

Midterm 1

02/23/05, 502 Davis Hall, 2 hours

Name _____

Problem	Points	Maximum
1		20
2		20
3		20
4		20
5		20
total		100

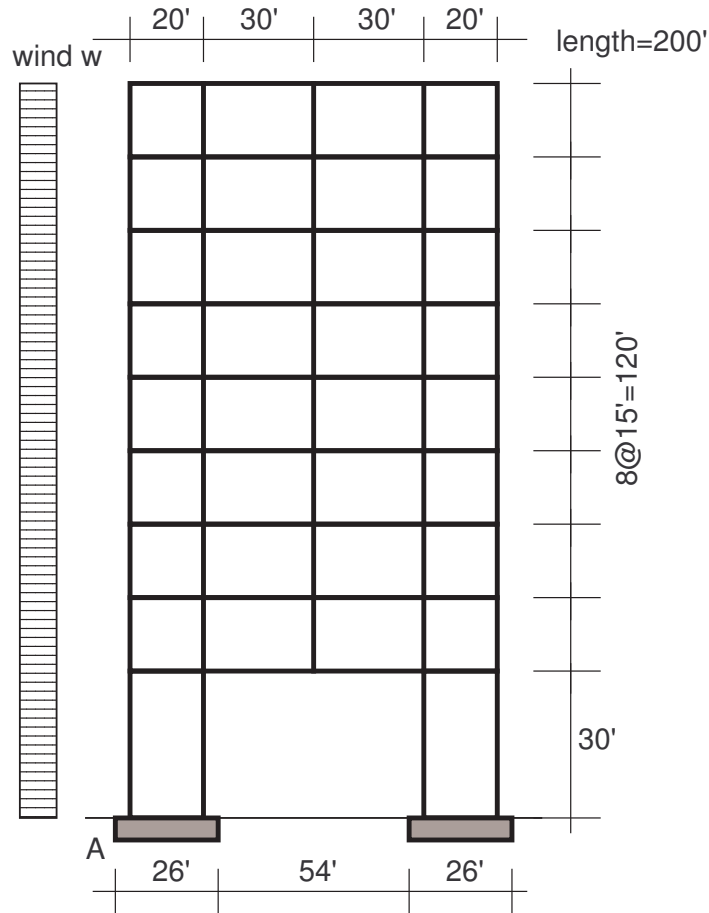
Honor Pledge:

I have neither give nor received aid during this examination, nor have I concealed any violation of the Honor Code.

Problem 1: (20%)

The building shown below is 200 feet long (the length is not shown). It has 8 stories and a roof above the large entryway. Each story and the roof have a 6-inch thick reinforced concrete slab. Additional dead weight of the ceilings, flooring, and permanent partitions is 30 pounds per square foot on each of the 8 floors and the roof. The foundation is a pair of 26x200-foot reinforced concrete mats at the ground level, as shown.

Compute the value of the uniform wind pressure w acting on the side of the building as shown at the moment when uplift is just about to occur at point A. Neglect the actual depth of the foundation and assume the uplift occurs at the ground level.



Problem 2: (20%)

For each structure shown in the table:

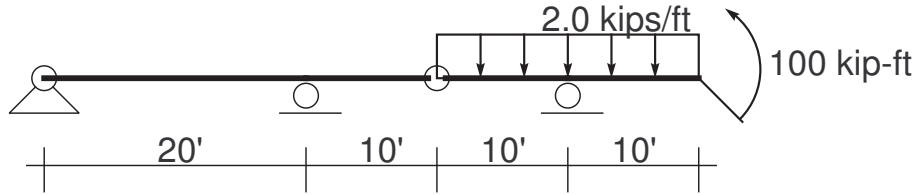
1. Determine if the structure is stable or not;
2. For each stable structure, determine if it is statically determinate or statically indeterminate.

Write down your reasoning (such as counting of equations and unknowns) and submit it together with your yes/no answers in the table.

	stable?	statically determinate?

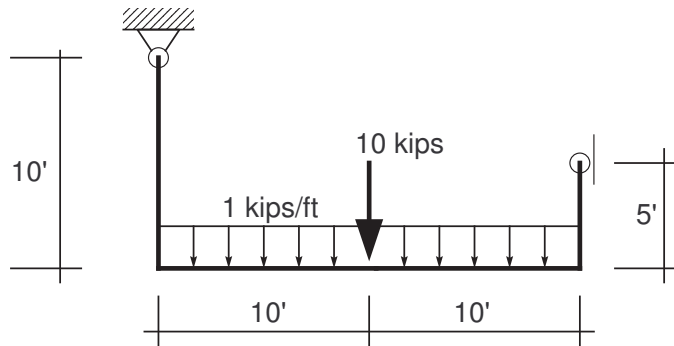
Problem 3: (20%)

For the structure shown below, compute the support reactions, draw the shear and moment diagrams and label them appropriately using values computed at important locations.



Problem 4: (20%)

For the structure shown below, compute the support reactions, draw the axial force, shear and moment diagrams and label them appropriately using values computed at important locations.



Problem 5: (20%)

For the structure shown below, compute the support reactions, draw the shear and moment diagrams and label them appropriately using values computed at important locations.

Sketch the deflected shape of the structure as accurately as possible without computing the actual values of deflections or rotations.

