Mid-paper

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Section = c

Paper = introduction dynamic and earthquake engineering.

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***Qno1 .**describe the types and configuration depicted in fig 1,2,&3.how they can affected seismic performance of structure and what are their possible solution.*

Answer of fig1:

- If there is discontinuity in load path the building is unable resist seismic forces regardless of strength of existing elements
- ***1= Shear wall** shear wall have the most basic lateral load resistance elements in an earthquakes. Resistance in building*

To the purpose of shear wall is to collect diaphragm loads on every floor and transmit them as directly and efficiently as possible to the foundation. To interrupt this load path is undesirable.

2=Breakdown centre:

possible solution :

- To reduce possibility of torsion by balancing resistance around perimeter
- Add coulumns to provide for large strength and stiffness to buildings in direction of orientation
- By fixing non structural parts

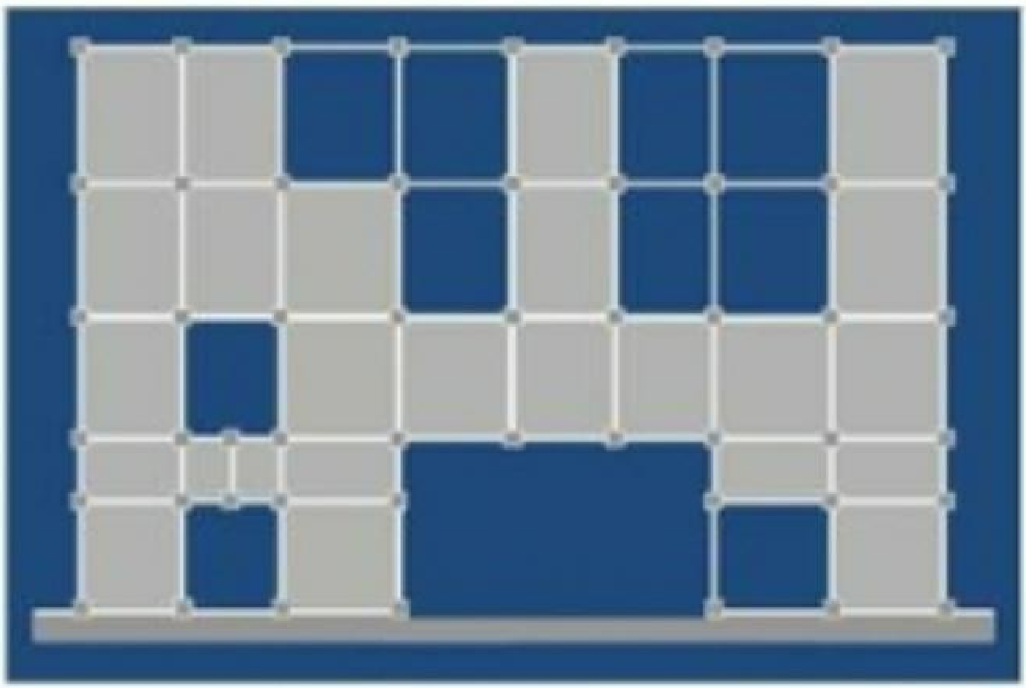

Figure 1

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Answer of fig02:

- The ground level story is less stiff than above one
- During earth quake motion soft story behavior is based on criteria that ground portion will look for all possible weaknesses in structure
- A Soft or weak story is the most prominent of the problem at any height caused by severe stress concentration is that of the “soft" story . The term has commonly been applied to the building whose ground-level story is contain less stiffness as compare to above portion a soft and weak stories at any height can be created a problem, but since the cumulative loads are highest towards the base of the building.

And also provide additional brace plus
Additional column.

Figure 2

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POSSIBLE solution:

- To avoid seismic performance of structure during in an earthquakes.
- In some frames we can provide brass that can produce stiffnes in floor
- The building could be designed as limited ductility that mean we design building with lighter load we were increase stiffness , so we have less deflection and then we can avoid soft story affects
- To create strength and stifnes along vertical configuration
- We have to to separate corner from another .

