

PERMANENT WAY NOTES

DIMENSIONS, FORMULAE ETC. FOR CHECK LUMPS (2)

THESE NOTES ARE INTENDED FOR THE GUIDANCE AND ASSISTANCE OF STAFF ENGAGED UPON PERMANENT WAY WORK. THEY DO NOT IN ANY WAY MODIFY, SUPPLEMENT OR AMEND THE INSTRUCTIONS LAID DOWN IN E.D.I. STANDARD DRAWINGS CIRCULARS ETC., WHICH SHOULD BE REFERRED TO IN ALL CASES.



CURVED SWITCHES (9 - 16 FT)

FORMULA FOR PLANING :- $\text{Log } 0.233$
Planing = $0.233 \sqrt{Re}(\text{ft})$ = 1.3673559

FORMULA FOR OFFSETS :-
Offset (inches) = Heel Opening (ins) + $\frac{10.392X}{\sqrt{Re}(\text{ft})} + \frac{6X^2}{Re(\text{ft})}$

SIMPLIFIED FORMULA FOR OFFSETS :-
where $a = \frac{51.960}{\sqrt{Re}(\text{ft})}$, $b = \frac{150}{Re(\text{ft})}$
Log 51.96 = 1.7156691
Log 150 = 2.1760913

Offset (ins) at 5'-0" = Heel Opening + a + b
 " " " 10'-0" = " + 2a + 4b
 " " " 15'-0" = " + 3a + 9b
 " " " 20'-0" = " + 4a + 16b
 " " " 25'-0" = " + 5a + 25b

STRAIGHT SWITCHES (18 - 30 FT)

FORMULA FOR PLANING :-
Planing = $\frac{\sqrt{Re(A + Re)} - Re}{Z}$

FORMULA FOR OFFSETS :-
Offset = $Re - \sqrt{\{Re + (b+x)\}\{Re - (b+x)\} + H - a}$

$a = \frac{Re(\text{ft})}{2Z^2}$ $b = \frac{Re(\text{ft})}{Z}$

x = Distance from switch heel in feet.

Sw.	A	Z
18'	1056	48
20'	1304	53.3
30'	2933	80

FOR DERIV. OF M, Z, E, Z, SEE DOUBLE CHECKS (3)

Sw.	2Z ²	Z	H
18'	4608	48	.375'
20'	5688	53.3	.375'
30'	12800	80	.375'

