



# ETABS

Engineering Software

م.د. محمد زهير يوسف  
قسم الهندسة المدنية

## 1.1 General

**ETABS** is a special-purpose computer program developed specifically for building structures. It provides the Structural engineer with all the tools necessary to create, modify, analyze, design, and optimize building models.



Dr. Mohammad Z. Yousif

**ETABS** "Extended 3D Analysis of Building Systems" A computer program based on the theory of finite elements (FEA) dedicated to the analysis and design of structural sentences of buildings exclusively. His design began in 1963, when the first version was produced at Berkeley University in California, USA, in 1984. Produced by Computers and Structures Inc. (CSI). The structural analysis and design software CSI produce include SAP2000, CSI Bridge, ETABS, SAFE, PERFORM-3D, and CSI COL. Several versions of the program were subsequently developed.

Version 8.4 of the Burj Khalifa model is now the world's tallest building for structural analysis under the influence of vertical and side loads (wind and earthquakes) and considering the effects of P-delta. Many of the buildings were designed with ETABS such as "The princess tower - Dubai marina"(107 story) , "Elite tower"(91 story) in Dubai

**Dr. Mohammad Z. Yousif**

## 1.2 Saving Time

The program includes options that allow you to reduce the time spent creating models. Those options include the following :

- 1- Similar Stories, allow the user to make changes to multiple stories simultaneously.
- 2- Auto Select section, allow the user to define section from a list of sections, for example: for concrete members or for steel members like W18x35, W18x40, W24x55 .... etc. , that can be assigned to a frame member.
- 3- Vertical Load Transfer, frees the user from the chore of calculating the load on the members supporting the floor plate, and determines the area tributary to each members for live load reduction.
- 4- Towers, allow multiple towers to exist within a single model.
- 5- Analysis Steps.
- 6- Design Steps.

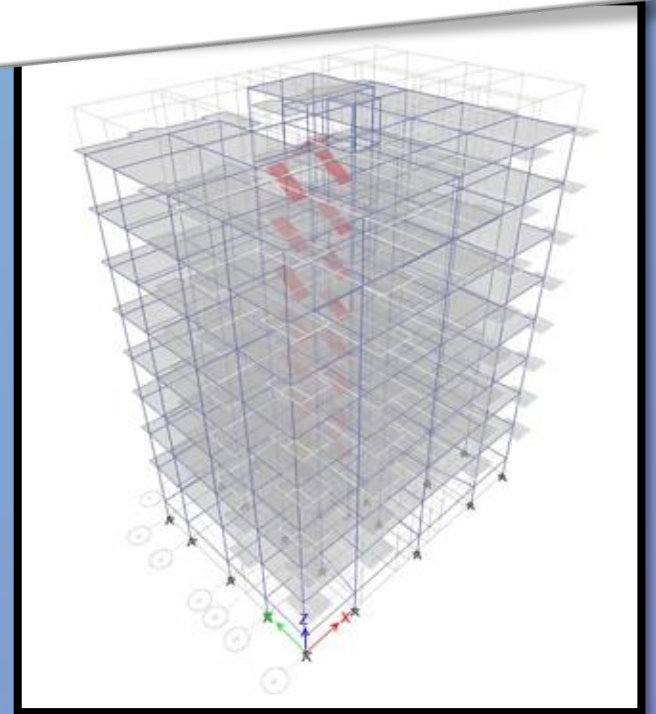
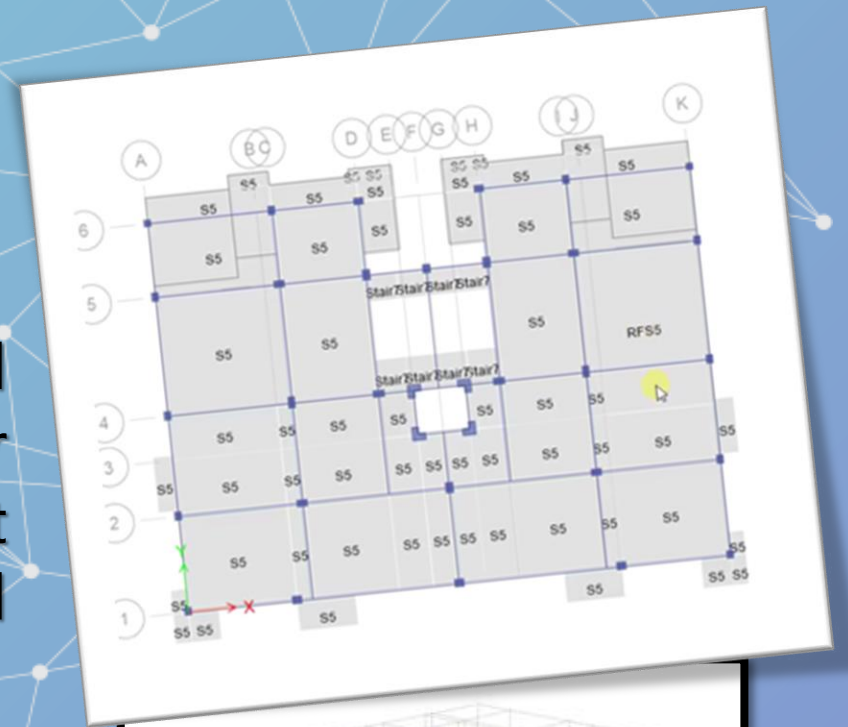


