

Location of Load Bearing Elements of the Lateral Loads in Structural Design and Analysis

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Abstract: Several bugs in the design of buildings, steel bracing system is seen under construction. Connection plate weld to beam or column alone, connecting members of the wind out of the center in connection with the installation of steel columns and beam edge of the wing and the weakness of the containment member and non-sufficient dimensions connecting plates of the most common. This was the place for research, analysis and design of lateral load bearing elements to the analysis of structural elements such as load bearing structures, selected parts of the lateral load bearing, load bearing elements of the structural weight dependence of lateral inhibition curves of (channel pairs), the connection is made.

Key words: structure, Barber, fragments, concrete, connectivity, load, lateral inhibition of

Load-bearing Structural Elements:

Composite beam and plates covering the walls with the system that the terms of the load bearing capacity than any of them is alone. Wall cover plates to prevent buckling of the beam and the beams are from the buckling of plates that cover the front. Cover plates to wall wooden beam connecting devices to help connect like nails and screws and clamps are used. Building components for walls and roofs made of wood for building and implementing a construction site in prefabricated buildings is appropriate.

Select Parts:

Prefabricated parts with the following benefits:

- A- can provide better processing and quality control of laboratory tests such as flutter, and this arbitrary
- B- the speed of processing: Some of the auto kelay curing time is even less than 24 hours.
- C- the independence of atmospheric conditions : I have no time limit for further operations.
- D- Loss of control and creep usually produced after a long stay in the factory that makes the bulk of losses occur in the concrete.
- E- the action of the Stress reduces the height of the Persian month.
Precast concrete products to the preparation of the format - Mark Steel - concrete - and will be processed.
Note in this regard is twists the anchor and the suction effect when the separation is done the part that should be considered.
Format pages should be rigid to push against the concrete side stocked with distortion and deformation.
Prefabricated concrete parts, general production methods are:
situ - in situ few teeth (battery) - moving the chassis or palette - moving with the conveyor - the production line
Select a large number of connections is reduced and the speed increases, but the connections should be stronger and better able to design parts weighing less than 10 tons and is limited to 6 tons as possible.
- F- Frame Home: In this example, the use of frames and the use of auxiliary components such as the Persian month Tir complex structures are created.
- G- the panel: is the world's most extensive pre-building the wall panels may be load bearing or non-use of large panels of high-grade industrial buildings and reduce the number of connections and joints, and less manpower is required and installing speed goes up and the architecture is more flexible.
- H- the longitudinal load bearing **walls:** the traditional technique is adapted in this way bearing exterior walls are thick and the thickness of the insulation because of its advantages are high and only if the opening had to be much of a performance panel page to be in the frame.

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Barber of Lateral Loads:

Wall elements, the design shear load and axial load and bending moment can be controlled, Most of the time of vertical slices are layered or bending test. In cases where the network had been boiling with stretch bending brittle failure can be caused due to the small cross section steel and welded them in place is that stress leads to focus on these cases of the bars assistive In areas that stretch to fall significantly reduces rupture. Open up the connection and shows the strength of reinforcement should be provided. Following these structures are implemented and followed by a band or a single application of these structures, the reinforcement to be embedded in the walls of the wall panels are controlled to follow.

Panels to the floor slab due to unilateral acts and the members of the panel is cut longitudinally toward retention. The panels next to each other and located on the wall panels and reinforcement panels to the foundation so that they are not in contact with the Eps are inhibited. The mold for the concrete layers of polystyrene insulation and sound play and ceiling panels will form a rigid . Lateral wind or earthquake load due to the hardness of the rigid diaphragm walls will be distributed. power plant pipes and the mesh network between the strata are installed insulation. If that amount should be cut to install the cuts needed to be strengthened. The panels are attached to the inside of the rebar steel panels that are used to connect to the network should at least be 40 cm apart. All joints between panels (wall, floor and corners) must both be connected by a network connection straw with wire reinforcement.

