ANALYSIS AND DESIGN

INTRODUCTION

Due to concentration and increase of population into urban cities, there is a need to accommodate the influx in urban cities. However, due to rapid increase of land cost and limited availability of land, construction of high rise buildings were taking part in our daily life. The advantage of high rise buildings include but not limited to high ratio rentable floor space per unit area of land. These high rise buildings are skyscrapers are built not just for economy of space they are considered as icons of a city's economic power and city's identity.

ETABS Software: The innovative and revolutionary new ETABS is the ultimate integrated software package for the structural analysis and design of buildings. This latest ETABS offers unmatched 3D object based on modeling and visualization tools, fast linear and nonlinear analytical power, sophisticated and comprehensive design capabilities for a wide-range of materials, and insightful graphic displays, reports, and schematic drawings. CAD drawings can be directly converted into ETABS models. Design of steel and concrete frames, composite beams, composite columns, steel joists and concrete and masonry shear walls, as is the capacity check for steel connections and base plates. Comprehensive and customizable reports are available for all analysis and design output, and construction drawings of framing plans, details, and cross sections are generated for concrete and steel structures.

ARCHITECTURAL PLAN: Based on the client requirements and site conditions, we develop architectural drawing. In this project, I have planned for stilt+5 floors which is a residential building as per the norms and basic requirements which includes municipal rules, vaastu, site conditions. ANALYSIS AND DESIGN: basic height of floor is 3m, loads patterns are DEAD load with self weight 1, live load, wall as dead load.

3D view of all members of all floors:
After structure analysis, we get story analysis and story forces for each and every floor.

Then model results were taken and given the percentage of steel required for beams, columns, footings, slabs at all conditions.

**Percentage of steel:**

<table>
<thead>
<tr>
<th>Load Case/Combo</th>
<th>FX (kN)</th>
<th>FY (kN)</th>
<th>FZ (kN)</th>
<th>MX (kN-m)</th>
<th>MY (kN-m)</th>
<th>MZ (kN-m)</th>
<th>X (m)</th>
<th>Y (m)</th>
<th>Z (m)</th>
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<tbody>
<tr>
<td>DWAL1</td>
<td>1.156E-06</td>
<td>-670.302</td>
<td>27517.9014</td>
<td>246128.7321</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>DWAL2</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tbody>
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In design IS456, IS875 were used for calculation of all forces and loads.

The use of light weight concrete and light weight materials will reduce the dead load of structure, which then allows the structural designer to reduce the size of the columns, footings, and other load bearing elements.

The occurrence and spread of fire is unpredictable and uncertain. It is therefore critical that fire proof materials and fire resistant products measure up to the highest possible standards of performance as well as reliability.

For more than 5 storey buildings it is better to provide the connecting beams in between the flats.

Limit state design is the best approach for designing the buildings.

**SCOPE OF THE PROJECT:**

This report is clear with the structural analysis and design of multistoried building which was designed by ETABS. This software is very innovative and easier which is better than staad pro. It is better for designing the high rise buildings under the applied live load, dead load, wind load, earthquake load, and seismic load. Construction of apartments became a need in urban areas, mainly construction of g+5 residential buildings for living were taking place. So I suggest my project will apt for above specified buildings with measurements, so that it reduces time period for designing.

**REFERENCE**