63	279.18	15.93
290	7-15- 0	790.29	4.43	144.84	10-30-45	3-30-15	7- 0-30	97.00	193.65	289.56	289.02	17.70
300	7-30- 0	763.94	4.91	149.81	11-15- 0	3-45- 0	7-30- 0	100.40	200.37	299.48	298.84	19.59
310	7-45- 0	739.30	5.41	154.77	12- 0-45	4- 0-15	8- 0-30	103.81	207.10	309.39	308.64	21.60
320	8- 0- 0	716.20	5.96	159.73	12-48- 0	4-16- 0	8-32- 0	107.22	213.85	319.29	318.40	23.75
330	8-15- 0	694.49	6.53	164.69	13-36-45	4-32-15	9- 4-30	110.65	220.60	329.17	328.14	26.04
340	8-30- 0	674.07	7.14	169.64	14-27- 0	4-49- 0	9-38- 0	114.08	227.36	339.03	337.84	28.47
350	8-45- 0	654.81	7.79	174.58	15-18-45	5- 6-15	10-12-30	117.54	234.14	348.88	347.50	31.04
360	9- 0- 0	636.62	8.48	179.52	16-12- 0	5-24- 0	10-48- 0	121.00	240.93	358.72	357.12	33.76

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

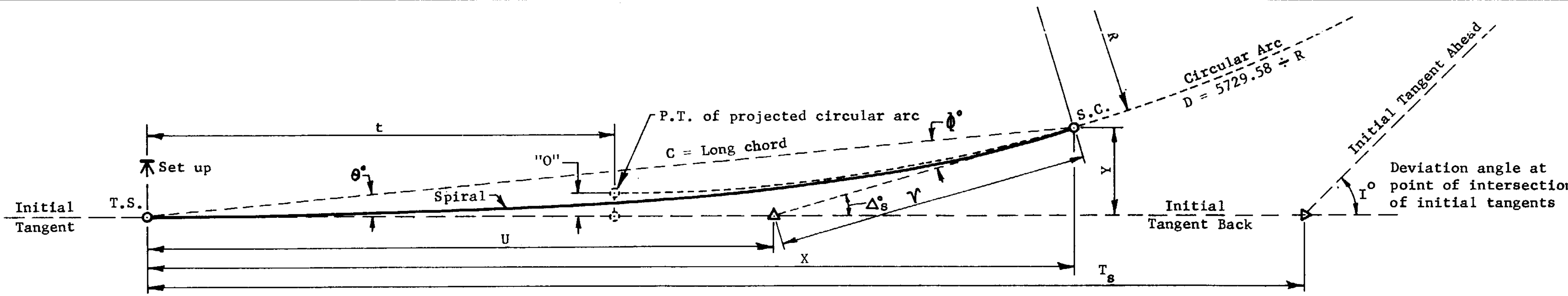
For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 2 1/2

Drawn	R.A.F. 1-71	Drawing No.	Rev
Traced	R.A.F. 1-71	D-6.20	
Checked	JPO 1-71		
Approved Engr. Plans	G. Weidecker 1-71		



L_s	D	R	"O"	t	Δ°_s	θ°	ϕ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0-40- 0	8594.37	0.00	12.50	0- 5- 0	0- 1-40	0- 3-20	8.33	16.67	25.00	25.00	0.01
50	1-20- 0	4297.18	0.02	25.00	0-20- 0	0- 6-40	0-13-20	16.67	33.33	50.00	50.00	0.10
75	2- 0- 0	2864.79	0.08	37.50	0-45- 0	0-15- 0	0-30- 0	25.00	50.00	75.00	75.00	0.33
100	2-40- 0	2148.59	0.19	50.00	1-20- 0	0-26-40	0-53-20	33.34	66.67	100.00	99.99	0.78
125	3-20- 0	1718.87	0.38	62.50	2- 5- 0	0-41-40	1-23-20	41.67	83.34	124.99	124.98	1.51
150	4- 0- 0	1432.39	0.65	74.99	3- 0- 0	1- 0- 0	2- 0- 0	50.01	100.01	149.98	149.96	2.62

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

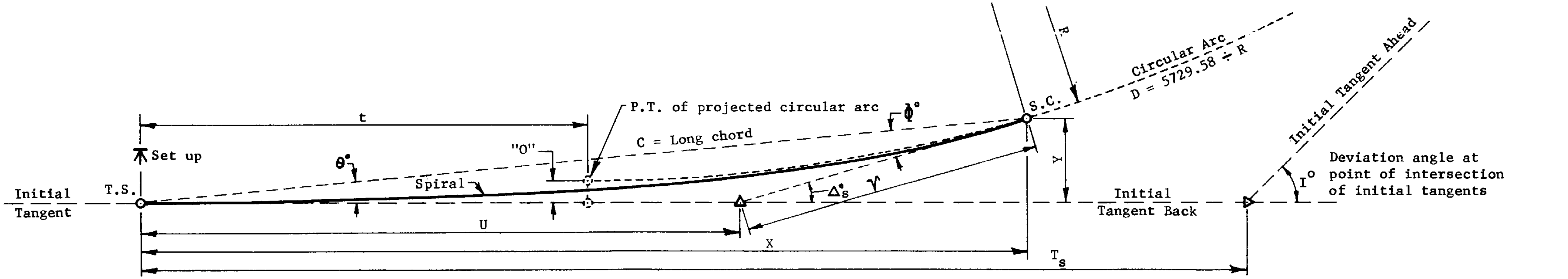
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev.

TRANSITION SPIRAL TABLE FOR a = 2 2/3

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	
Checked	JPO 2-71	D-6.21
Approved Engr. Plans	[signature] 2-71	



L_s	D	R	"O"	t	$\Delta°_s$	$\theta°$	$\phi°$	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0-45- 0	7639.44	0.00	12.50	0- 5-38	0- 1-53	0- 3-45	8.33	16.67	25.00	25.00	0.01
50	1-30- 0	3819.72	0.03	25.00	0-22-30	0- 7-30	0-15- 0	16.67	33.33	50.00	50.00	0.11
75	2-15- 0	2546.48	0.09	37.50	0-50-38	0-16-53	0-33-45	25.00	50.00	75.00	75.00	0.37
100	3- 0- 0	1909.86	0.22	50.00	1-30- 0	0-30- 0	1- 0- 0	33.34	66.67	100.00	99.99	0.87
125	3-45- 0	1527.89	0.43	62.50	2-20-38	0-46-53	1-33-45	41.67	83.34	124.99	124.98	1.70
150	4-30- 0	1273.24	0.74	74.99	3-22-30	1- 7-30	2-15- 0	50.02	100.02	149.98	149.95	2.94
175	5-15- 0	1091.35	1.17	87.48	4-35-38	1-31-53	3- 3-45	58.37	116.70	174.95	174.89	4.68
200	6- 0- 0	954.93	1.74	99.96	6- 0- 0	2- 0- 0	4- 0- 0	66.74	133.40	199.90	199.78	6.98

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

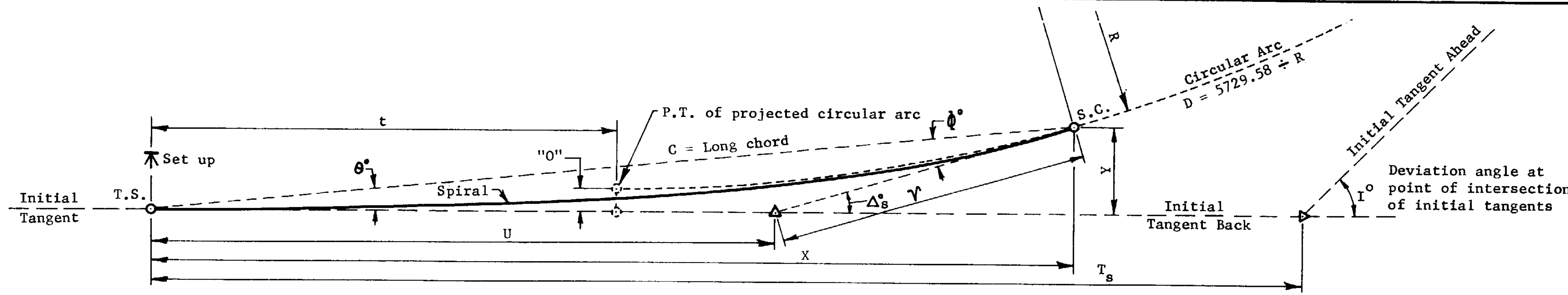
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 3

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.22
Checked	JPO 1-71	
Approved Engr. Plans	G Meidecker 1-71	

Rev



L_s	D	R	"O"	t	$\Delta°_s$	$\theta°$	$\Phi°$	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	0-20- 0	17188.74	0.00	5.00	0- 1- 0	0- 0-20	0- 0-40	3.33	6.67	10.00	10.00	0.00
20	0-40- 0	8594.37	0.00	10.00	0- 4- 0	0- 1-20	0- 2-40	6.67	13.33	20.00	20.00	0.01
30	1- 0- 0	5729.58	0.01	15.00	0- 9- 0	0- 3- 0	0- 6- 0	10.00	20.00	30.00	30.00	0.03
40	1-20- 0	4297.18	0.02	20.00	0-16- 0	0- 5-20	0-10-40	13.33	26.67	40.00	40.00	0.06
50	1-40- 0	3437.75	0.03	25.00	0-25- 0	0- 8-20	0-16-40	16.67	33.33	50.00	50.00	0.12
60	2- 0- 0	2864.79	0.05	30.00	0-36- 0	0-12- 0	0-24- 0	20.00	40.00	60.00	60.00	0.21
70	2-20- 0	2455.53	0.08	35.00	0-49- 0	0-16-20	0-32-40	23.33	46.67	70.00	70.00	0.33
80	2-40- 0	2148.59	0.12	40.00	1- 4- 0	0-21-20	0-42-40	26.67	53.33	80.00	80.00	0.50
90	3- 0- 0	1909.86	0.18	45.00	1-21- 0	0-27- 0	0-54- 0	30.00	60.00	90.00	89.99	0.71
100	3-20- 0	1718.87	0.24	50.00	1-40- 0	0-33-20	1- 6-40	33.34	66.67	100.00	99.99	0.97
110	3-40- 0	1562.61	0.32	55.00	2- 1- 0	0-40-20	1-20-40	36.67	73.34	109.99	109.99	1.29
120	4- 0- 0	1432.39	0.42	60.00	2-24- 0	0-48- 0	1-36- 0	40.01	80.01	119.99	119.98	1.68
130	4-20- 0	1322.21	0.53	64.99	2-49- 0	0-56-20	1-52-40	43.34	86.68	129.99	129.97	2.13
140	4-40- 0	1227.77	0.66	69.99	3-16- 0	1- 5-20	2-10-40	46.68	93.35	139.98	139.95	2.66
150	5- 0- 0	1145.92	0.82	74.99	3-45- 0	1-15- 0	2-30- 0	50.02	100.02	149.97	149.94	3.27
160	5-20- 0	1074.30	0.99	79.99	4-16- 0	1-25-20	2-50-40	53.36	106.70	159.96	159.91	3.97
170	5-40- 0	1011.10	1.19	84.98	4-49- 0	1-36-20	3-12-40	56.71	113.37	169.95	169.88	4.76
180	6- 0- 0	954.93	1.41	89.97	5-24- 0	1-48- 0	3-36- 0	60.06	120.05	179.93	179.84	5.65
190	6-20- 0	904.67	1.66	94.97	6- 1- 0	2- 0-20	4- 0-40	63.41	126.73	189.91	189.79	6.65
200	6-40- 0	859.44	1.94	99.95	6-40- 0	2-13-20	4-26-40	66.76	133.42	199.88	199.73	7.75
210	7- 0- 0	818.51	2.24	104.94	7-21- 0	2-27- 0	4-54- 0	70.12	140.11	209.85	209.65	8.97
220	7-20- 0	781.31	2.58	109.93	8- 4- 0	2-41-20	5-22-40	73.48	146.81	219.81	219.56	10.31
230	7-40- 0	747.34	2.95	114.91	8-49- 0	2-56-20	5-52-40	76.85	153.51	229.76	229.45	11.78
240	8- 0- 0	716.20	3.35	119.89	9-36- 0	3-12- 0	6-24- 0	80.23	160.22	239.70	239.33	13.38
250	8-20- 0	687.55	3.79	124.86	10-25- 0	3-28-20	6-56-40	83.62	166.93	249.63	249.17	15.12
260	8-40- 0	661.11	4.26	129.83	11-16- 0	3-45-20	7-30-40	87.01	173.66	259.55	258.99	17.00
270	9- 0- 0	636.62	4.77	134.80	12- 9- 0	4- 3- 0	8- 6- 0	90.42	180.39	269.46	268.79	19.03
280	9-20- 0	613.88	5.32	139.76	13- 4- 0	4-21-20	8-42-40	93.84	187.13	279.35	278.54	21.22
290	9-40- 0	592.72	5.91	144.71	14- 1- 0	4-40-20	9-20-40	97.27	193.89	289.23	288.26	23.56
300	10- 0- 0	572.96	6.54	149.66	15- 0- 0	5- 0- 0	10- 0- 0	100.71	200.66	299.08	297.94	26.07
310	10-20- 0	554.48	7.22	154.60	16- 1- 0	5-20-20	10-40-40	104.18	207.45	308.92	307.58	28.74
320	10-40- 0	537.15	7.94	159.53	17- 4- 0	5-41-20	11-22-40	107.65	214.25	318.73	317.16	31.59
330	11- 0- 0	520.87	8.71	164.45	18- 9- 0	6- 3- 0	12- 6- 0	111.15	221.07	328.52	326.69	34.62
340	11-20- 0	505.55	9.52	169.36	19-16- 0	6-25-20	12-50-40	114.67	227.91	338.28	336.16	37.84
350	11-40- 0	491.11	10.39	174.26	20-25- 0	6-48-20	13-36-40	118.22	234.77	348.02	345.56	41.24

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

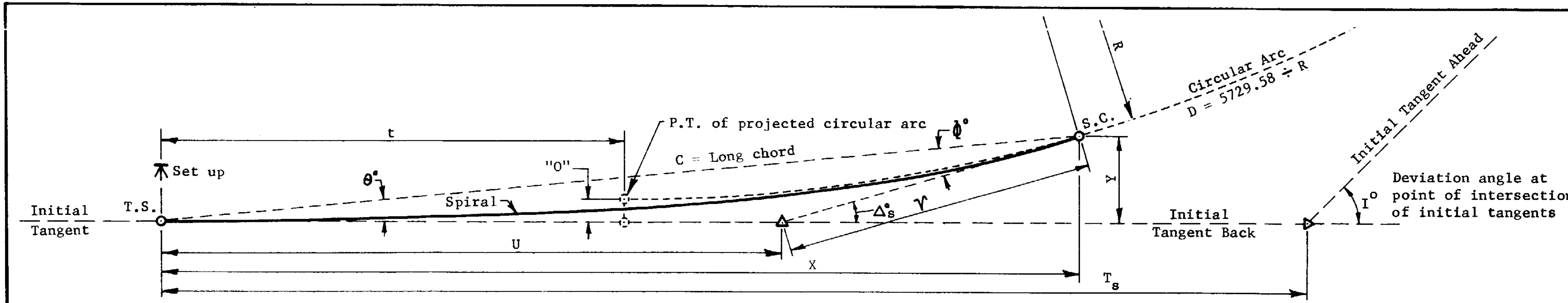
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev

TRANSITION SPIRAL TABLE FOR a = 3 1/3

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.23
Checked	1-71	
Approved Engr. Plans	1-71	



L_s	D	R	"O"	t	Δ°_s	θ°	ϕ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	0-52-30	6548.09	0.00	12.50	0- 6-34	0- 2-11	0- 4-22	8.33	16.67	25.00	25.00	0.02
50	1-45- 0	3274.04	0.03	25.00	0-26-15	0- 8-45	0-17-30	16.67	33.33	50.00	50.00	0.13
75	2-37-30	2182.70	0.11	37.50	0-59- 4	0-19-41	0-39-23	25.00	50.00	75.00	75.00	0.43
100	3-30- 0	1637.02	0.25	50.00	1-45- 0	0-35- 0	1-10- 0	33.34	66.67	100.00	99.99	1.02
125	4-22-30	1309.62	0.50	62.50	2-44- 4	0-54-41	1-49-22	41.68	83.34	124.99	124.97	1.99
150	5-15- 0	1091.35	0.86	74.99	3-56-15	1-18-45	2-37-30	50.02	100.02	149.97	149.93	3.44

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

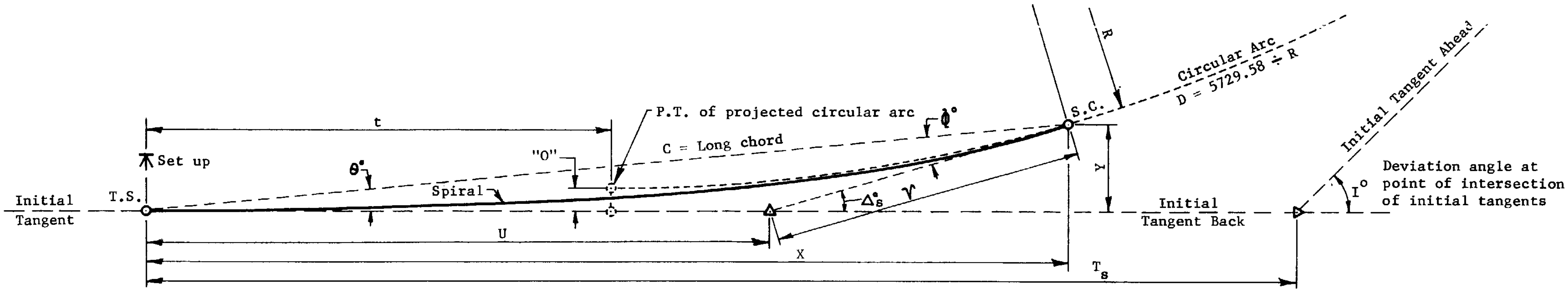
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 3 1/2

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.24
Checked	JPO 1-71	
Approved Engr. Plans	G. Heidecker 1-71	

Rev



L_s	D	R	"O"	t	$\Delta°_s$	$\theta°$	$\Phi°$	γ	U	C	X	Y
00	C0-00-00	C0.00	0.00	0.00	00-00-C0	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	0-22-30	15278.87	0.00	5.00	0- 1- 7	0- 0-23	0- 0-45	3.33	6.67	10.00	10.00	0.00
20	0-45- 0	7639.44	0.0C	10.0C	0- 4-30	0- 1-30	0- 3- 0	6.67	13.33	20.00	20.00	0.01
30	1- 7-30	5092.96	0.01	15.0C	0-10- 7	0- 3-23	0- 6-45	10.00	20.00	30.00	30.00	0.03
40	1-30- 0	3819.72	0.02	20.CC	0-18- 0	0- 6- 0	0-12- 0	13.33	26.67	40.00	40.00	0.07
50	1-52-30	3C55.77	0.03	25.00	0-28- 8	0- 9-23	0-18-45	16.67	33.33	50.00	50.00	0.14
60	2-15- 0	2546.48	0.06	30.00	0-40-30	0-13-30	0-27- 0	20.00	40.00	60.00	60.C0	0.24
70	2-37-30	2182.70	0.C9	35.00	0-55- 7	0-18-23	0-36-45	23.33	46.67	70.00	70.00	0.37
80	3- 0- 0	19C9.86	0.14	4C.C0	1-12- 0	0-24- 0	0-48- 0	26.67	53.33	8C.00	80.00	0.56
90	3-22-30	1697.65	0.20	45.00	1-31- 7	0-30-23	1- 0-45	30.00	60.00	90.00	89.99	0.80
100	3-45- 0	1527.89	0.27	50.0C	1-52-30	0-37-30	1-15- 0	33.34	66.67	100.00	99.99	1.09
11C	4- 7-30	1388.99	0.36	55.0C	2-16- 7	0-45-23	1-30-45	36.67	73.34	109.99	109.98	1.45
120	4-30- 0	1273.24	0.47	60.00	2-42- 0	0-54- 0	1-48- 0	40.01	80.01	119.99	119.97	1.88
130	4-52-30	1175.30	0.60	64.99	3-10- 7	1- 3-23	2- 6-45	43.35	86.68	129.98	129.96	2.40
140	5-15- 0	1091.35	0.75	69.99	3-40-30	1-13-30	2-27- 0	46.69	93.35	139.97	139.94	2.99
150	5-37-30	1018.59	0.92	74.99	4-13- 8	1-24-23	2-48-45	50.03	100.03	149.96	149.92	3.68
160	6- 0- 0	954.93	1.12	79.98	4-48- 0	1-36- 0	3-12- 0	53.37	106.70	159.95	159.89	4.47

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

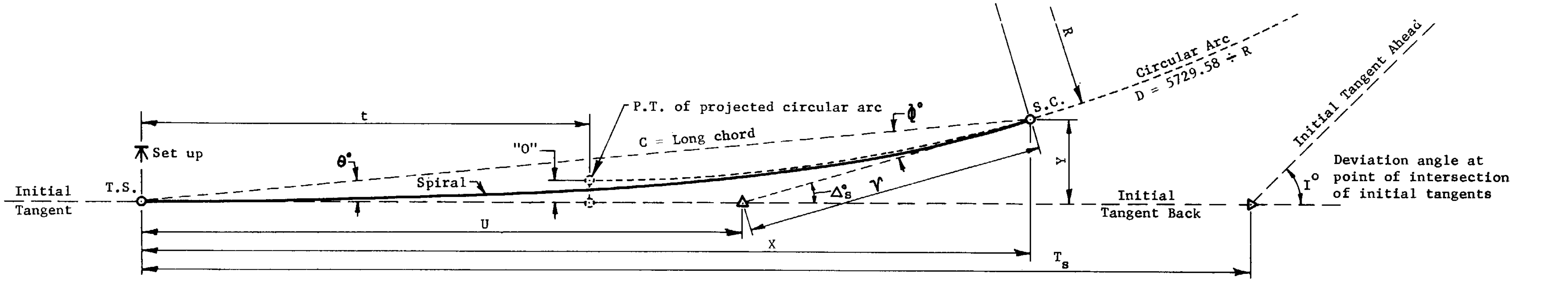
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev

TRANSITION SPIRAL TABLE FOR a = 3 3/4

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	
Checked	gPO 1-71	D-6.25
Approved Engr. Plans	H. Heidecke '71	



L_s	D	R	"O"	t	Δ_s°	θ°	ϕ°	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	1- 0- 0	5729.58	0.00	12.50	0- 7-30	0- 2-30	0- 5- 0	8.33	16.67	25.00	25.00	0.02
50	2- 0- 0	2864.79	0.04	25.00	0-30- 0	0-10- 0	0-20- 0	16.67	33.33	50.00	50.00	0.15
75	3- 0- 0	1909.86	0.12	37.50	1- 7-30	0-22-30	0-45- 0	25.00	50.00	75.00	75.00	0.49
100	4- 0- 0	1432.39	0.29	50.00	2- 0- 0	0-40- 0	1-20- 0	33.34	66.67	99.99	99.99	1.16
125	5- 0- 0	1145.92	0.57	62.49	3- 7-30	1- 2-30	2- 5- 0	41.68	83.35	124.98	124.96	2.27
150	6- 0- 0	954.93	0.98	74.98	4-30- 0	1-30- 0	3- 0- 0	50.03	100.03	149.96	149.91	3.93
175	7- 0- 0	818.51	1.56	87.47	6- 7-30	2- 2-30	4- 5- 0	58.40	116.73	174.91	174.80	6.23
200	8- 0- 0	716.20	2.33	99.93	8- 0- 0	2-40- 0	5-20- 0	66.80	133.46	199.83	199.61	9.30

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

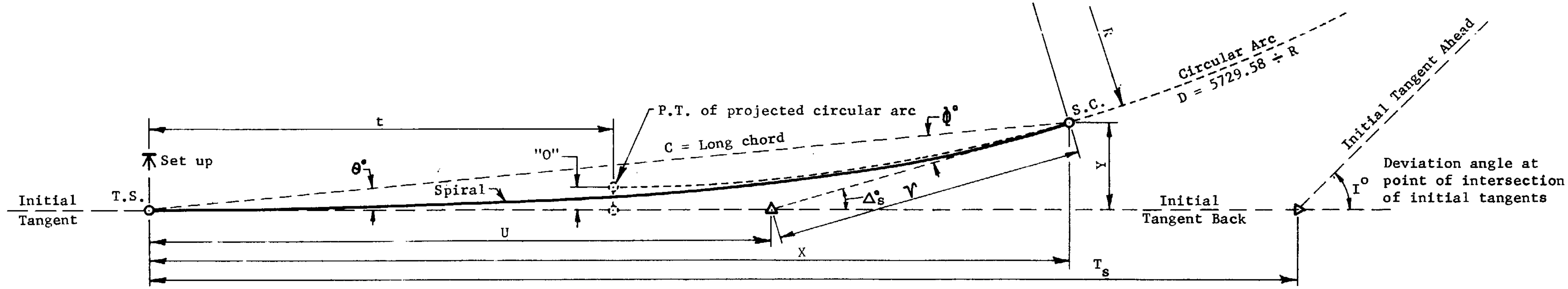
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 4

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.26
Checked	[illegible] 1-71	
Approved Engr. Plans	[illegible] 1-71	

