

CE 4010/6010

Homework #10

Assigned: Friday, February 14, 2014;
Due: Thursday, February 20, 2014; end of class

Homework must be done neatly in pencil, on 8 1/2" x 11" paper, stapled together. Each step must be easily followed; diagrams are useful. State your assumptions. Homework that is not neat and legible may be rejected. Staple the question sheet to the front of your homework.

Make Sure To Include The Cover Page!

Problem 1: Write a MATLAB script (*.m file) to calculate the deformations, reactions and member forces of the following truss for each of the problems given below (i.e. three scripts total). In the script, use the functions provided to generate the element matrices and assemble the global matrices. Use the numbering system shown below for elements.

In your submission include both your MATLAB script and your results.

- 1) Consider a 1 inch settlement in the vertical direction at support 1, (33 points).
- 2) Consider fabrication error in member 3 (1.5 inches too short) and member 5 (2 inches too long) (33 points).
- 3) Consider a 90° F increase in temperature for members 3, 4 and 5, $\alpha = 8 \times 10^{-6} \text{ in/in/}^\circ\text{F}$ (34 points).

