560.206
Homework 6

Conjugate Beam Method

1. Hibbeler #8-28
provide a plot of slope and displacement as well as the sloe and displacement at C.

2. Hibbeler #8-43

Virtual Work Solutions for Trusses

3. Hibbeler #8-75 (careful with units!)

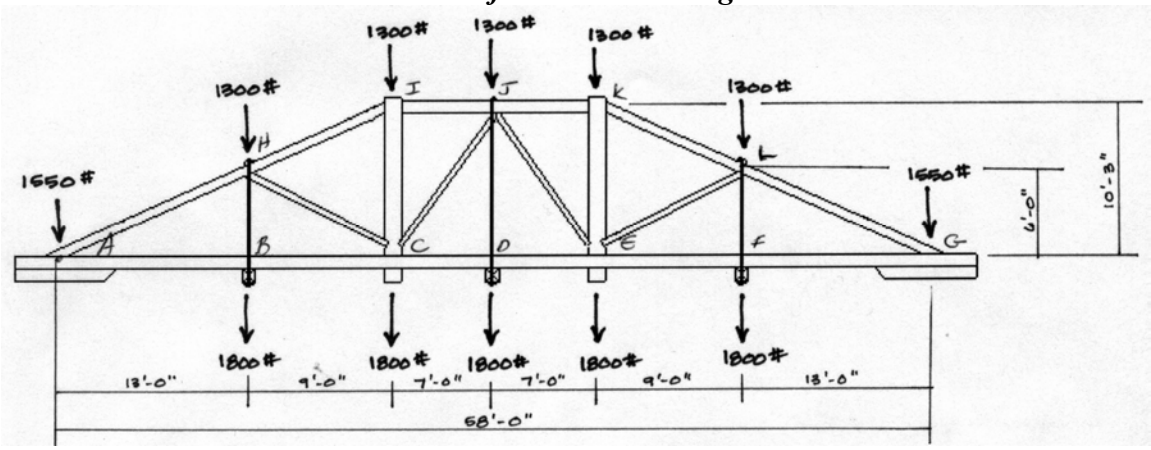
4. Hibbeler #8-74

5. How short should you make member AE if you want the net deflection under the given loads to be zero?

Group Work – Truss Analysis Case Study Part 2

6. Morgan Bridge Case Study Virtual work application for deflection determination

Find the vertical deflection at D using Virtual Work



Truss is symmetric, so assume HI = KL, etc..

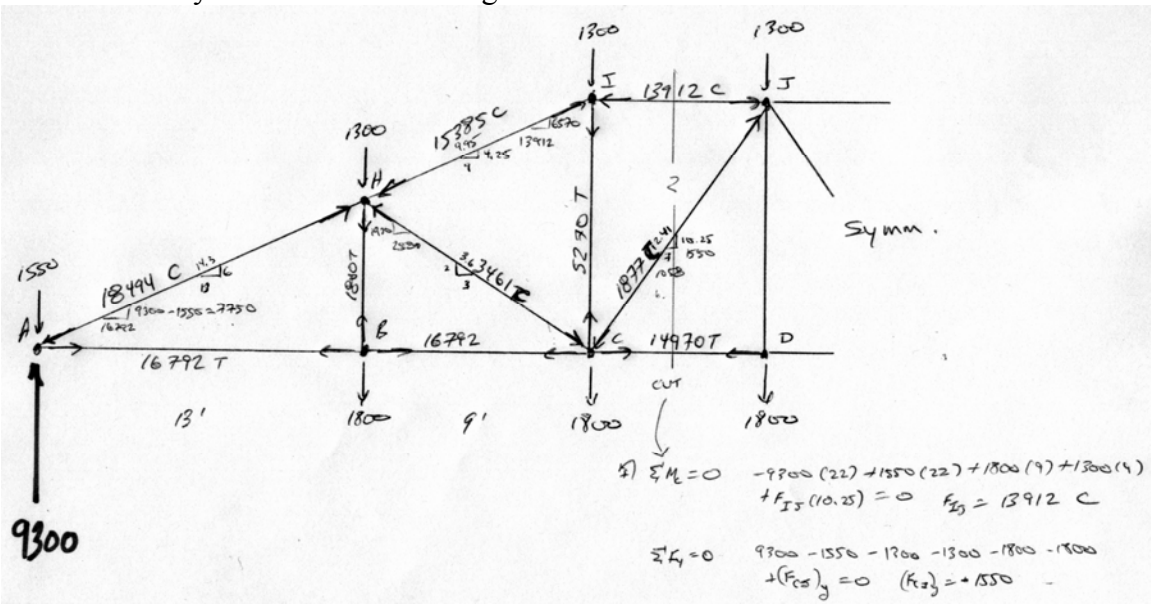
Top Chord
AH, E=1400 ksi, A=75 in^2
HI, E=1400 ksi, A=75 in^2
IJ, E=1400 ksi, A=100 in^2

Bottom Chord
AB, E=1400 ksi, A=120 in^2
BC, E=1400 ksi, A=120 in^2
CD, E=1400 ksi, A=120 in^2

Diagonals
HC, E=1400 ksi, A=50 in^2
CJ, E=1400 ksi, A=40 in^2

Verticals
HB, E=29000 ksi, A=0.7854 in^2
IC, E=1400 ksi, A=130 in^2
JD, E=29000 ksi, A=1.2272 in^2

Dead load analysis of the structure is given below.



You will need to find *n* for a unit load at D…

It might be smart to make a little spreadsheet to organize all your results.

Be careful with units!!

Comment on the “realism” of your final result.