Solve by Deflection Method

Choose B as Redundant

With B removed:
Solve for $\delta_B$ by Second Moment Area Method

$M_{EI}$ Diagram $2730.67/\text{EI}$ 256 K in / $\text{EI}$

$\sum M_A = 0 = -M_A + 2730 \times 10 + 1024 \times 20 \times \frac{\text{EI}}{\text{EI}}$

$M_4 = \frac{47786.67}{\text{EI}} = \Delta \times \frac{\text{FT}}{K}$

With B as load:
Solve with Equation in D-25

$\Delta = \frac{PL^3}{48EI} = \frac{P \times 48^3}{48EI} = \frac{47786.67}{\text{EI}}$

$P = 20.74 K$

By Symmetry:

$A + C = 64 - 20.74 = 43.26$

$A = C = 21.63 K$
LOAD DIAGRAM

\[ w = 2 \text{ klf} \]

\[ 21.63 \text{k} \]

\[ 20.74 \text{k} \]

\[ 21.63 \text{k} \]

SHEAR DIAGRAM

\[ 10.37 \text{k} \]

\[ 82.96 \text{k} \]

\[ 26.88 \text{k} \]

\[ 116.96 \text{k} \]

\[ 5.185' \]

\[ 10.815' \]

\[ -10.37 \text{k} \]

\[ -21.63 \text{k} \]

MOMENT DIAGRAM

\[ 90.08 \text{k} \cdot \text{m} \]

\[ 312 \text{k} \cdot \text{m} \]

\[ 116.96 \text{k} \cdot \text{m} \]