

Design of Building and Opening with Shear Walls



Engineering

KEYWORDS : IMNCI, Malnutrition , ARI, Immunization.

G Mahesh naidu

Associate Professor, Department of Paediatrics, Pt JNM Medical College Raipur (C.G)

Tharun

Associate Professor, Department of Paediatrics, Pt JNM Medical College Raipur (C.G).

Manoj

Postgraduate Fellow, Department of Paediatrics, Pt JNM Medical College Raipur (C.G).

ABSTRACT

T Shear wall systems are one of the most commonly used lateral load resisting systems in high-rise buildings. Shear walls have very high inplane stiffness and strength, which can be used to simultaneously resist large horizontal loads and support gravity loads, making them quite advantageous in many structural engineering applications. There are lots of literatures available to design and analyze the shear wall. However, the decision about the location of shear wall in multistory building is not much discussed in any literatures.

Introduction

Now a day, shear walls are the most common structures built inside the structures in order to counteract severe earthquake forces. Earthquake is a major concern for the engineers to give stability to the buildings. Properly designed and detailed buildings with shear walls have shown very good performance in past earthquakes. Shear walls must provide the necessary lateral strength to resist horizontal earthquake forces. When shear walls are strong enough, they will transfer these horizontal forces to the next element in the load path below them. These other components in the load path may be other shear walls, floors, foundation walls, slabs or footings.

Shear walls also provide lateral stiffness to prevent the roof or floor above from excessive side-sway. When shear walls are stiff enough, they will prevent floor and roof framing members from moving off their supports. Also, buildings that are sufficiently stiff will usually suffer less non-structural damage.

Generally shear wall can be defined as structural vertical member that is able to resist combination of shear, moment and axial load induced by lateral load and gravity load transfer to the wall from other structural member. Reinforced concrete walls, which include lift wells or shear walls, are the usual requirements of Multi Storey Buildings. Design by coinciding centroid and mass center of the building is the ideal for a Structure. An introduction of shear wall represents a structurally efficient solution to stiffen a building structural system because the main function of a shear wall is to increase the rigidity for lateral load resistance.

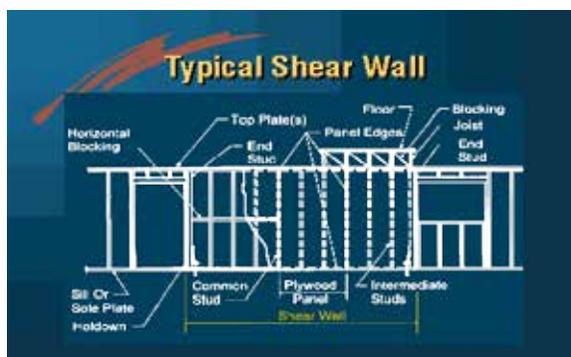
In modern tall buildings, shear walls are commonly used as a vertical structural element for resisting the lateral loads that may be induced by the effect of wind and earthquakes which cause the failure of structure as shown in figure Shear walls of varying cross sections i.e. rectangular shapes to more irregular

cores such as channel, T, L, barbell shape, box etc. can be used. Provision of walls helps to divide an enclosed space, whereas of cores to contain and convey services such as elevator. Wall openings are inevitably required for windows in external walls and for doors or corridors in inner walls or in lift cores. The size and location of openings may vary from architectural and functional point of view. The use of shear wall structure has gained popularity in high rise building structure, especially in the construction of service apartment or office/ commercial tower.

Table: Sum of Reactions, Part 1 of 2

Name	Height mm	Elevation mm	Master Story	Similar To	Splice Story
Story7	3000	19500	Yes	None	No
Story6	3000	16500	No	Story7	No
Story5	3000	13500	No	Story7	No
Story4	3000	10500	No	Story7	No
Story3	3000	7500	No	Story7	No
Story2	3000	4500	No	Story7	No
Story1	1500	1500	No	Story7	No
Base	0	0	No	None	No

Name	Height mm	Elevation mm	Master Story	Similar To	Splice Story
Story7	3000	19500	Yes	None	No
Story6	3000	16500	No	Story7	No
Story5	3000	13500	No	Story7	No
Story4	3000	10500	No	Story7	No
Story3	3000	7500	No	Story7	No
Story2	3000	4500	No	Story7	No
Story1	1500	1500	No	Story7	No
Base	0	0	No	None	No



CONCLUSION:

ETABS software has become more and more critical in the analysis of engineering and scientific problems. Much of the reason for this change from manual methods has been the advancement of computer techniques development by the research community and in particular universities.

As technology and engineering adoptions are advertising new methodology interlinking and completing the industries via computer applications are created with a similar improvement in hardware capacities. This is turn facilities the implementations of more effective and professional engineering software. As the applications adventure in functionality, one can hope that they will be more affordable to promote their widespread usage amongst civil engineering at a global scale.

SCOPE OF THE PROJECT: The aim of the shear wall is to investigate the different ways in which the tall structures can be stabilized against the effects of strong horizontal wind loading and seismic loading. Some other reasons why we use shear walls are tall structures can be constructed which reduces the area used and we can accommodate a large population in that particular area. Other objective is to construct a cost effective structure in less period of time. This study helps in the investigation of strength and ductility of walls

The scope is to analyze the constructed shear wall that is to be constructed. Firstly the model is implemented into known computer software and then it is analyzed based on the investigation of strength and ductility. The strength of shear walls tested are compared with the calculated strengths based on design codes.

REFERENCE

1. Is: 456-2000 design for reinforced. | 2. IS: 875(part - 3) - 1987 code of practice for design loads for building and structures. | 3. SP: 16 designs for reinforce concrete. | 4. AUTO CAD & ETABS Software's | 5. Reinforcement concrete design by N.KRISHNA RAJU & R.N.PRANESH | 6. Design of reinforced concrete structure by S.RAMAMURTHAM.