

EFFECT OF CONSTRUCTION SEQUENTIAL ANALYSIS ALONG WITH P-DELTA

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Abstract—*The important part of the structural engineer is to design the structures for a safe, serviceable, durable and economical one, with the development of technical in the creating field. High rise multi-storey. In the high rise building was analysis in a one step apply equivalent static analysis on that taking over the structures are defining to the total loads are one time the whole building is constructed completely. But in real execution the dead load due to each structural component is activated in different constructions level of each floor of building due to the material are the non-linearity Performance. The loads is considered with linear static analysis changes in a every construction stages, and hence the output comes out will not be acceptable and fullfill their to serviceability criteria. Hence the building structure shall is to be analysed at that each level of construction preceeds into consider the load diffrences. Therefore in this assignment of this project the outcomes of the construction sequential analysis along with P-delta are the structure is examine. Three dimensional modelling for G+15 storey building of Reinforced cement concrete is approved to the analyse the special effect of the results are taking for the constant. For the Equivalent linear static analysis is for the seismic zone factor for zone II and the medium soil type is examine to according to IS: 1893 (part1)-2002. Therefore the analysis result ease to understand the structural reaction across the load changes in the sequential analysis. And these project significance autoconstruction sequence analysis significance on the serviceability. There a comparative research of displacements was correctly for construction sequence (CSA) model taking the finite element analysis software “ETABS v. 16”.*

Keywords— *Construction sequence analysis, P-Delta effects*

INTRODUCTION

This In seing that the previous high rise building of framework have been analysis in a one pace as it a total full framewith all the loads provison on the structure specifically there self-weight, dead loads, live loads, and lateral loads are being concerned on the framework at given existent then they construction of that total all the frames are in finished. A while ago the sequential analysis remain involoved in the creation of more limitation are retain to be compute that there at phase of evaluvation. In definite, the dead load due to the entire structural element and completing the all the things are enforce in individual phase of the structures are executed as storey by storey. Sequential analysis is progress into noticeable part during inspection several known the software is contain. These provides in these analysis and design. This however is not so despread ever since there is lack of information about its need and choice. Similarly as their different inspection, construction sequential analysis are asure to absolute purpose in the models of every one element of the structures.

Building system is analyzed using etabs v16. Which is one of the pre-elmiment of the study software and all the output essential such as the bending moment is determined in kn-m whereas displacement and shear force are stately in mm and kn are successively.

OBJECTIVES OF STUDY

The main motive of this study is to understand that in which way the time depending and auto construction sequence analysis with P-Delta effects impact the changes of the reaction of building such as bending moments, displacements and shear forces are opposed equivalent static analysis for the structure.

Importance of the study

In the up to date the advanced they requires of high-rise structure are important in than the past they earlier will do linear static analysis. And there due to the benefits that the Sequential construction analysis is a nonlinear static analysis which taking into review of the abstraction of additional loading. Hence the structures are responsive to starting place by a number of structural variables for its framed network and its identity weight.

The Multi Storey building are analysis by using the all-purpose done in one step linear static analyze assuming the complete loads to be concern on the building. But they might be a lot of differentiation in the result obtain from this analyze opposition the convenient situation. I.e. the effects may be to an inaccurate design due to where they beside there may be very critical to the structure. Hence here to understand they and conquer shortly about that the difficulty in a non-linear static construction sequential analysis including P-Delta effects is completing the structure in that they loads are the changes in every stages of construction i.e. floor by floor is loading is done on the Structure and the outcome are also derive for each.

Methodology

Analyse On The ETABS V.16.2.0 Software, Then Create The Model Through CAD Dxf File To Input The Etabs And Create The Structural Components Such As Beams, Column, Shear Wall, Slabs. And The Loads Are Assigned By Indian Standard Code. And Then The Linear And Nonlinear Analysis. As They Starting Performed As First They Include The Equivalent Static Analysis In Which Usually They Some Time Not Considered The Construction Sequential Analysis Of Each Stage Is Done With All The Loads & sideways Loads And Entire All The Structure Are Taken Into The Account Specifically On Each Floor. And The Program Has Attain The Analyse To The Each Every Floor. After that The Software Has Done Grouping The Combination And User Have To Design To Check Dead Sequence And The Compared With The Various Constraints Could Be Done Seems To Be As Bending Moment, Shear Force, Axial Load Displacement, Etc.

