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Section	A
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Figure 1

Figure No 1 depicts the soft and weak stories During earthquak. soft story buildings poso and extra risk. Soft story buildings having first stories much less rigid than stories above are particularly susceptible to earthquake damage. For functional purposes the first story has lesser strength and stiffnes as compared to upper story. The soft story is the one in which latral stiffness is less than 70%

of that in the story above or lesser than 80% of the average lateral stiffeners of the three stories above.

The lower level containing the concret colums behaved as a soft storey in that the colums were unable to provide adequate shear resistance during earthquake. During an earthquake motion soft storey behavior is based on criteria that the ground motion will look for all possible weakness in the structure.

possible solution.

A soft story retrofit involves strengthening and stiffing the frist story, so it does not "pancake" or collapse. The retrofit might involves the addition of steel moment frames, shear wall, diagonal bracing. or fusing system. In all options we increase the stiffness of frist story and create new load path.

⇒ Also by Adding columns

⇒ By Adding bracing

⇒ Adding external buttresses.

Figure 2

Figure 2 depicts the Re-entrant corners.

The re-entrant corner is the common characteristic of building forms that, in plan assume shape of an L, T, H or combination of these shapes.

Re-entrant corners mainly cause two problem, one is torsion and the other is difference in the s[illegible] in different wings of the building causing stress concentration at corner.

Building with re-entrant corner are more vulnerable to seismic damage and are susceptible to earthquakes corresponding to time periods of lower order.

Solution :- One of the simplest methods of relieving the structure of the deficiencies caused by the re-entrants corners is to separate the structure at the notches and converting them into small blocks of regular configration.

⇒ To tie the building together more strongly with element positined to provide more balanced resistance.

⇒ The use of splayed rather than right angle re-entrant corner lessens the stress concentration.

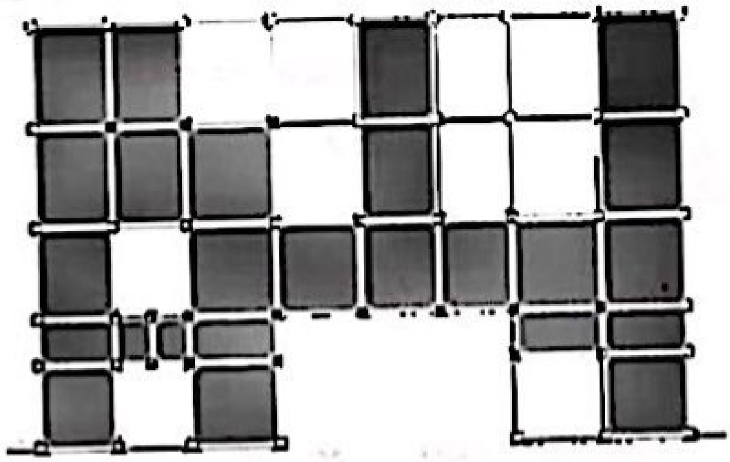


Figure 3

- Figure 3 depicts the discontinuous shear wall.

⇒ when the shear walls from the main lateral resistance elements of a structure. and there is not a continuous load path through the walls from roof to foundation. the result can be serious overstressing at the point of discontinuity.

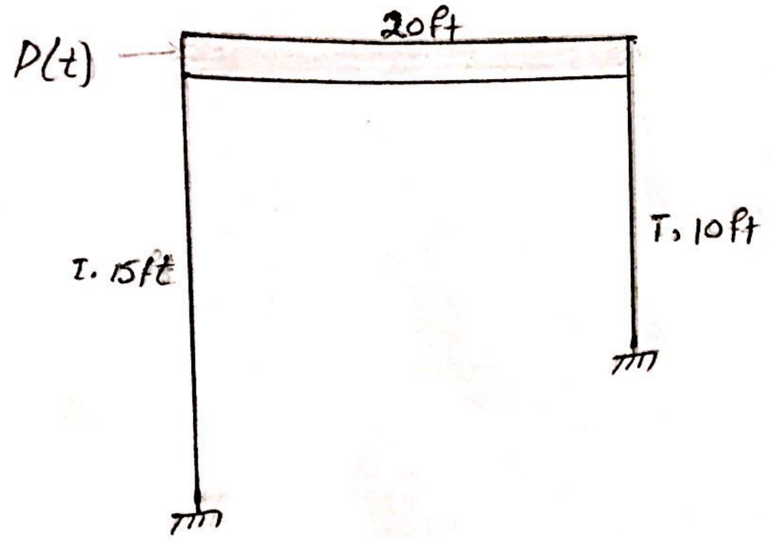
⇒ The discontinuous shear wall is a fundamental design contradiction the purpose of a shear wall is to collect diaphragm load at each floor and transmit them directly and efficiently as possible to the foundation. To interrupt this

This load path is undesirable.

Solution ⇒ The solution to the problem of the discontinous shear wall is to eliminate shear wall

⇒ if the decision is made to use shear walls then their presence must be recognized from the beginning of schematic design, and their size and location made the subject of careful architectural and engineering coordination early.

No 2



Sol

$ID = 7698$ lb/ft

gravity load on beam = 7698 lb/ft

$$m = \frac{W}{g} = \frac{7698 \text{ lb/ft} \times 20\text{ft}}{32.2 \text{ ft/sec}^2}$$

$$m = 4781.3 \text{ lb sec}^2/\text{ft}$$

Using D-Alembert's principle of dynamic equilibrium

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

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

$$(K_1 u + K_2 u) + m\ddot{u} = P(t)$$

As, $K = 3759$ K/ft

$$4781.3 + 3.76 \times 10^6 u = P(T)$$

where u and p(T) are in ft and lb

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