Weight Dependence of Lateral Load Bearing Structural Elements:

The main contribution of gravity loads is related to the weight of the walls (Fig. 1). So the choice of style was studied as a solution but was eliminated because of the following options.

- A) destruction of the walls and floor in a wide range of high development costs are significant.
- B) the gravity walls is very important now. The destruction of the walls, bars

Gravity of the beam and columns in which the service is likely to weaken the structure of the problem.

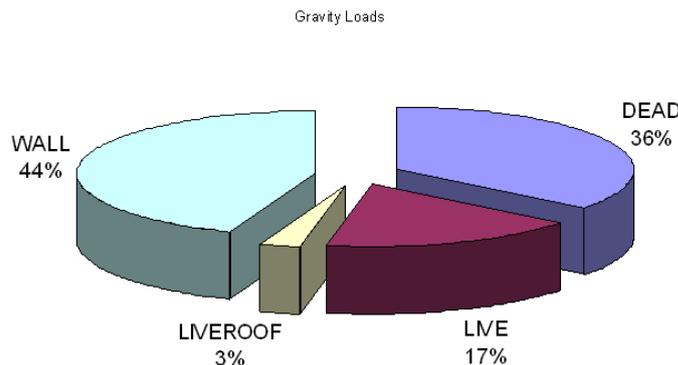


Fig. 1:

Inhibition Curves for (Channel Pair):

Several bugs in the design of buildings, steel bracing system is seen under construction. Connection plate weld to beam or column alone, connecting members of the wind out of the center in connection with the installation of steel columns and beam edge of the wing and the weakness of non-sufficient members of sheet connection of the wind, the most common. In some buildings, the owner of the coordination with the Structural Engineer of the profiles that I prefer the old, instead of bracing members (usually a pair of channel sections or angles) are used It should be noted that these sections are often even satisfy the condition Compression members are not wasting condition is satisfied if and only perhaps in the upper floors of buildings in earthquake-induced forces are reduced. The other problem is the lack of connection between the two profiles (or chute angles) to each other with a couple of sections of the wind, which is necessary in certain intervals (every 60 cm on the map) are connected together with belts. with openings for the wind forces can be classified into classes, columns can be adjusted down. standard 2800, it is preferred that the lateral load bearing elements are designed so that forces are transmitted directly towards the foundation and work with members who are acting in a page.

Divergence in the bracing system (trapezoidal), the attention to details necessary for members to connect the members to be June, July and its resistance to be careful. There is often provided for openings larger angle with the horizontal bracing and high efficiency of the system not only reduces the lateral resistance to side loads on the bearing, but also to the greater shear force will impose a bond beam. The bond beam shall be

the same moment. If it is non-elastic deformations within the shear force and energy of earthquake damage to depreciate. Unfortunately, many buildings of steel bracing in running divergent, the bond beam is used as a honeycomb beam, which in no way designed to meet the current criteria is not getting his cut. In such cases the beam's range in July transplantation, the damaged parts are reinforced with sheets of ductility cannot be found nearby. 2800 standard, while a larger ratio of 7 for external bracing system will be driven because of its good ductility.

One of the most important issues in each building, steel, welding, it is controlled. Pimples all sectors should be based on map information and the terms of the length of welding and quality control is necessary. Ones even in a small steel building to conduct non-destructive testing (NDT) of welding is required. In the 2800 standard, ultrasonic and radiographic examination of welded connections to control special moment frames is required. Depending upon the discretion of the supervisory engineer in the steel building systems in other states also are common.

A significant number of the country entirely without any metal buildings earthquake loads are the load bearing system. In their most basic frame without the bracing system is used only for vertical loads are designed to withstand. mode also sometimes the cause is not symmetrical torsion coupling is large in the building's floors. As a matter of Many important buildings in the removal of metallic element resistant to the ground floor entrance of the building, causing the formation of soft and weak story in this class is the maximum shear force of the earthquake-induced tolerance may be. In such cases, according to the 2800 standard, axial force and displacement can be much worse if the P-Δ effects.

