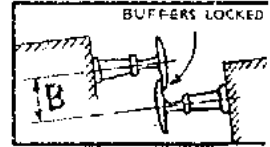


PERMANENT WAY NOTES.

BUFFER-LOCKING.

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

WHEN VEHICLES COUPLED TOGETHER PASS FROM ONE CURVE TO ANOTHER, WITH LITTLE OR NO STRAIGHT TRACK BETWEEN, THERE IS RELATIVE LATERAL MOVEMENT BETWEEN CONTIGUOUS BUFFERS, WHICH IS GREATEST FOR LONG PASSENGER STOCK AND CURVES OF OPPOSITE HAND. COMBINED WITH OSCILLATION ETC. IT MAY CAUSE THE BUFFERS TO LOCK (AS SHOWN IN SKETCH) AND POSSIBLY THE VEHICLES TO DERAIL. IN DESIGNING NEW LAYOUTS, ESPECIALLY CARRIAGE SHED SIDINGS, GREAT CARE SHOULD BE TAKEN TO REDUCE THE RISK OF BUFFER-LOCKING ON REVERSE CURVES. AS MUCH STRAIGHT AS POSSIBLE SHOULD BE INTRODUCED BETWEEN TANGENT POINTS (E.D.I. § 197 STATES, NOT LESS THAN 40 FT.) AND, IN SELECTING THE BEST LAYOUT, THAT GIVING THE LEAST (THEORETICAL) RELATIVE LATERAL BUFFER MOVEMENT ("B" IN SKETCH) SHOULD BE PREFERRED. THE GRAPH BELOW ENABLES THIS QUANTITY TO BE QUICKLY FOUND FOR ANY TWO CURVES AND LENGTH OF STRAIGHT BETWEEN. IT IS PLOTTED FOR AN EXTREME CASE OF TWO 70'-0" x 9'-6 1/2" COMPO. DINERS, 52'-6" BETWEEN BOGIE CENTRES, 73'-11" OVER BUFFERS.



EXAMPLE, "603 FT. RAD. REVERSING TO 603 FT. RAD., 14'-8" OF STRAIGHT"

"EQUIVALENT" RADIUS, $R_e = \frac{603 \times 603}{603 + 603} = 301.5'$ LAY A STRAIGHT EDGE ACROSS THE DIAGRAM FROM THE POINT 14'-8" (14'-8") ON THE SCALE OF D. TO THE POINT 301.5' ON THE SCALE OF R_e : THE POINT WHERE THE STRAIGHT EDGE INTERSECTS THE SCALE OF B GIVES THE RELATIVE LATERAL BUFFER MOVEMENT (1'-0 3/8" IN THIS CASE). SEE DOTTED LINE ON GRAPH.

N.B. THE ABOVE EXAMPLE CORRESPONDS TO A STANDARD 1 IN 8 STATION CROSSOVER-ROAD (SEE E.D.I. § 183 X) WITH 6'-6" INTERVAL, OVER WHICH PASSENGER STOCK WORKS SATISFACTORILY AT LOW SPEED. CASES IN WHICH B IS FOUND NOT TO EXCEED, SAY 12", ARE, AT ANY RATE, NO WORSE THAN THAT.

