

- permitted by ACI, provided that the designer has to estimates the degree of cracking and comply with the serviceability limit state at the adopted design service loads.
3. Permanent drift due to gravity loads to be checked and shall be eliminated or minimized with proper technical arrangement.
 4. All structural framing elements and their connections, not required by design to be part of lateral–force-resisting system, shall be designed to be adequate to maintain support of design dead plus live loads when subjected to the deformation caused by seismic forces.
 5. Effects of axial long term shortening due to elastic, shrinkage and creep effects shall be investigated and accounted for in the design and construction. If measures to compensate for the effects of differential shortening are taken, consultant shall include such information on engineering drawings and relevant documents.
 6. Manual take down of gravity loads for all key vertical elements to be compared with resulting loads from analyzed model.
 7. Design shall be carried out in accordance with code the governing load combination was derived from.
 8. Calculation of effects of accidental eccentricities and load reductions shall be consistent with the code used for the structural design.
 9. Thermal effects shall be evaluated based on realistic temperature distribution. Seasonal temperature change shall not be less than 25 deg C or in accordance with credible local climate record. This effect shall be considered in design of vertical and horizontal members.
 10. Structural design shall accommodate shrinkage, creep and thermal strains by providing appropriate reinforcement or specifying control or expansion joints. Expansion joints shall satisfy seismic requirements of relevant code.
 11. Floor slabs shall be designed to be adequately supporting the entire construction loads from the next slab without compromising the ultimate or/and service limit states requirements.

2.5.2.4 SERVICEABILITY LIMITS

1. All buildings shall be designed to limit maximum drift under 50 years wind load to 1/500 of building height.
2. All buildings shall be designed to limit inter-story drift to 1/500 of the story height and not more than 10mm under serviceability of 10 years wind. If no wind tunnel test results are available, 10 years serviceability wind speed of 38 m/s can be adopted in Dubai for inter-story drift calculations.
3. Adequate provisions shall be adopted to eliminate risk of damage to non-structural elements due to inter-story drift.
4. Wind induced vibration due to 10 years wind shall be limited to 15 milli-g for residential and hotel buildings and 20 milli-g for office buildings. Damping ratio should under no circumstances exceed 2.0% unless additional special damping devices are used. For buildings subject to coupled modes response, the torsional velocity due to 10 years wind shall be limited to 3 milli-rad/s or as recommended with credible relevant reference.
5. For buildings with irregular façade shapes and where a potential noise expected to occur, the tonal noise generated as part of vortex shredding mechanism shall be properly addressed by wind specialist. The consultant and the wind specialist are solely responsible to undertake the necessary study and to propose any effective remedial measures to resolve the problem.

2.5.2.5 SOFTWARE

The following commercial structural software packages are commonly used structural design tools and are accepted by CED for structural analysis and design. Computer software not listed below shall be submitted for review and approval prior to adopting in the design.

Acceptable popular commercial structural software packages:

ETABS, SAFE, SAP2000, ROBOT, STRAND, STAAD, PROKON.