Nonlinear static analysis based on the guidelines for this case commensurate with the spectrum analysis and uniform distribution of lateral forces in both the reverse direction (Diagram 1) can be concluded:

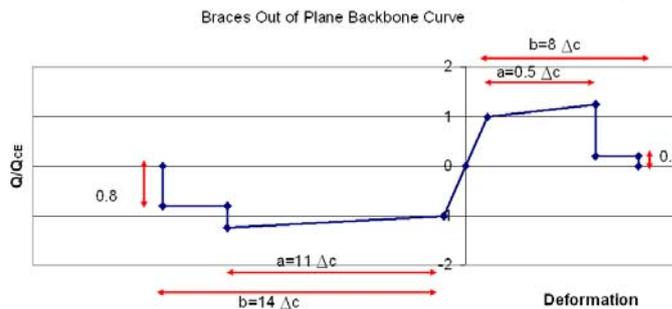


Diagram 1:

In comparing the results of the static and static nonlinear analysis for three classes (Table 1) can be concluded:

- A- static equivalent : Vertebral column should be light to heavy winds.
- B- Nonlinear static : Columns must be heavy to light and wind bands.

Table 1:

	Weight Befor Rehabilitation (kg)	Weight After Rehabilitation (kg)	
		Linear	PushOver
Braced Columns	3403	10264	5157
Gravity Columns	4458	4458	4458
Braces	0	7636	12910
Slab Braces	0	975	975
Beams	9249	9249	9249
Total (kg)	17110	32582	32749
Total (kg / m ²)	21.7	41.4	41.6

Static analysis of the third edition in 2800 and the static nonlinear The five-story building (Table 2) can be concluded:

- A- 2800 (third edition) : Columns should be as heavy winds are heavy.
- B- Static nonlinear : Columns should be as light and wind will be light.

Connection:

Perhaps the most difficult tasks of the Structural Engineer on seismic design of building a steel beam to column connection to ensure the accuracy and detail, it is not just a special moment frame along the bracing system loads in front of the side of seismic. Such a case, if made of steel columns can be used to design the

linkage plates and cans in the balance sheet and on the beam, especially for special attention to special moment frames. Tangly beam column connection should be able to provide the bending strength of the anchor beam and the corresponding shear strength of the connection springs (panel zone) or enclosed area in front of the John Ball is June.

Table 2:

	Weight Before Rehabilitation (kg)	Weight After Rehabilitation (kg)	
		2800	Pushover
Columns	9950	16290	13040
Braces	1240	11370	8230
Slab Braces	0	1100	1100
Beams	12700	12700	12700
Total (kg)	23890	41460	35070
Total (kg / m ²)	28.1	48.8	42.5

In many buildings, steel frames for the columns in bending couple consists of two sections of the IPE profiles and reinforcing plates are used on the wings. When the tensile strength to the wing sheets, the sheets can easily be bent and philosophy connect tangly question. For such situations can be resolved or at least reduce the problem of reinforcing plates welded to the edge of the column and the other half of baking sheet strengthened during the palate with a furrow that wings can be used for detailed structural design drawings must be obtained.

Furrow connecting the upper and lower plates welded to column connection tangly also provide important and practical details, like having the 45 degree beveled edge of the baking sheet and influence in the design and structural maps of negligence are. Rectangular sheets often used as the upper furrow of resistance welding and therefore would not be enough. To solve this problem is the width of the trapezoid sheet locally connected to the column increases. For special moment frames, shear stress reduction at the source to connect to multiple sheets or less in height than the thickness of the die are used. Between the sheets no more than 5 / 1 mm from the edge of the upper die and the lower plate with welded corners and edges of the weld should be at least equal to 5 mm. The sheets should be welded using furrow or side to reach double shear plates are welded to the wing.

