1. Four-Story Bldg. Analysis (see below)
   \[ f = 0.772 \text{ Hz} \]
   \[ T = 1.30 \text{ s} \]

2. Problem 2-2(a) in text
   \[ v(1.0 \text{ sec}) = -1.38 \text{ in} \]
   \[ \dot{v}(1.0 \text{ sec}) = 1.71 \text{ in/ sec} \]

3. Problem 2-3 in text
   \[ v(2.4 \text{ sec}) = -4.46 \text{ in} \]
   \[ \rho = 4.97 \text{ in} \]

**Problem 1. Four-Story Bldg. Analysis.** Calculate the natural frequency (f, in Hz) and the period (T, in sec) of a four-story, one-bay by one-bay building. Select a steel wide-flange column to support each corner of the first story using the attached table from the AISC manual. Assume that KL = 15’ for buckling about the weak axis.

1. Plan dimensions: 20’ x 30’
2. First-story height: 15’
3. Each of four floors is a 6inch-thick reinforced concrete slab supported at the corners by steel wide-flange columns (Fy = 36ksi)
4. LL = 60psf
5. Assume that the building is braced (with steel cross-bracing) for sideway
   - in the weak-axis direction of the columns for the 1st story
   - in both weak and strong-axis directions for Stories 2 through 4.
6. The flexural stiffness (K) of a column in double curvature (like the first story columns in the figure below) is \[ K = \frac{12EI}{L^3} \]