

DIAGRAM SHOWING LENGTHS OF  
**1½-IN. PIPE**  
UNDER STRAIN FOR VARIOUS EXPANSIONS.  
Secondary Expansion ( $s$ ) = Zero  
Maximum Fiber Stress = 12 000 lb. per sq. in.

Expansion ( $r$ ), in Inches.

5

10

15

20

25

Length of 1½" Pipe under Strain ( $l_1$ ), in Feet.

$l_2 = \infty$

$l_2 = 8l_1$

$l_2 = 4l_1$

$l_2 = 2l_1$

$l_2 = l_1$

$l_2 = \frac{1}{2}l_1$

$l_2 = \frac{1}{4}l_1$

$l_2 = 0$