Rev



L_s	D	R	"O"	t	Δ°_s	θ°	ϕ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	1- 7-30	5092.96	0.01	12.50	0- 8-26	0- 2-49	0- 5-38	8.33	16.67	25.00	25.00	0.02
50	2-15- 0	2546.48	0.04	25.00	0-33-45	0-11-15	0-22-30	16.67	33.33	50.00	50.00	0.16
75	3-22-30	1697.65	0.14	37.50	1-15-56	0-25-19	0-50-38	25.00	50.00	75.00	75.00	0.55
100	4-30- 0	1273.24	0.33	50.00	2-15- 0	0-45- 0	1-30- 0	33.34	66.67	99.99	99.98	1.31
125	5-37-30	1018.59	0.64	62.49	3-30-56	1-10-19	2-20-38	41.68	83.35	124.98	124.95	2.56
150	6-45- 0	848.83	1.10	74.98	5- 3-45	1-41-15	3-22-30	50.04	100.04	149.95	149.88	4.42
175	7-52-30	727.57	1.75	87.46	6-53-26	2-17-49	4-35-38	58.42	116.75	174.89	174.75	7.01
200	9- 0- 0	636.62	2.62	99.92	9- 0- 0	3- 0- 0	6- 0- 0	66.84	133.49	199.78	199.51	10.46

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

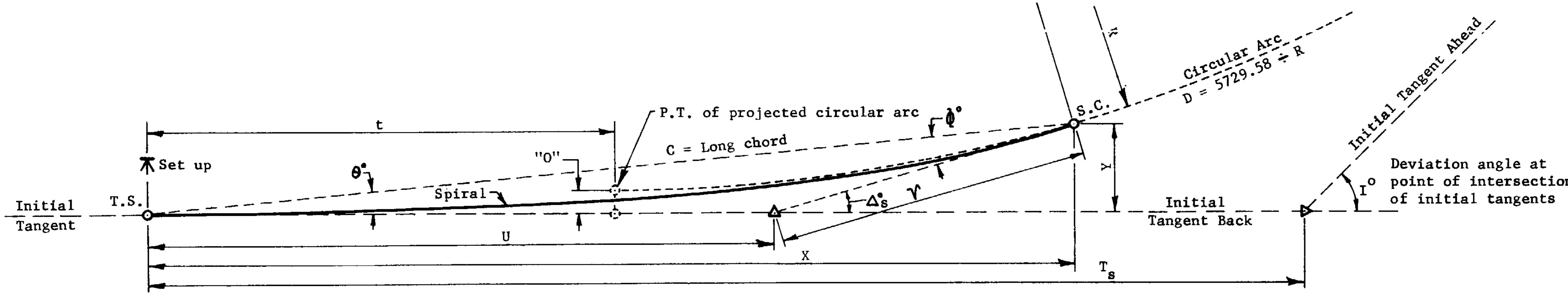
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 4 1/2

Rev

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.27
Checked	JPO 1-71	
Approved Engr. Plans	HWeidecke 1-71	



L_S	D	R	"O"	t	Δ°_s	θ°	ϕ°	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	1-10- 0	4911.07	0.01	12.50	0- 8-45	0- 2-55	0- 5-50	8.33	16.67	25.00	25.00	0.02
50	2-20- 0	2455.53	0.04	25.00	0-35- 0	0-11-40	0-23-20	16.67	33.33	50.00	50.00	0.17
75	3-30- 0	1637.02	0.14	37.50	1-18-45	0-26-15	0-52-30	25.00	50.00	75.00	75.00	0.57
100	4-40- 0	1227.77	0.34	50.00	2-20- 0	0-46-40	1-33-20	33.34	66.67	99.99	99.98	1.36
125	5-50- 0	982.21	0.66	62.49	3-38-45	1-12-55	2-25-50	41.68	83.35	124.98	124.95	2.65
150	7- 0- 0	818.51	1.15	74.98	5-15- 0	1-45- 0	3-30- 0	50.04	100.04	149.94	149.87	4.58

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

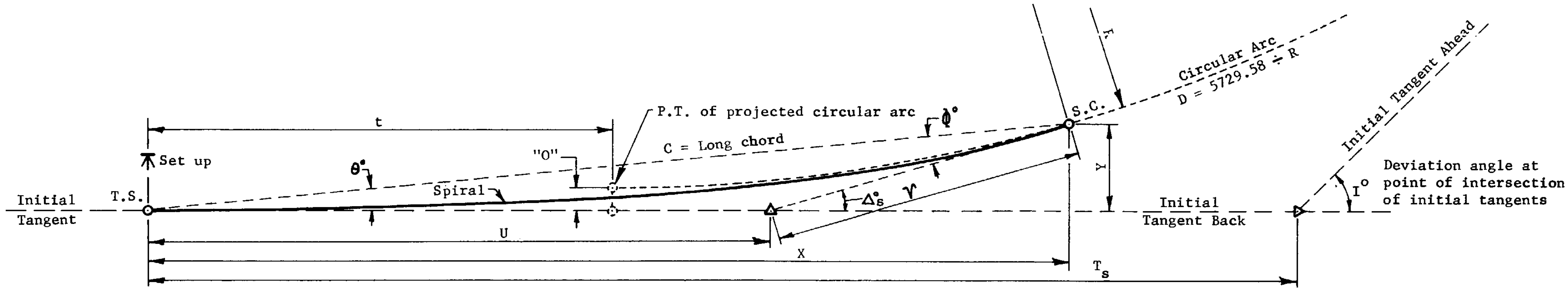
For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION		Rev
TRANSITION SPIRAL TABLE FOR a = 4 2/3		
Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.28
Checked	JRS 2-71	
Approved Engr. Plans	H.Heidecke 2-71	



L_s	D	R	"O"	t	$\Delta°_s$	$\theta°$	$\phi°$	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	0-30- 0	11459.16	0.00	5.00	0- 1-30	0- 0-30	0- 1- 0	3.33	6.67	10.00	10.00	0.00
20	1- 0- 0	5729.58	0.00	10.00	0- 6- 0	0- 2- 0	0- 4- 0	6.67	13.33	20.00	20.00	0.01
30	1-30- 0	3819.72	0.01	15.00	0-13-30	0- 4-30	0- 9- 0	10.00	20.00	30.00	30.00	0.04
40	2- 0- 0	2864.79	0.02	20.00	0-24- 0	0- 8- 0	0-16- 0	13.33	26.67	40.00	40.00	0.09
50	2-30- 0	2291.83	0.05	25.00	0-37-30	0-12-30	0-25- 0	16.67	33.33	50.00	50.00	0.18
60	3- 0- 0	1909.86	0.08	30.00	0-54- 0	0-18- 0	0-36- 0	20.00	40.00	60.00	60.00	0.31
70	3-30- 0	1637.02	0.12	35.00	1-13-30	0-24-30	0-49- 0	23.33	46.67	70.00	70.00	0.50
80	4- 0- 0	1432.39	0.19	40.00	1-36- 0	0-32- 0	1- 4- 0	26.67	53.34	80.00	79.99	0.74
90	4-30- 0	1273.24	0.26	45.00	2- 1-30	0-40-30	1-21- 0	30.00	60.00	89.99	89.99	1.06
100	5- 0- 0	1145.92	0.36	50.00	2-30- 0	0-50- 0	1-40- 0	33.34	66.67	99.99	99.98	1.45
110	5-30- 0	1041.74	0.48	54.99	3- 1-30	1- 0-30	2- 1- 0	36.68	73.34	109.99	109.97	1.94
120	6- 0- 0	954.93	0.63	59.99	3-36- 0	1-12- 0	2-24- 0	40.02	80.02	119.98	119.95	2.51
130	6-30- 0	881.47	0.80	64.99	4-13-30	1-24-30	2-49- 0	43.36	86.69	129.97	129.93	3.19
140	7- 0- 0	818.51	1.00	69.98	4-54- 0	1-38- 0	3-16- 0	46.70	93.37	139.95	139.90	3.99
150	7-30- 0	763.94	1.23	74.98	5-37-30	1-52-30	3-45- 0	50.05	100.05	149.94	149.86	4.91
160	8- 0- 0	716.20	1.49	79.97	6-24- 0	2- 8- 0	4-16- 0	53.40	106.73	159.91	159.80	5.95
170	8-30- 0	674.07	1.79	84.95	7-13-30	2-24-30	4-49- 0	56.76	113.42	169.88	169.73	7.14
180	9- 0- 0	636.62	2.12	89.94	8- 6- 0	2-42- 0	5-24- 0	60.12	120.12	179.84	179.64	8.47
190	9-30- 0	603.11	2.49	94.92	9- 1-30	3- 0-30	6- 1- 0	63.50	126.82	189.79	189.53	9.96
200	10- 0- 0	572.96	2.91	99.90	10- 0- 0	3-20- 0	6-40- 0	66.88	133.53	199.73	199.39	11.61
210	10-30- 0	545.67	3.37	104.87	11- 1-30	3-40-30	7-21- 0	70.27	140.25	209.65	209.22	13.44
220	11- 0- 0	520.87	3.87	109.84	12- 6- 0	4- 2- 0	8- 4- 0	73.67	146.98	219.56	219.02	15.44
230	11-30- 0	498.22	4.42	114.80	13-13-30	4-24-30	8-49- 0	77.09	153.73	229.45	228.77	17.64
240	12- 0- 0	477.46	5.03	119.75	14-24- 0	4-48- 0	9-36- 0	80.53	160.49	239.32	238.48	20.03
250	12-30- 0	458.37	5.68	124.69	15-37-30	5-12-30	10-25- 0	83.98	167.27	249.17	248.14	22.62
260	13- 0- 0	440.74	6.39	129.62	16-54- 0	5-38- 0	11-16- 0	87.45	174.06	258.99	257.74	25.42
270	13-30- 0	424.41	7.15	134.54	18-13-30	6- 4-30	12- 9- 0	90.95	180.88	268.78	267.27	28.45
280	14- 0- 0	409.26	7.98	139.45	19-36- 0	6-32- 0	13- 4- 0	94.48	187.73	278.54	276.73	31.69
290	14-30- 0	395.14	8.87	144.35	21- 1-30	7- 0-30	14- 1- 0	98.03	194.60	288.26	286.10	35.17
300	15- 0- 0	381.97	9.81	149.23	22-30- 0	7-30- 0	15- 0- 0	101.62	201.50	297.93	295.39	38.89

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compound curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

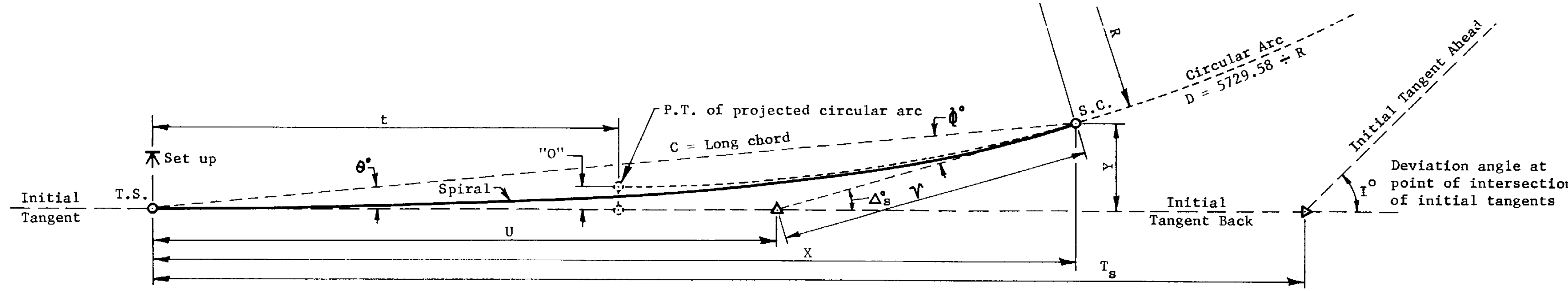
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev

TRANSITION SPIRAL TABLE FOR a = 5

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.29
Checked	JHB 1-71	
Approved Engr. Plans	G Heidecke 1-71	



L_s	D	R	"O"	t	Δ_s°	θ°	ϕ°	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	1-20- 0	4297.18	0.01	12.50	0-10- 0	0- 3-20	0- 6-40	8.33	16.67	25.00	25.00	0.02
50	2-40- 0	2148.59	0.05	25.00	0-40- 0	0-13-20	0-26-40	16.67	33.33	50.00	50.00	0.19
75	4- 0- 0	1432.39	0.16	37.50	1-30- 0	0-30- 0	1- 0- 0	25.00	50.00	75.00	74.99	0.65
100	5-20- 0	1074.30	0.39	50.00	2-40- 0	0-53-20	1-46-40	33.34	66.67	99.99	99.98	1.55
125	6-40- 0	859.44	0.76	62.49	4-10- 0	1-23-20	2-46-40	41.69	83.35	124.97	124.93	3.03
150	8- 0- 0	716.20	1.31	74.97	6- 0- 0	2- 0- 0	4- 0- 0	50.06	100.05	149.93	149.84	5.23

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compound curves, see Std. D-6.03.

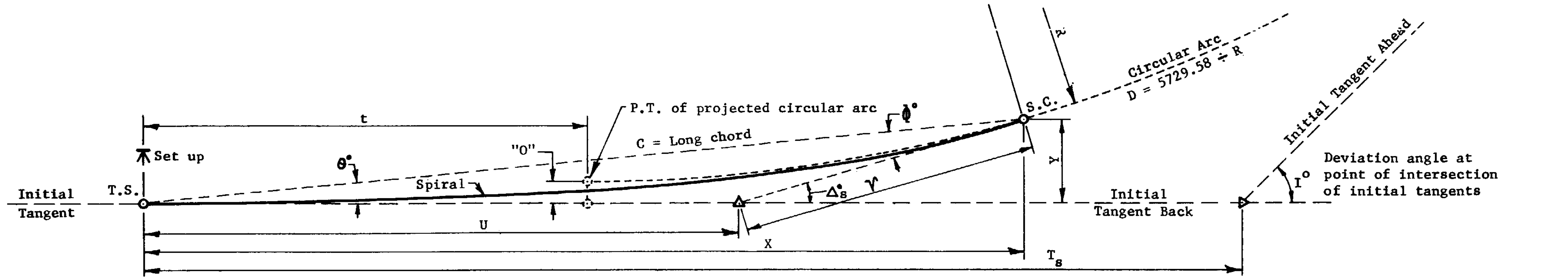
For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 5 1/3

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.30
Checked	JPD 1-71	
Approved Engr. Plans	GWeideche 1-71	Rev



L_s	D	R	"O"	t	Δ°_s	θ°	Φ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	1-22-30	4166.97	0.01	12.50	0-10-19	0- 3-26	0- 6-52	8.33	16.67	25.00	25.00	0.02
50	2-45- 0	2083.48	0.05	25.00	0-41-15	0-13-45	0-27-30	16.67	33.33	50.00	50.00	0.20
75	4- 7-30	1388.99	0.17	37.50	1-32-49	0-30-56	1- 1-53	25.00	50.00	75.00	74.99	0.67
100	5-30- 0	1041.74	0.40	50.00	2-45- 0	0-55- 0	1-50- 0	33.34	66.67	99.99	99.98	1.60
125	6-52-30	833.39	0.78	62.49	4-17-49	1-25-56	2-51-52	41.69	83.36	124.97	124.93	3.12
150	8-15- 0	694.49	1.35	74.97	6-11-15	2- 3-45	4- 7-30	50.06	100.06	149.92	149.82	5.40
175	9-37-30	595.28	2.14	87.44	8-25-19	2-48-26	5-36-52	58.46	116.79	174.83	174.62	8.56
200	11- 0- 0	520.87	3.20	99.88	11- 0- 0	3-40- 0	7-20- 0	66.92	133.57	199.67	199.26	12.77

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

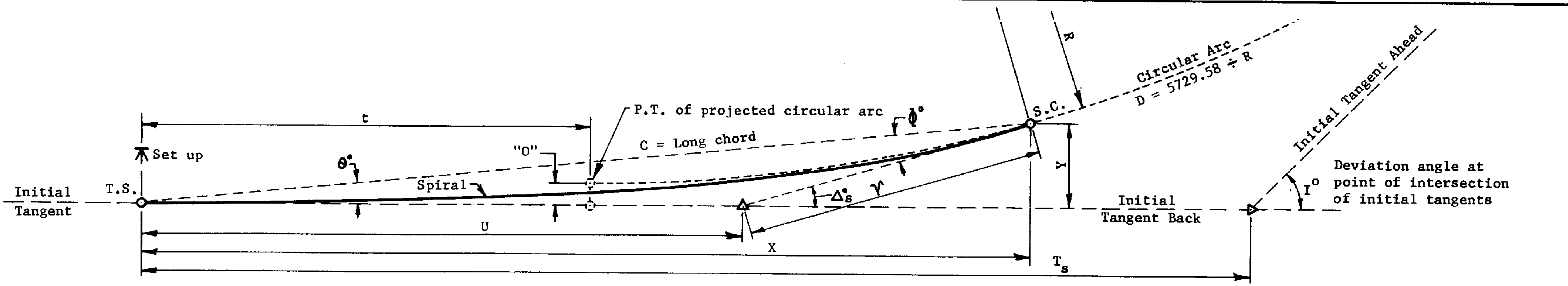
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev

TRANSITION SPIRAL TABLE FOR a = 5 1/2

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	
Checked	JPO 2-71	D-6.31
Approved Engr. Plans	[illegible] 2-71	



L_s	D	R	"O"	t	Δ_s°	θ°	ϕ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	1-30- 0	3819.72	0.01	12.50	0-11-15	0- 3-45	0- 7-30	8.33	16.67	25.00	25.00	0.03
50	3- 0- 0	1909.86	0.05	25.00	0-45- 0	0-15- 0	0-30- 0	16.67	33.33	50.00	50.00	0.22
75	4-30- 0	1273.24	0.18	37.50	1-41-15	0-33-45	1- 7-30	25.00	50.00	75.00	74.99	0.74
100	6- 0- 0	954.93	0.44	50.00	3- 0- 0	1- 0- 0	2- 0- 0	33.34	66.68	99.99	99.97	1.75
125	7-30- 0	763.94	0.85	62.49	4-41-15	1-33-45	3- 7-30	41.70	83.36	124.96	124.92	3.41
150	9- 0- 0	636.62	1.47	74.97	6-45- 0	2-15- 0	4-30- 0	50.07	100.07	149.91	149.79	5.89

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compound curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

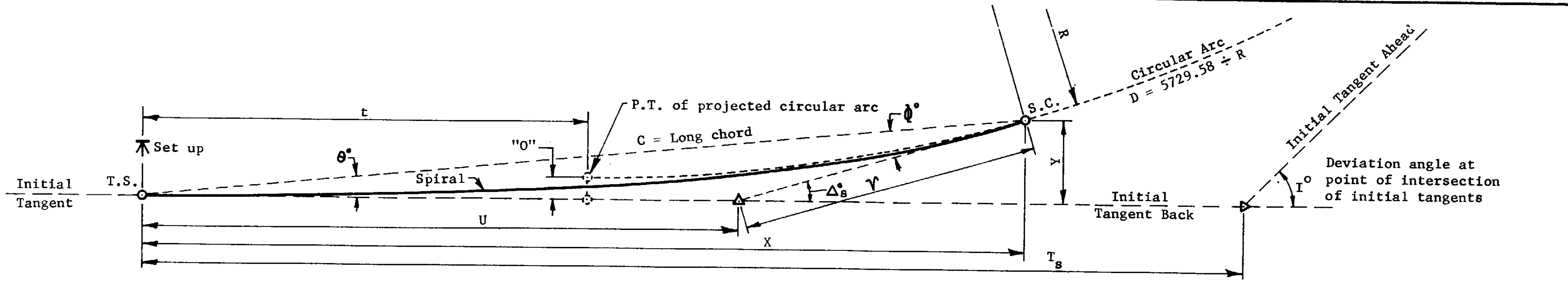
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 6

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.32
Checked	JPO 1-71	
Approved Engr. Plans	[signature] 1-71	

Rev



L_s	D	R	"O"	t	$\Delta°_s$	$\theta°$	$\phi°$	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	0-37-30	9167.32	0.00	5.00	0- 1-52	0- 0-38	0- 1-15	3.33	6.67	10.00	10.00	0.00
20	1-15- 0	4583.66	0.00	10.00	0- 7-30	0- 2-30	0- 5- 0	6.67	13.33	20.00	20.00	0.01
30	1-52-30	3055.77	0.01	15.00	0-16-52	0- 5-38	0-11-15	10.00	20.00	30.00	30.00	0.05
40	2-30- 0	2291.83	0.03	20.00	0-30- 0	0-10- 0	0-20- 0	13.33	26.67	40.00	40.00	0.12
50	3- 7-30	1833.46	0.06	25.00	0-46-53	0-15-38	0-31-15	16.67	33.33	50.00	50.00	0.23
60	3-45- 0	1527.89	0.10	30.00	1- 7-30	0-22-30	0-45- 0	20.00	40.00	60.00	60.00	0.39
70	4-22-30	1309.62	0.16	35.00	1-31-52	0-30-38	1- 1-15	23.34	46.67	70.00	69.99	0.62
80	5- 0- 0	1145.92	0.23	40.00	2- 0- 0	0-40- 0	1-20- 0	26.67	53.34	80.00	79.99	0.93
90	5-37-30	1018.59	0.33	45.00	2-31-52	0-50-38	1-41-15	30.01	60.01	89.99	89.98	1.33
100	6-15- 0	916.73	0.45	50.00	3- 7-30	1- 2-30	2- 5- 0	33.34	66.68	99.99	99.97	1.82
110	6-52-30	833.39	0.60	54.99	3-46-52	1-15-38	2-31-15	36.68	73.35	109.98	109.95	2.42
120	7-30- 0	763.94	0.79	59.99	4-30- 0	1-30- 0	3- 0- 0	40.03	80.02	119.97	119.93	3.14
130	8- 7-30	705.18	1.00	64.98	5-16-52	1-45-38	3-31-15	43.37	86.70	129.95	129.89	3.99
140	8-45- 0	654.81	1.25	69.97	6- 7-30	2- 2-30	4- 5- 0	46.72	93.38	139.93	139.84	4.99
150	9-22-30	611.15	1.53	74.96	7- 1-53	2-20-38	4-41-15	50.08	100.07	149.90	149.77	6.13
160	10- 0- 0	572.96	1.86	79.95	8- 0- 0	2-40- 0	5-20- 0	53.44	106.77	159.86	159.69	7.44

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

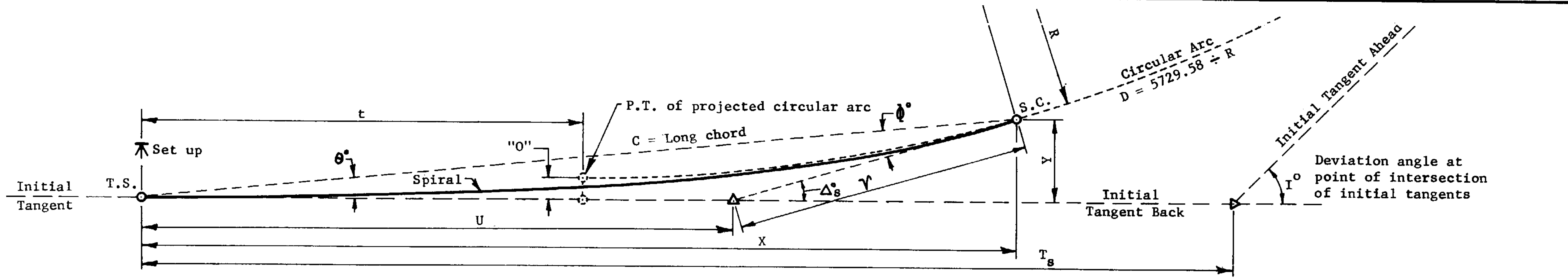
For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 6 1/4

Drawn	R.A.F. 1-71	Drawing No.	Rev
Traced	R.A.F. 1-71	D-6.33	
Checked	JPD 1-71		
Approved Engr. Plans	GHeidecker 1-71		



L_s	D	R	"O"	t	Δ_s°	θ°	ϕ°	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	1-37-30	3525.89	0.01	12.50	0-12-11	0- 4- 4	0- 8- 7	8.33	16.67	25.00	25.00	0.03
50	3-15- 0	1762.95	0.06	25.00	0-48-45	0-16-15	0-32-30	16.67	33.33	50.00	50.00	0.24
75	4-52-30	1175.30	0.20	37.50	1-49-41	0-36-34	1-13- 8	25.00	50.00	75.00	74.99	0.80
100	6-30- 0	881.47	0.47	49.99	3-15- 0	1- 5- 0	2-10- 0	33.34	66.68	99.99	99.97	1.89
125	8- 7-30	705.18	0.92	62.48	5- 4-41	1-41-34	3-23- 7	41.70	83.36	124.96	124.90	3.69
150	9-45- 0	587.65	1.59	74.96	7-18-45	2-26-15	4-52-30	50.08	100.08	149.89	149.76	6.37
175	11-22-30	503.70	2.53	87.41	9-57-11	3-19- 4	6-38- 7	58.52	116.84	174.76	174.47	10.11
200	13- 0- 0	440.74	3.78	99.83	13- 0- 0	4-20- 0	8-40- 0	67.02	133.66	199.54	198.97	15.08

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

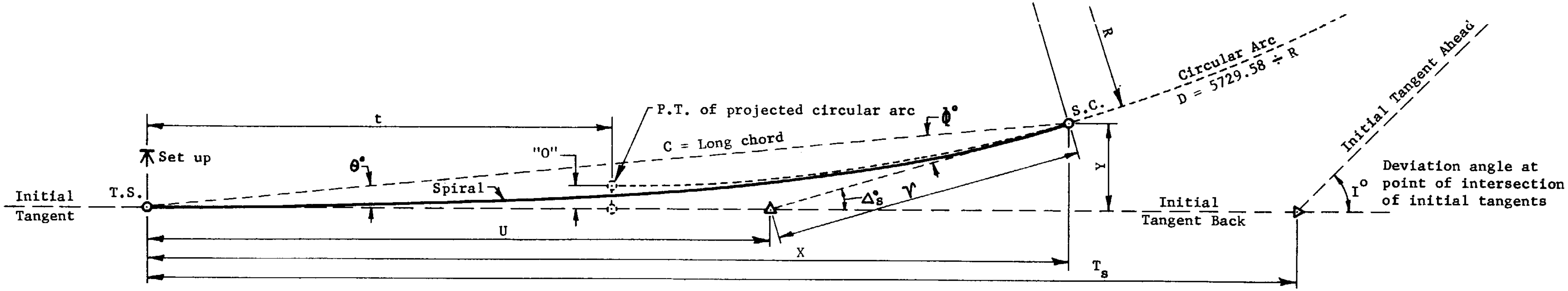
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