D

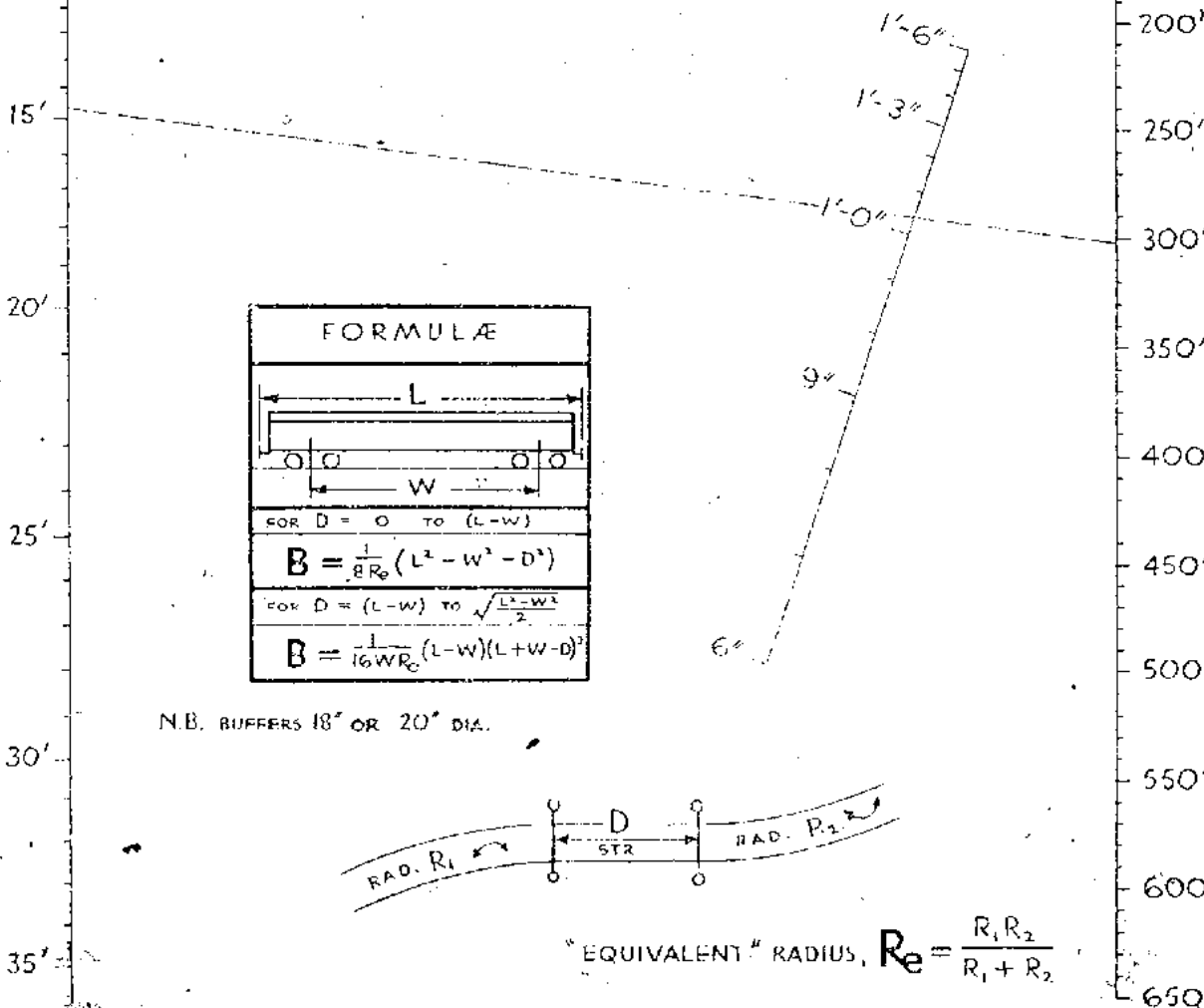
LENGTH OF STRAIGHT BETWEEN TANGENT PTS.

"EQUIVALENT" RADIUS OF REVERSE CURVES.

0'
5'
10'
15'
20'
25'
30'
35'

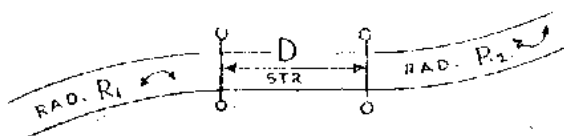
R_e
150'
200'
250'
300'
350'
400'
450'
500'
550'
600'
650'

THEORETICAL RELATIVE LATERAL BUFFER MOVEMENT (SEE SKETCH ABOVE) **B**



FORMULÆ	
FOR D = 0 TO (L-W)	
$B = \frac{1}{8R_e} (L^2 - W^2 - D^2)$	
FOR D = (L-W) TO $\sqrt{\frac{L^2 - W^2}{2}}$	
$B = \frac{1}{16WR_e} (L-W)(L+W-D)^2$	

N.B. BUFFERS 18" OR 20" DIA.



"EQUIVALENT" RADIUS, $R_e = \frac{R_1 R_2}{R_1 + R_2}$