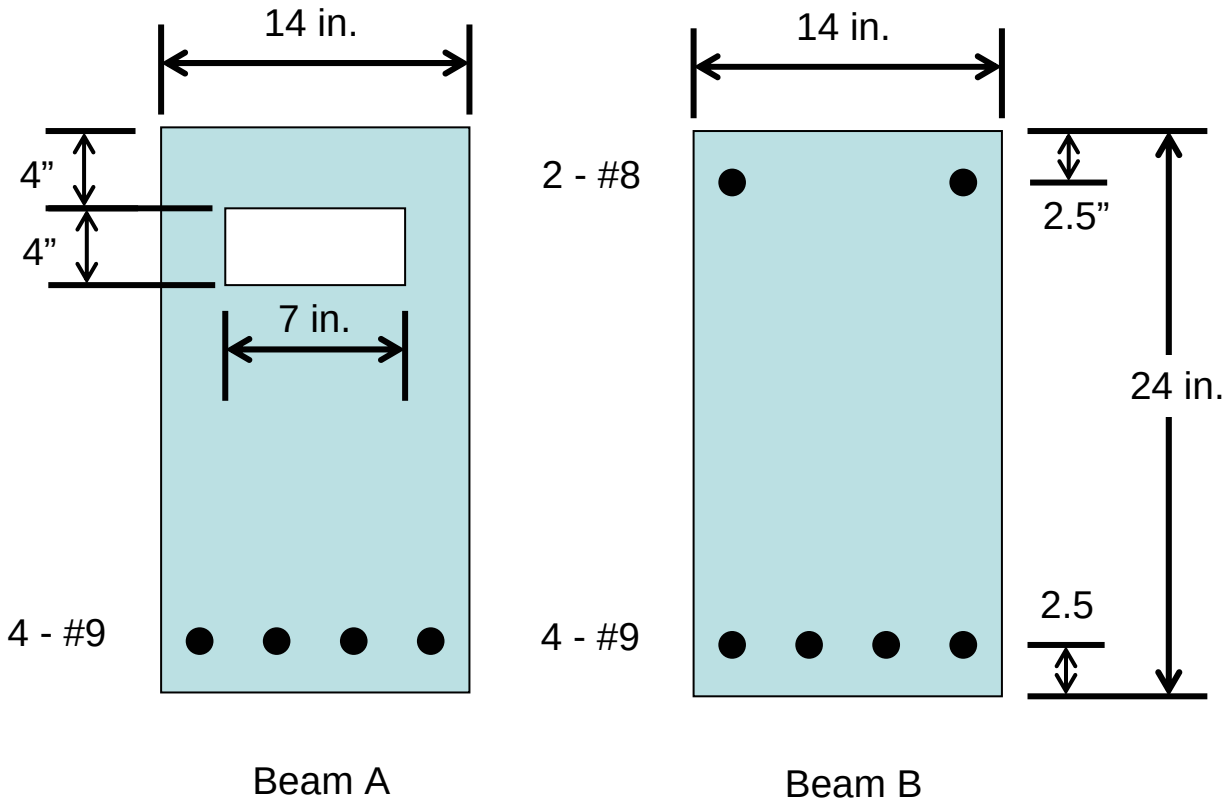
CE243A- Behavior and Design of RC Elements

Assignment #1: Nominal moment capacity, Moment-curvature response, Deflections
Due date: 11 October 2004.

1.2 Using a Whitney Stress Block assumption, calculate the nominal moment capacity M_n for cross sections A and B given below. Use f'_c = 4 ksi and f_y = 60 ksi.



1.2 Calculate a moment – curvature relation for Cross Section B for the following points: (a) just prior to cracking, (b) first yield of tension reinforcement, (c) and for an extreme fiber compression strain of 0.003 using a Whitney stress block

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1.3 If Cross Section B is used for a simply supported beam that spans 20 ft and supports a point load at mid-span, determine the load versus displacement relation for points (a), (b), and (c) of problem 1.2. For (c), use a plastic hinge model with an assumed hinge length equal to the beam depth (24 in.).