Rev

TRANSITION SPIRAL TABLE FOR a = 6 1/2

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	
Checked	JHO 1-71	D-6.34
Approved Engr. Plans	GWeidecker 1-71	



L_s	D	R	"O"	t	Δ°_s	θ°	ϕ°	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	1-40- 0	3437.75	0.01	12.50	0-12-30	0- 4-10	0- 8-20	8.33	16.67	25.00	25.00	0.03
50	3-20- 0	1718.87	0.06	25.00	0-50- 0	0-16-40	0-33-20	16.67	33.33	50.00	50.00	0.24
75	5- 0- 0	1145.92	0.20	37.50	1-52-30	0-37-30	1-15- 0	25.00	50.00	75.00	74.99	0.82
100	6-40- 0	859.44	0.48	49.99	3-20- 0	1- 6-40	2-13-20	33.35	66.68	99.98	99.97	1.94
125	8-20- 0	687.55	0.95	62.48	5-12-30	1-44-10	3-28-20	41.70	83.37	124.95	124.90	3.79
150	10- 0- 0	572.96	1.64	74.96	7-30- 0	2-30- 0	5- 0- 0	50.09	100.08	149.89	149.74	6.54

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

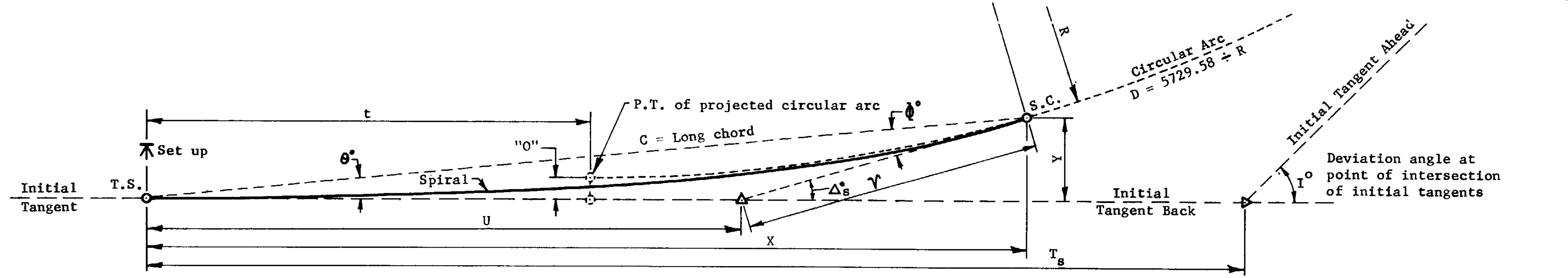
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 6 2/3

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.35
Checked	JPo 2-71	
Approved Engr. Plans	GWeidecker 2-71	

Rev



L_s	D	R	"O"	t	Δ°_s	θ°	Φ°	ν	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-C0	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	0-41-15	8333.93	0.00	5.00	0- 2- 4	0- 0-41	0- 1-22	3.33	6.67	10.00	10.00	0.00
20	1-22-30	4166.97	0.0C	10.00	0- 8-15	0- 2-45	0- 5-30	6.67	13.33	20.00	20.00	0.02
30	2- 3-45	2777.98	0.01	15.00	0-18-34	0- 6-11	0-12-22	10.00	20.00	30.00	30.00	0.05
40	2-45- 0	2083.48	0.03	20.00	0-33- 0	0-11- 0	0-22- 0	13.33	26.67	40.00	40.00	0.13
50	3-26-15	1666.79	0.06	25.00	0-51-34	0-17-11	0-34-22	16.67	33.33	50.00	50.00	0.25
60	4- 7-30	1388.99	0.11	30.00	1-14-15	0-24-45	0-49-30	20.00	40.00	60.00	60.00	0.43
70	4-48-45	1190.56	0.17	35.00	1-41- 4	0-33-41	1- 7-22	23.34	46.67	70.00	69.99	0.69
80	5-30- 0	1041.74	0.26	40.00	2-12- 0	0-44- 0	1-28- 0	26.67	53.34	79.99	79.99	1.02
90	6-11-15	925.99	0.36	45.00	2-47- 4	0-55-41	1-51-22	30.01	60.01	89.99	89.98	1.46
100	6-52-30	833.39	0.50	49.99	3-26-15	1- 8-45	2-17-30	33.35	66.68	99.98	99.96	2.00
110	7-33-45	757.63	0.67	54.99	4- 9-34	1-23-11	2-46-22	36.69	73.35	109.97	109.94	2.66
120	8-15- 0	694.49	0.86	59.99	4-57- 0	1-39- 0	3-18- 0	40.03	80.03	119.96	119.91	3.45
130	8-56-15	641.07	1.10	64.98	5-48-34	1-56-11	3-52-22	43.38	86.71	129.94	129.87	4.39
140	9-37-30	595.28	1.37	69.97	6-44-15	2-14-45	4-29-30	46.73	93.40	139.91	139.81	5.48
150	10-18-45	555.60	1.69	74.95	7-44- 4	2-34-41	5- 9-23	50.09	100.09	149.88	149.73	6.74
160	11- 0- 0	520.87	2.05	79.94	8-48- 0	2-56- 0	5-52- 0	53.46	106.79	159.83	159.62	8.18

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

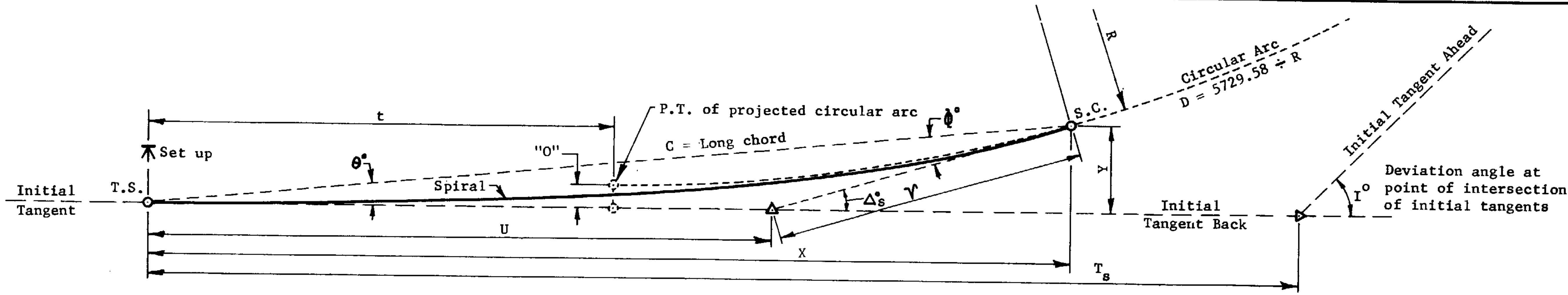
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 6 7/8

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.36
Checked	JPD 1-71	
Approved Engr. Plans	G Weideker 1-71	

Rev



L_s	D	R	"O"	t	Δ_s°	θ°	ϕ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	1-45- 0	3274.04	0.01	12.50	0-13- 8	0- 4-23	0- 8-45	8.33	16.67	25.00	25.00	0.03
50	3-30- 0	1637.02	0.06	25.CC	0-52-30	0-17-30	0-35- 0	16.67	33.33	50.00	50.00	0.25
75	5-15- 0	1091.35	0.21	37.50	1-58- 8	0-39-23	1-18-45	25.00	50.0C	75.00	74.99	0.86
100	7- 0- 0	818.51	0.51	49.99	3-30- 0	1-10- 0	2-20- 0	33.35	66.68	99.98	99.96	2.04
125	8-45- 0	654.81	0.99	62.48	5-28- 8	1-49-23	3-38-45	41.71	83.37	124.95	124.89	3.97
150	10-30- 0	545.67	1.72	74.95	7-52-30	2-37-30	5-15- 0	50.1C	100.09	149.87	149.72	6.86
175	12-15- 0	467.72	2.73	87.4C	10-43- 8	3-34-23	7- 8-45	58.55	116.86	174.73	174.39	10.89
200	14- 0- 0	409.26	4.07	99.80	14- 0- 0	4-40- 0	9-20- 0	67.08	133.72	199.47	198.81	16.23

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

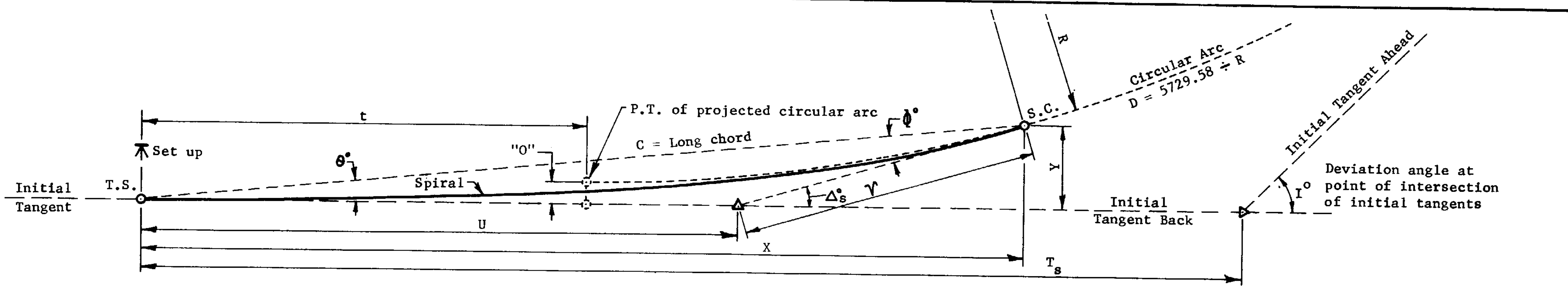
For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION		Rev
TRANSITION SPIRAL TABLE FOR a = 7		
Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	
Checked	JPO 1-71	D-6.37
Approved Engr. Plans	[illegible] 1-71	



L_s	D	R	"O"	t	$\Delta°_s$	$\theta°$	$\phi°$	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	0-45- 0	7639.44	0.00	5.00	0- 2-15	0- 0-45	0- 1-30	3.33	6.67	10.00	10.00	0.00
20	1-30- 0	3819.72	0.00	10.00	0- 9- 0	0- 3- 0	0- 6- 0	6.67	13.33	20.00	20.00	0.02
30	2-15- 0	2546.48	0.01	15.00	0-20-15	0- 6-45	0-13-30	10.00	20.00	30.00	30.00	0.06
40	3- 0- 0	1909.86	0.03	20.00	0-36- 0	0-12- 0	0-24- 0	13.33	26.67	40.00	40.00	0.14
50	3-45- 0	1527.89	0.07	25.00	0-56-15	0-18-45	0-37-30	16.67	33.33	50.00	50.00	0.27
60	4-30- 0	1273.24	0.12	30.00	1-21- 0	0-27- 0	0-54- 0	20.00	40.00	60.00	60.00	0.47
70	5-15- 0	1091.35	0.19	35.00	1-50-15	0-36-45	1-13-30	23.34	46.67	70.00	69.99	0.75
80	6- 0- 0	954.93	0.28	40.00	2-24- 0	0-48- 0	1-36- 0	26.67	53.34	79.99	79.99	1.12
90	6-45- 0	848.83	0.40	45.00	3- 2-15	1- 0-45	2- 1-30	30.01	60.01	89.99	89.97	1.59
100	7-30- 0	763.94	0.55	49.99	3-45- 0	1-15- 0	2-30- 0	33.35	66.68	99.98	99.96	2.18
110	8-15- 0	694.49	0.73	54.99	4-32-15	1-30-45	3- 1-30	36.69	73.36	109.97	109.93	2.90
120	9- 0- 0	636.62	0.94	59.98	5-24- 0	1-48- 0	3-36- 0	40.04	80.03	119.95	119.89	3.77
130	9-45- 0	587.65	1.20	64.97	6-20-15	2- 6-45	4-13-30	43.39	86.72	129.93	129.84	4.79
140	10-30- 0	545.67	1.50	69.96	7-21- 0	2-27- 0	4-54- 0	46.75	93.41	139.90	139.77	5.98
150	11-15- 0	509.30	1.84	74.95	8-26-15	2-48-45	5-37-30	50.11	100.10	149.85	149.67	7.35
160	12- 0- 0	477.46	2.23	79.93	9-36- 0	3-12- 0	6-24- 0	53.49	106.81	159.80	159.55	8.92

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

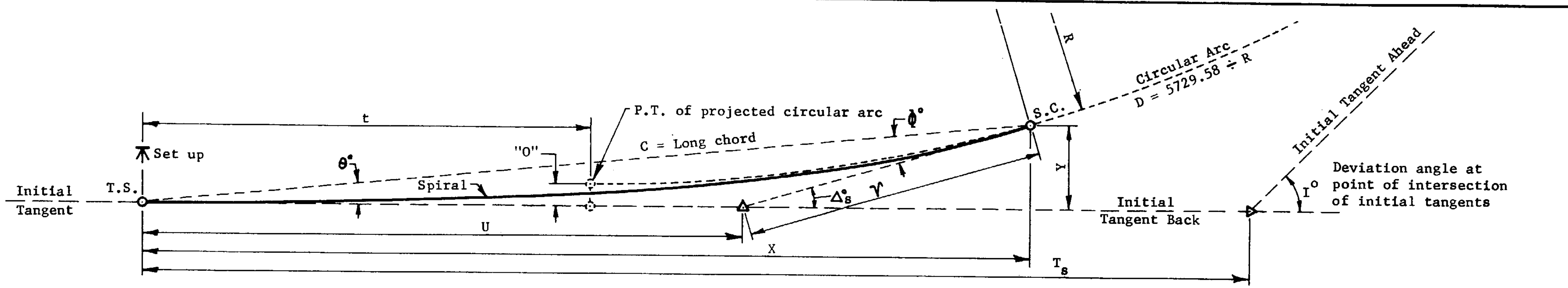
For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 7 1/2

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.38
Checked	JPO 1-71	
Approved Engr. Plans	[illegible] 1-71	
Rev		



L_s	D	R	"O"	t	Δ_s°	θ°	ϕ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	2- 0- 0	2864.79	0.01	12.50	0-15- 0	0- 5- 0	0-10- 0	8.33	16.67	25.00	25.00	0.04
50	4- 0- 0	1432.39	0.07	25.00	1- 0- 0	0-20- 0	0-40- 0	16.67	33.33	50.00	50.00	0.29
75	6- 0- 0	954.93	0.25	37.50	2-15- 0	0-45- 0	1-30- 0	25.00	50.00	74.99	74.99	0.98
100	8- 0- 0	716.20	0.58	49.99	4- 0- 0	1-20- 0	2-40- 0	33.35	66.68	99.98	99.95	2.33
125	10- 0- 0	572.96	1.14	62.48	6-15- 0	2- 5- 0	4-10- 0	41.72	83.38	124.93	124.85	4.54
150	12- 0- 0	477.46	1.96	74.94	9- 0- 0	3- 0- 0	6- 0- 0	50.13	100.12	149.83	149.63	7.84
175	14- 0- 0	409.26	3.12	87.37	12-15- 0	4- 5- 0	8-10- 0	58.61	116.92	174.64	174.20	12.44
200	16- 0- 0	358.10	4.65	99.74	16- 0- 0	5-20- 0	10-40- 0	67.21	133.84	199.30	198.44	18.53

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

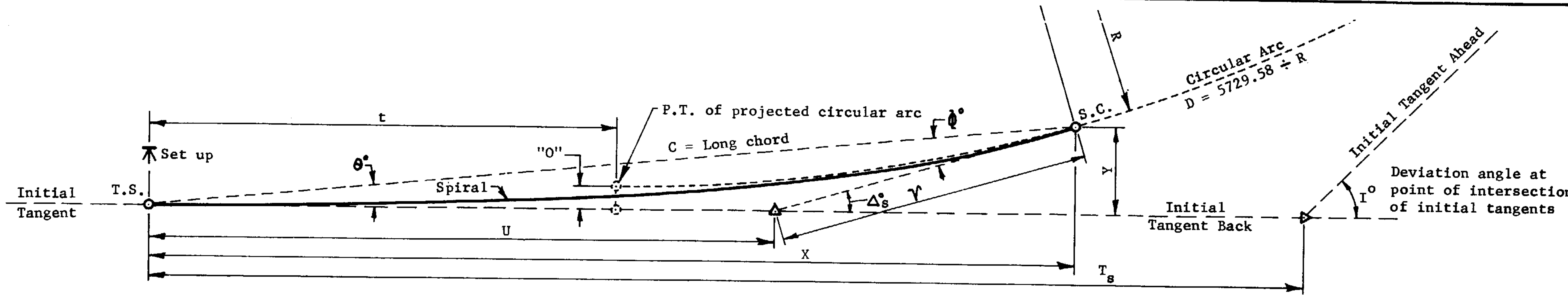
Rev

TRANSITION SPIRAL TABLE FOR $a = 8$

Drawn	R.A.F. 1-71
Traced	R.A.F. 1-71
Checked	[illegible] 1-71
Approved Engr. Plans	[illegible] 1-71

Drawing No.

D-6.39



L_s	D	R	"O"	t	Δ_s°	θ°	ϕ°	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	0-48-45	7051.79	0.00	5.00	0- 2-26	0- 0-49	0- 1-37	3.33	6.67	10.00	10.00	0.00
20	1-37-30	3525.89	0.00	10.00	0- 9-45	0- 3-15	0- 6-30	6.67	13.33	20.00	20.00	0.02
30	2-26-15	2350.60	0.02	15.00	0-21-56	0- 7-19	0-14-37	10.00	20.00	30.00	30.00	0.06
40	3-15- 0	1762.95	0.04	20.00	0-39- 0	0-13- 0	0-26- 0	13.33	26.67	40.00	40.00	0.15
50	4- 3-45	1410.36	0.07	25.00	1- 0-56	0-20-19	0-40-37	16.67	33.33	50.00	50.00	0.30
60	4-52-30	1175.30	0.13	30.00	1-27-45	0-29-15	0-58-30	20.00	40.00	60.00	60.00	0.51
70	5-41-15	1007.40	0.20	35.00	1-59-26	0-39-49	1-19-37	23.34	46.67	70.00	69.99	0.81
80	6-30- 0	881.47	0.30	40.00	2-36- 0	0-52- 0	1-44- 0	26.67	53.34	79.99	79.98	1.21
90	7-18-45	783.53	0.43	45.00	3-17-26	1- 5-49	2-11-37	30.01	60.01	89.99	89.97	1.72
100	8- 7-30	705.18	0.59	49.99	4- 3-45	1-21-15	2-42-30	33.35	66.68	99.98	99.95	2.36
110	8-56-15	641.07	0.79	54.99	4-54-56	1-38-19	3-16-37	36.69	73.36	109.96	109.92	3.14
120	9-45- 0	587.65	1.02	59.98	5-51- 0	1-57- 0	3-54- 0	40.04	80.04	119.94	119.87	4.08
130	10-33-45	542.45	1.30	64.97	6-51-56	2-17-19	4-34-37	43.40	86.73	129.92	129.81	5.19
140	11-22-30	503.70	1.62	69.95	7-57-45	2-39-15	5-18-30	46.76	93.42	139.88	139.73	6.48
150	12-11-15	470.12	1.99	74.94	9- 8-26	3- 2-49	6- 5-38	50.13	100.12	149.83	149.62	7.96
160	13- 0- 0	440.74	2.42	79.91	10-24- 0	3-28- 0	6-56- 0	53.52	106.84	159.76	159.47	9.66

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

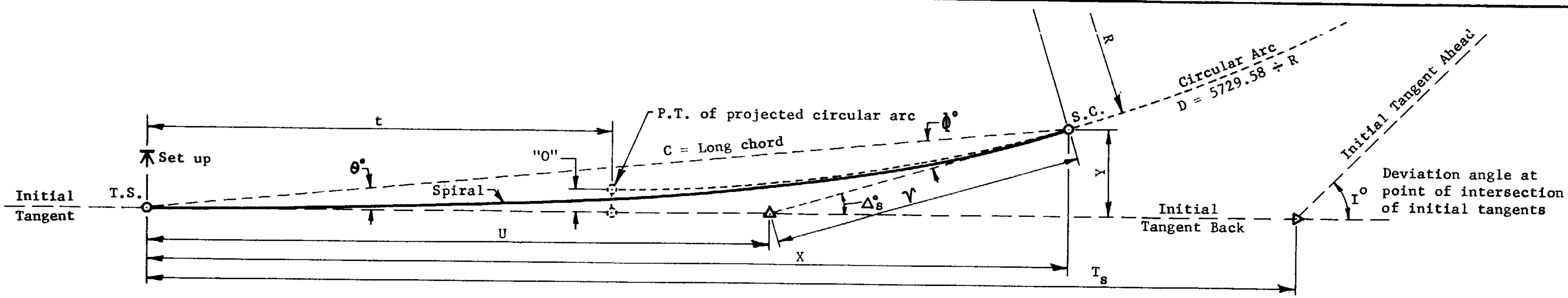
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 8 1/8

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	
Checked	JSO 2-71	D-6.40
Approved Engr. Plans	G. Weidecker 2-71	

Rev



L_s	D	R	"O"	t	$\Delta°_s$	$\theta°$	$\phi°$	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	0-52-30	6548.09	0.00	5.00	0- 2-37	0-.0-53	0- 1-45	3.33	6.67	10.00	10.00	0.00
20	1-45- 0	3274.04	0.01	10.00	0-10-30	0- 3-30	0- 7- 0	6.67	13.33	20.00	20.00	0.02
30	2-37-30	2182.70	0.02	15.00	0-23-37	0- 7-53	0-15-45	10.00	20.00	30.00	30.00	0.07
40	3-30- 0	1637.02	0.04	20.00	0-42- 0	0-14- 0	0-28- 0	13.33	26.67	40.00	40.00	0.16
50	4-22-30	1309.62	0.08	25.00	1- 5-38	0-21-53	0-43-45	16.67	33.33	50.00	50.00	0.32
60	5-15- 0	1091.35	0.14	30.00	1-34-30	0-31-30	1- 3- 0	20.00	40.00	60.00	60.00	0.55
70	6- 7-30	935.44	0.22	35.00	2- 8-37	0-42-53	1-25-45	23.34	46.67	70.00	69.99	0.87
80	7- 0- 0	818.51	0.33	40.00	2-48- 0	0-56- 0	1-52- 0	26.67	53.34	79.99	79.98	1.30
90	7-52-30	727.57	0.46	44.99	3-32-37	1-10-53	2-21-45	30.01	60.01	89.98	89.97	1.86
100	8-45- 0	654.81	0.64	49.99	4-22-30	1-27-30	2-55- 0	33.35	66.69	99.97	99.94	2.54
110	9-37-30	595.28	0.85	54.98	5-17-37	1-45-53	3-31-45	36.70	73.36	109.96	109.91	3.39
120	10-30- 0	545.67	1.10	59.98	6-18- 0	2- 6- 0	4-12- 0	40.05	80.05	119.94	119.85	4.39
130	11-22-30	503.70	1.40	64.96	7-23-37	2-27-53	4-55-45	43.41	86.74	129.90	129.78	5.59
140	12-15- 0	467.72	1.75	69.95	8-34-30	2-51-30	5-43- 0	46.78	93.43	139.86	139.69	6.97
150	13- 7-30	436.54	2.15	74.93	9-50-38	3-16-53	6-33-45	50.15	100.14	149.80	149.56	8.57
160	14- 0- 0	409.26	2.61	79.90	11-12- 0	3-44- 0	7-28- 0	53.55	106.86	159.73	159.39	10.40

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

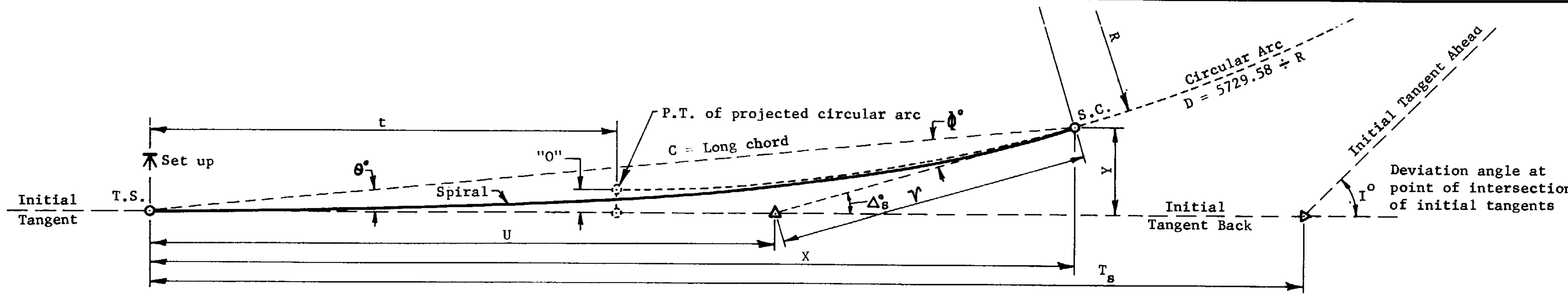
For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION		Rev
TRANSITION SPIRAL TABLE FOR a = 8 3/4		
Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	
Checked	JPO 2-71	D-6.41
Approved Engr. Plans	G.Weidenbaum 2-71	