Analysis Method Used

As mentioned in Indian Standard Code 1893:2002 after technique for examination have been prescribed to discover the plan sidelong loads,

- a. Equivalent Static Analysis (ESA)
- b. Response Spectrum Analysis (RSA)
- c. Construction sequential Analysis (CSA)

Modeling Method

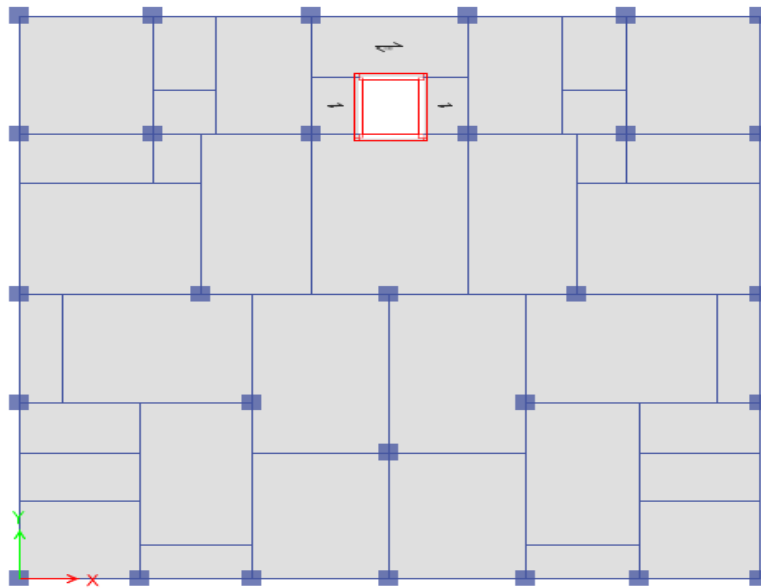
The software etabs V-2016 v16.2.1 is used for analysis & investigation. Displaying of Construction sequential Analysis And P-Delta effect MULTI-STOREYED BUILDING model is used.

GENERAL

In This Paper Analyzed The Model With Varying Height Has Been Considered. The Analysis with Conventional and Construction Sequential Analysis Had Been convey them to carry Out Research. It is conveying that from the Results Bending Moment Is More in Sequential Analysis Compare to Conventional Analysis. As Well As Same Difference In Shear Force And Axial Load. This Analysis Is Necessary To Improve The Analysis In correctness In Terms Of Moment, Shear, In The Supporting Beam And Column Near Of Its And Also For Whole The Structure.

Model : The structure is being modelled as 15 storied RC Frame Building

II. PLAN USED IN ANALYSIS



Structure Data

The model under zone 2 is analysis using ETABS v16.0. Seismic behaviour of the structure and auto construction sequential analyze is studied and the models are compared in both the bending moments, shear force, axial load. IS 1893:2002 is used for earthquake seismic analysis. IS 875:1987? (PART 3) is used for wind analysis. Auto construction sequence with P-delta analyze is working on out for the model.

Materials Used & Geometrical Properties

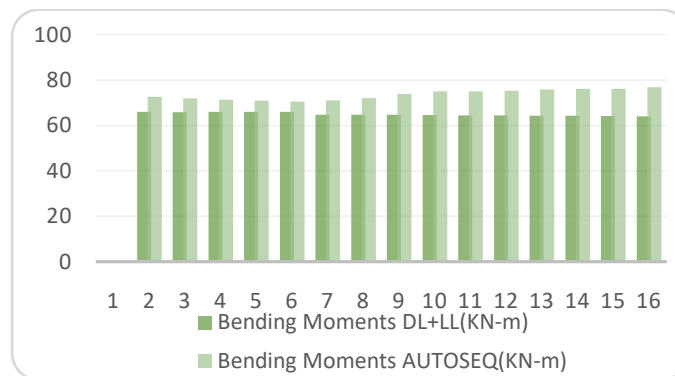
Particulars	RCC Structure
Plan dimension	25m x 25m
Total height of the building	53.50m
Height of each storey	3m
Size of beam	300 X 750
Size of column	600 X 600
Thickness of masonry wall	230mm
Thickness of slab	150mm
Seismic zone	II
Soil type	Medium
Response reduction factor (R)	3.0
Importance factor (I)	1.0
Seismic zone factor (Z)	0.10
Grade of concrete	M35
Grade of reinforcing steel	Fe500
Wall load on beam	13.80
Density of concrete	25KN/m ²
Supports at base	Fixed
Diaphragm	Rigid

