1. RAIL JOINTS & WELDING OF RAILS

LONG WELDED RAIL

A LWR, is the rail whose central part does not undergo any longitudinal movement under temperature variations.

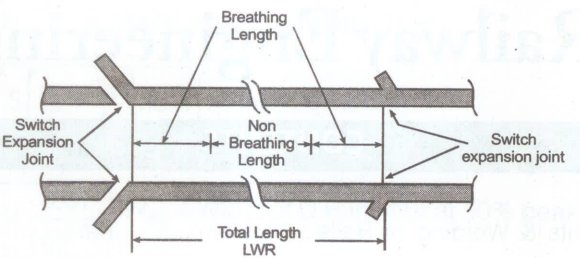
Normally, any length greater than 200 m on BG, and 300 m on MG will function as LWR.

Length of rail required in one direction $\boxed{L = (n - 1)\,s}$

Total minimum length of LWR so that central portion does not move = 2L

Minimum no. of sleepers required to prevent P_f force

$$\boxed{n = \frac{F}{P_f}} \text{ where } \boxed{F = \alpha T E_S \cdot A_S}$$



where, F = Force in a fully developed rail neglecting the creep effects.

A_S = Cross-sectional area of rail section.

E_S = Modulus of elasticity of rail steel.
~2150 tonnes/sq. cm.

α = Coefficient of linear expansion for rail steel
~0.00001152/ °C.

T = Change in temperature in °C.

P_f = Force resisted by one fixtures.

S = Spacing of fixtures.

n = minimum no. of sleepers required to prevent F force