L_s	D	R	"O"	t	$\Delta_s°$	$\theta°$	$\Phi°$	γ	U	C	X	Y
00	00-00-00	00.00	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
25	2-15- 0	2546.48	0.01	12.50	0-16-53	0- 5-38	0-11-15	8.33	16.67	25.00	25.00	0.04
50	4-30- 0	1273.24	0.08	25.00	1- 7-30	0-22-30	0-45- 0	16.67	33.33	50.00	50.00	0.33
75	6-45- 0	848.83	0.28	37.50	2-31-53	0-50-38	1-41-15	25.01	50.00	74.99	74.99	1.10
100	9- 0- 0	636.62	0.65	49.99	4-30- 0	1-30- 0	3- 0- 0	33.35	66.69	99.97	99.94	2.62
125	11-15- 0	509.30	1.28	62.47	7- 1-53	2-20-38	4-41-15	41.73	83.39	124.92	124.81	5.11
150	13-30- 0	424.41	2.21	74.92	10- 7-30	3-22-30	6-45- 0	50.16	100.15	149.79	149.53	8.82
175	15-45- 0	363.78	3.51	87.33	13-46-53	4-35-38	9-11-15	58.68	116.99	174.55	173.99	13.98
200	18- 0- 0	318.31	5.23	99.67	18- 0- 0	6- 0- 0	12- 0- 0	67.35	133.97	199.12	198.03	20.81

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compund curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

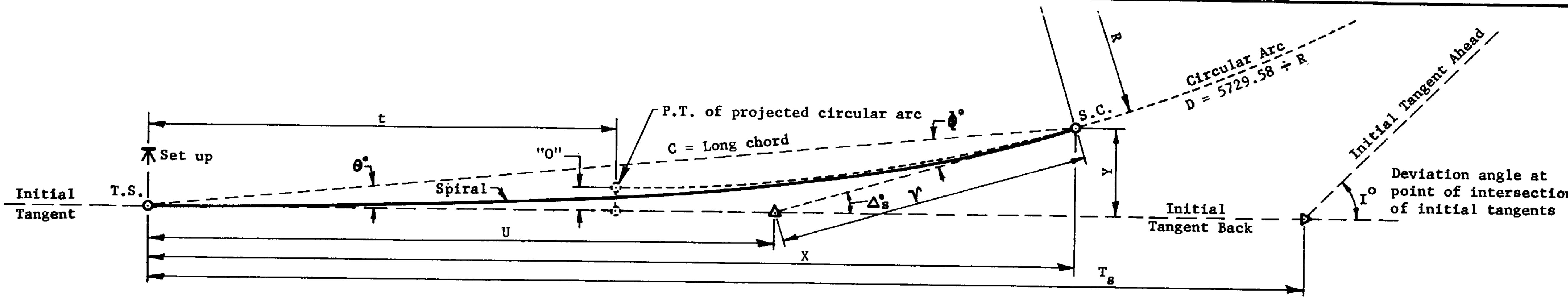
For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 9

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.42
Checked	JPO 1-71	
Approved Engr. Plans	[illegible signature] -71	

Rev



L_s	D	R	"O"	t	Δ°_s	θ°	ϕ°	γ	U	C	X	Y
0	00-00-00	INFINITY	0.00	0.00	00-00-00	00-00-00	00-00-00	0.00	0.00	0.00	0.00	0.00
10	1-00-00	5,729.58	--	5.00	0-03-00	0-01-00	0-02-00	3.33	6.67	10.00	10.00	--
20	2-00-00	2,864.79	.01	10.00	0-12-00	0-04-00	0-08-00	6.67	13.33	20.00	20.00	.02
30	3-00-00	1,909.86	.02	15.00	0-27-00	0-09-00	0-18-00	10.00	20.00	30.00	30.00	.08
40	4-00-00	1,432.40	.05	20.00	0-48-00	0-16-00	0-32-00	13.33	26.67	40.00	40.00	.19
50	5-00-00	1,145.92	.09	25.00	1-15-00	0-25-00	0-50-00	16.67	33.33	50.00	50.00	.36
60	6-00-00	954.93	.16	30.00	1-48-00	0-36-00	1-12-00	20.00	40.00	60.00	60.00	.63
70	7-00-00	818.51	.25	35.00	2-27-00	0-49-00	1-38-00	23.33	46.67	69.99	69.98	1.00
80	8-00-00	716.20	.37	40.00	3-12-00	1-04-00	2-08-00	26.68	53.35	79.99	79.98	1.49
90	9-00-00	636.62	.53	45.00	4-03-00	1-21-00	2-42-00	30.01	60.02	89.98	89.96	2.12
100	10-00-00	572.96	.73	49.99	5-00-00	1-40-00	3-20-00	33.36	66.69	99.97	99.93	2.91
110	11-00-00	520.87	.97	54.98	6-03-00	2-01-00	4-02-00	36.71	73.38	109.95	109.88	3.87
120	12-00-00	477.47	1.26	59.97	7-12-00	2-24-00	4-48-00	40.07	80.07	119.92	119.81	5.02
130	13-00-00	440.74	1.60	64.95	8-27-00	2-49-00	5-38-00	43.43	86.75	129.87	129.71	6.38
140	14-00-00	409.26	1.99	69.93	9-48-00	3-16-00	6-32-00	46.81	93.47	139.82	139.59	7.96
150	15-00-00	381.97	2.45	74.90	11-15-00	3-45-00	7-30-00	50.20	100.19	149.75	149.43	9.79
160	16-00-00	358.10	2.97	79.87	12-48-00	4-16-00	8-32-00	53.61	106.92	159.64	159.20	11.88
170	17-00-00	337.03	3.56	84.82	14-27-00	4-49-00	9-38-00	57.04	113.68	169.52	168.92	14.23
180	18-00-00	318.31	4.24	89.76	16-12-00	5-24-00	10-48-00	60.50	120.46	179.36	178.56	16.88
190	19-00-00	301.56	4.99	94.68	18-03-00	6-01-00	12-02-00	63.99	127.27	189.16	188.12	19.83
200	20-00-00	286.48	5.82	99.59	20-00-00	6-40-00	13-20-00	67.52	134.13	198.92	197.57	23.09
210	21-00-00	272.84	6.73	104.48	22-03-00	7-21-00	14-42-00	71.09	141.01	208.61	206.90	26.69
220	22-00-00	260.44	7.74	109.35	24-12-00	8-04-00	16-08-00	74.71	147.94	218.25	216.09	30.63
230	23-00-00	249.11	8.84	114.18	26-27-00	8-49-00	17-38-00	78.39	154.93	227.81	225.12	34.92
240	24-00-00	238.73	10.05	118.99	28-48-00	9-36-00	19-12-00	82.14	161.99	237.29	233.97	39.57
250	25-00-00	229.18	11.35	123.76	31-15-00	10-25-00	20-50-00	85.98	169.11	246.68	242.61	44.60
260	26-00-00	220.37	12.78	128.49	33-48-00	11-16-00	22-32-00	89.90	176.32	255.96	251.03	50.01
270	27-00-00	212.21	14.31	133.18	36-27-00	12-09-00	24-18-00	93.92	183.63	265.12	259.18	55.80
280	28-00-00	204.63	15.96	137.81	39-12-00	13-04-00	26-08-00	98.21	191.05	274.15	267.05	62.07

GENERAL NOTES

For definitions of spiral values and their applicable formulae, see Std. D-6.01.

For deflection angle formulae for an instrument set-up at a point on spiral, see Std. D-6.01.

For partial transition spiral formulae, see Std. D-6.02.

For spiral transition between compound curves, see Std. D-6.03.

For curvature, superelevation and superelevation transition standards, see Std. D-6.04, D-6.05 and D-6.06.

For superelevation distribution, see Std. D-6.07.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

TRANSITION SPIRAL TABLE FOR a = 10

Drawn	R.A.F. 1-71	Drawing No.
Traced	R.A.F. 1-71	D-6.43
Checked	[illegible] 1-71	
Approved Engr. Plans	[illegible] 1-71	

Rev

NAME OF HIGHWAY
NAME OF SECTION
NAME OF COUNTY

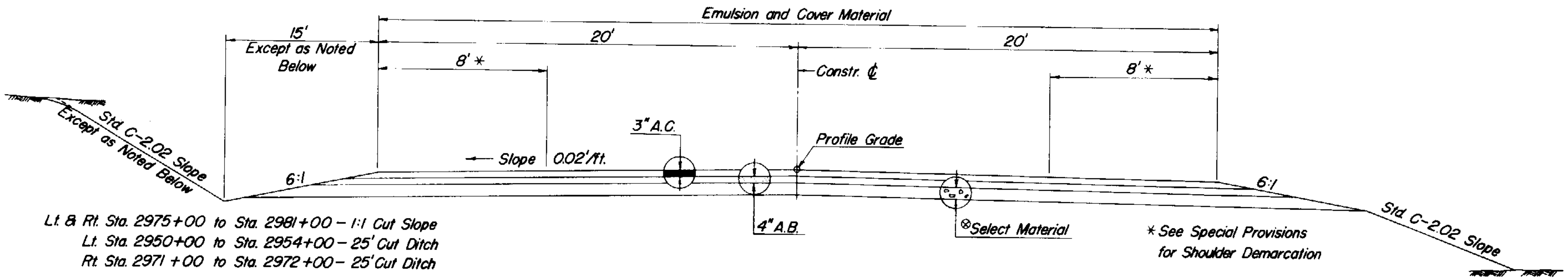
DESIGN DATA
1968 A.D.T. = 1,000
1988 A.D.T. = 2,500
Min. Design Speed 70 M.P.H.

To appear and be used only on Plans prepared by a Consulting Engineer

CONSULTANT SEAL

B.P.R. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
7	ARIZ		2	24	

DATE — FOR THE CONSULTING ENGINEER
DESIGN: DRAWN: CHECKED:



Lt. & Rt. Sta. 2975+00 to Sta. 2981+00 – 1:1 Cut Slope
Lt. Sta. 2950+00 to Sta. 2954+00 – 25' Cut Ditch
Rt. Sta. 2971+00 to Sta. 2972+00 – 25' Cut Ditch

* See Special Provisions for Shoulder Demarcation

TYPICAL SECTION

LENGTH OF PROJECT

Sta. 2748+31.97 to Sta. 2989+24.90 Bk. = 24,092.93'
Sta. 2989+27.50 Ahd. to Sta. 3017+12.17 = 2,784.67'
Total = 26,877.60'
Net and Gross Length = 5.090 Miles
Mile Post 165.85 to Mile Post 160.76

INDEX OF SHEETS

ROADWAY CONSTRUCTION STANDARDS 1968

C-1.01	C-6.01	C-10.03	C-12.02	C-13.11	C-17.03
C-2.02	C-6.02	C-10.04	C-13.01	C-14.01	C-21.01
C-3.01	C-9 Series	C-11.01	C-13.02	C-14.02	C-21.02
C-4.01	C-10.01	C-11.02	C-13.08	C-14.03	
C-4.02	C-10.02	C-12.01	C-13.10	C-17.01	

NEW PIPE CULVERT

Station	Size	Length	C.M.P. Gauge $2\frac{2}{3} \times \frac{1}{2}$	C.M.P. Gauge 3X1	R.C.P. Placement	R.C.P. Class	Remarks
2875+05	24"	86'	14	—	Type I	III	30° Sk. Lt.
2886+00	2-36"	76'	12	14	Type I	IV	
2960+20	42"	92'	12	14	Type 2	III	
2970+50	24"	78'	16	—	Type I	III	"L" Hdwl. Rt. Std. C-14.01
2973+10	54"	90'	14	14	Type I	II	Spec. Hdwls. Lt. & Rt.

NEW CORRUGATED METAL PIPE

Station	Size	Length	Gauge $2\frac{2}{3} \times \frac{1}{2}$	Gauge 3X1	Remarks
3008+00	24"	50'	in place		Ext. 20' Lt. & 30' Rt. 16Ga.
3015+00	48"	78'	10	14	30° Sk. Rt. Hdwl. Rt. Std. C-14.02

NEW CORRUGATED METAL PIPE ARCH

Station	Size	Length	Gauge	Remarks
2986+00	29"X18"	72'	14	—

NEW STRUCTURAL PLATE PIPE

Station	Size	Length	Remarks
3165+25	96"	120'	See special detail

EMBANKMENT CURB & SPILLWAY

Std. C-4.01

3065 Lin. Ft. Curb

Station	Inlet	Length	Outlet
Lt. 2970+00	Sgl.	36'	—
Lt. 2972+50	Sgl.	41'	1
Lt. 2993+50	Dbl.	32'	1
Rt. 2993+50	Dbl.	32'	1
Lt. 2996+50	Dbl.	40'	—

C.M.P. DOWNDRAIN

Std. C-4.02

Station	Inlet	Length	Elbow	Anchor Stakes	Outlet
Rt. 2769+69	Sgl.	38'	1-30°	8	1
Lt. 2934+25	Dbl.	38'	2-30°	8	—
Rt. 3009+70	Sgl.	42'	1-30°	10	1

BANK PROTECTION

Std. C-17.01
1,350 Lin. Ft., Type I, h=3'
255 Lin. Ft., Type I, h=1'

RIPRAP

140 C.Y. Type 3 Std. C-17.03

LINE FENCE AND GATES

Std. C-12.01; C-12.02
3,400 Lin. Ft., 4-Wire Game Fence
13,600 Lin. Ft., 4-Wire Fence
9,890 Lin. Ft., Reconstruct 4-Wire Fence
8 Gates, Type 1
3 Gates, Type 2

⊗SELECT MATERIAL THICKNESS

Station	to Station	Inches
2748+31.97	2813+00	12"
2813+00	2839+00	15"
2839+00	2896+00	12"
2896+00	2924+34	6"
2924+34	3017+12.17	12"

GUARD RAIL

Std. C-10 Series
900 Lin. Ft.

CATTLE GUARD

Station	Units	Remarks
Rt. 2950+00	2	Without Gate Std. C-11.02
Lt. 2992+58	2	With Gate Std. C-11.01

SURVEY MONUMENT AND COVER

3 ea. Std. C-21.01

RIGHT OF WAY MARKERS

51 ea. Std. C-21.01

DELINEATORS

Std. C-9 Series
106 – Type M8-1
4 – Type M9-3V
2 – Type M9-3H

GENERAL NOTES

Right of way encroachments shall be removed by order of the State unless otherwise noted.

All right of way provisions shall be complied with before job acceptance.

Striping of finished roadway shall be for standard 2-lane, 2-way operation.

Bench markers will be furnished by the State and placed by the Contractor. Std. C-21.02.

Right of way markers shall be furnished and placed by the Contractor as directed by the Engineer. Std. C-21.01.

Mile post markers will be furnished by the State and placed by the Engineer.

Changes in location or length of spillway installations may be made by the Engineer to improve drainage conditions.

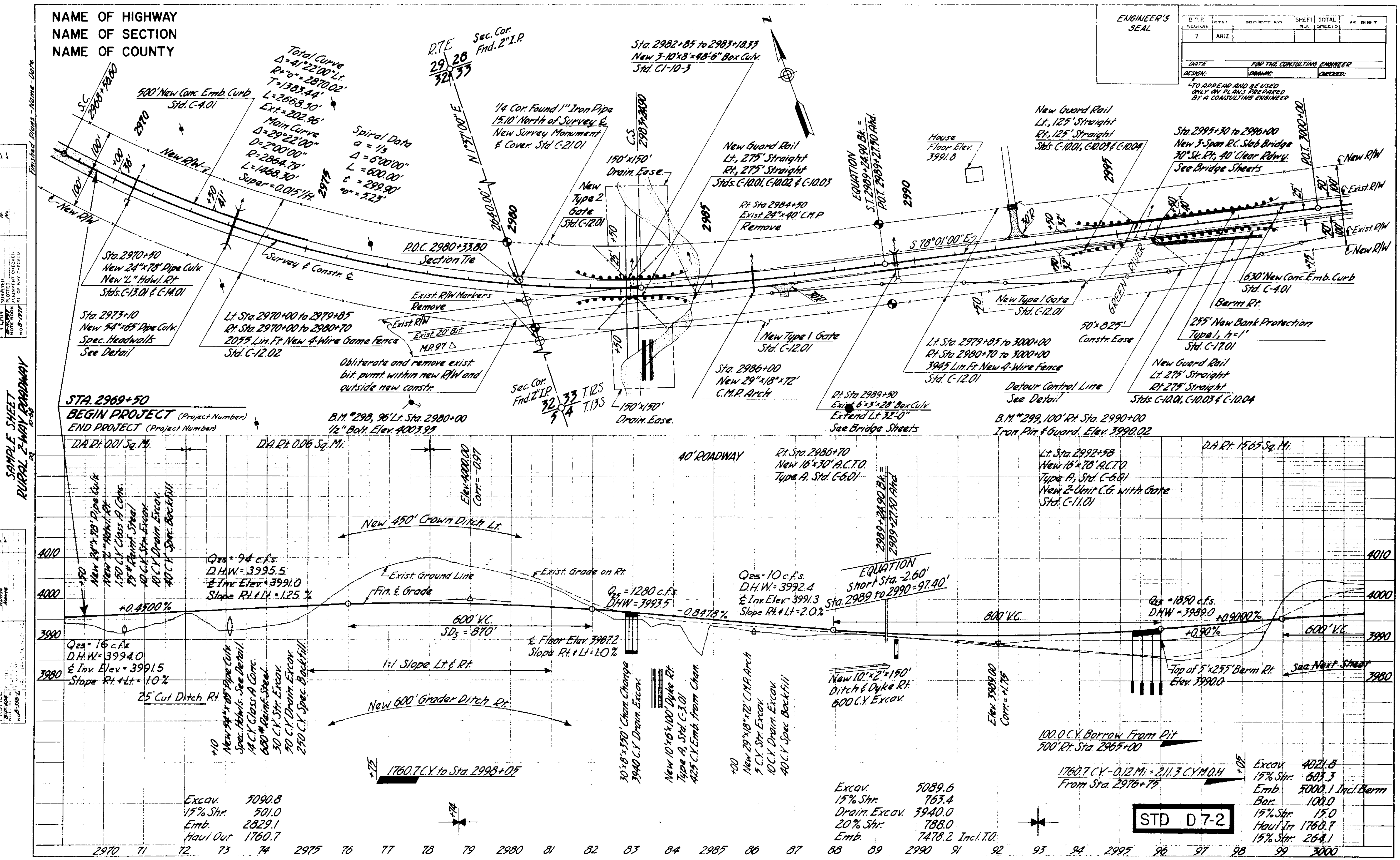
NOTE: If LEROY lettering is used, use a No. 200 template with a No. 2 pen point for titles. For quantities use a No. 175 template with a No. 1 pen point.
If lettered in freehand, use No. 6 Ames Lettering Guide lines with No. 2 Rapidograph for titles. For quantities use No. 6 Ames Lettering Guide lines with No. 1 Rapidograph.

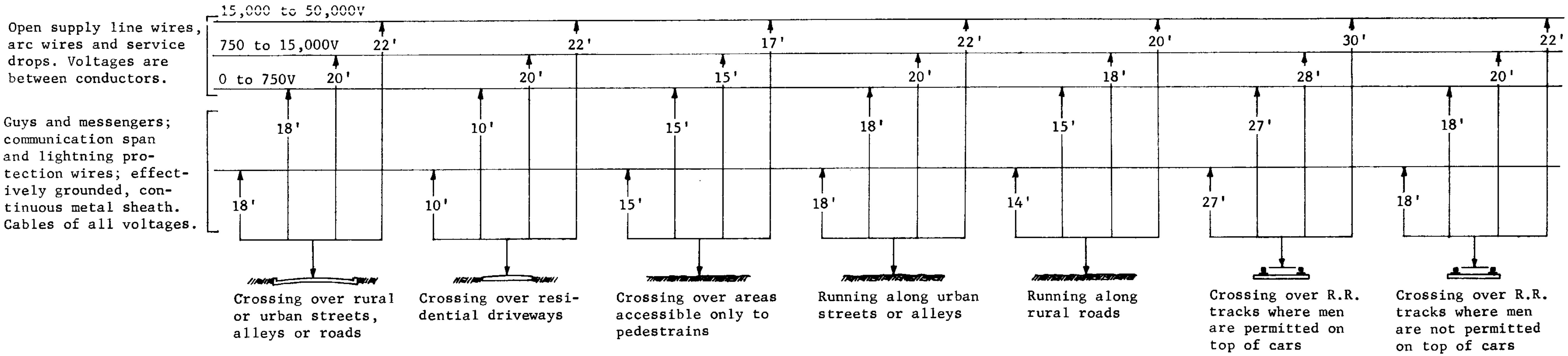
Finished Plans – Name – Date

SAMPLE SHEET
RURAL 2-WAY ROADWAY
R.A.F. 10-9-68

D 7-1

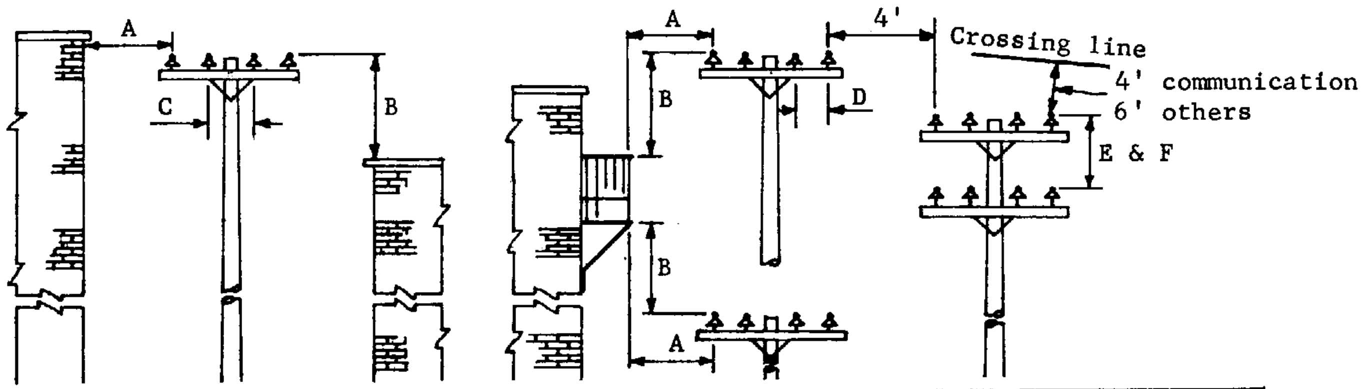
SAMPLE SHEET


NAME OF HIGHWAY
NAME OF SECTION
NAME OF COUNTY
ENGINEER'S SEAL
7 ARIZ.
FOR THE CONSULTING ENGINEER
TO APPEAR AND BE USED ONLY ON PLANS PREPARED BY A CONSULTING ENGINEER
S.C. 2968+56.60
500' New Conc. Emb. Curb Std. C-4.01
Total Curve Δ=41°22'00" Lt. R="o"=2870.02' T=1383.44' L=2668.30' Ext.=202.96'
Main Curve Δ=29°22'00" D=2°00'00" R=2864.79' L=1468.30' Super=0.015'/ft.
Spiral Data a=1/3 Δ=6°00'00" L=600.00' t=299.90' "o"=5.23'
R.7E 29 28 32 33 Sec. Cor. Fnd. 2" I.P.
N 1°37'00" E 2640.00'
1/4 Cor. Found 1" Iron Pipe 15.10' North of Survey ℄ New Survey Monument & Cover Std. C-21.01
Sta. 2982+85 to 2983+18.33 New 3-10'x8'x48'-6" Box Culv. Std. C1-10-3
C.S. 2983+24.90
150'x150' Drain. Ease.
New Type 2 Gate Std. C-12.01
New Guard Rail Lt. 275' Straight Rt. 275' Straight Stds. C-10.01, C-10.02 & C-10.03
Rt. Sta. 2984+50 Exist. 24"x40" C.M.P. Remove
EQUATION S.T. 2989+24.90 Bk. = P.O.T. 2989+27.50 Ahd.
House Floor Elev. 3991.8
New Guard Rail Lt. 125' Straight Rt. 125' Straight Stds. C-10.01, C-10.03 & C-10.04
Sta. 2995+30 to 2996+00 New 3-Span R.C. Slab Bridge 30° Sk. Rt. 40' Clear Rdwy. See Bridge Sheets
P.O.T. 3000+00
New R/W
Exist. R/W
℄ New R/W
New R/W
Sta. 2970+50 New 24"x78' Pipe Culv. New "L" Hdwl. Rt. Stds. C-13.01 & C-14.01
Survey & Constr. ℄
P.O.C. 2980+33.80 Section Tie
S 78°01'00" E
Exist. R/W Markers Remove
Exist. R/W
Exist. 20' Bit.
M.P. 97
Sta. 2973+10 New 54"x65' Pipe Culv. Spec. Headwalls See Detail
Lt. Sta. 2970+00 to 2979+85 Rt. Sta. 2970+00 to 2980+70 2055 Lin. Ft. New 4-Wire Game Fence Std. C-12.02
Obliterate and remove exist. bit. pvmt. within new R/W and outside new constr.
New Type 1 Gate Std. C-12.01
Sta. 2986+00 New 29"x18"x72' C.M.P. Arch
Lt. Sta. 2979+85 to 3000+00 Rt. Sta. 2980+70 to 3000+00 3945 Lin. Ft. New 4-Wire Fence Std. C-12.01
New Type 1 Gate Std. C-12.01
GREEN RIVER
50'x825' Constr. Ease.
630' New Conc. Emb. Curb Std. C-4.01
Berm Rt.
275' New Bank Protection Type 1, h=1' Std. C-17.01
New Guard Rail Lt. 275' Straight Rt. 275' Straight Stds. C-10.01, C-10.03 & C-10.04
Detour Control Line See Detail
Sec. Cor. Fnd. 2" I.P. 32 33 5 4 T.12S T.13S
150'x150' Drain. Ease.
Rt. Sta. 2989+50 Exist. 6'x3'x28' Box Culv. Extend Lt. 32'-0" See Bridge Sheets
STA. 2969+50 BEGIN PROJECT (Project Number) END PROJECT (Project Number)
B.M. #298, 96' Lt. Sta. 2980+00 1/2" Bolt. Elev. 4003.95
B.M. #299, 100' Rt. Sta. 2990+00 Iron Pin & Guard. Elev. 3990.02
D.A. Rt. 0.01 Sq. Mi.
D.A. Rt. 0.06 Sq. Mi.
40' ROADWAY
Rt. Sta. 2986+70 New 16'x70' A.C.T.O. Type A, Std. C-6.01
Lt. Sta. 2992+58 New 16'x70' A.C.T.O. Type A, Std. C-6.01 New 2-Unit C.G. with Gate Std. C-11.01
D.A. Rt. 15.65 Sq. Mi.
Elev. 4000.00 Corr. = -0.97
New 24"x78' Pipe Culv. New "L" Hdwl. Rt. 1.50 C.Y. Class A Conc. 19# Reinf. Steel 10 C.Y. Str. Excav. 10 C.Y. Drain. Excav. 40 C.Y. Spec. Backfill
New 450' Crown Ditch Lt.
2989+24.90 Bk. = 2989+27.50 Ahd.
Q25 = 94 c.f.s. D.H.W. = 3995.5 ℄ Inv. Elev. = 3991.0 Slope Rt. & Lt. = 1.25%
Exist. Ground Line
Exist. Grade on Rt.
Fin. ℄ Grade
Q25 = 1280 c.f.s. DHW = 3993.5
Q25 = 10 c.f.s. D.H.W. = 3992.4 ℄ Inv. Elev. = 3991.3 Slope Rt. & Lt. = 2.0%
EQUATION Short Sta. -2.60' Sta. 2989 to 2990 = 97.40'
Q25 = 1850 c.f.s. DHW = 3989.0
+0.4500%
600' V.C. SD5 = 870'
-0.8478%
800' V.C.
+0.9000%
+0.90%
600' V.C.
Q25 = 16 c.f.s. D.H.W. = 3994.0 ℄ Inv. Elev. = 3991.5 Slope Rt. & Lt. = 1.0%
℄ Floor Elev. 3987.2 Slope Rt. & Lt. = 1.0%
1:1 Slope Lt. & Rt.
25' Cut Ditch Rt.
New 600' Grader Ditch Rt.
New 54"x65' Pipe Culv. Spec. Hdwls. See Detail 14 C.Y. Class A Conc. 680# Reinf. Steel 30 C.Y. Str. Excav. 70 C.Y. Drain. Excav. 250 C.Y. Spec. Backfill
30'x8'x350' Chan. Change 3940 C.Y. Drain. Excav.
New 10'x6'x100' Dyke Rt. Type A, Std. C-3.01 425 C.Y. Emb. from Chan.
New 29"x18"x72' C.M.P. Arch 5 C.Y. Str. Excav. 10 C.Y. Drain. Excav. 40 C.Y. Spec. Backfill
New 10'x2'x150' Ditch & Dyke Rt. 600 C.Y. Excav.
Elev. 3989.00 Corr. = +1.75
Top of 5'x255' Berm Rt. Elev. 3990.0
See Next Sheet
100.0 C.Y. Borrow From Pit 500' Rt. Sta. 2965+00
1760.7 C.Y. to Sta. 2998+05
1760.7 C.Y. - 0.12 Mi. = 211.3 C.Y.M.O.H. From Sta. 2976+75
Excav. 5090.8 15% Shr. 501.0 Emb. 2829.1 Haul Out 1760.7
Excav. 5089.6 15% Shr. 763.4 Drain. Excav. 3940.0 20% Shr. 788.0 Emb. 7478.2 Incl. T.O.
Excav. 4021.8 15% Shr. 603.3 Emb. 5000.1 Incl. Berm Bor. 100.0 15% Shr. 15.0 Haul In 1760.7 15% Shr. 264.1
STD D 7-2
4010 4000 3990 3980
2970 71 72 73 74 2975 76 77 78 79 2980 81 82 83 84 2985 86 87 88 89 2990 91 92 93 94 2995 96 97 98 99 3000
SAMPLE SHEET RURAL 2-WAY ROADWAY
Finished Plans - Name - Date