Barber Openings:

Prefabricated buildings Steel Light (Light Weight Steel Frame), called the LSF was used as a dry and mainly using screw connections Process. This component consists of 3 buildings: cold rolled steel sheet consisting of sections For construction, gypsum board panels to cover the procedures and internal layer of heat insulation and sound Be. This building used as a structural system and most of the mass Two storeys of buildings, offices and small commercial buildings, industrial halls Is a class sport. A gravity load-bearing structural system that is capable of combining with Other structural systems, such as reinforced concrete walls are structural. In buildings Short form of the complex structural system used. The use of different forms according to law Letter has been authorized. The sections have different dimensions and thickness variation range between 2.5 to 6 / 0 are mm. LSF binding to the foundation through the coils with a horizontal cross section c, is formed. Vertical component of gravity acts as a load bearing column in If some members of the lateral bracing structures in the mouth of the gravity load, undergo Forces from this side was also under pressure (stud) on Systems have been introduced. The cold-rolled steel joist roof structure is composed of. Beams and joists are mainly c and z are the shapes of the sections. Slab of concrete covering the roof with the necessary integration between the concrete and Profiled steel joist, metal compound can be designed as a roof. LSF, to bearing structures along the main orthogonal side of the mouth of the Times used (Load Bearing Wall).

Barber openings to the four Method Following Created by:

- A- bracing system of openings with a diameter of
- B- shear wall system with steel Thin steel
- C- load bearing wall systems cover OSB
- D- wall system Reinforced concrete shear;

Low heat transfer, it For use as permanent residential buildings will face problems, but performance Withdrawal is appropriate for use. Acoustic performance of walls and roofs made in Arrangements comply with

national building regulations is to set expectations respond. Material LSF times have the fire and cold rolled Have little resistance to fire and should be well protected, one of the reasons Gypsum is used as lining to this end.

The main benefits of reducing crime, LSF Building, costs of materials, manpower and During construction projects. Using this method, 5-storey buildings in the country with respect Special arrangements are possible.

Benefit Structures galvanized steel by light (Table 3) and the construction of prefabricated houses (Table 4) above shall prove.

Table 3:

Style
Easily fabricated in mass production
Uniform quality
Resistance and high hardness
No delays due to weather conditions in the construction and installation
Transport Economic
Quick and easy installation
High accuracy in the details
Recyclability of materials
Non-flammability
High resistance to decay, termites S
No need to format
No drop in temperatures and the creep Environmental

Table 4:

Stage Name
Material used
The foundation Shnazhy
Longitudinal bars and strip foundations with dimensions Low
The skeleton
Galvanized steel, cold Nvrshdh LSF
The roof
Cement Panel (Fiber cement board) + combined with traditional materials and classic
The external cover panels installed
foam concrete
Install a layer of insulation, moisture and Audio
Rock wool, polystyrene foam, and cover final The classical method
Installation of lining panels
Gypsum Leaf
Electronic facilities and operations Mechanical
All facilities in the system can pass Space (duct) is available
Installing Doors and Windows
UPVC, aluminum, wood and ...
Finishing operations
All the usual methods of complying with Mlyt By

Conclusion:

Select a large number of connections is reduced and the speed increases, but the connections should be stronger and better able to design parts weighing less than 10 tons and is limited to 6 tons as possible. Wall elements, the design shear load and axial load and bending moment can be controlled, Most of the time of vertical slices are layered or bending test. In cases where the network had been boiling with stretch bending brittle failure can be caused due to the small cross section steel and welded them in place is that stress leads to focus on these cases of the bars assistive parts that fall in tension to failure is significantly reduced. Rebar steel panels that are used for connection to at least be 40 cm apart. All joints between panels (wall, floor and

corners) must both be connected by a network connection straw with wire reinforcement. The main contribution of gravity loads is related to the weight of the walls. So the choice of style was studied as a solution.

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