EQ. RADIUS Re.	PLANING OF CHECK LUMPS	OFFSETS (where gauge is 4'-8 1/2") *					EQ. RADIUS Re.	LENGTH OF SWITCH	PLANING OF CHECK LUMPS	OFFSETS (where gauge is 4'-8 1/2") *					
		DISTANCE FROM 4 1/2" OPENING (X)								DISTANCE FROM 4 1/2" OPENING (X)					
		5'	10'	15'	20'	25'				5'	10'	15'	20'	25'	30'
191	3' - 2 3/8"	9 1/16"	1' - 3 1/8"	1' - 10 7/8"	-	-	906	18	8' - 10 13/16"	7 7/8"	9 3/8"	1' - 0 3/8"	1' - 2 15/16"	1' - 6"	
213	3' - 4 13/16"	8 3/4"	1' - 2 7/16"	1' - 9 1/2"	-	-	1004	18	9' - 0 7/16"	7 5/8"	9 5/8"	1 1/8"	1' - 2 7/16"	1' - 5 3/8"	
235	3' - 6 7/8"	8 1/2"	1' - 1 7/8"	1' - 8 7/16"	-	-	1095	20	9' - 10 5/16"	7 5/16"	9 1/8"	1 1/16"	1' - 1 7/8"	1' - 4 1/2"	
260	3' - 9 1/16"	8 3/16"	1' - 1 1/4"	1' - 7 3/8"	-	-	1202	20	10' - 0 1/16"	9"	1 1/16"	1' - 1 1/8"	1' - 3 1/2"		
285	3' - 11 1/16"	8 1/8"	1' - 0 7/8"	1' - 6 7/16"	-	-	1315	20	10' - 1 1/16"	8 7/8"	10 7/8"	1' - 1"	1' - 3 3/8"		
311	4' - 1 1/16"	7 15/16"	1' - 0 5/16"	1' - 5 3/8"	-	-	1433	20	10' - 3 3/16"	8 13/16"	10 5/8"	1' - 0 3/4"	1' - 3 1/2"		
339	4' - 3 7/16"	7 3/4"	1 1/16"	1' - 5"	-	-	1504	30	13' - 5 7/8"	7 11/16"	9 3/8"	10 3/4"	1' - 0 3/8"		
368	4' - 5 3/8"	7 3/8"	1 1/16"	1' - 4 3/16"	-	-	1626	30	13' - 8 1/2"	7 3/16"	9"	10 3/8"	1' - 0 3/8"		
398	4' - 7 3/4"	7 1/2"	1 1/4"	1' - 3 11/16"	1' - 8 15/16"	-	1752	30	13' - 10 15/16"	7 3/16"	8 13/16"	10 3/8"	1' - 0 3/8"		
429	4' - 9 15/16"	7 3/8"	10 15/16"	1' - 3 3/8"	1' - 8 1/8"	-	1884	30	14' - 1 1/4"	7 1/2"	8 13/16"	10 3/4"	1 11/16"		
461	5' - 0"	10 3/8"	1' - 2 1/8"	1' - 7 3/8"	-	-	2021	30	14' - 3 3/16"	7 7/16"	8 11/16"	10 1/8"	1 11/16"		
495	5' - 2 3/8"	10 3/8"	1' - 2 1/4"	1' - 6 13/16"	-	-	2163	30	14' - 5 3/16"	7 3/8"	8 5/8"	10"	1 1/2"		
530	5' - 4 3/8"	10 1/8"	1' - 1 13/16"	1' - 6 1/4"	-	-	2311	30	14' - 7 1/2"	7 15/16"	8 3/16"	9 3/8"	1 11/16"		
566	5' - 6 1/2"	9 15/16"	1' - 1 1/16"	1' - 5 1/2"	-	-	2464	30	14' - 9 3/8"	7 5/16"	8 7/16"	9 3/4"	1 11/16"		
603	5' - 8 11/16"	9 3/4"	1' - 1/16"	1' - 4 15/16"	-	-	2623	30	14' - 11 3/16"	7 5/16"	8 7/16"	9 1/2"	1 11/16"		
641	5' - 10 11/16"	9 3/16"	1' - 0 3/4"	1' - 4 7/16"	-	-	2788	30	15' - 0 7/8"	8 1/8"	9 3/8"	10 15/16"			
680	6' - 0 7/8"	9 3/8"	1' - 0 1/2"	1' - 4"	-	-	2958	30	15' - 2 7/16"	8 5/16"	9 1/2"	10 7/8"			
721	6' - 3 1/16"	9 3/16"	1' - 0 3/16"	1' - 3 3/16"	-	-	3134	30	15' - 4"	8 3/8"	9 7/16"	10 3/4"			
763	6' - 5 1/4"	9 1/16"	1 15/16"	1' - 3 3/8"	1' - 6 1/16"	-	3316	30	15' - 5 7/16"	8 1/4"	9 3/8"	10 3/8"			
850	6' - 9 1/2"	8 3/4"	1 17/16"	1' - 2 7/16"	1' - 5 13/16"	-	3504	30	15' - 6 13/16"	8 3/16"	9 5/16"	10 1/2"			
942	7' - 1 1/16"	8 1/2"	1 1"	1' - 1 11/16"	1' - 5 1/4"	-	3698	30	15' - 8 1/16"	8 1/8"	9 5/16"	10 7/8"			
1038	7' - 6 1/4"	8 5/16"	10 5/8"	1' - 1 1/4"	1' - 4 1/4"	-									

* FOR WIDENED GAUGE. INCREASE EACH OFFSET BY THE INCREASE IN GAUGE. FOR GAUGE WIDENED FROM THE 4 1/2" OPENING, THE OFFSET AT 5'-0" SHOULD BE OMITTED FROM THE MANUFACTURING DIAGRAM.