## 1.3 What ETABS Can Do

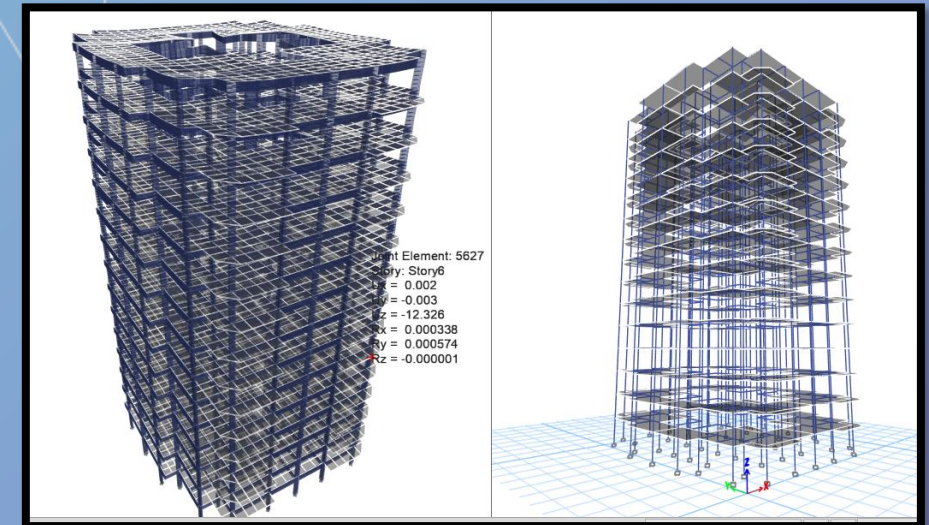
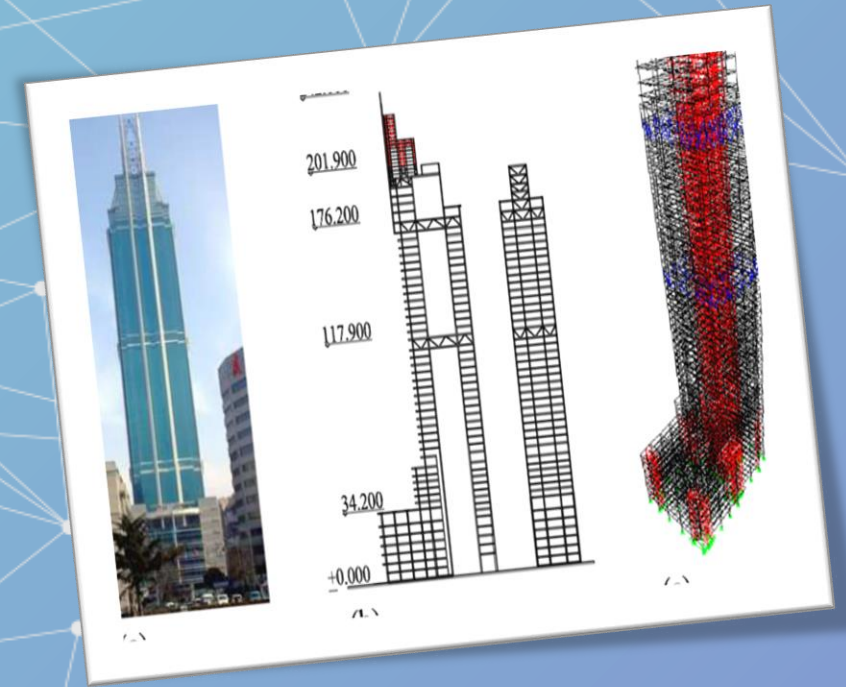
**ETABS** offers the widest assortment of analysis and design tools available for the structural engineer working on building structures. The following list represents just a portion of the types of systems and analyses that ETABS can handle easily:

- 1- Multi-story building (commercial, government and health care facilities).
- 2- Building with curved beam, walls and floor framing.
- 3- Building with concrete, steel and composite section.
- 4- Shear walls and cores with arbitrary opening.
- 5- Parking garages with circular and linear ramps.

Dr. Mohammad Z. Yousif



- 6- Performance based design utilizing non-linear analysis.
- 7- Flat or waffle slab concrete buildings.
- 8- Building subjected to any number of vertical and lateral load cases and combinations, including automated Wind load and Seismic load.
- 9- Automated transfer of vertical loads (including self weight) on floors to beams to column and walls.
- 10- Capacity check of beam-to-column and beam-to-beam steel connections.
- 11- P- $\Delta$  analysis with static or dynamic analysis.
- 12- Design optimization for steel and concrete frames.
- 13- Design capacity check of column .....etc.



Dr. Mohammad Z. Yousif