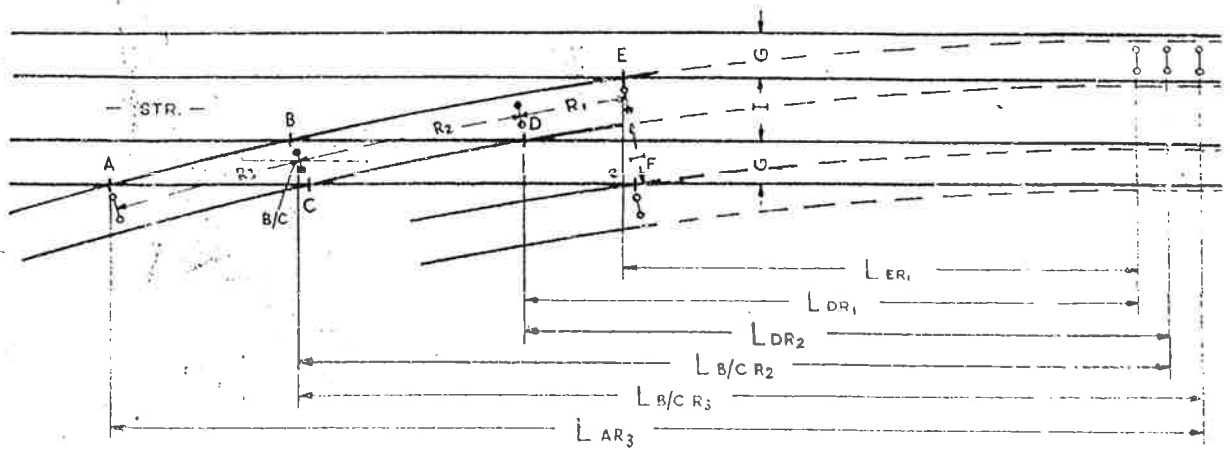


PERMANENT WAY
NOTES

DOUBLE
JUNCTIONS (8)

STANDARD XING ANGLE BASIS
CURVE out of STRAIGHT

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. 1 AND DRAWING CIRCULARS ETC., WHICH SHOULD BE REFERRED TO IN ALL CASES.



GIVEN: $N_E \cdot N_D > N_D > N_{B/C} > N_A$

RADII

$$R_1 = (2N_E^2 + \frac{1}{2}) \left[\frac{I(N_D^2 + \frac{1}{4}) - G(N_D^2 - \frac{1}{4})}{N_E^2 - N_D^2} \right] - \frac{G}{2}$$

$$R_2 = \frac{G \cdot N_D^2 (4N_{B/C}^2 + 1)}{2(N_D^2 - N_{B/C}^2)}$$

$$R_3 = \frac{G \cdot N_A^2 (4N_{B/C}^2 + 1)}{2(N_{B/C}^2 - N_A^2)}$$

TANGENT LENGTHS

$$L_{ER1} = \frac{N_E (4R_1 + 2G)}{4N_E^2 + 1}$$

$$L_{DR1} = \frac{N_D (4R_1 - 2G)}{4N_D^2 + 1}$$

$$L_{DR2} = \frac{N_D (4R_2 - 2G)}{4N_D^2 + 1}$$

$$L_{B/C R2} = \frac{N_{B/C} \cdot 4R_2}{4N_{B/C}^2 + 1}$$

$$L_{B/C R3} = \frac{N_{B/C} \cdot 4R_3}{4N_{B/C}^2 + 1}$$

$$L_{AR3} = \frac{N_A (4R_3 + 2G)}{4N_A^2 + 1}$$

$$L_{BR2} = L_{B/C R2} + \frac{G}{4N_{B/C}}$$

$$L_{BR3} = L_{B/C R3} + \frac{G}{4N_{B/C}}$$

$$\alpha F = \frac{I+G}{2N_E} \text{ (approx.)}$$

$$L_{CR2} = L_{B/C R2} - \frac{G}{4N_{B/C}}$$

$$L_{CR3} = L_{B/C R3} - \frac{G}{4N_{B/C}}$$

LENGTHS of LEGS

$$AB = \sqrt{(L_{AR3} - L_{BR3})^2 + G^2}$$

$$AC = L_{AR3} - L_{CR3}$$

$$BE = \sqrt{[(L_{BR2} - L_{DR2}) + (L_{DR1} - L_{ER1})]^2 + I^2}$$

$$BD = L_{BR2} - L_{DR2}$$

$$CD = \sqrt{(L_{CR2} - L_{DR2})^2 + G^2}$$

$$CF = (L_{CR2} - L_{DR2}) + (L_{DR1} - L_{ER1}) + \alpha F$$

CROSSING to CROSSING DIMENSIONS

$$D \text{ to } E = \sqrt{(L_{DR1} - L_{ER1})^2 + I^2}$$

$$D \text{ to } F = \sqrt{(L_{DR1} - L_{ER1} + \alpha F)^2 + G^2}$$