# ETABS - Analysis check List

Check List of Analytical Model

1. Geometry Check
   - Distance between grids
   - Storey Heights
   - Column Heights below plinth beam based on EGL, FGL, FFL & foundation depth
   - Duplication and overlapping of structural components with tolerance limit of spacing between nodes is to be check with 100 mm.

2. Material Property
   - Grade of Concrete and Steel
   - E, Poison's ratio and Density of RC

3. Frame / Area Element
   - Physical, Geometry (Dimension), Material property of each element
   - Unit of dimension
   - Type of element (Membrane or Shell)

4. Check Application of load i.e. Dead, Live, Partition, Floor screed, Floor finish, Wall and Cladding loads, duct load, Toilet Sunken load, not modeled structures such as stair, sunshade, cantilever slab load, Torsional load due to cantilever projection such as sunshade, porch, canopy, Ramp and inclined slab load, Equipment load, Equipment pedestal load, Wind load, Seismic Load. Check load calculation sheet for all basic load applied.

5. Member Assignments: Torsional release of all beams where torsion is not applied externally, secondary beam moment releases, Shear wall out of plane mt release etc, orientation of all columns, member offset distance setting, all Area element local axis in same direction, Number of output stations for frame members.

6. Integrity Check: View deflected and mode shape of all basic load cases and check structural connectivity. View model with extrusion command, Automatic meshing

7. Diaphragm Check: Connectivity with all points or area and its load.

8. Static Check with sum of support reaction of each basic load cases (DL, LL, WLX, WLY, EQX, EQY) with applied loads and contribution of each support loads per unit contributing area.

9. Analysis Result Check: Approximate contribution load on column/beam by verifying BMD, SFD and Axial load, Maximum and minimum forces for all members. (to identify any unusual values)

10. Seismic load Check: Mass source definition, spectrum values and As per IS 1893 base shear is to be magnified for design (height of building, with or without infill, building lateral dimension, E value, Seismic weight combination generally 1 to 3), Check x and y direction seismic load combination if building is inclined. Check vertical seismic load combination if span is more i.e. greater than 12 m span. Mass

participation factor > = 90 %.
11. Check contribution of shear wall and column and column atleast should contribute 25% of lateral force.

12. Serviceability Check: Check all serviceability criteria (deflection, drift, storey displacement, and bearing pressure) for un-factored load combination and strength criteria with factored load combination.

13. Load Combination Check: Check all load combination as per IS 456, IS 875 & IS 1893 for Design, Serviceability check and Footing bearing Pressure check. Live load is to be defined as LL1 (Load < 3 kN/m2), LL2 (Load > 3 kN/m2), LL3 (Roof live load). It should be in the order mentioned in the DBR.