IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 1, June 2022
Impact Factor: 6.252

Performance of Mid Rised RCC Structure using Flat Slab System

Deepan Dev B[1] and Dr V Selvan[2]
PG Scholar, Department of Structural Engineering[1]
Associate Professor & HOD, Department of Civil Engineering[2]
Kumaraguru College ofTechnology, Coimbatore, Tamilnadu, India
deepandev.20mse@kct.ac.in and selvan.v.ce@kct.ac.in

Abstract: *Flat-slab building structures possesses major advantages over traditional slab-beam-column structures because of the free design of space, shorter construction time, architectural –functional and economical aspects. Because of the absence of deep beams and shear walls, flat-slab structural system is significantly more flexible for lateral loads then traditional RC frame system and that make the system more vulnerable under seismic events. The critical moment in design of these systems is the slab-column connection, i.e., the shear force in the slab at the connection, which should retain its bearing capacity even at maximal displacements. The behavior of flat slab building during earthquake depends critically on 'Building Configuration'. This fact has resulted in to ensure safety against earthquake forces of tall structures hence, there is need to determine seismic responses of such building for designing earthquake resistant structures. Response Spectrum analysis is one of the important techniques for structural seismic analysis. In the present work analysis of 4 models of multi-storied RCC Flat slab structure is carried out by response spectrum analysis. The BIS guideline in IS 1893:2002 says "Regular and Irregular Configuration to perform well in an earthquake, a building should possess four main attributes, namely simple and regular configuration, and adequate lateral strength, stiffness and ductility. Buildings having simple regular geometry and uniformly distributed mass and stiffness in plan as well, suffer much less damage than buildings with irregular configurations". Similarly, in IS 4326:1993 it is mentioned that "The building should have a simple rectangular plan and be symmetrical both with respect to mass and rigidity so that the center of mass and rigidity of the building coincide with each other." But the limiting "plan aspect ratio" and "Slenderness ratio" for the regular structure is not prescribed. This study is concerned with the behavior of structure having same plan area but different plan aspect ratio (L/B) and slenderness ratio (H/B) under seismic condition. The structures are simulated in ETABS software and analyzed using Response Spectrum method.*

Keywords: Aspect Ratio, Slenderness Ratio, Response Spectrum Analysis, RCC flat slab structure

REFERENCES

[1]. K S Sable, V A Ghodechor, S B Kandekar, "Comparative Study of Seismic Behavior of Multi-storey Flat Slab and Conventional Reinforced Concrete Framed Structures", International Journal of Computer Technology and Electronics Engineering (IJCTEE) Volume 2, Issue 3, June 2012.

[2]. Rucha.S.Banginwar, M.R.Vyawahare, P.O.Modani, "Effect of Plan Configurations on the Seismic Behaviour of the structure By Response Spectrum Method" ,International Journal of Engineering Research and Applications(IJERA),Vol2,May-June2012 .

[3]. Arun Solomon A, Hemalatha G, "Limitation of irregular structure for seismic response", International Journal of Civil And Structural Engineering Volume 3, No 3, 2013.

[4]. Dr Ramakrishna Hegde, Chethana, Nanditha Vinod Kumar presented paper on the "Comparative Study on Seismic Analysis Of Conventional Slab, Flat Slab And Grid Slab System For A R.C Framed Structures" (IRJET) Volume: 05 Issue: 09 Sep 2018.

[5]. Shinozuka, M., Feng, M.Q., Lee, J. and Naganuma, T. (2000a), "Statistical Analysis of Fragility Curves," Journal of Engineering Mechanics, 126, (12), 1224-1231.

[6]. Shinozuka, M., Feng, M.Q., Kim, H.-K. and Kim, S.-H. (2000b), "Nonlinear Static Procedure for Fragility

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 1, June 2022
Impact Factor: 6.252

Curve Development," Journal of Engineering Mechanics, 126, (12), 1287-1295.

[7]. Reinhorn, A.M., Barron- Corverra, R. and Ayala, A.G. (2002), "Global Spectral Evaluation of Seismic Fragility of Structures," Proc., 7th U.S. National Conference on Earthquake Engineering, Boston.

[8]. Mircic N. (2006). "Seismic Resistance of Flat-slab RC Structural Systems of High Rise Buildings "Master Thesis, IZIIS, „Ss. Cyril and Methodius " University, Skopje.

[9]. K S Sable, V A Ghodechor, S B Kandekar, "Comparative Study of Seismic Behavior of Multi-storey Flat Slab and Conventional Reinforced Concrete Framed Structures", International Journal of Computer Technology and Electronics Engineering (IJCTEE) Volume 2, Issue 3, June 2012

[10]. Aradhna A. Ganvir Prof. V. S. Singhade research on "Comparative Study of Reinforced Concrete Flat Slabs with and without Openings using Finite Element Analysis" IJIRST – Volume 3 Issue 02 July 2016.