ME 360 – H03 Name _____

USE THIS SHEET AS THE FIRST PAGE OF YOUR HOMEWORK SUBMISSION

1) A stepped bar with fillets is loaded in pure tension as shown in Appendix C Figure C-9 Norton. Use D = 39 mm, d = 30 mm, r = 1.6 mm, h = 7 mm and P = 6 kN. Determine nominal and actual stress at the fillets.

σ_{NOM} _____ MPa σ_{ACT} _____ MPa

2) The same stepped bar with fillets is loaded in pure bending as shown in Appendix C Figure C-10 Norton. Use M = 9 N.m (note units). Determine nominal and actual stress at the fillets.

σ_{NOM} _____ MPa σ_{ACT} _____ MPa

3) Determine maximum actual stress and its location if the bar in Problems 1) and 2) is loaded simultaneously in tension and bending.

σ_{MAX} _____ MPa location = TOP fillet or BOTTOM fillet (circle one)

4) The C-clamp shown below has rectangular cross-section A-A that is 33 mm tall by 9 mm wide and the material is class 50 gray cast iron. Determine maximum tensile stress and factor of safety for clamping force 2.2 kN. Ignore stress concentration factors. See Section 4.9 in Norton for help with curved beams.

σ_{MAX} _____ MPa N _____