The structure is 25m in x-direction & 25m in y-direction. The storey elevation is kept 3.0m. Firstly the model consists of symmetrical of fifteen storey building. The storey elevation between two level is .3.0m with beam & column size are 0.60x0.60m comparatively and as well the slab thickness is in use as 125mm. Shape of the structure for all the forms is made known in figure

RESULTS OF ANALYSIS

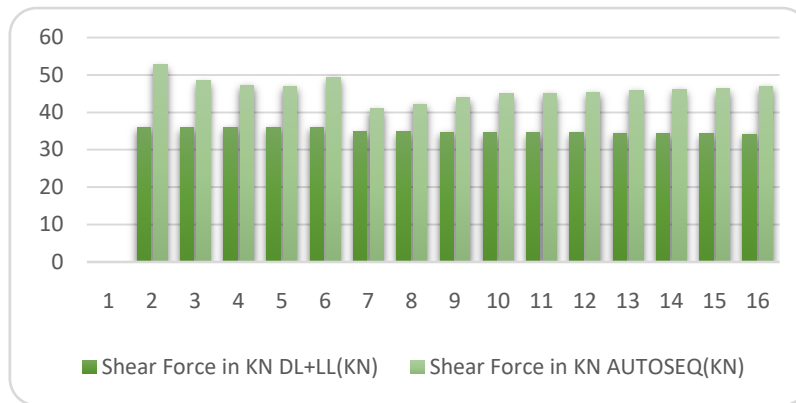
Storey	DL+LL(KN-m)	AUTOSEQ(KN-m)
0	0	0
1	66.02	72.63
2	65.91	68.47
3	65.95	67.25
4	65.98	66.99
5	65.99	69.26
6	64.80	71.046
7	64.78	72.12
8	64.70	73.91
9	64.55	74.98
10	64.50	75.10
11	64.50	75.36
12	64.30	75.88
13	64.28	76.10
14	64.22	76.22
15	64.10	76.89

Comparison of Bending Moment



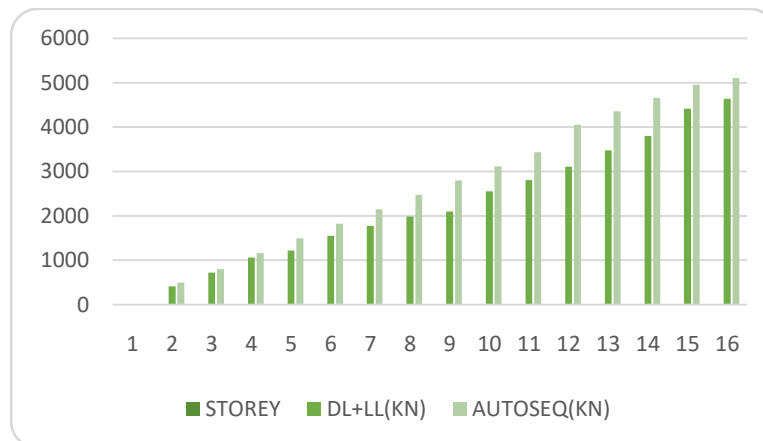
Comparison of Shear force

STOREY	DL+LL(KN)	AUTOSEQ(KN)
0	0	0
1	36.02	52.63
2	35.91	48.47
3	35.95	47.25
4	35.98	46.99
5	35.99	49.26
6	34.80	41.046
7	34.78	42.12
8	34.70	43.91
9	34.55	44.98
10	34.50	45.10
11	34.50	45.36
12	34.30	45.88
13	34.28	46.10
14	34.22	46.22
15	34.10	46.89



Comparison of Axial force

STOREY	DL+LL(KN)	AUTOSEQ(KN)
0	0	0
1	408.56	497.97
2	720.56	803.05
3	1057.52	1162.14
4	1220.23	1493.41
5	1550.78	1823.20
6	1770.63	2150.91
7	1980.78	2476.36
8	2100.50	2796.50
9	2550.23	3116.76
10	2805.63	3431.91
11	3105.36	4051.06
12	3478.25	4354.99
13	3800.56	4655.22
14	4412.56	4951.81
15	4639.65	5105.63



CONCLUSIONS

Construction sequential analyze in the structures of RCC is important and need to enhance the analysis precision in terms of they displacement, axial load, moment and shear in the sustaining the beam and column near of it and therefore for they complete the structure overall. Bending Moment & shear force effects of and also shows the important for non-linear analysis. Concerning they displacement results, structure examine the sequential effects came the best part of the than that of structure, In sequential load case in the analysis of high rise building of RCC framed structure contribute they more reliable design than the conventional design

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