(1)

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Department:- BE (civil)   Exam:- Mid term
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Fig:- 1

Type:- This structure is a discontinue sheal wall.

Incase of earth quake:-
Incase of earth quake this structure will break at centre.

Solution:-
To avoid any demage from earthquake at this structure it should be provided with additional columns, or shear walls should be eliminated or these shear walls should be continued till the end or bottom.

Fig2:-

Solution:

The solution to the problem of the discontinuous shear wall is unequivocally to eliminate the condition. To do this may create architectural problems of planning or circulation or image. If this is so, it indicates that the decision to use shear wall as resistant elements was wrong from the inception of the design. If the decision is made to use shear walls, that their presence must be recognized from the beginning of schematic design, and their size and location made the subject of carefull architectural and engineering coordination early.

Fig:- 3

These configuration are so common and familiar that the fact that they represent one of the most difficult problem areas in ~~seem~~ seismic design may seem surprising. Example of demage to re-entrant-corner type buildings are common, and this problem was one of the first to be identified by observers.

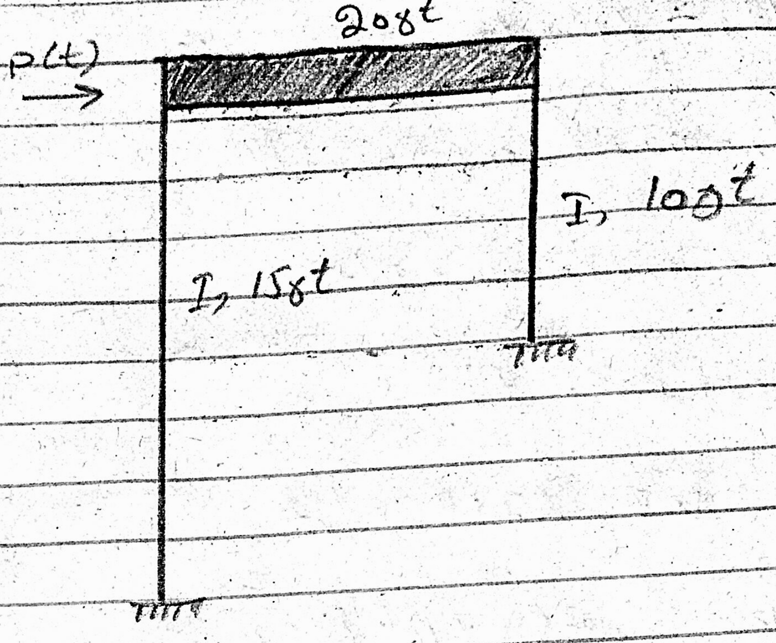
The courtyard some times becomes a glass-enclosed atrium, but the structural form in the same.

➔ Solution :-

There are two basic alternative approaches to the problems of re-entrant corner forms: structurally to seperate the building into simpler shapes, or to tie the building together more strongly with elements positioned to provide a more balanced resistance. The latter solution applies only to similler buildings.

Q No 2

Ans:-



Given data:-

$E = 29{,}000$ ksi

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

uniformly ~~Equation~~ Distribution gravit load = 6870 lb/ft

Required Data:-

Develop Equation of motion = $P(t) = ?$

Solution:-

$$m = \frac{w}{g} = \frac{6870 \times 20}{32.2 \text{ ft/sec}^2}$$

$$= 4.267 \text{ k.sec}^2/\text{ft}$$

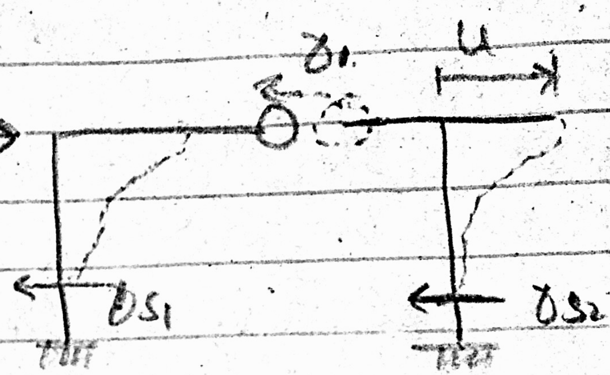
$$\boxed{m = 4267 \text{ lb.sec}^2/\text{ft}}$$

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

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

$$p(t) - m\ddot{u} - (f_{s1} + f_{s2}) = 0$$

$$(k_1 u + k_2 u) + m\ddot{u} = p(t)$$



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

As $k = 3759 \text{ k/ft}$

$k = 3.759 \times 10^6 \text{ lb/ft}$

Puting values we get.

$$\boxed{p(t) = 4267 + 3.759 \times 10^6 u}$$

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