Background Info on Masonry Walls

Read Section 12.2.3 in the MDG

Check the ultimate strength of the same masonry wall analyzed for HW #1 and HW #2 for axial and out-of-plane flexure with #5 reinforcing bars added every 48”.

1. Axial Compression, use LC \( 1.2D + 1.6L \), \( \phi = 0.65 \) for pure compression
2. Flexural Tension, use LC \( 0.9D + 1.6W \), depth to neutral axis (x) = 0.373”
3. Secondary Moment, use LC \( 1.2D + 1.6W + 0.5L \)
   
   Allowable Stress analysis at these loads yields: \( \varepsilon_m = 0.000338 \), x = 1.216”

   Factored Load Analysis at these loads (but including P-\( \Delta \) in Mu) yields x = 0.476”

Repeated from HW #1:

12” CMU, density = 110 pcf, Mortar Cement Type S
\( f'm = 2000 \) psi

Height = 20’, simply supported at top and bottom

\( P_D = 300 \) plf
\( P_L = 1000 \) plf
Wind = 25 psf