

**Homework # 2****CIVE311 – STRUCTURES I**

Spring 2007-08

**Topics:** Influence Lines  
Maximum Values (Dead + Live Loading) & Absolute Live Maxima  
Beams and Truss  
Application on SAP2000

**Textbook:** Structural Analysis, by R.C. Hibbeler  
Prentice-Hall, **6<sup>th</sup> Edition**

**Problems:**

- Chapter 6: 5, 13, 7<sup>(1)</sup>, 21<sup>(2)</sup>, 27<sup>(3)</sup>, 28<sup>(4)</sup>, 48<sup>(5)</sup>, 73<sup>(6)</sup>
    - (1) Problem 7: Add Reaction at B and Shear at A.
    - (2) Problem 21: Add Moment at B and Shear at C.
    - (3) Problem 27: Add Shear at D and Dead Load (Two cases:  $w_D=1000$  lb/ft and  $w_D=100$  lb/ft).
    - (4) Problem 28: Add Live Load ( $P=1000$  lbs).
    - (5) Problem 48: Add Reaction at A and Member Force CD; unit load moves from A to G.
    - (6) Problem 73: Add Absolute Maximum Live Shear; Maximum Reaction at A; Maximum Moment at mid-point C. Compare Maximum Shears (Absolute and at A); Compare Maximum Moments (Absolute and at C). Comment on both comparisons.
  - Synthesis Problem:  
Solve Problem I (Question 1) from Quiz #1 (CVEV051-Structures I, Spring 2001-2002; available on this course Moodle); then solve for the influence lines of the moment at B and the reaction at C, deduce their values for the loading given, and compare with Question 1 and comment (briefly).
- NOTE:** When solving for influence lines, use the approach which you prefer; a point-by-point however, rather than equations, is definitely preferred.
- Solve for (check values from table and plot) the Influence Lines using SAP2000 for the following problems (in addition to the manual calculation): 5, 7, 21, 28, & 48. Refer to and follow steps outlined in SAP-Hints-3.

**Given:** Monday, February 25, 2008

**Due:** Wednesday, March 12, 2008

**IMPORTANT NOTES**

- Homework should be submitted on time.
- Use FE paper, staple, and submit in FEA folder.
- Homework should be clean, organized, and professional.
- Think of yourself as a professional engineer who is submitting a project (your homework) to a client (your teacher), who, if not satisfied, will not give you another job.

**If you do not satisfy the above, your homework may be returned to you without grading.**