

I am aiming for setting up a cantilever beam for up to 3 stems using spreadsheet. I would like it to do cantilever retaining wall and restrained basement wall with option to add axial load. Each stem can be CMU or Concrete. Then we can load the stem with triangular earth pressure, rectangular surcharge, inverted triangle for seismic, an axial load and a restrained lateral load near the top. Then from Structural Analysis, I would get the induced shear, moment and deflection.

But how do I factor the Max. Moment by 1.6 so as to compare it to ϕM_n with depth? Also how do I check V_c with ϕV_n ? I like this approach, because I can make charts for shear, moment and deflection along the wall height and compare the demands with capacity. This way I can optimize stem thickness with depth. Later on I will get to development length and S&T reinforcement.

Any direction is appreciated. Thanks.

