CIVL-313 Structural Mechanics Spring 2010

PS #6 Due: 2/23/10

Objectives

1 - To become familiar with earthquake loads for buildings.

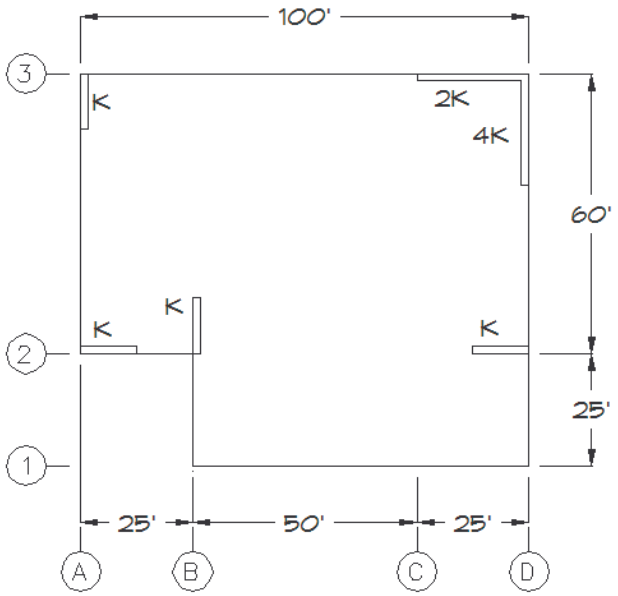
2 - To become familiar with the horizontal and vertical distribution of earthquake loads in buildings.

The Problem

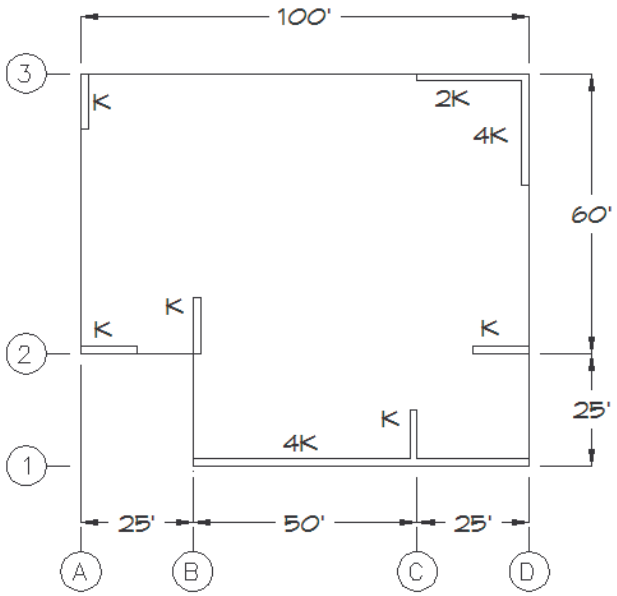
A four story office building is to be constructed in Salinas, CA. The occupancy is for a telecommunication center. The structure has 12-inch thick *"Special reinforced concrete shear walls"*, 6-inch thick composite concrete floors and an 8-inch thick composite concrete roof, t-bar acoustic tile ceilings, fire sprinklers and lots of glazing.

Given the floor plans shown below and the indicated story heights we want to determine the seismic forces as described below. 1st Story = 20' tall. 2nd, 3rd, 4th Stories = 15' tall.

A) Find Story Forces, all 4 levels.
B) Find line of action of base shear (each direction).
C) Assume a flexible diaphragm and find wall forces.
D) Assume a rigid diaphragm and find wall forces.



2ND, 3RD & 4TH LEVELS



1ST LEVEL