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I-D ⇒ 7671

Subject Name ⇒ Intro to Structure dynamics ly Earthquack

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IQRA NATIONAL UNIVERSITY :-

Figure 1:

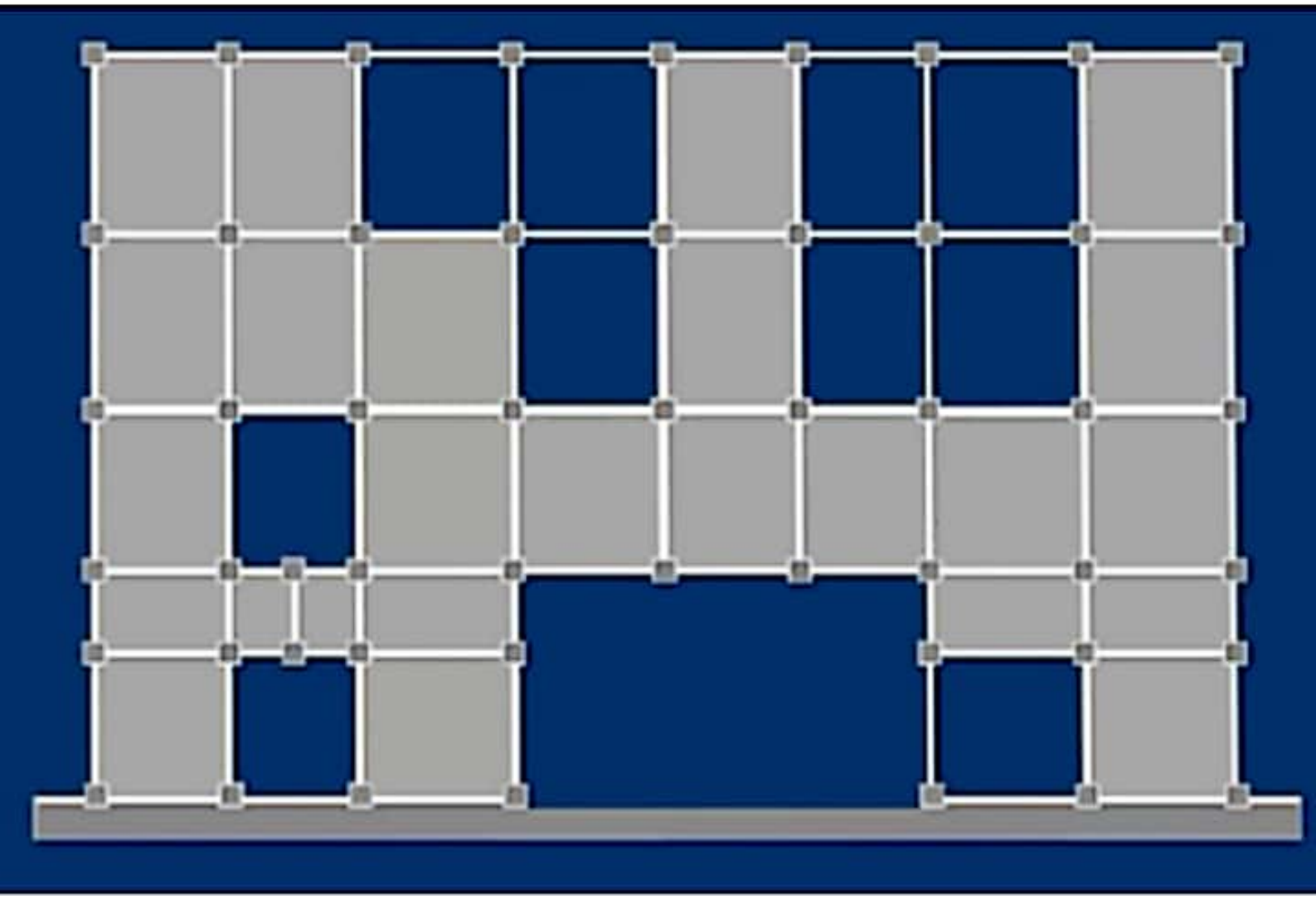

Figure NO#1:- (1)

the type of configuratims shown by above figure is discontinous shear wall.

the discontinuity of shear wall at the center indicates that there is no continues path for load transferring to the foundation. thus when earthquake occurs then the structure will falls at the center or may be little bit to left side of the structure.

Solution:-

there are two possible solutions which are;

* if shear wall is required, it is important to be construct till foundation.
* Eliminate the shear wall.

Figure 2:

Figure NO # 02:-

the types of the Configurations shown by above figure is soft-storey effect.

As we look to the ground portion its stiffness is less Compare to the upper portion. Both the portions (ground floor & upper floors) will behave differently under seismic waves. Now when earthquake occurs its Consequences

P.T.O

is that the soft Stories will Collapse. Hence in the given figure effects almost provoked to Collapse

Solution:-

TO Counter act the soft story effect we have;

- Adding external buttresses.
- We Can provided the additional Columns.
- By adding bracing.

Figure NO #03:-

the types of ~~figure~~ Configurations shown by above figure is Re-entrant Corners.

the above figure Shows that the structure is "L" Shaped which

Figure 3:

Figure NO #03:-

The types of ~~figure~~ Configuration shown by above figure is Re-entrant Corners.

the above figure shows that the structure is "L" shaped which indicates differential deformation at the junction of the two wings due to earthquake thus producing stress Concentration at Corner resulting Cracking.

Solution:-

Solution for avoiding Re-entrant Corners are;

First Solution is the use of splayed rather than right angle re-entrant

Corners lessees the stress Concentration.

* Separation of wing from each other at sufficient: away so that they do not pond together during earthquack.

* Tie the building together. using stiff resistance elements to provide a more balance resistance. Such solution applies only to smaller buildings.

QNO# 02:

Ans:- Given Data:-

uniformula distributed gravity load acting on the beam 7671 lb/ft.

Required Data:-

develop the equation of motion of the frame shown in figure 4 under the action of the lateral dynamic force p(t).

Sol:-

As we know that,

$$m = \frac{w}{g} = \frac{7671 \times 20}{32.2}$$

$m = 4764.59$

using D - Alembert's principle of dynamic equilibrium.

$$p(t) - F_I - F_{s_1} - F_{s_2} = 0.$$

$$p(t) - m\ddot{u} - (F_{s_1} + F_{s_2}) = 0.$$

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

$$(Ku) + m\ddot{u} = p(t) \qquad \because A_1 K = 37.57$$

$$4764.59 + 3.76 \times 10^6 u = p(t)$$

Where u u $p(t)$ are in ft u lb.