CHAPTER 6
PERFORMANCE-BASED SEISMIC DESIGN REQUIREMENTS FOR TALL BUILDINGS

6.1. ANALYSIS PROCEDURES FOR TALL BUILDINGS

6.1.1 – In the linear elastic analysis of tall buildings required for design stages described in **6.3.1** and **6.3.3**, *Multi-mode Response Spectrum Analysis* procedure described in **2.4** or *Linear Response History Analysis* procedure described in **2.5.1** shall be employed.

6.1.2 – In the nonlinear analysis of tall buildings required for design stages described in **6.3.2** and **6.3.4**, *Direct Integration* procedure shall be employed in the time domain.

6.1.3 – In nonlinear analysis, a minimum seven earthquake ground motion sets shall be used in accordance with **1.2.3** and the acceleration records in the two perpendicular directions shall be applied simultaneously along the principal axes of the structural system. Subsequently directions of acceleration records shall be rotated by 90^o and the analysis shall be repeated. Design basis seismic demands shall be calculated as the average of results obtained from the minimum 2*7 = 14 analysis.

6.1.4 – In the linear or nonlinear analysis of tall buildings, damping ratio shall be taken $\xi = 0.05$ as a maximum. Second order ($P - \Delta$) effects shall be taken into account.

6.1.5 – In the cases where needed, vertical component of the earthquake ground motion may be considered as well, subject to approval of the *Independent Reviewer(s)*.