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1) \( A_s = \# \text{bars (area of 16\#)} \)
\[
A_s = 3 \times (0.79) = 2.37 \text{ in}^2
\]
\[
\text{from table p341}
\]

2) \( \text{find limit of } a \) (depth of the stress block)

\[
a = k_1 \left[ \frac{87}{87 + f_y} \right] d \left(0.75\right)
\]

3) \( \text{based on strength of concrete} \)

\[
a = 0.85 \left[ \frac{87}{87 + 60} \right] 
\]

\[
18 \left(0.75\right) = 6.79 \text{ in}
\]

\[
0.85 f'_c
\]

\[
\frac{a}{0.85 f'_c b}
\]

4) \( c = \frac{a}{b-l} \)

\[
0.85 f'_c ab = A_s f_y
\]

\[
a = \frac{A_s f_y}{0.85 f'_c b} 
\]

\[
a = \frac{2.37 \times 60}{0.85 \times (3) \times (12)} = 4.65 \text{ in}
\]

\[
\text{steel is yielding before compressive failure in concrete}
\]
4) find moment capacity

\[ M = A_s f_y j d = 0.85 f'_c a b j d \]

for a rectangular section \( j_d = d - a/2 \)

\[ \bar{M} = M_n = A_s f_y \left( d - \frac{a}{2} \right) = 2.37 \times 100 \times \left( 18 - \frac{4.65}{2} \right) \]

\[ M_n = 2228.99 \text{ K} = 185.75 \text{ K'} \]

5) \( M_u = 0.9 M_n \quad M_u = 0.9 \times 185.75 = 167.18 \text{ K} \)