

$$A_x = 100 \text{ in}^2 \quad I_z = 1000 \text{ in}^4 \quad \text{DEPTH} = 20 \text{ in}$$

I WANT TO GIVE IT A TEMP. CHANGE OF 20° IN THE $20''$ DEPTH

FROM MY WORK

$$\Delta T = \frac{M D}{E I \alpha}$$

ΔT = TEMP. DIFFERENCE TOP TO BOTM

M = EQUIVALENT MOMENT \rightarrow IN KIP

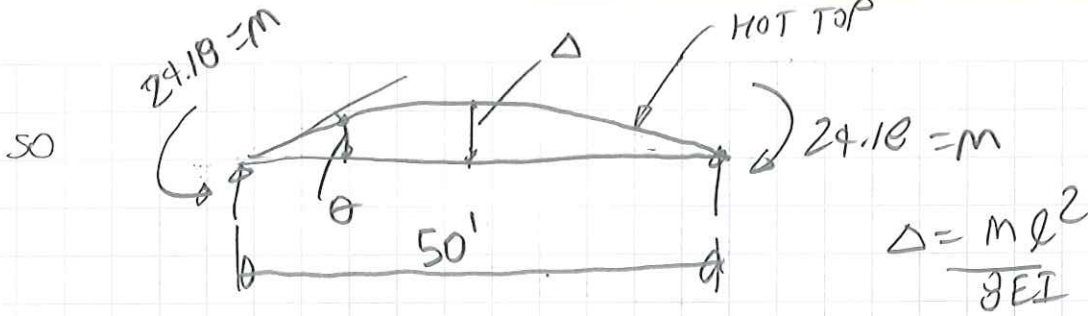
D = DEPTH \rightarrow INCH

E \rightarrow MOD. OF ELASTICITY \rightarrow 4030 KSI

I \rightarrow MOM. OF INERTIA

α \rightarrow ALPHA \rightarrow COEFF. OF EXPANSION 6×10^{-6}

$$M = \frac{\Delta T E I \alpha}{D} = \frac{20 - 4030 - 1000 \times 6 \times 10^{-6}}{20} = 24.18 \text{ KIP}$$



$$\Delta = 24.18 \times \frac{(50 \times 12)^2}{8} \cdot 4030 \cdot 1000 = .27''$$

$$\theta = \frac{m l}{2EI} = \frac{24.18 \times (50 \times 12)}{2 \cdot 4030 \cdot 1000} = .0018 \text{ RADIANS}$$

I-RAN FRAME 3DP

LC1 → TEMP LOADS

LC2 → 24.18 COIC. END MOMENTS

WHY ARE THERE NO DEFLECTIONS FOR LC1?

A TEMP. LOAD SHOULD CAUSE NO MOMENTS + SHEARS IN MY MODEL BUT LC1 HAS?

SEE LC2 → $\Delta = .27''$ ✓
 $\theta = .0018$ ✓