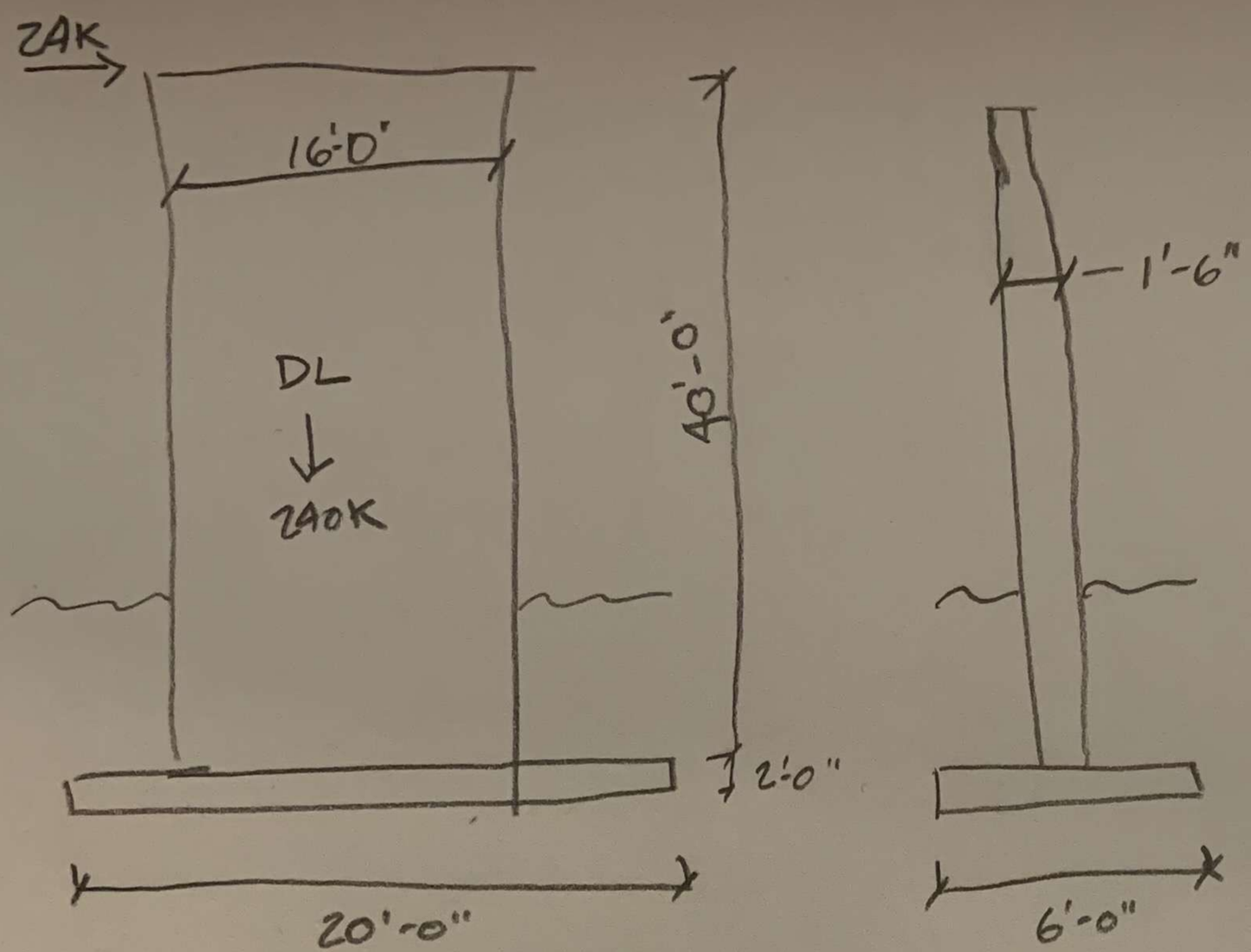

CONCRETE WEIGHT: $\frac{150\ \#/FT^3}{1000} = .15\ K/FT^3$

WALL

$V = LWH$

$V = 16' \times 40' \times 1'\text{-}6"$

$V = 960\ FT^3$

$WEIGHT = 960\ ft^3 \times .15\ k/ft^3$

$= 144K$

FOOTING

$V = LWH$

$V = 20' \times 6' \times 2'$

$V = 240\ ft^3$

$WEIGHT = 240\ ft^3 \times .15\ k/ft^3$

$= 36k$

PIVOT @ A = $\frac{20'}{2} - 10'$

$= 0$

STABILIZING MOMENT

$SM = (DL + W_{WALL} + W_{FOOT}) \times D$

$SM = (240K + 144K + 36K) \times 10'$

$SM = 4200\ K\text{-}FT$

OVERTURNING MOMENT

$OM = F \times D$

$OM = 24K \times 42'$

$OM = 1008\ KFT$

$F_S = \frac{SM}{OM} \rightarrow F_S = \frac{4200\ KFT}{1008\ KFT} \rightarrow 4.16 \rightarrow 4.2$

OVERTURNING MOMENT IS TAKEN AS SUM OF MOMENTS ON COLUMN & ANY SHEAR ON THE COLUMN MULTIPLIED BY THE DISTANCE FROM THE BASE OF THE COLUMN TO THE BASE OF THE FOOTING. IF THERE IS UPLIFT ON THE COLUMN THEN THE MOMENT ASSOCIATED WITH THAT AXIAL LOAD IS ALSO CONSIDERED IN THE OVERTURNING MOMENT.

FACTOR OF SAFETY = $\frac{\text{STABILIZING}}{\text{OVERTURNING}}$