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Section : C

subject : Earth quake Assignment

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Fig # 01

This structure is a discontinue shear wall. in case if earth qualces come it will break at centre.

Solution.

shear wall should be elimenated to form frame structure only or shear wall should be continue till to the end.

Fig # 02

This is a soft story building in each the lower portion is less stiffer and the upper is ~~less~~ more stiffer.

So when the upper portion loads comes on the lower portion. The lower portion will not with stand with the upper portion load and will collaps.

Solution:-

This structure should provided with additional colams and additional braces. - It will help the building to with stand on earthquake

Fig #03

Type: This structure is a Re-entrant corner building. These building is "L" shaped building.

Problem:

There are two problem in this building when earth quake occurs.

(1) There is a problem in the building wing because of the differentional motion if earth quak occurs.

(2) The second problem which will occur is the tension.

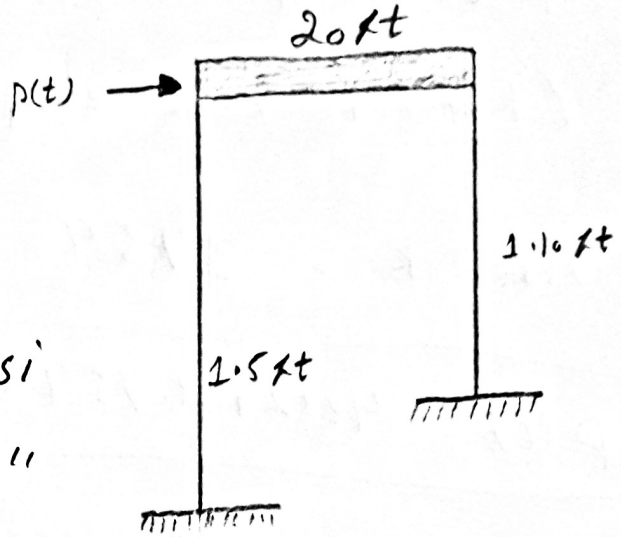
is the tension in the building because the centre of the mass and the centre of the rigidity in this form can not geometrically concide.

Solution:-

There should be seperation in the two portion as it is a L shaped building, or it should be embressed or protected with stiff resistant element.

Q No 2

Ans:



Given data

$E = 29000$ ksi

$I = 1200$ in^4

Uniformly distributed gravity load

$= 7780$ lb/ft

Required Dat:

Develop equation of motion : $p(t) = ?$

Solution:

$$m = \frac{w}{g} = \frac{7780 \times 20}{32.2 \text{ ft/sec}^2}$$

$$m = 4832 \text{ lb sec}^2/\text{ft}$$

Now Using D'Alembert's principal of dynamic equation.

$$p(t) - f_i - f_{s1} - f_{s2} = 0$$

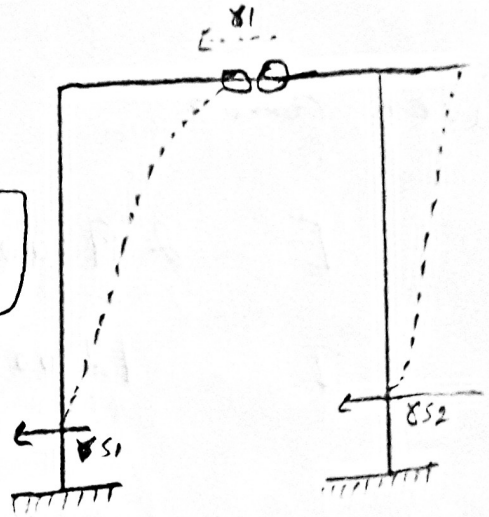
$$p(t) - mu - (f_{s1} + f_{s2}) = 0$$

$$k.u + k = u) + m\ddot{u} = p(t)$$

$$(ku) + mu = p(t)$$

As $k = 3759$

$$\boxed{p(t) = 4832 + 3.759 \times 10^6}$$



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