PERMANENT WAY

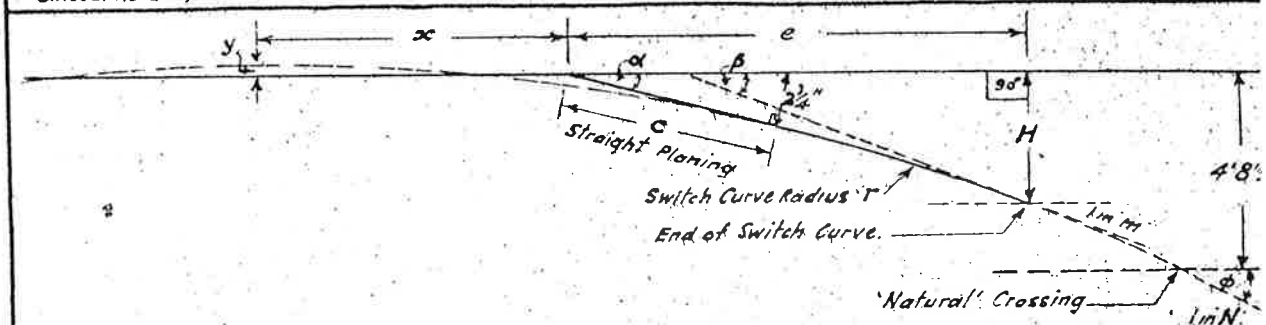
NOTES

B.R.109
B.S.110A

F B SWITCHES AND LEADS.

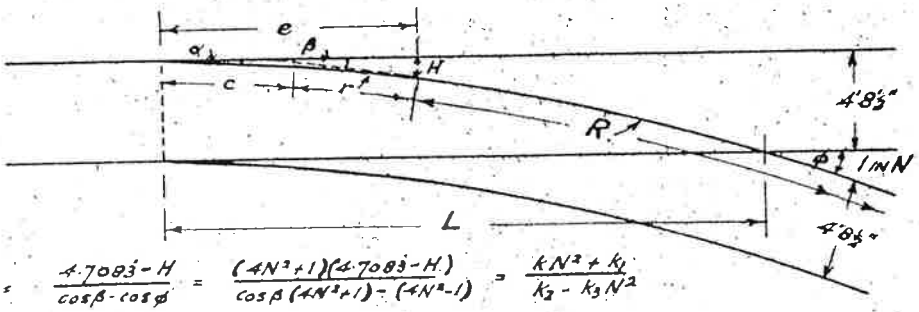
GEOMETRICAL DATA & FORMULAE.

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 DRAWIN CIRCULARS ETC., WHICH SHOULD BE REFERRED TO IN ALL CASES.



		TYPE OF SWITCHES				
		B	C	D	E	F
at Switch Toe.	α	1° 47·395′	1° 25·926′	1° 11·609′	0° 53·710′	0° 42·970
	cos α	0·9995120 77.	0·999687646.	0·999783057	0·999877951.	0·999921
	tan α	0·031250.	0·0250.	0·020833333	0·0156250	0·01250.
	sin α	0·031234752	0·024992191.	0·020828813.	0·0156223062.	0·0124990
	m C.L.M	32·007868.	40·0062759.	48·00629270.	64·0037624	80·003436
at Switch Heel.	β	3° 37·636′	2° 40·588′	2° 10·351′	1° 38·590′	1° 19·632
	cos β	0·99799 6682	0·998909119.	0·999281166.	0·9995888.	0·999731
	tan β	0·0633924	0·046747 1845	0·037935 1211.	0·0286867.	0·023170
	sin β	0·0632654	0·046696 1889	0·037907 8521.	0·0286749.	0·023164
	m C.L.M	15·7903779	21·4032746	26·3702785.	34·8667766.	43·163666
	r ft.	614·08947.	958·08935.	1378·53346	2448·75664	3824·7538
	x "	11·8511389	14·78093254.	17·715552076	23·59236188	29·47360
	y "	0·0705730.	0·07016716	0·06994555	0·06972841	0·06962
	e "	27·00	29·9583	34·5416	46·625.	59·125′
	c "	7·3	9·16	11·00	14·6	18·3
	H	1·159643	0·974984.	0·92099	0·93721.	0·95669
At Natural Crossing	φ	7° 9·16239′	5° 43·49084′	4° 46·31513′	3° 34·79372′	2° 51·8531
	N. C.L.M.	8	10	12	16	20.
	cos φ	0·99221789	0·995012468	0·996533795	0·998048780.	0·998750
	tan φ	0·1254902	0·1002506	0·0834783	0·0625611	0·05003
	sin φ	0·1245136	0·0997506	0·0831889.	0·0624390	0·049968

FORMULAE FOR LEADS



$$R = \frac{4{\cdot}7083 - H}{\cos\beta - \cos\phi} = \frac{(4N^2+1)(4{\cdot}7083 - H)}{\cos\beta(4N^2+1) - (4N^2-1)} = \frac{kN^2 + k_1}{k_2 - k_3N^2}$$

$$N = \frac{1}{2}\sqrt{\frac{(\cos\beta+1)R - (4{\cdot}7083 - H)}{(1-\cos\beta)R + (4{\cdot}7083 - H)}} = \sqrt{\frac{k_2R - k_1}{k_3R + k}}$$

N.B. R = Radius of outer rail of Lead.

$$L = (4{\cdot}7083 - H)\cot\frac{\phi+\beta}{2} + e = N(k + k_3R) - k_4R + e = N\left[k + k_3\left(\frac{kN^2+k_1}{k_2-k_3N^2}\right)\right] - k_4\left(\frac{kN^2+k_1}{k_2-k_3N^2}\right) + e = \sqrt{(k_2R-k_1)(k+k_3R)} - k$$

SWITCHES	B	C	D	E	F
k	7·09788	7·4667	7·57468	7·54224	7·503
k_1	1·774345	1·866675	1·89367	1·88556	1·8758
k_2	0·99899834	0·9994546	0·9996406	0·9997944	0·9998
k_3	0·0040066	0·0021817 4	0·0014875	0·0008224	0·0005
k_4	0·06326627	0·04669634	0·037908	0·0286247	0·0231
e	27·00	29·9583	34·5416	46·625	59·125

(Supersedes R.4155.)