* BASIC MINIMUM GROUND AND RAILROAD RAIL VERTICAL CLEARANCES

* Increase basic minimums:
1/2" for each 1000 V over 50,000 V
6" over ground for each 50' of span over 350' - light or medium loading
9" over rails for each 50' of span over 350' - light loading
18" over rails for each 50' of span over 350' - medium loading

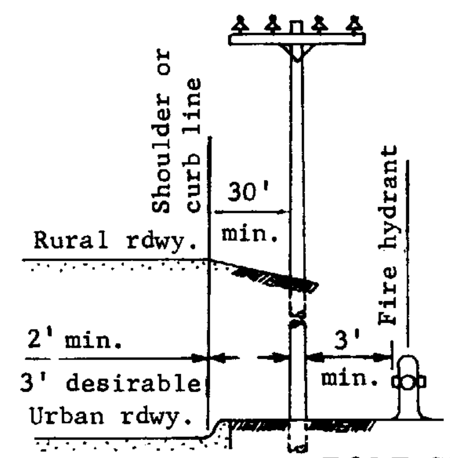


Line Description		A	B	C	D	E	F
Open supply line wires and service drops	0-750V	3'	8'	18"	12"	2'	4'
	750-15000V	8'	8'	3'	12"	4'	6'
	15000-50000V	10'	10'	3'	15"	4'	6'
Guys and messengers; communication, span and lightning protection wires; effectively grounded, continuous metal sheath. Cables of all voltages.		—	—	2'	6"	2'	4'

A = Horizontal clearance to buildings and other structures.
B = Vertical clearance to buildings and other structures.
C = Climbing space at pole.
D = Clearance between parallel conductors on same cross arm.
E = Vertical cross arm separation - same utility.
F = Vertical cross arm separation - different utilities.

** BASIC MINIMUM STRUCTURE AND LINE CLEARANCES

** Increase basic minimums A and B:
6" for each 50' of span over 150' for 8700 V to 50,000 V
1/2" for each 1000 V over 50,000, + 10'
Increase basic minimum D:
0.4 " for each 1000V over 7500V



Pole Height	DEPTH OF POLE SETTINGS: Soft Ground Straight Line	Soft Ground Corner	Solid Ground Straight Line	Solid Ground Corner	Solid rock
20'	5'	5'	5'	5'	3'
25'	5 1/2'	6'	5'	5 1/2'	3 1/2'
30'	6'	6 1/2'	5 1/2'	6'	3 1/2'
35'	6 1/2'	7'	6'	6 1/2'	4'
40'	7'	7 1/2'	6 1/2'	7'	4'
45'	7'	7 1/2'	6 1/2'	7'	4 1/2'
50'	7 1/2'	8'	7'	7 1/2'	4 1/2'
55'	8'	8 1/2'	7 1/2'	8'	5'
60'	8 1/2'	9'	8'	8 1/2'	5 1/2'
65'	9'	9 1/2'	8 1/2'	9'	6'

POLE CLEARANCE AND DEPTH SETTING DATA

GENERAL NOTES

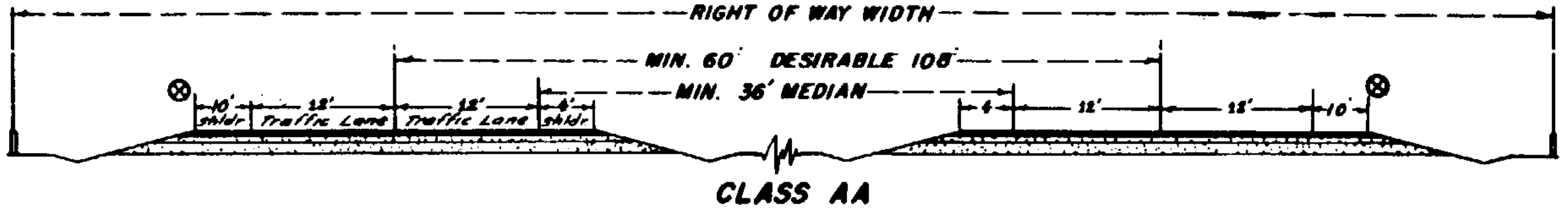
This Standard represents excerpts from "Safety Rules for Installation and Maintenance of Electrical Supply and Communication Lines", Dept. of Commerce, Bureau of Stds. Handbook No. 81, reprint of May 1, 1966 (approved by Ariz. State Industrial Comm.) and is to be considered as a guide only. The applicable standards established by the governing bodies and commissions shall be considered the final control.

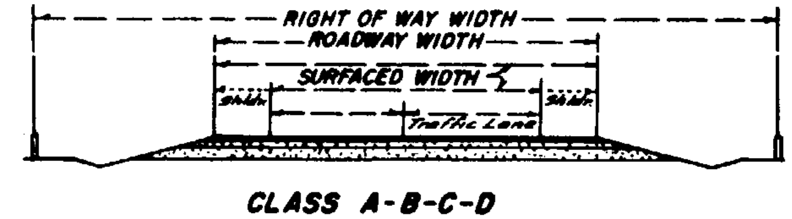
ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

MINIMUM CLEARANCES FOR UTILITY LINES & POLES AS RELATED TO HIGHWAYS

Drawn	D.G. 2-68	Drawing No.	Rev
Traced	D.G. 8-68	D-8.01	
Checked	J.P.O. JPO 4/72		
Approved Engr. Plans	JP Daley 4/72		

SUPERCEDES & REPLACES STD. D4-1





DESIGN CROSS SECTION INDEX	CLASS AA			CLASS A			CLASS B			CLASS C			CLASS D		
ADT (AVERAGE DAILY TRAFFIC)	5000 TO 15000			1000 TO 5000			300 TO 1000			50 TO 300			UNDER 50		
DHV (30TH HIGHEST HOUR)	600 TO 1800			120 TO 600			36 TO 120								
TERRAIN	FLAT	ROLL.	MTN.	FLAT	ROLL.	MTN.	FLAT	ROLL.	MTN.	FLAT	ROLL.	MTN.	FLAT	ROLL.	MTN.
DESIGN SPEED	80	70	60	80	70	60	70	60	50	60	50	40	50	40	30
ROADWAY WIDTH (INCL. PAVED SHLDRS.)	2-38' ⊗			40	40	40	34	34	34	28	28	28	26	26	26
TRAFFIC LANE WIDTH	12	12	12	12	12	12	12	12	12	10	10	10	10	10	10
NUMBER OF TRAFFIC LANES	4- DIVIDED			2	2	2	2	2	2	2	2	2	2	2	2
MEDIAN WIDTH	SEE CROSS SECTIONS			CURVE WIDENING 0.1 FT. PER LANE PER DEGREE OF CURVE (WHEN OVER D=5°)											
MAXIMUM CURVATURE, DEGREES	2°	4°	6°	2°	4°	6°	4°	6°	8°	6°	8°	14°	8°	14°	28°
DESIRABLE MAX. CURVATURE, DEGREES	1°	2°	4°	1°	2°	4°	2°	4°	6°	4°	6°	8°	6°	8°	14°
MIN. STOPPING SIGHT DIST. (EYE TO 6" OBJECT)	775	625	480	775	625	480	625	480	375	480	375	275	375	275	200
PASSING SIGHT DISTANCE (EYE TO EYE)				3200+	3200	2300	3200	2300	1600	2300	1600	1100	1600	1100	600
MAXIMUM GRADE	6%	6%	6%	6%	6%	6%	6%	6%	7%	6%	7%	8%	6%	8%	10%
DESIRABLE MAXIMUM GRADE	2%	3%	4%	2%	3%	4%	3%	4%	5%	4%	5%	6%	5%	6%	7%
MINIMUM R/W WIDTH	260	260	260	200	200	200	200	200	200	100	100	100	100	100	100
DESIRABLE MINIMUM WIDTH	308	308	308	250	250	250	250	250	250	200	200	200			

LING" TERRAIN INCLUDES HILLS WHICH MAY CALL FOR CUTS AS HIGH AS 80' ON ℄ WITH SHORT RUNS OF MAXIMUM GRADE.

MOUNTAIN" TERRAIN IMPLIES PRECIPITOUS CANYONS AND ESCARPMENTS WITH FORCED ALIGNMENT AND EXTENDED MAXIMUM GRADES.

"DESIRAB... 'S THE STANDARD AIMED FOR IF PHYSICAL FEATURES ALLOW. SIGHT DISTANCES LESS THAN "PASSING SIGHT DISTANCE" ARE PERMITTED, BUT AVOIDED IF POSSIBLE. THIS VALUE IS LISTED FOR THE PURPOSE OF DETERMINING WHAT PROPORTION OF THE LENGTH IS FULLY ADEQUATE.

WIDTH OF CLEAR ROADWAY ON STRUCTURES: * CLEAR ROADWAY WIDTH ON ALL STRUCTURES SHOULD BE EQUAL TO THE APPROACH ROADWAY INCLUDING SHOULDERS.

~~MAXIMUM SUPERELEVATION: 0.125 FT. PER FT. ACROSS ROADWAY IN LOCATIONS FREE OF SNOW AND ICE CONDITIONS.~~

~~0.083 FT. PER FT. ACROSS ROADWAY IN LOCATIONS WHERE SNOW AND ICE PREVAIL.~~

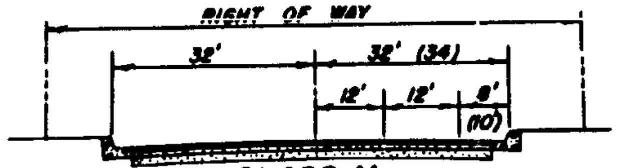
APPROVED: Wm. E. Willey
STATE HIGHWAY ENGINEER

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

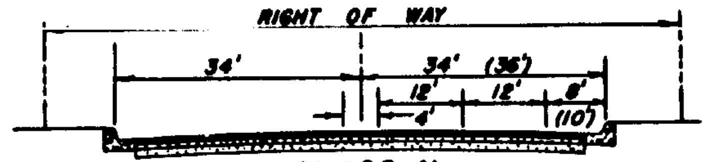
GEOMETRIC DESIGN STANDARDS FOR RURAL HIGHWAYS

DRAWN	D.C.	8-58	D8-1
CHECKED	C. Bowman	3-59	
APPROVED	H. Heidecker, ENGR. OF PLANS	3-24-59	

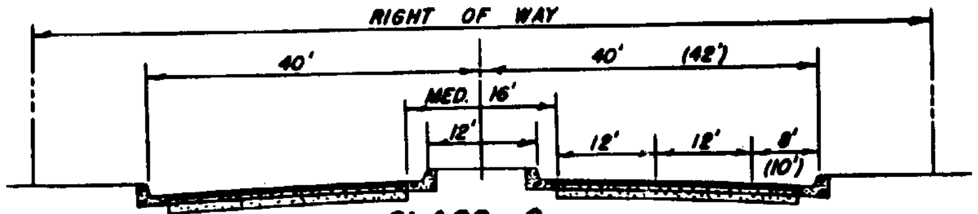
⊗ REV. 3-24-59, 2-3-60, * 1-16-68 R.A.F., 3-14-68 R.A.F.



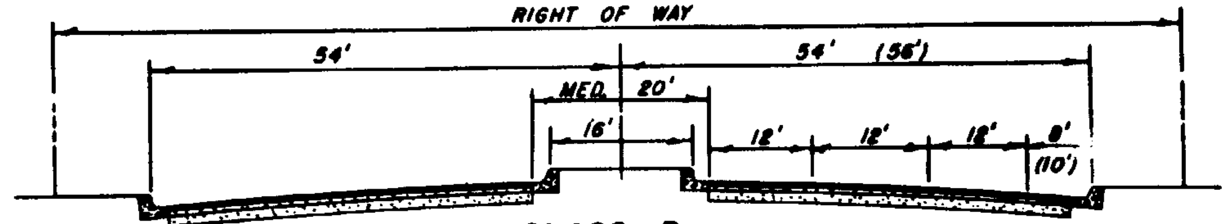
CLASS M



CLASS N



CLASS O



CLASS P

DESIGN CROSS SECTION INDEX	M	N	O	P
ADT (AVERAGE DAILY TRAFFIC)	3000 TO 5000	5000 TO 15000	15000 TO 25000	OVER 25000
DHV (30TH HIGHEST HOUR)	330 TO 550	550 TO 1650	1350 TO 2250	OVER 2250
NUMBER OF TRAFFIC LANES	4	4	4	6
DESIGN SPEED	60 M.P.H.	50 M.P.H.	45 M.P.H.	40 M.P.H.
ROADWAY WIDTH	64'-68'	68'-72'	80'-84'	108'-112'
INCLUDING 2-8' MINIMUM, 10' DESIRABLE PARKING LANES	UNDIVIDED CENTER	WITH 4' MEDIAN	WITH 16' MEDIAN WITH LEFT TURN SLOT	WITH 20' MEDIAN WITH LEFT TURN SLOT
TRAFFIC LANE WIDTH	12'	12'	12'	12'
MAXIMUM CURVATURE	6°00'	9°00'	11°15'	14°30'
DESIRABLE MAXIMUM CURVATURE	5°00'	7°30'	9°30'	12°30'
MINIMUM TURNING CURB RADIUS	20'	20'	20'	20'
MINIMUM STOPPING SIGHT DISTANCE (EYE TO 6" OBJECT)	475'	375'	325'	275'
MAXIMUM GRADE	6%	6%	6%	6%
DESIRABLE MAXIMUM GRADE	4%	4%	4%	4%
MINIMUM R/W WIDTH	80'	90'	100'	135'
DESIRABLE MINIMUM R/W WIDTH	100'	200'	250'	300'

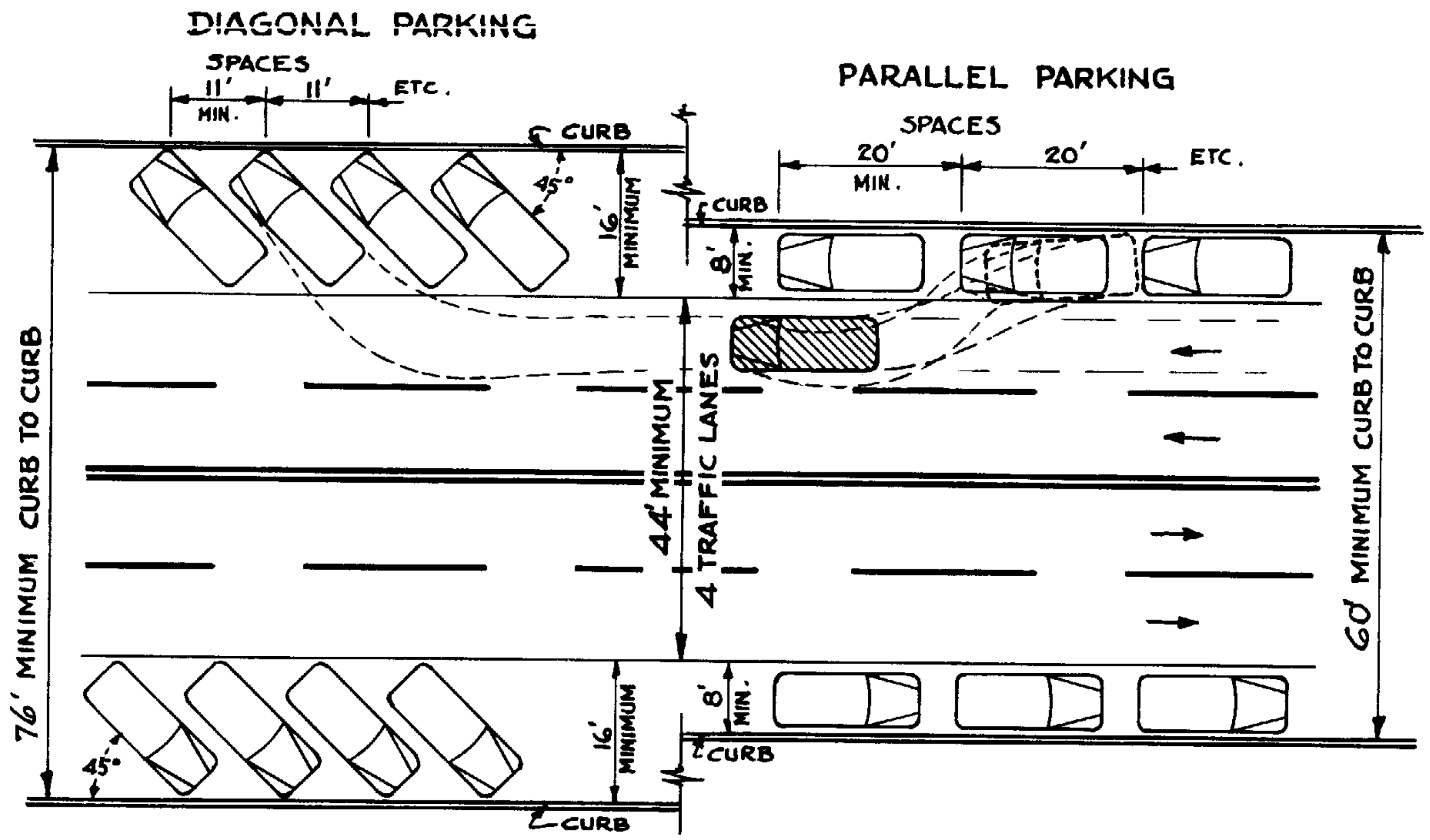
APPROVED: Wm. E. Willey
STATE HIGHWAY ENGINEER

NOTES:
- DESIRABLE IS THE STANDARD OR THE LIMIT AIMED FOR, IF PHYSICAL FEATURES ALLOW.
- SUPER ELEVATIONS FOR CURVES TO BE CONSISTANT WITH DESIGN SPEED. SAME AS FOR RURAL HIGHWAYS.
- IN LIEU OF OBTAINING SUFFICIENT R/W FOR ROADWAYS INDICATED ABOVE, IT IS SUGGESTED THAT CONSIDERATION BE GIVEN TO THE ADVANTAGES OF A FACILITY COMPOSED OF A PAIR OF PARALLEL AND ADJACENT ONE WAY STREETS.
- CONTROLLED ACCESS WITH FRONTAGE ROADS CAN BE PROVIDED IN R/W 250' AND PREFERABLY 300' IN LIEU OF LIMITED ACCESS LAW.

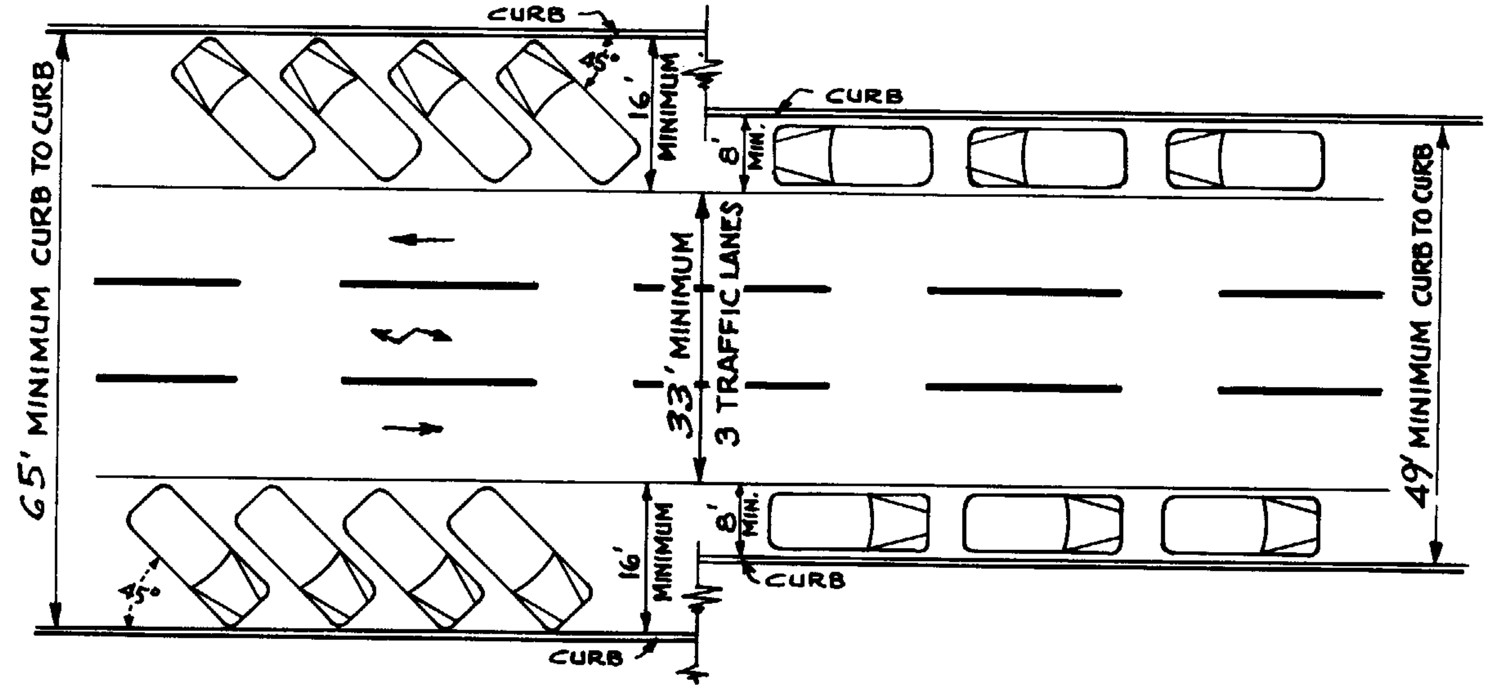
ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