Figure 03:”

Re entrant corner:

- *Any inside corner that form angle of 180 degree or less that is subjected to internal or external load*
- *Any irregularity will lead to an abrupt change in length or stiffnes of structure*
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- *The re entrant corner is the most common characterization of the building forms that, in plan . if we Assuming the shape of an l,T,H, etc..or a combination of theses shape*
- *The first is that if tend to produce a differential motion between different wings of the building that, because of stiff elements that tend to be located in this region*
- *second problem of this form is torsion which is caused because the canter of the mass of rigidly in this form cannot geometricaly coincided for all possible earthquakes direction. These results is rotation the resulting force are very difficult to analysed and predict.*
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- *In corner become of earthquakes.*
- *Differential has corner.*

Figure 3

Their possible solution:

- *Two ideas are to be supposed to deal the problem i.e re entrant corner structurally to separate the building into simpler shape*
- We have to provide brass in stiff beam and flexible and then load will distributed in column
- We can provide steel plate at joints also
- ***the*** *use of played rather than right angles re entrant corner lessens the stresses concentration*
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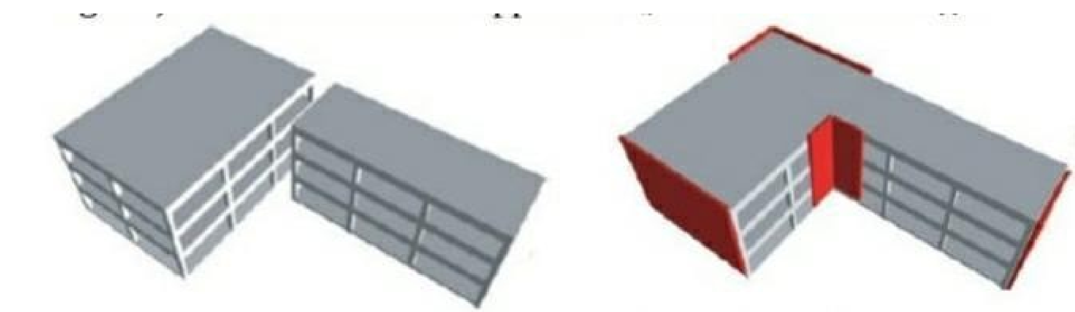

Seperation Stiff resistant elements

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Numerical question.

Givendata .

E=29000ksi

I=1200in^4

Uniformly distracted gravity load =7693lb/ft

Required. ***Devolpe of equation of motion =p(t)***

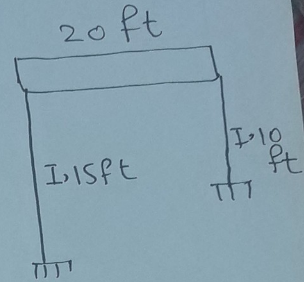
Solution:

①

REQ

Develop eq of motion

Sol



As $K_{eq} = K_1 + K_2$

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

$= 12 \times 29000 \times 1200\left[\frac{1}{(15 \times 12)^3} + \frac{1}{(10 \times 12)^3}\right]$

$\Rightarrow$ $\boxed{K = 313.29\ K/in}$ or $\boxed{K = 3759\ K/ft}$

Now $\Rightarrow m = \frac{W}{g} = \frac{7.693 \times 20}{32.2\ ft/sec^2} = 4.778$

$\boxed{m = 4.778\ K \cdot sec^2/ft}$ or $\boxed{m = 4778\ lb\ sec^2/ft}$

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

$P(t) = Ku + m\ddot{u} \rightarrow$ ①

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

Put values

$\Rightarrow$ $\boxed{P(t) = 4778\ddot{u} + 3.759 \times 10^6}$ The require

The units of U and P(t) are in ft in lb respectivly