

(c) Deformation capacities of structural steel frame elements shall be taken from ASCE/SEI 41-06* for *Collapse Prevention* performance objective.

(d) Shear capacities of reinforced concrete structural elements shall be calculated from EN 1992-1-1: 2005 using expected strengths given in 6.2.5.

(e) In the event where any of the requirements given in (a) through (d) above is not satisfied, all design stages shall be repeated with a modified structural system.

Table 5.1. Performance-based design stages of tall buildings

<i>Design Stage</i>	Design Stage I – A	Design Stage I – B	Design Stage II	Design Stage III
<i>Design type</i>	Prelim. design (dimensioning)	Design	Verification	Verification
<i>Earthquake Level</i>	<i>Normal class buildings</i> (E2) earthquake	<i>Normal class buildings</i> (E2) earthquake	<i>Normal class buildings</i> (E1) earthquake	<i>Normal class buildings</i> (E3) earthquake
	<i>Special class buildings</i> (E3) earthquake	<i>Special class buildings</i> (E3) earthquake	<i>Special class buildings</i> (E2) earthquake	
<i>Performance objective</i>	Life Safety	Life Safety	Immediate Occupancy	Collapse Prevention
<i>Analysis type</i>	3-D Linear Response Spectrum Analysis	3-D Nonlinear Time-history Analysis	3-D Linear Response Spectrum Analysis	3-D Nonlinear Time-history Analysis
<i>Behaviour Factor</i>	$q \leq 5.0$	–	$q = 1.0$	–
<i>Story drift ratio limit</i>	% 2	% 2.5	% 1	% 3.5
<i>Section stiffness in R/C frame members</i>	Effective stiffness	Effective stiffness (from moment- curvature analysis)	Effective stiffness (from moment- curvature analysis)	Effective stiffness (from moment- curvature analysis)
<i>Material strengths</i>	Design strength	Expected strength	Expected strength	Expected strength
<i>Acceptance criteria</i>	Strength & Story drift ratio	Strains & Story drift ratio	Strength & Story drift ratio	Strains & Story drift ratio

*ASCE/SEI 41-06: Seismic Rehabilitation of Existing Buildings, American Society of Civil Engineers, 1st edition, 15/05/2007.