GEOMETRIC DESIGN STANDARDS FOR URBAN AND URBAN CHARACTER HIGHWAYS

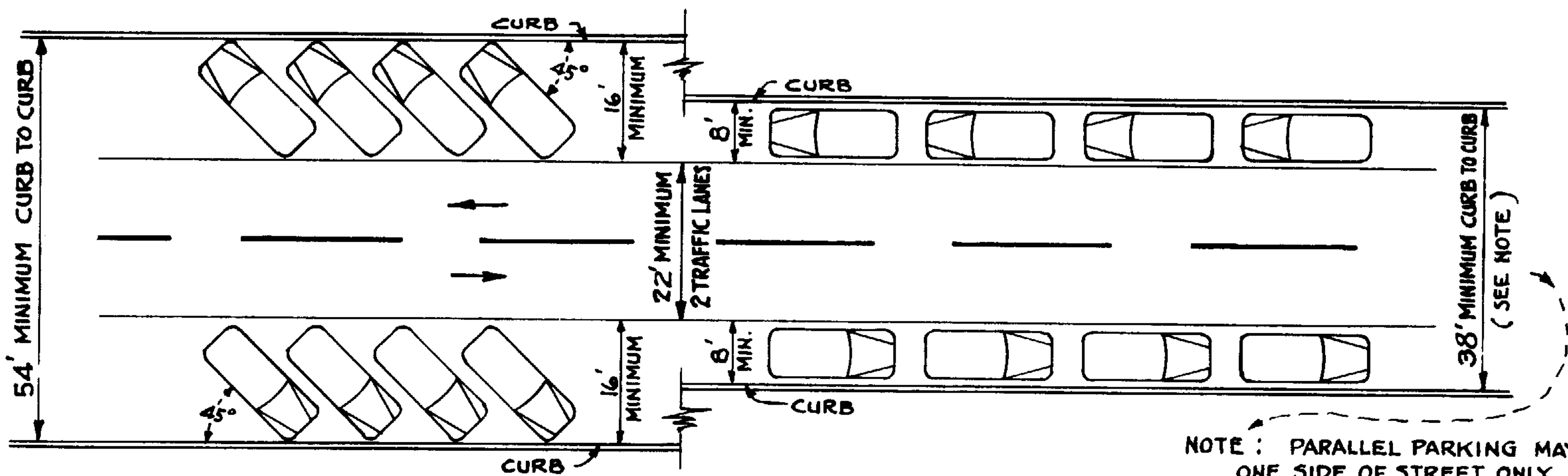
DRAWN	D.C.	9-58	D8-3
CHECKED	C. Bowman	3-59	
APPROVED	E. Heidecke ENGR. OF PLANS	3-24-59	



4 TRAFFIC LANES
OVER 300 VEHICLES PER HOUR



3 TRAFFIC LANES
200 TO 300 VEHICLES PER HOUR



2 TRAFFIC LANES
UNDER 200 VEHICLES PER HOUR

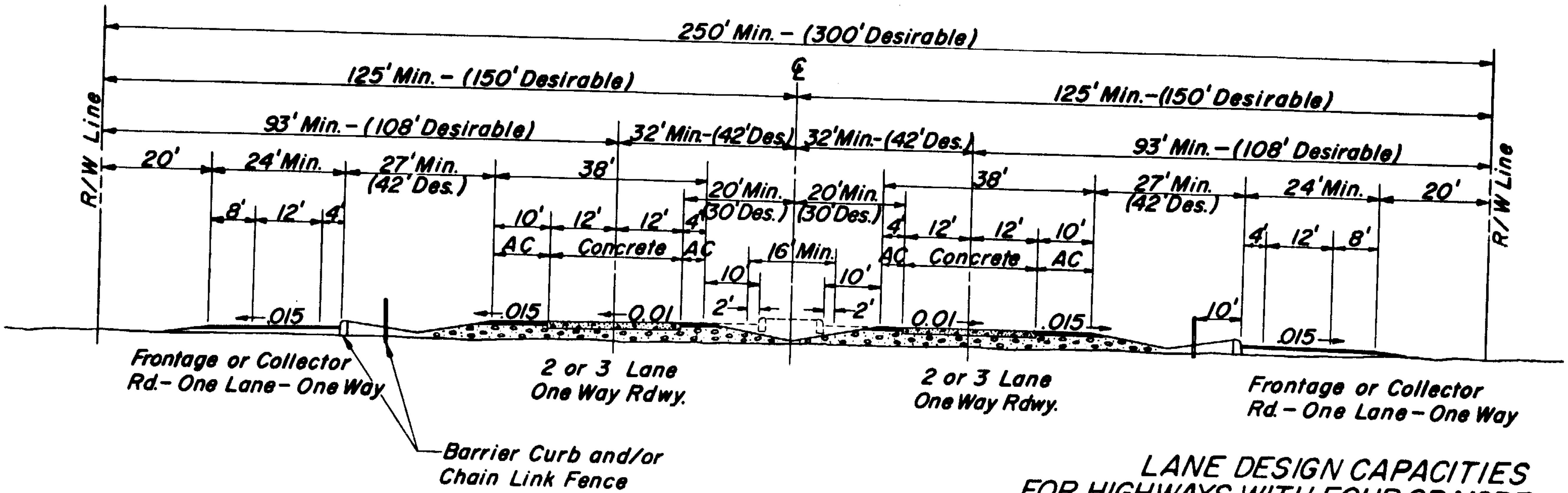
NOTE: PARALLEL PARKING MAY BE PERMITTED ON ONE SIDE OF STREET ONLY, WHEN WIDTH BETWEEN CURBS IS UNDER 38' BUT OVER 28'. IF UNDER 28', PERMIT NO PARKING WHAT-EVER.

NOTE:
THE MINIMUM DIMENSIONS SHOWN ON THIS DRAWING FOR DIFFERENT CONDITIONS OF PARKING AND FOR TRAFFIC LANES MUST NOT BE CONSTRUED AS DESIRABLE IN THE LIGHT OF MODERN DESIGN STANDARDS, BUT RATHER AS MINIMUM REQUIREMENTS FOR EXISTING FACILITIES, TYPICAL OF URBAN DEVELOPMENTS.
PARKING LANE WIDTHS AND SPACES SHOWN HERE ARE BASED ON MINIMUM REQUIREMENTS FOR PASSENGER VEHICLES AND CONFORM TO A.A.S.H.O. POLICY.

ARIZONA STATE HIGHWAY DEPARTMENT PLANS DIVISION		REV. 8-17-55
PARKING ON STATE HIGHWAYS		
DRAWN AND TRACED MAY 19, 1941 BY LESLIE McDOUGALL - HWY. DESIGNER	STANDARD DRWG. NO.	
CHECKED BY	D9-1	
APPROVED BY ENGINEER OF PLANS H H Wassel		

Rev. 5-64 R.A.D.

INTERSTATE DESIGN
TYPICAL ROADWAY CROSS SECTIONS



LANE DESIGN CAPACITIES FOR HIGHWAYS WITH FOUR OR MORE LANES

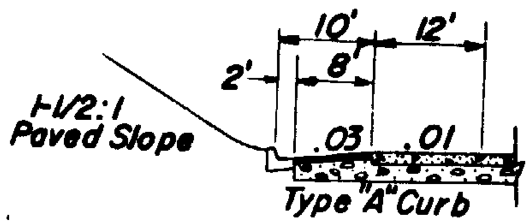
Percent of trucks during peak hour	Design capacity, average per 12-foot lane in V.P.H. for:					
	Freeways in Urban Areas		Freeways in Suburban Areas		Freeways in Rural Areas	
	Level Terrain	Rolling Terrain	Level Terrain	Rolling Terrain	Level Terrain	Rolling Terrain
0	1500	1500	1200	1200	1000	1000
5	1430	1300	1140	1040	950	870
10	1360	1160	1090	920	910	770
15	1300	1030	1040	830	870	690
20	1250	940	1000	750	830	630

DESIGN SPEED - 60 M.P.H. Min.

Design shall be for 4 lane divided roadway except where the design year traffic volumes warrant 6 lanes.

Right of Way required at interchanges varies with type of interchange (loop or diamond), type of frontage roads (one-way or two-way), and whether the interstate or cross road is elevated or depressed.

Dimensions shown are typical only and may necessarily vary for special conditions.



TYPICAL SHOULDER
FREEWAY DEPRESSED

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

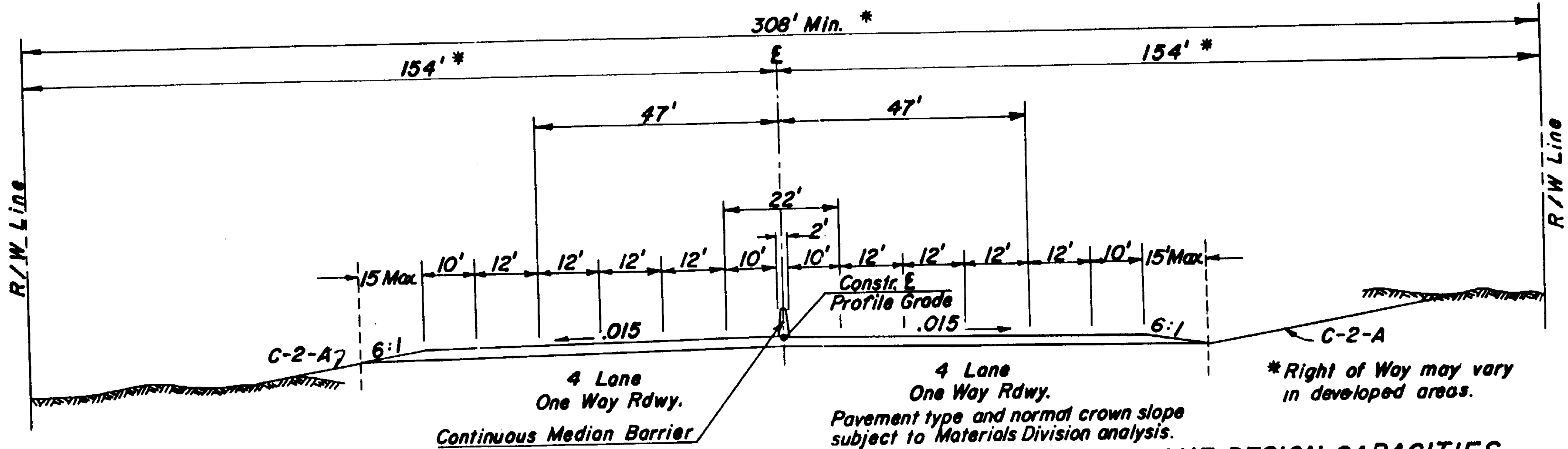
URBAN INTERSTATE DESIGN
4-LANE OR 6-LANE DIVIDED

DRAWN	C.B. 3-60
TRACED	B.B. 4-1-60
CHECKED	W.E.P. 3-60
APPROVED	

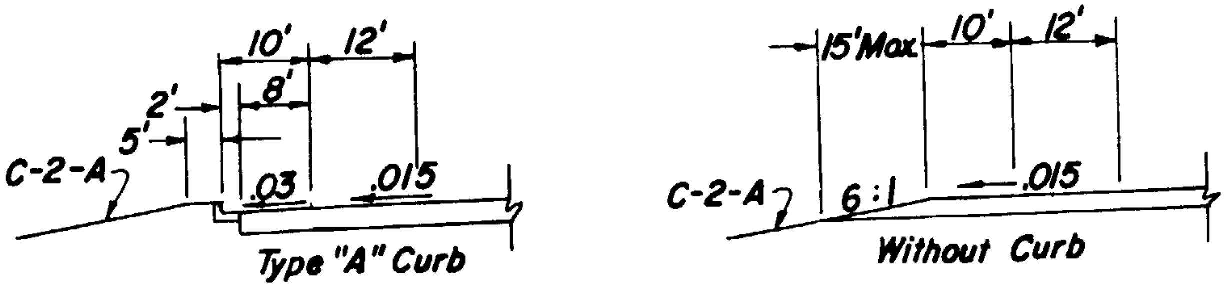
D9-1

INTERSTATE DESIGN

TYPICAL ROADWAY CROSS SECTIONS



* Right of Way may vary in developed areas.



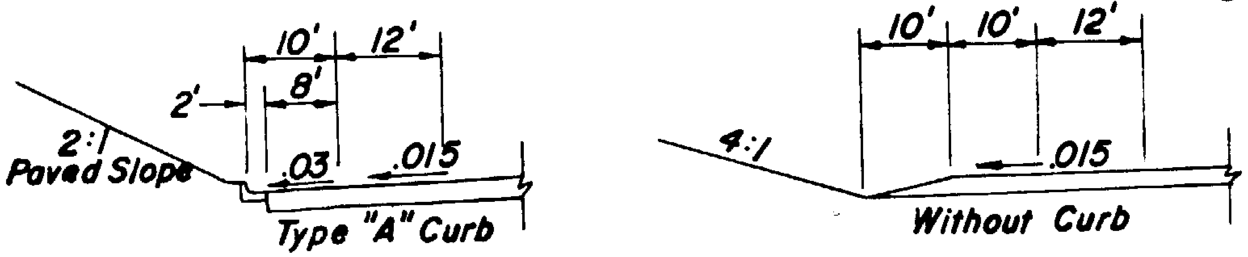
TYPICAL SHOULDERS —— FREEWAY ELEVATED

LANE DESIGN CAPACITIES FOR HIGHWAYS WITH FOUR OR MORE LANES

Percent of trucks during peak hour	Design capacity, average per 12-foot lane in V.P.H. for:					
	Freeways in Urban Areas		Freeways in Suburban Areas		Freeways in Rural Areas	
	Level Terrain	Rolling Terrain	Level Terrain	Rolling Terrain	Level Terrain	Rolling Terrain
0	1500	1500	1200	1200	1000	1000
5	1430	1300	1140	1040	950	870
10	1360	1160	1090	920	910	770
15	1300	1030	1040	830	870	690
20	1250	940	1000	750	830	630

.03 cross slope on shoulders to be used only in conjunction with curb and gutter sections.

DESIGN SPEED – 70 M.P.H. MIN.



TYPICAL SHOULDERS —— FREEWAY DEPRESSED

Right of Way required at interchanges varies with type of interchange (loop or diamond) and whether the interstate or cross road is elevated or depressed.

Dimensions shown are typical only and may vary necessarily for special conditions.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

REV. 2-67

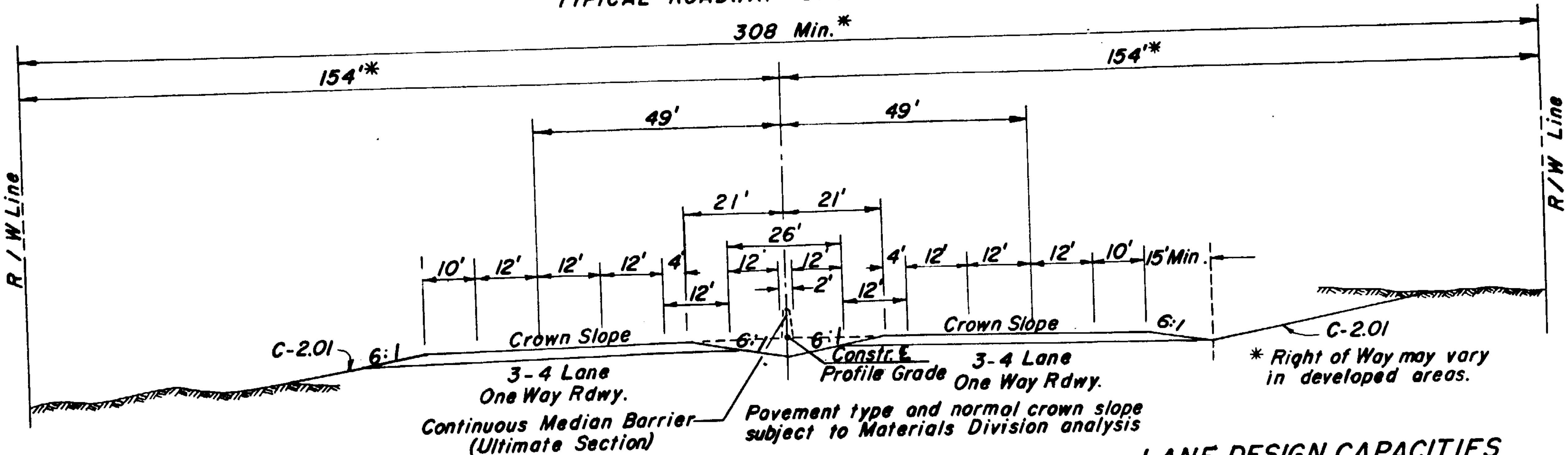
8 LANE INTERSTATE DESIGN
FLUSH MEDIAN

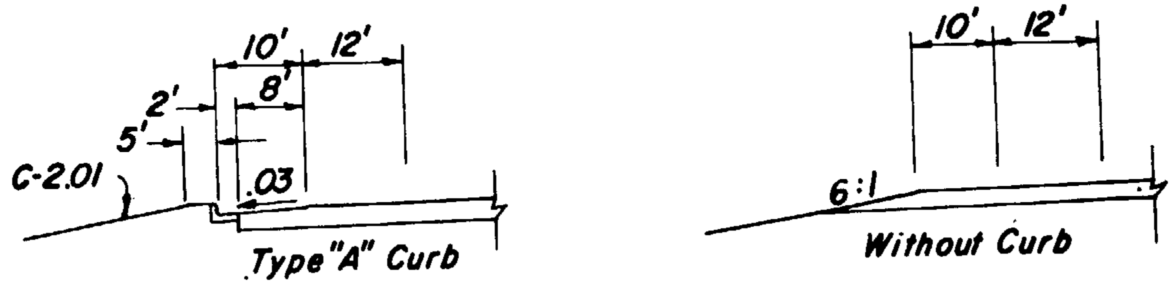
DRAWN	E.E.S.	10-66
TRACED	M.N.	2-21-67
CHECKED	R.A.D.	10-66
APPROVED ENGR. PLANS		

D9-1.1

INTERSTATE DESIGN

TYPICAL ROADWAY CROSS SECTIONS





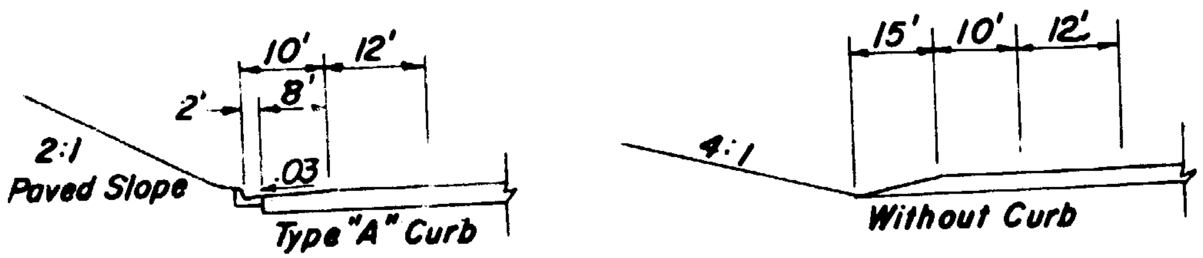
TYPICAL SHOULDERS —— FREEWAY ELEVATED

LANE DESIGN CAPACITIES FOR HIGHWAYS WITH FOUR OR MORE LANES

Percent of trucks during peak hour	Design capacity, average per 12-foot lane in V.P.H. for:					
	Freeways in Urban Areas		Freeways in Suburban Areas		Freeways in Rural Areas	
	Level Terrain	Rolling Terrain	Level Terrain	Rolling Terrain	Level Terrain	Rolling Terrain
0	1500	1500	1200	1200	1000	1000
5	1430	1300	1140	1040	950	870
10	1360	1160	1090	920	910	770
15	1300	1030	1040	830	870	690
20	1250	940	1000	750	830	630

.03 cross slope on shoulders to be used only in conjunction with curb and gutter sections.

DESIGN SPEED - 70 M.P.H. MIN.



TYPICAL SHOULDERS —— FREEWAY DEPRESSED

Right of Way required at interchanges varies with type of interchange (loop or diamond) and whether the interstate or cross road is elevated or depressed.

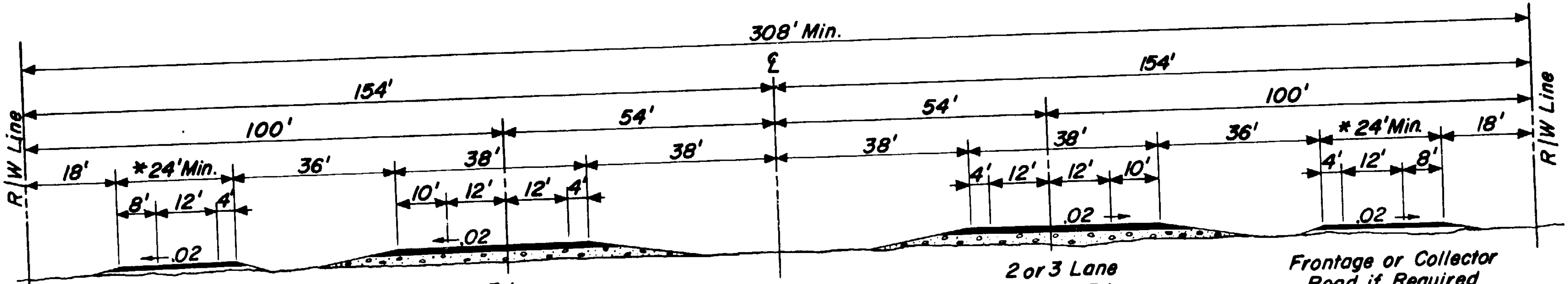
Dimensions shown are typical only and may necessarily vary for special conditions.

ARIZONA HIGHWAY DEPARTMENT **PLANS DIVISION**	REV. 2-67 1-71
6-LANE INTERSTATE DESIGN ULTIMATE 8-LANE—FLUSH MEDIAN	

DRAWN	E.E.S. 10-66	D9-1.2
TRACED	MN 2-21-67	
CHECKED	RAD 10-66	
APPROVED ENGR. PLANS		

Rev. W.S.L. 5-25-64

INTERSTATE DESIGN
TYPICAL ROADWAY CROSS SECTIONS



Frontage or Collector Road if Required One Lane - One Way

2 or 3 Lane One Way Rdwy.

2 or 3 Lane One Way Rdwy.

Frontage or Collector Road if Required One Lane - One Way

*26' Min. when used as 2 way Frontage Road.

*26' Min. when used as 2 way Frontage Road

LANE DESIGN CAPACITIES FOR HIGHWAYS WITH FOUR OR MORE LANES

Percent of trucks during peak hour	Design capacity, average per 12-foot lane in V.P.H. for:					
	Freeways in Urban Areas		Freeways in Suburban Areas		Freeways in Rural Areas	
	Level Terrain	Rolling Terrain	Level Terrain	Rolling Terrain	Level Terrain	Rolling Terrain
0	1500	1500	1200	1200	1000	1000
5	1430	1300	1140	1040	950	870
10	1360	1160	1090	920	910	770
15	1300	1030	1040	830	870	690
20	1250	940	1000	750	830	630

DESIGN SPEED - 70 M.P.H. Min.

Design shall be for 4 lane divided roadway except where the design year traffic volumes warrant 6 lanes.

Right of Way required at Interchanges varies with type of Interchange (loop or diamond), type of Frontage Roads (one-way or two-way), & whether the Interstate or Cross Road is elevated or depressed.

Dimensions shown are typical only and may necessarily vary for special conditions.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

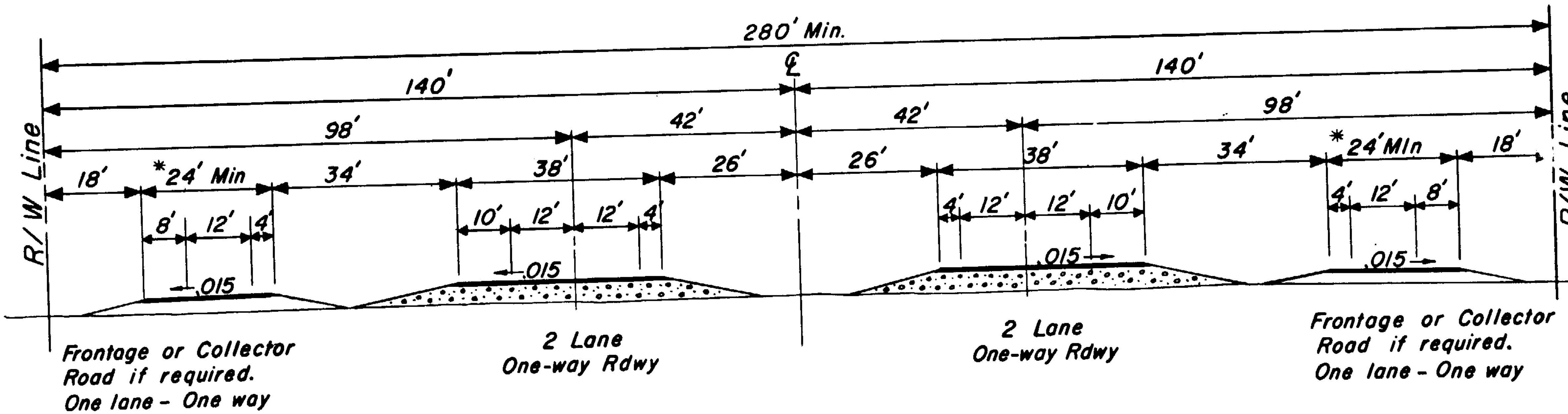
RURAL INTERSTATE DESIGN
4-LANE DIVIDED

Revised 5-7-65 1-19-71

DRAWN	C.B. 3-60
TRACED	B.B. 4-3-60
CHECKED	W.E.P. 3-60
APPROVED ENGR. PLANS	

D9-2

INTERSTATE DESIGN
TYPICAL ROADWAY CROSS SECTIONS



*26' min when used as 2-way frontage road.

*26' min. when used as 2-way frontage road.

DESIGN SPEED - 70 m.p.h. min.

