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Q1

Ans:- Figure #1;

In this figure the problem is "Discontinuous Shear Wall". If earthquake occurs, The building will be break down.

**Solution:**

The Solution to the problem of the discontinuous Shear wall is unequuviollay to eliminate the Condition. So in this building Shear wall is provide continuous till the end.

Q No1

Ans: Figure: 2

In figure: 2, the most prominent of the problems Caused by Severe Stress Concentration is that of the "Soft Story".

Soft Stories are less stiff or more flexible than the Story above, weak story have less strength.

A Soft Story creat at any height creates a problem, but since the Cumulative loads are greatest towards the base of the building, so a dis-continuity between the first and second floor tends to result in the most serious Condition.

In this building Severe Stress Concentrat-ion is Caused at the top of the first floor. This concentration overstresses the joints along the Second floor line, leading to distortion or Collapse.

**Solution:**

The best Solution to this

building is to aviod the discontinuity through architectural design.
The programatic reasons is that why the first floor should be more open or higher than the upper floors.
In these case, careful architectural or structural design must be employed to reduce the discontinuity.
Some conceptual methods for doing this are add columns, add bracing or external buttresses.

Q1 **Figure #3**

Ans: In figure #3 the re-entrant corner configuration. In this the building in L shape. There are two problem in this building.
The first one is that they tend to produce differential motions between different wings of the building that, because of stiff elements that tend to be located in this region, result in local

Stress Concentrations of the re-entrant Corner or "notch".

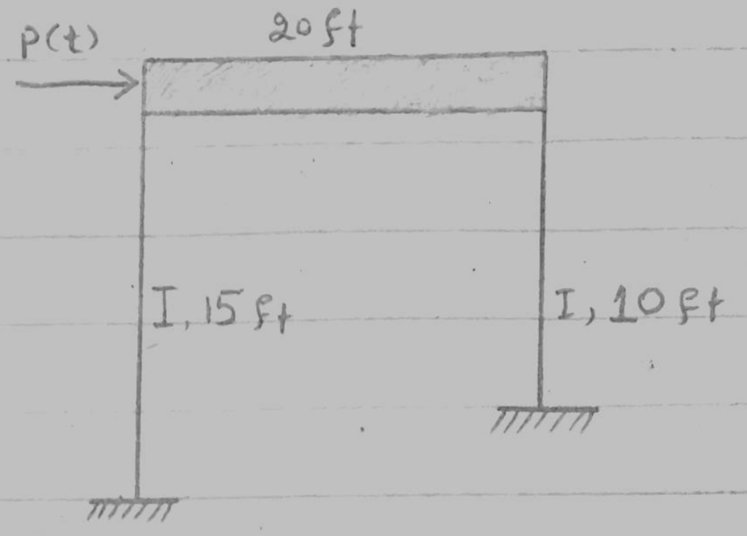
The Second problem of this form is torsion. Which is caused because the Centre of mass and the Centre of rigidity in this form Cannot geometrically Coincide for all possible earthquake directions

**Solution:**

There are two basic alternative approaches to the problem of re-entrant-Corner form; Structurally to Separate the building into Simpler Shapes, or to tie the building together more Strongly with elements positioned to provide a more balanced resistance.

**QNo2**

Ans:




**Given data:**

$\Rightarrow E = 29{,}000$ ksi

$\Rightarrow I = 1200 \text{ in}^4$

$\Rightarrow$ Uniformly Distributed Gravity Load = 7678 lb/ft

**Required data:**

$\Rightarrow$ Develop Equation of motion = p(t) = ?

**Solution:**

As; $K_{eq} = K_1 + K_2$

$$\Rightarrow K = 12EI\left[\frac{1}{h_1^3} + \frac{1}{h_2^3}\right]$$

$$= 12 \times 29{,}000 \times 1200 \times \left[\frac{1}{(15\times12)^3} + \frac{1}{(10\times12)^3}\right]$$

$\Rightarrow K = 313.29$ K/in

$\Rightarrow$ $\boxed{K = 3759 \text{ K/ft}}$

⇒ Now;

$$\Rightarrow m = \frac{W}{g} = \frac{7.678 \times 20}{32.2\ ft/sec^2}$$

$$= 4.768 K.Sec^2/ft$$

$$\Rightarrow \boxed{m = 4768\ lb.\ Sec^2/ft}$$

Now using D-Alembert's principle of dynamic equilibrium.

$$P(t) = Ku + m\ddot{u} \longrightarrow (i)$$

As $K = 3759 = 3.759 \times 10^6\ lb/ft$

putting value we get

$$\boxed{P(t) = 4768\ddot{u} + 3.759 \times 10^6}$$ **Answer.**

where $u$ & $p(t)$ are in ft and lb, respectively.