ARCH 324 - Structures 2, Winter 2009

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SOLVE BY DEFLECTION METHOD

Choose B as Redundant

With B removed:

Solve for $\Delta_B$ by Second Moment Area Method

$M_{diagram} = 2730.67 \times \frac{1}{EI}$

$M = 97786.67 \times \frac{1}{EI}$

$\Sigma M_{EA} = 0 = -M_A + \frac{2730(10)}{EI} + \frac{1024(20)}{EI}$

$M_A = \frac{97786.67}{EI}$

With B as load:

Solve with equation in D-25

$\Delta_E = \frac{PL^3}{48EI} = \frac{P \times 48^3}{48EI} = \frac{97786.67}{EI}$

$P = 20.74 \text{ k}$

By symmetry:

$A + C = 64 - 20.74 = 43.26$

$A = C = 21.63 \text{ k}$
LOAD DIAGRAM

SHEAR DIAGRAM

MOMENT DIAGRAM