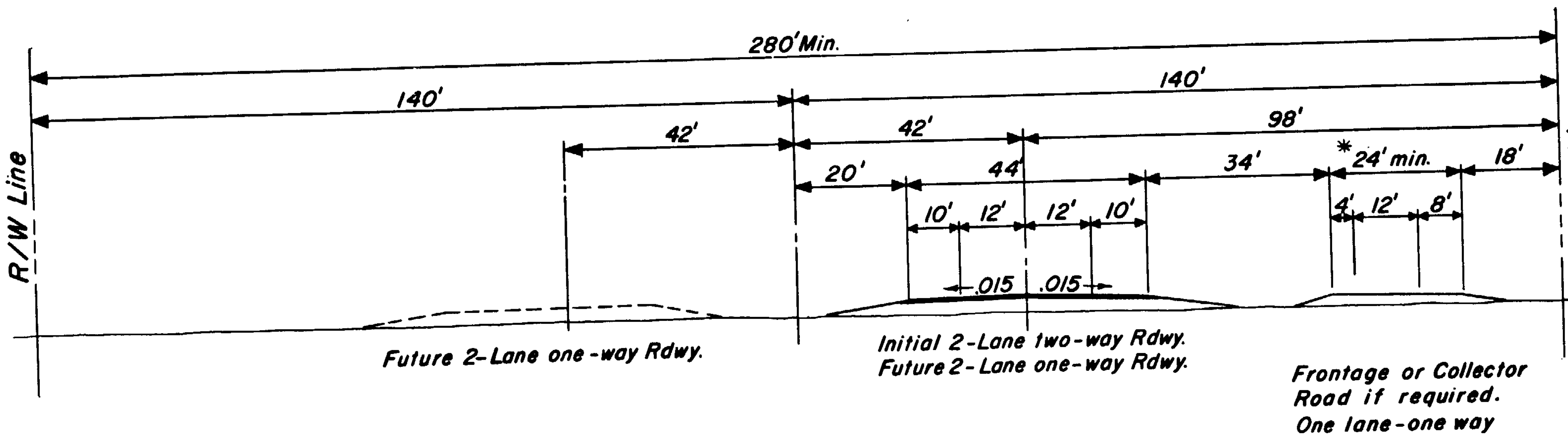
Right of Way required at interchanges varies with type of interchange (loop or diamond), type of frontage roads (one-way or two-way), and whether the Interstate or cross road is elevated or depressed.

Dimensions shown are typical only and may , cessarily vary for special conditions.

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION			
RURAL INTERSTATE DESIGN 4 LANE DIVIDED			
DRAWN	C.B.	MAY 1960	D9-3
TRACED	J.M.	MAY 1960	
CHECKED	W.E.P.	MAY 1960	
APPROVED			

Rev. 2-64 R.A.D.

INTERSTATE DESIGN
TYPICAL ROADWAY CROSS SECTIONS



*26' min. when used as 2-way frontage road.

DESIGN SPEED - 70 m.p.h. min.

When the design year traffic volume (V.P.H.) is 700 or less, one roadway may be constructed and used for 2-way traffic providing the above design is used to allow for future divided highway and all R/W is acquired.

Right of Way required at interchanges varies with type of interchange (loop or diamond), type of frontage roads, (one-way or two way), and whether the Interstate or cross road is elevated or depressed.

Dimensions shown are typical only and may necessarily vary for special conditions.

Note:
This Typical Section used in 1960 Estimate. Not used in this Estimate.

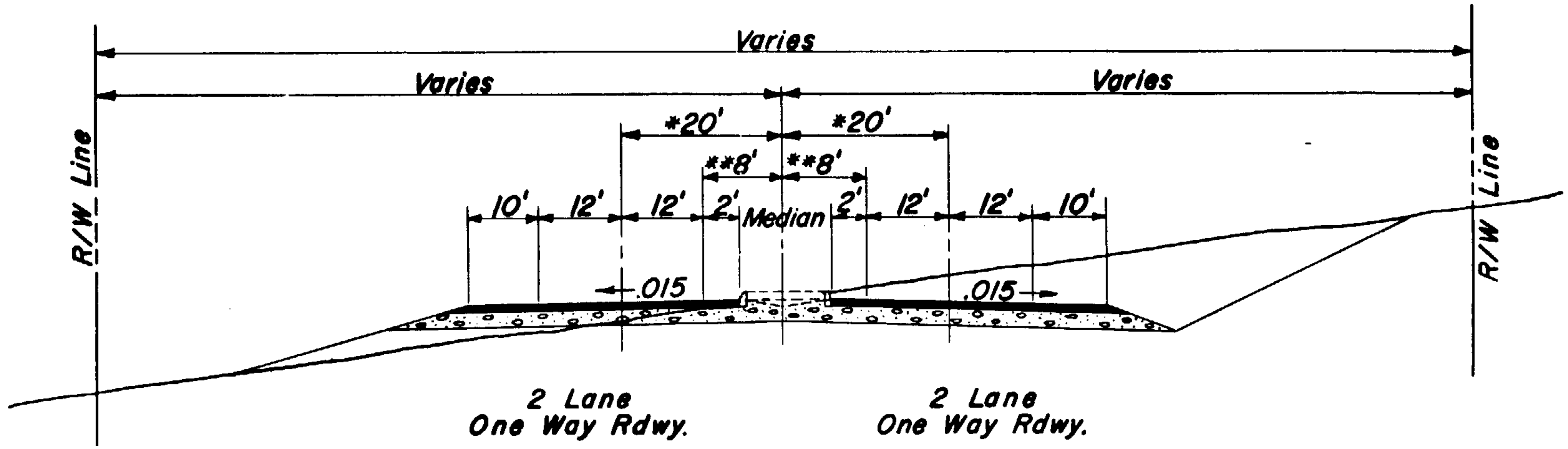
ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

RURAL INTERSTATE DESIGN
INITIAL 2-LANE ROADWAY
ULTIMATE 4-LANE DIVIDED

DRAWN	C.B.	MAY 1960	D9-4
TRACED	J.M.	MAY 1960	
CHECKED	W.E.P.	MAY 1960	
APPROVED PLANS ENGR.			

Rev. 5-64 R.A.D.

INTERSTATE DESIGN
TYPICAL ROADWAY CROSS SECTIONS



*16' Absolute Minimum for Rugged Mountainous Terrain.
**4' Absolute Minimun for Rugged Mountainous Terrain.

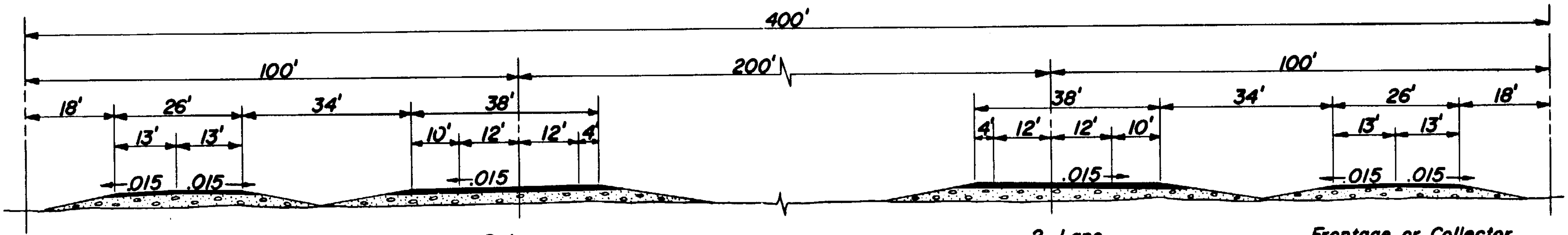
DESIGN SPEED – 50 M.P.H. Min.

When the design year traffic volume (V.P.H.) is 700 or less, one roadway may be constructed and used for 2-way traffic providing the above design is used to allow for future divided highway and all R/W is acquired.

Dimensions shown are typical only and may necessarily vary for special conditions.

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION	
INTERSTATE DESIGN MOUNTAINOUS TERRAIN 4 LANE DIVIDED	
DRAWN	C.B. 3-60
TRACED	B.B 4-4-60
CHECKED	W.E.P. 3-60
APPROVED ENGR. PLANS	
	D9-5

INTERSTATE DESIGN
TYPICAL ROADWAY CROSS SECTIONS

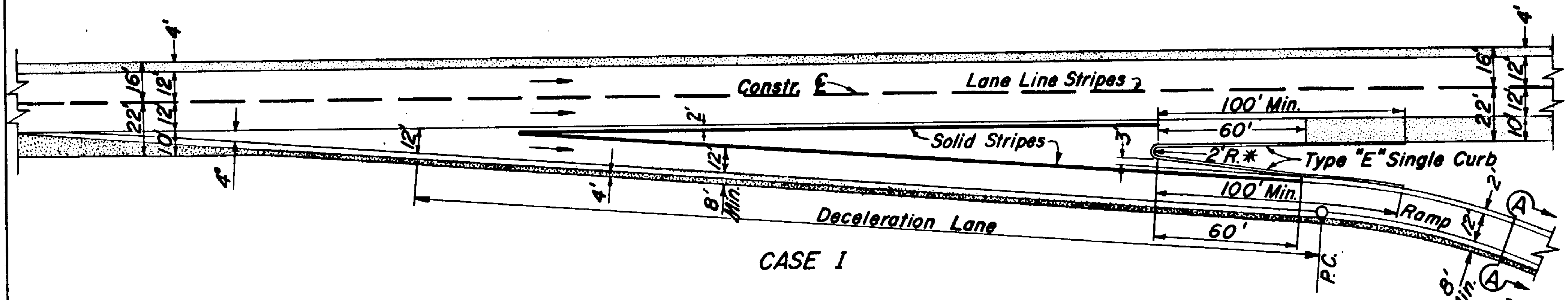


DESIGN SPEED - 70 M.P.H. Min.

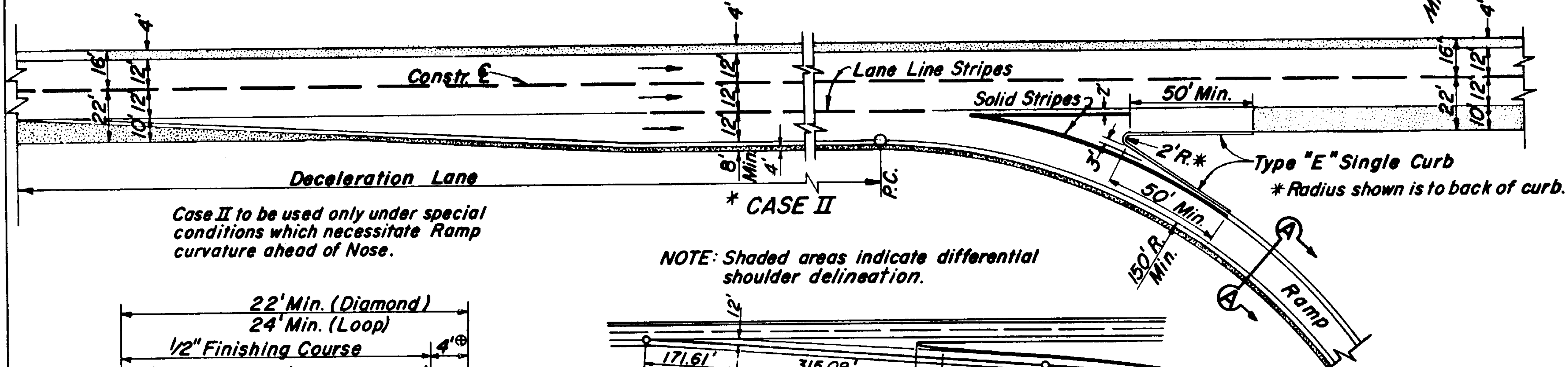
Right of Way required at interchanges varies with type of interchange (loop or diamond), type of frontage roads (one-way or two-way), and whether the interstate or cross road is elevated or depressed.

Dimensions shown are typical only and may necessarily vary for special conditions.

ARIZONA HIGHWAY DEPARTMENT PLANS DIVISION		
RURAL INTERSTATE DESIGN 4-LANE DIVIDED FOREST AND PUBLIC LANDS		
DRAWN	C.B. 3-60	D9-6
TRACED	B.B. 5-10-60	
CHECKED	W.E.P. 3-60	
APPROVED ENGR PLANS		



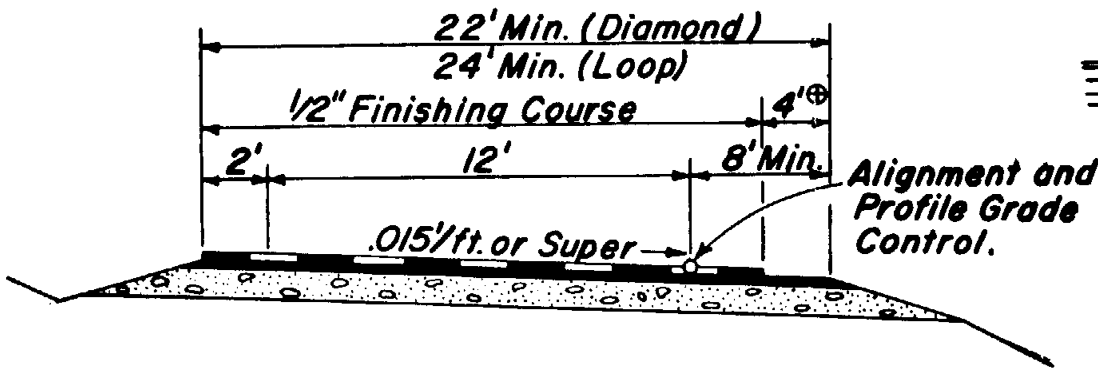
CASE I



* CASE II

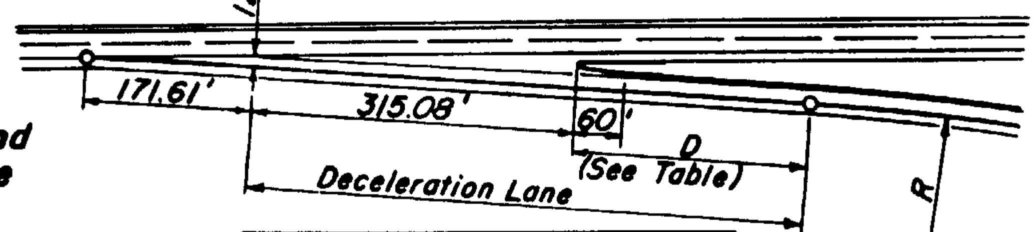
Case II to be used only under special conditions which necessitate Ramp curvature ahead of Nose.

NOTE: Shaded areas indicate differential shoulder delineation.



SECTION A-A

⊕ Emulsion and Special Cover Material.



R (Feet)	Min. D (Feet)
Less than 250'	275'
250' – 450'	200'
450' – 1000'	100'
Over 1000'	60'

NOTE: Ramp take off from main roadway on curve should provide equivalent deceleration min. control distances.

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

INTERSTATE DESIGN
TYPICAL EXIT RAMP TERMINALS

DRAWN	C.B. 3-60	D9-7
TRACED	B.B. 4-5-60	
CHECKED	W.E.P. 3-60	
APPROVED ENGR. PLANS	[signature]	

REV.
D.C.
6-9-60
7-1-60
1-29-62
3-26-63
12-29-64
6-1-65
2-3-66

AIRWAY—HIGHWAY CLEARANCE REQUIREMENTS

RUNWAY LENGTH AT SEA LEVEL	CLASS AND TYPE OF SERVICE	A	B	C	D	E	C:E (SLOPE OF APPROACH SURFACE)	D_X MIN.	M NON-INSTRUMENT (MIN.)	M INSTRUMENT (MIN.)	V MIN.
2301—3000	1. SECONDARY	250	2,250	10,000	200	500	20:1	500	300	—	15
3501—4200	2. LOCAL	400	2,400	10,000	200	250	40:1	800	350	700	15
4201—5000	3. TRUNK	500	2,500	10,000	200	250	40:1	800	450	700	15
5001—5900	4. CONTINENTAL	500	2,500	10,000	200	250	40:1	800	450	700	15
5901—7000	5. INTER-CONTINENTAL	500	2,500	10,000	200	250	40:1	800	450	700	15
FIRST STEP SECOND STEP	INSTRUMENT OPERATIONS	1,000	4,000 16,000	10,000 40,000	200	200	50:1 40:1	1,250	700	700	15

A. WIDTH OF APPROACH AREA (AND APPROACH SURFACE) AT CLEAR ZONE END.

B. WIDTH OF APPROACH AREA (AND APPROACH SURFACE) AT APPROACH END.

C. LENGTH OF APPROACH AREA (AND APPROACH SURFACE) MEASURED HORIZONTALLY BEYOND CLEAR ZONE.

D. LENGTH OF CLEAR ZONE.

E. ELEVATION OF APPROACH SURFACE ABOVE END OF RUNWAY AT DISTANCE "C".

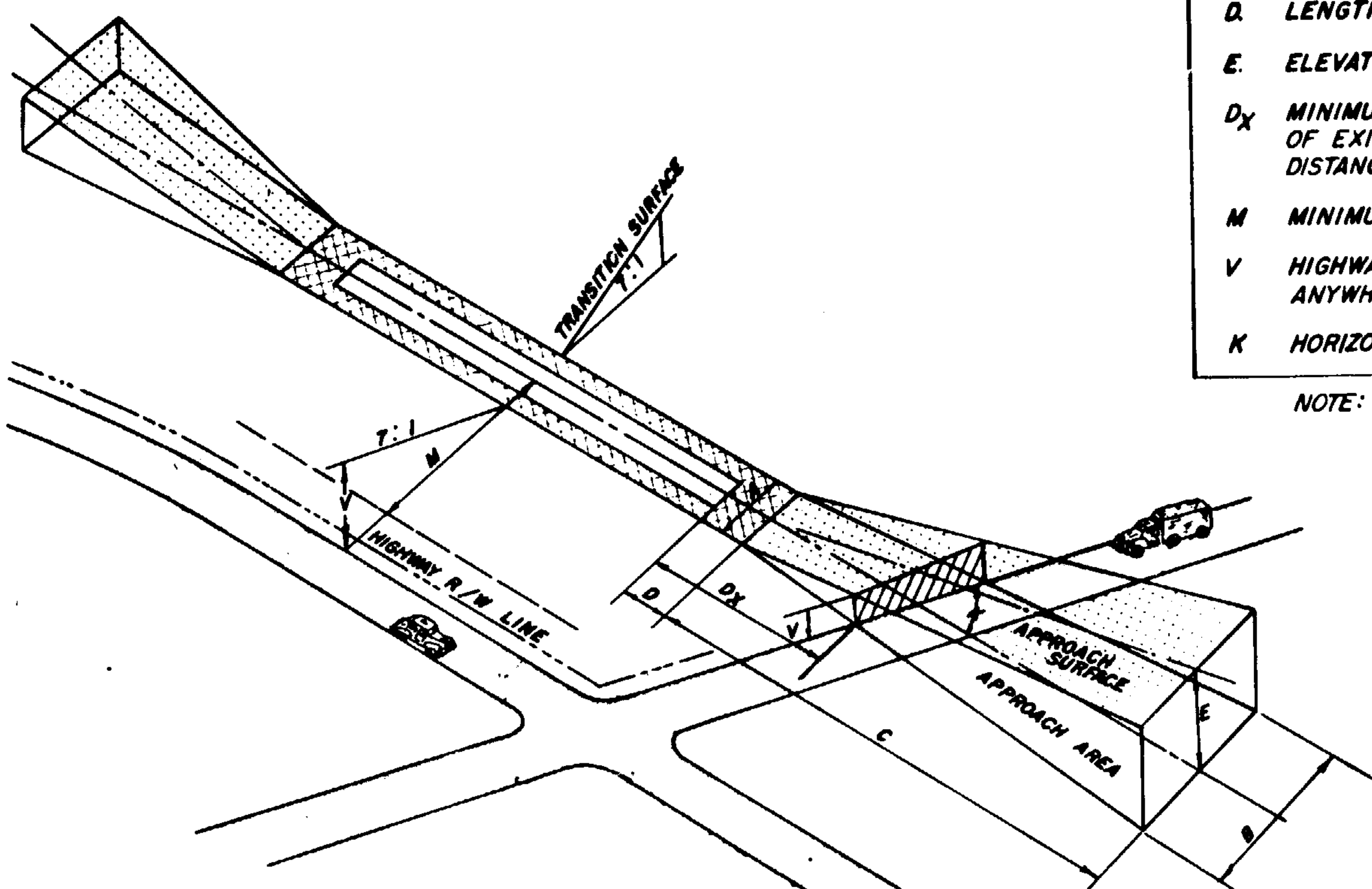
D_X MINIMUM HORIZONTAL DISTANCE FROM THE END OF THE RUNWAY TO THE NEAREST EDGE OF EXISTING OR PROPOSED HIGHWAY PAVEMENT. WHERE PAVED RUNWAYS DO NOT EXIST THIS DISTANCE SHOULD BE MEASURED FROM THE END OF THE LANDING STRIP.

M MINIMUM TRAVERSE CLEARANCE DISTANCE, CENTERLINE OF RUNWAY TO FIXED OBSTACLES.

V HIGHWAY CLEARANCE, PROFILE AT PAVEMENT EDGE. MINIMUM VERTICAL CLEARANCE IS 15' ANYWHERE IN APPROACH AREA AND UNDER TRANSITION SURFACE.

K HORIZONTAL ANGLE BETWEEN RUNWAY CENTERLINE EXTENDED AND HIGHWAY.

NOTE: Approach data conforms to CAA technical standards and TSO-N18, revised to date.



COURTESY
BUREAU OF PUBLIC ROADS
SEPTEMBER 1952

ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

AIRWAY — HIGHWAY
CLEARANCE REQUIREMENTS
CIVIL AIRFIELDS

REV. 1-29-63
11-5-63

DRAWN	
TRACED	D.C. 10-16-58
CHECKED	
APPROVED ENGR. PLANS	

D10-2

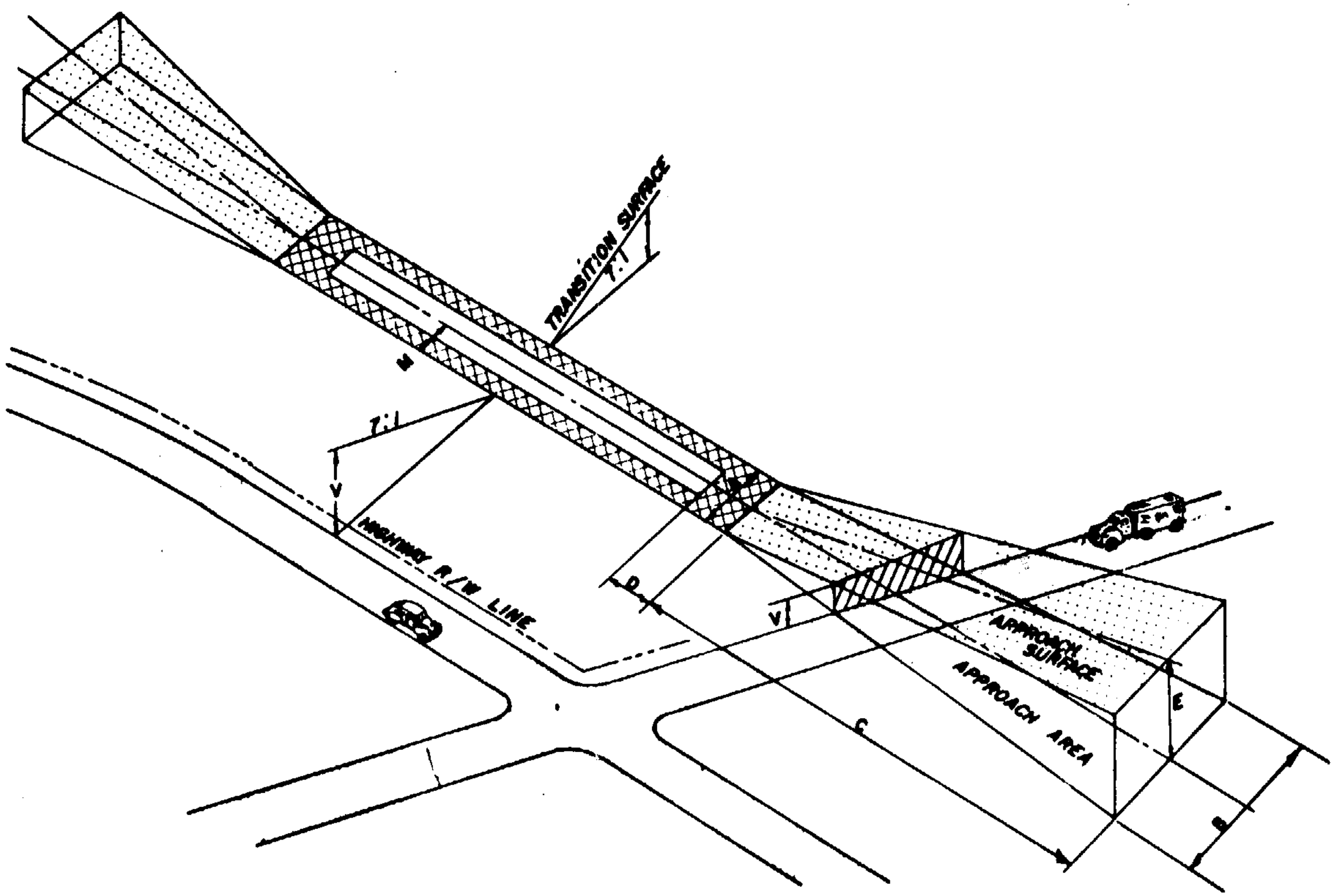
AIRWAY – HIGHWAY CLEARANCE REQUIREMENTS

RUNWAY LENGTH AT SEA LEVEL	CLASS AND TYPE OF SERVICE	A	B	C	D	E	C:E (SLOPE OF APPROACH SURFACE)	M	V MIN.
8,000 —	NAVY AIR STATIONS AND AIR FORCE AIRFIELDS	2,000	4,000	10,000	1,000	200	50:1	1,200	15

A. WIDTH OF APPROACH AREA (AND APPROACH SURFACE) AT CLEAR ZONE END.
B. WIDTH OF APPROACH AREA (AND APPROACH SURFACE) AT APPROACH END.
C. LENGTH OF APPROACH AREA (AND APPROACH SURFACE) MEASURED HORIZONTALLY BEYOND CLEAR ZONE.
D. LENGTH OF CLEAR ZONE OR END ZONE.
E. ELEVATION OF APPROACH SURFACE ABOVE END OF RUNWAY OF DISTANCE "C".
M. MINIMUM TRAVERSE CLEARANCE DISTANCE, CENTERLINE OF RUNWAY TO FIXED OBSTACLES.
V. HIGHWAY CLEARANCE, PROFILE OF PAVEMENT EDGE. MINIMUM VERTICAL CLEARANCE IS 15' ANYWHERE IN APPROACH AREA AND UNDER TRANSITION SURFACE.

