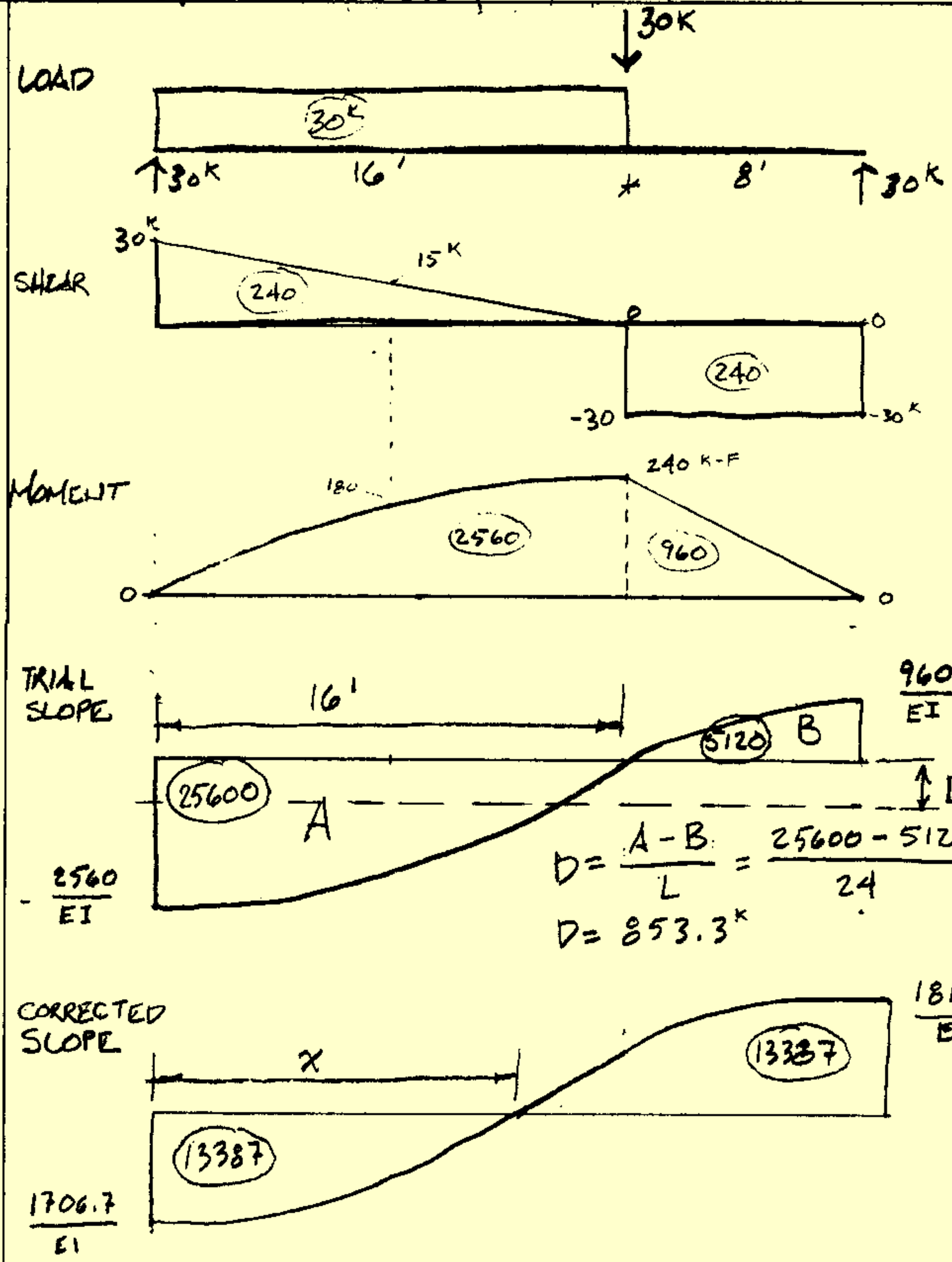
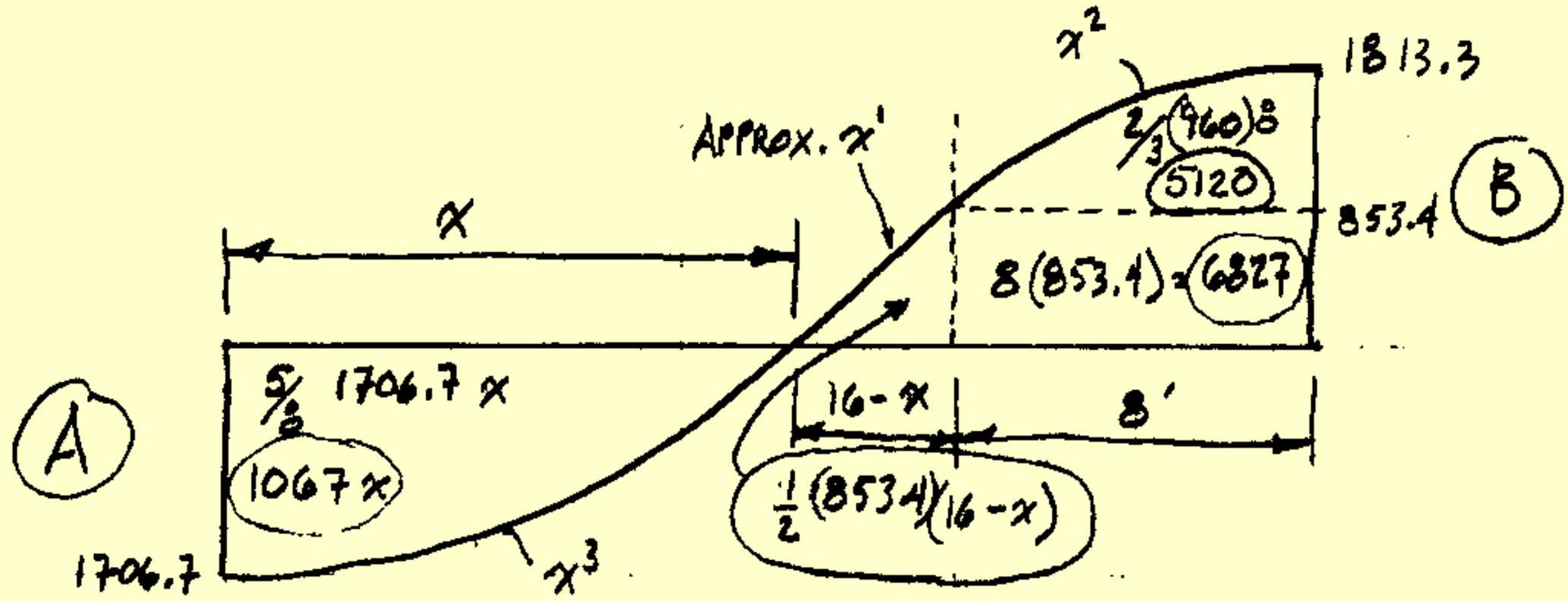
open.michigan



FIND x BY TRIAL & ERROR SO THAT AREA A = B

(CONT)

TO SOLVE FOR x, GUESS A TRIAL x AND THEN CALCULATE THE AREAS. ADJUST x SO THAT AREA 'A' BELOW EQUALS AREA 'B' ABOVE THE BASE LINE. APPROXIMATELY TRIANGULAR AREAS NEAR THE CENTER CAN BE ½ bh



TRIAL 1 - $x = 12'$

AREA (A) $1067(12) = 12804$

AREA (B) $5120 + 6827 + [\frac{1}{2} 853.4(16-12)] = 13654$ 6.6% OFF

TRIAL 2 $x = 13'$

AREA (A) $1067(13) = 13871$

AREA (B) $11947 + [\frac{1}{2} 853.4(16-13)] = 13227$ 4.6% OFF

TRIAL 3 $x = 12.6'$

AREA (A) $1067(12.6) = 13444$

AREA (B) $11947 + [\frac{1}{2} 853.4(16-12.6)] = 13398$ 0.3% OFF

AVG AREAS = 13421

$$\text{DEFLECTION} = \frac{\text{AREA}(1728)}{EI} = \frac{13421(1728)}{29000(1830)} = \underline{0.6''}$$