Name:_____

53:134 Structural Design II, Spring 2006
Final Exam

Assigned: 26 April 2006
Due: 08 May 2006 in CEE office by 9am

Design W14 shapes for the members of the lowest story of a single-bay multistory unbraced frame, part of which is shown below (the frame is indeterminate to one degree). The axial compression P is the total load acting on the bottom story columns and the wind load H is the total horizontal service wind load acting at point B for the entire frame. The steel is A992 (F_y = 50 ksi, E = 29000 ksi). Assume same section for columns AB and DC. Also assume that the columns of the second story have same section as for the first story.

Carry out at least one iteration of the design cycle. If you make any other assumptions in your work, state them clearly.

P = 230 kips dead load
    = 92 kips live load

w = 0.5 kip/ft dead load
    = 1.5 kip/ft live load

H = 78 kips wind load