NOTES:

1. APPROACH DATA CONFORMS TO DEPARTMENT OF THE NAVY PLANNING STANDARDS FOR NAVAL AIR STATIONS AND DEPARTMENT OF THE AIR FORCE STANDARDS AFR 86–3, DATED 24 MARCH 1949, AIRFIELD ZONING-PREVENTING ENCROACHMENTS IN APPROACHES AND AIRSPACE SURROUNDING AIR FORCE AIRFIELDS.
2. CRITERIA FOR DEPARTMENT OF THE ARMY TYPE AIRCRAFT IS UNDER DEVELOPMENT BY THE DEPARTMENT OF THE ARMY, OFFICE CHIEF OF ENGINEERS AND WILL BE PUBLISHED IN SUPPLEMENTAL REGULATIONS.



ARIZONA HIGHWAY DEPARTMENT
PLANS DIVISION

AIRWAY — HIGHWAY
CLEARANCE REQUIREMENTS
NAVY AIR STATIONS— AIR FORCE AIRFIELDS

DRAWN	
TRACED	D.C. 10–16–58
CHECKED	
APPROVED ENGR. PLANS	

D10-3

REV. 1-29-63

BASIC PROCEDURE

GIVEN: Terrain Class, Design Speed, ADT (Average Daily Traffic), K (Design Hour Factor), T (% Trucks & Recreation Vehicle) and D (% Directional Distribution Factor) or % Passing Sight Distance > 1500 Ft.

FIND: The geometric design standard (roadway with the minimum cross section) that satisfies the given criteria.

STEPS

1. Compute DHV in 100's = ADT x K x 0.01
2. Enter the table in the appropriate terrain class column.
3. Within the terrain class column find the appropriate T (% Trucks) column.
4. Within the appropriate D or % Passing Sight Distance column find the range of smallest DHV values which will satisfy the value for DHV as computed in Step 1. Note that both given design speed and either D or % Passing Sight Distance must be satisfied.
5. The minimum geometric design standard is indicated by the "R" number associated with the result of Step 4.
6. The details of the geometric design standard found in Step 5 are shown on Std. D-52.20

Note: All DHV's computed in these procedures are two-way.

EXAMPLE NO. 1

GIVEN: Terrain = Rolling, Design Speed = 60 mph, ADT = 6000, K = 8%, T = 5%, Passing Sight Distance = 60% > 1500 Feet.

Solution:

1. DHV = 6000 x 0.08 x 0.01 = 4.8
2. Enter "Rolling" terrain class column.
3. Within the above column find the T% column group which contains the given value of 5% (0% to 9% group).
4. Within the column group found in Step 3 find that column which contains the % passing sight distance value of 60%.
5. Within the above column find the range of smallest DHV which contains the value 4.8 (from Step 1).
6. The "R" number to the left is found to be R3, the geometrics for which may be found on Std. D-52.20

Comment:

It will be noticed that cross section R5 will also satisfy the DHV criteria if a 50 mph design speed is permissable. A re-evaluation of the basic criteria may find such a revision advisable.

MULTI-LANE

	Terrain		Level								
	% Trucks (T)	Max	9			15			20		
		Min	0			10			16		
	% Directional Distribution D	Max	60	70	80	60	70	80	60	70	80
		Min	50	61	71	50	61	71	50	61	71
R1	Design Speed		80 mph (Level of Service B)								
R1	DHV Range (100's)	Max	32	27	24	29	24	21	28	24	20
R1		Min	23	20	17	22	19	16	21	18	15
R2	Design Speed		70 mph (Level of Service B)								
R2	DHV Range (100's)	Max	22	19	16	21	18	15	20	17	14
R2		Min	17	14	12	16	13	12	15	13	11

	Terrain		Rolling								
	% Trucks (T)	Max	9			15			20		
		Min	0			10			16		
	% Directional Distribution D	Max	60	70	80	60	70	80	60	70	80
		Min	50	61	71	50	61	71	50	61	71
R1	Design Speed		70 mph (Level of Service B)								
R1	DHV Range (100's)	Max	31	26	22	25	21	18	23	19	17
R1		Min	20	17	15	16	14	12	14	12	11
R2	Design Speed		60 mph (Level of Service B)								
R2	DHV Range (100's)	Max	19	16	14	15	13	11	13	11	10
R2		Min	12	10	9	11	9	8	10	8	7

	Terrain		Mountainous								
	% Trucks (T)	Max	9			15			20		
		Min	0			10			16		
	% Directional Distribution D	Max	60	70	80	60	70	80	60	70	80
		Min	50	61	71	50	61	71	50	61	71
R1	Design Speed		60 mph (Level of Service C)								
R1	DHV Range (100's)	Max	21	18	15	13	11	10	11	9	8
R1		Min	10	9	8	9	8	7	8	7	6
R2	Design Speed		50 mph (Level of Service C)								
R2	DHV Range (100's)	Max	17	14	12	10	8	7	8	6	5
R2		Min	8	7	6	6	5	5	5	5	4

2-LANE

	Terrain		Level								
	% Trucks (T)	Max	9			15			20		
		Min	0			10			16		
R3	% Passing Sight Dist.		100	80	60	100	80	60	100	80	60
R3	Design Speed		70 mph (Level of Service B)								
R3	DHV Range (100's)	Max	7.5	7.0	6.5	6.5	6.0	5.5	6.2	5.5	5.2
R3		Min	6.0	5.5	5.0	5.5	5.2	4.7	5.2	4.6	4.4
R4	% Passing Sight Dist.		100	80	60	100	80	60	100	80	60
R4	Design Speed		70 mph (Level of Service B)								
R4	DHV Range (100's)	Max	7.2	6.7	6.1	6.4	5.9	5.4	6.0	5.6	5.0
R4		Min	5.7	5.3	4.8	5.4	5.0	4.5	5.0	4.7	4.3
R5	% Passing Sight Dist.		100	80	60	100	80	60	100	80	60
R5	Design Speed		60 mph (Level of Service B)								
R5	DHV Range (100's)	Max	5.4	4.7	4.0	4.7	4.1	3.6	4.5	3.9	3.4
R5		Min	4.3	3.7	3.2	4.0	3.5	3.0	3.8	3.3	2.8

	Terrain		Rolling								
	% Trucks (T)	Max	9			15			20		
		Min	0			10			16		
R3	% Passing Sight Dist.		80	60	40	80	60	40	80	60	40
R3	Design Speed		60 mph (Level of Service B)								
R3	DHV Range (100's)	Max	6.0	5.1	4.1	4.2	3.5	2.9	3.6	3.1	2.5
R3		Min	3.9	3.4	2.7	3.3	2.8	2.3	3.0	2.6	2.0
R4	% Passing Sight Dist.		80	60	40	80	60	40	80	60	40
R4	Design Speed		60 mph (Level of Service B)								
R4	DHV Range (100's)	Max	5.5	4.7	3.7	4.1	3.5	2.8	3.5	3.1	2.4
R4		Min	3.6	3.1	2.5	3.1	2.7	2.2	2.8	2.4	2.0
R5	% Passing Sight Dist.		80	60	40	80	60	40	80	60	40
R5	Design Speed		50 mph (Level of Service C)								
R5	DHV Range (100's)	Max	6.9	6.2	5.0	5.1	4.5	3.7	4.5	4.0	3.2
R5		Min	4.6	4.1	3.3	4.0	3.6	2.9	3.6	3.2	2.6

	Terrain		Mountainous								
	% Trucks (T)	Max	9			15			20		
		Min	0			10			16		
R3	% Passing Sight Dist.		60	40	20	60	40	20	60	40	20
R3	Design Speed		50 mph (Level of Service C)								
R3	DHV Range (100's)	Max	8.0	6.4	4.7	4.2	3.4	2.5	3.2	2.6	1.9
R3		Min	3.9	3.2	2.3	3.0	2.4	1.8	2.6	2.1	1.5
R4	% Passing Sight Dist.		40	20	0	40	20	0	40	20	0
R4	Design Speed		50 mph (Level of Service C)								
R4	DHV Range (100's)	Max	5.4	4.0	2.6	3.2	2.4	1.5	2.5	1.9	1.2
R4		Min	3.0	2.2	1.4	2.3	1.7	1.1	2.0	1.5	1.0
R5	% Passing Sight Dist.		40	20	0	40	20	0	40	20	0
R5	Design Speed		40 mph (Level of Service D)								
R5	DHV Range (100's)	Max	5.6	4.4	2.4	3.0	2.3	1.3	2.3	1.8	1.0
R5		Min	2.7	2.1	1.1	2.1	1.6	0.9	1.8	1.4	0.7

EXAMPLE NO. 2

GIVEN: Terrain = Rolling, Design Speed = 70 mph, ADT = 22000, K = 11%, T = 8%, D = 55%.

Solution:

1. DHV = 22000 x 0.11 x 0.01 = 24
2. Enter "Rolling" terrain class column.
3. Within the above column find the T% column group which contains the given value of 8% (0% - 9% group).
4. Within the column group found in Step 3 find that column which contains the D value of 55% (50% - 60% column).
5. Within the above column find the range of smallest DHV which contains the value 24 (from Step 1).
6. The "R" number to the left is found to be R1, the geometrics for which may be found on Std. D-52.20

GENERAL NOTES

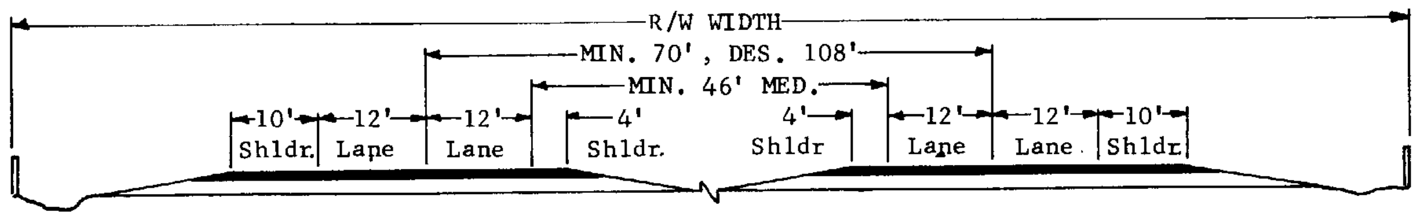
The procedures will in some instances yield results which can be satisfied by more than one design standard. Final selection will require careful consideration of factors such as operation, economics, local influences, etc.

Note that multi-lane vs. 2-lane standards are differentiated by directional distribution vs. % passing sight distance > 1500 feet.

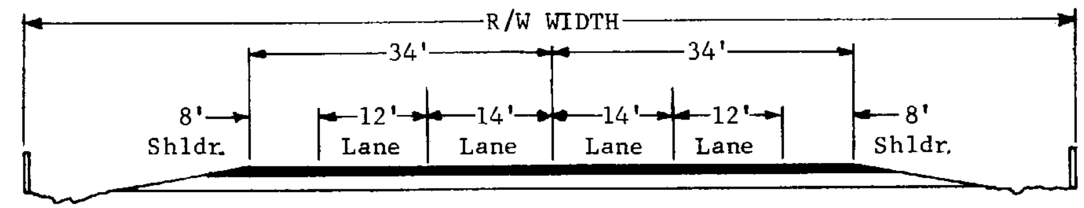
All DHV's computed in these procedures are two-way.

RURAL & RURAL CHARACTER HIGHWAYS

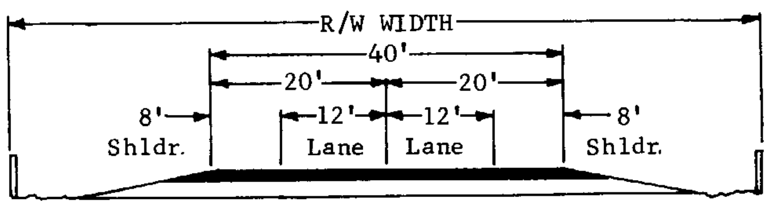
DESIGN APPROVED	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION STANDARD PLANS	REV. DATE
APPROVED FOR DISTRIBUTION	GEOMETRIC DESIGN SELECTION TABLE & PROCEDURES	PLAN NO. D-52.10



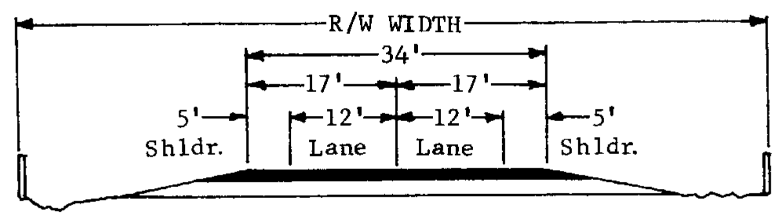
R1



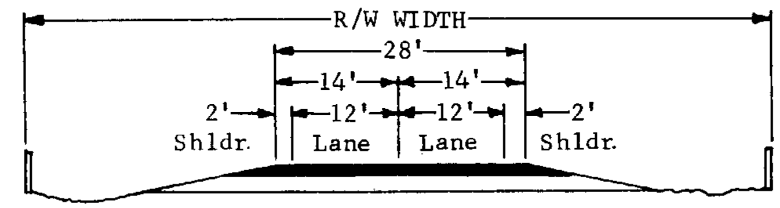
R2



R3



R4



R5

Design Cross Section	R1			R2			R3			R4			R5		
Number of Traffic Lanes	4-DIVIDED			4-UNDIVIDED			2			2			2		
Terrain	LEVEL	ROLL.	MTN.	LEVEL	ROLL.	MTN.	LEVEL	ROLL.	MTN.	LEVEL	ROLL.	MTN.	LEVEL	ROLL.	MTN.
Median Width & Roadway Width	See Cross Sections Above and Sections 8-11 and 8-12 of Design Manual														
Design Speed - m.p.h.	80	70	60	80	70	60	70	60	50	70	60	50	60	50	40
Maximum Curvature - Degrees	See Standards D-6.04, 6.05 & 6.06														
Desirable Maximum Curvature - Degrees	1	2	4	1	2	4	2	4	6	2	4	6	6	8	14
Minimum Stopping Sight Distance - Eye to 6" Object	900	675	500	900	675	500	675	500	375	675	500	375	500	375	275
Passing Sight Distance - Eye to Eye	-	-	-	3100	2700	2300	2700	2300	1900	2700	2300	1900	2300	1900	1550
Maximum Grade - %	3	4	6	3	4	6	3	4	6	4	6	8	4	6	8
Desirable Maximum Grade - %	2	3	4	2	3	4	3	4	4	3	5	6	3	5	7
Minimum R/W Width - Ft.	260	260	260	200	200	200	200	200	200	100	100	100	100	100	100
Desirable Minimum R/W Width - Ft.	308	308	308	250	250	250	250	250	250	200	200	200	-	-	-

GENERAL NOTES

LEVEL TERRAIN: Any combination of geometric design elements that permits trucks to maintain speeds that equal or approach speeds of passenger cars.
ROLLING TERRAIN: Any combination of geometric design elements that causes trucks to reduce speed substantially below that of passenger cars on some sections of the highway but which does not involve sustained crawl speeds by trucks for any substantial distance.
MOUNTAINOUS TERRAIN: Any combination of geometric design elements that will cause trucks to operate at crawl speed for considerable distances or at frequent intervals.
DESIRABLE is the standard to be attained if physical features permit.
PASSING SIGHT DISTANCES less than those tabulated are permitted but are to be avoided if possible.
ROADWAY WIDTH on structures shall be increased by two feet on each side for geometric design standards R1 through R4. For geometric design standard R5 the structure width may be greater than the approach roadway, but in no case shall it be less.
CURVE SUPERELEVATION shall be in accordance with standards D-56.10 through D-56.40.

For Geometric Design Standard Selection Procedure, see Standard D-52.10.

RURAL & RURAL CHARACTER HIGHWAYS

DESIGN APPROVED
APPROVED FOR DISTRIBUTION

STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STANDARD DRAWINGS

REV

GEOMETRIC DESIGN STANDARDS

DRAWING NO. D-52.20

	Location	Urban (30-50 mph)									Suburban (40-60 mph)								
	% Trucks	0 - 5			6 - 10			11 - 15			0 - 5			6 - 10			11 - 15		
	Directional Distribution	50 to 60	61 to 70	71 to 80	50 to 60	61 to 70	71 to 80	50 to 60	61 to 70	71 to 80	50 to 60	61 to 70	71 to 80	50 to 60	61 to 70	71 to 80	50 to 60	61 to 70	71 to 80
U1	Turn & Park Criteria	60% Green Time, Lt. Turn Arrow, Turns: 10% Lt., 10% Rt. No Parking in Outer Lanes. Distress Only.																	
	Design Hourly Volume (100's)	40 to 32	32 to 27	28 to 24	37 to 29	31 to 25	26 to 22	35 to 27	28 to 24	25 to 21	37 to 29	31 to 25	26 to 22	35 to 28	28 to 24	24 to 21	33 to 26	27 to 23	23 to 20
U2	Turn & Park Criteria	60% Green Time, Lt. Turn Arrow, Turns: 10% Lt., 10% Rt. No Parking in Outer Lanes. Distress Only.																	
	Design Hourly Volume (100's)	31 to 25	25 to 21	22 to 19	30 to 24	24 to 20	21 to 18	28 to 22	23 to 19	20 to 17	30 to 24	24 to 20	21 to 18	28 to 22	23 to 19	20 to 17	27 to 21	22 to 18	19 to 16
U3	Turn & Park Criteria	60% Green Time, Lt. Turn Arrow, Turns: 10% Lt., 10% Rt. No Parking in Outer Lanes. Distress Only.																	
	Design Hourly Volume (100's)	26 to 21	22 to 18	19 to 16	25 to 20	20 to 17	17 to 15	23 to 18	19 to 16	16 to 14	25 to 20	20 to 17	17 to 15	23 to 19	19 to 16	17 to 14	22 to 17	18 to 15	16 to 13
U4	Turn & Park Criteria	50% Green Time, Turns: 10% Lt., 10% Rt. Parking in Outer Lanes.																	
	Design Hourly Volume (100's)	17 to 14	14 to 12	12 to 10	16 to 13	13 to 11	11 to 10	15 to 12	13 to 11	11 to 9	16 to 13	13 to 11	11 to 10	15 to 12	13 to 11	11 to 9	15 to 12	12 to 10	10 to 9
U5	Turn & Park Criteria	50% Green Time, Turns: 10% Lt., 10% Rt. No Parking in Outer Lanes.																	
	Design Hourly Volume (100's)	18 to 14	15 to 12	13 to 11	17 to 14	14 to 12	12 to 10	16 to 13	13 to 11	11 to 10	17 to 14	14 to 12	12 to 10	16 to 13	13 to 11	11 to 10	15 to 12	13 to 11	11 to 9

PROCEDURE

GIVEN: Design Speed, ADT (Average Daily Traffic), K (Design Hour Factor), T (% Trucks), D (Directional Distribution) and whether classified as Urban or Suburban.

FIND: The Geometric Design Standard (roadway with the minimum cross section) that satisfies the given criteria

STEPS

1. Compute DHV in 100's = ADT x K x 0.01.
2. Enter the table in the appropriate urban or suburban column.
3. Within the location class column find the appropriate T (% Trucks) column.
4. Within the appropriate D (% Directional Distribution) column, find the range of smallest DHV values which will satisfy the DHV value computed in Step 1. Note that the given design speed must be satisfied.
5. The minimum Geometric Design Standard is indicated by the "U" number associated with the results of Step 4.
6. The details for the Geometric Design Standard found in Step 5 are shown in Standard D-52.40.

Note:
All DHV's computed in these procedures are two-way.

EXAMPLE

GIVEN: Location Class = Suburban
Design Speed = 55 mph
ADT = 18,500
K = 12%
T = 7%
D = 55%

1. DHV = 18,500 x 12 x 0.01 = 22
2. Enter Suburban column.
3. Within the above column, find the T% group which contains the given T value (6% to 10% column).
4. Within the column group found in Step 3 find the column which contains the D value of 55% (50% to 60% column).
5. Within the above column group, find the smallest DHV range which contains the value 22 (from Step 1).
6. The "U" number to the left is found to be U3, the geometrics for which may be found on Standard D-52.40.

GENERAL NOTES

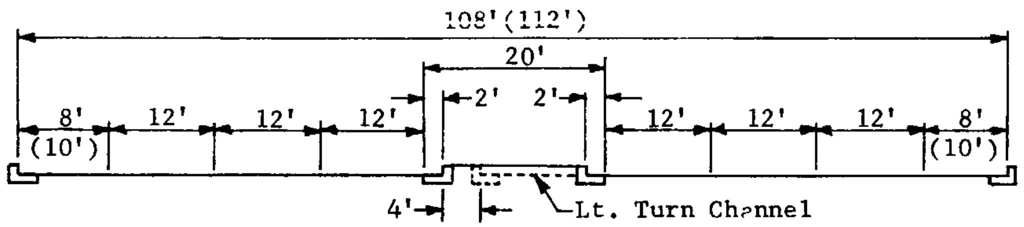
The procedures may in some instances yield results which can be satisfied by more than one geometric standard. Final selection will require careful consideration of factors such as operation, economics, local influences, etc.

A capacity analysis should be performed in those instances where the variables (% green time, % turning movements, etc.) are known to differ appreciably from the average values tabulated.

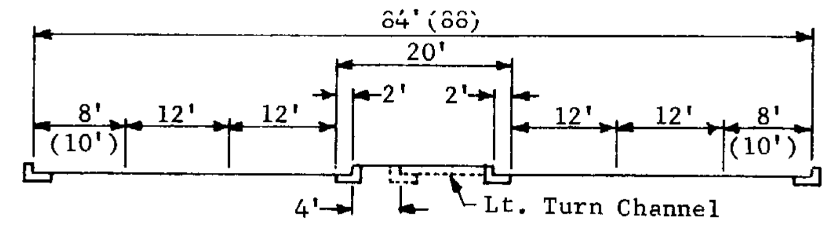
Standard U5 may be modified to serve in situations where it appears that two through traffic lanes would be adequate into the near future and it has been determined that on street parking would be temporarily acceptable. Under these conditions the cross section would be composed of two 16 foot traffic lanes with two 10 foot parking lanes. Traffic carrying capability would be determined by multiplying the appropriate U5 tabular design hourly volume by 65%.

URBAN & SUBURBAN HIGHWAYS

DESIGN APPROVED	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS STANDARD DRAWINGS	REV
APPROVED FOR DISTRIBUTION	GEOMETRIC DESIGN SELECTION TABLE & PROCEDURES	DRAWING NO. D-52.30



U1



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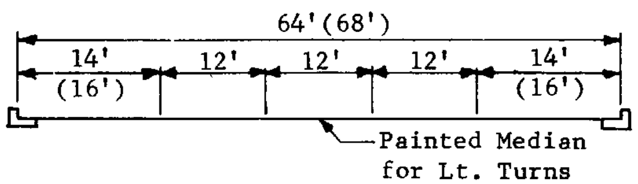
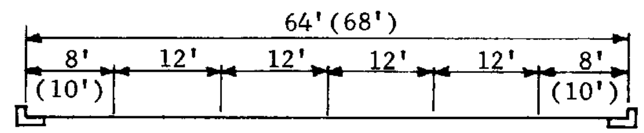


U3



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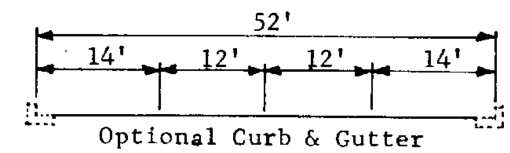

U5

Design Cross Section	U1		U2		U3		U4		U5	
Location	Urban	Suburban	Urban	Suburban	Urban	Suburban	Urban	Suburban	Urban	Suburban
Number of Traffic Lanes	6	6	4	4	4	4	4	4	4	4
Traffic Lane Width - Ft.	12	12	12	12	12	12	12	12	12	12
Median Width - Ft.	20	20	20	20	12	12	-	-	-	-
Minimum Outer Lane Width - Ft.	8	8	8	8	14	14	8	8	14	14
Minimum Desirable Outer Lane Width - Ft.	10	10	10	10	16	16	10	10	14	14
Minimum Roadway Width Incl. Paved Shoulders - Ft.	108	108	84	84	64	64	64	64	52	52
Minimum Desirable Roadway Width Incl. Paved Shoulders - Ft.	112	112	88	88	68	68	68	68	52	52
Design Speed - mph	30-50	40-60	30-50	40-60	30-50	40-60	30-50	40-60	30-50	40-60
Maximum Curvature - Degrees	8	6	8	6	8	6	8	6	8	6
Desirable Maximum Curvature - Degrees	7	5	7	5	7	5	7	5	7	5
Minimum Curb Return Radius - Ft.	20	20	20	20	20	20	20	20	20	20
Minimum Stopping Sight Distance - Eye to 6" Object	375	500	375	500	375	500	375	500	375	500
Maximum Grade - %	6	6	6	6	6	6	6	6	6	6
Desirable Maximum Grade - %	4	4	4	4	4	4	4	4	4	4
Minimum R/W Width - Ft.	135	135	100	100	90	90	90	90	80	80
Desirable Minimum R/W Width - Ft.	300	300	250	250	200	200	200	200	190	190

DESIRABLE is the standard to be attained if physical features permit.
ROADWAY WIDTH on structures shall match that of approach roadway.
CURVE SUPERELEVATION shall be in accordance with standards D-56.10 through D-56.40 subject to adjustments necessary to assuring reasonable ingress and egress to adjacent properties.

For Geometric Design Standard Selection Procedure, see Standard D-52.30.

URBAN & SUBURBAN HIGHWAYS

DESIGN APPROVED	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS STANDARD DRAWINGS	REV.
APPROVED FOR DISTRIBUTION	GEOMETRIC DESIGN STANDARDS	DRAWING NO. D-52.40