

Table C.1.3.1a Acceptable reliability (maximum annual probability of failure) and associated reliability indexes¹ (β) for load conditions that do not include earthquake²

Basis	Occupancy Category			
	I	II	III	IV
Failure that is not sudden and does not lead to wide-spread progression of damage	$P_F = 1.25 \times 10^{-4}/\text{yr}$ $\beta = 2.5$	$P_F = 3.0 \times 10^{-5}/\text{yr}$ $\beta = 3.0$	$P_F = 1.25 \times 10^{-5}/\text{yr}$ $\beta = 3.25$	$P_F = 5.0 \times 10^{-6}/\text{yr}$ $\beta = 3.5$
Failure that is either sudden or leads to wide-spread progression of damage	$P_F = 3.0 \times 10^{-5}/\text{yr}$ $\beta = 3.0$	$P_F = 5.0 \times 10^{-6}/\text{yr}$ $\beta = 3.5$	$P_F = 2.0 \times 10^{-6}/\text{yr}$ $\beta = 3.75$	$P_F = 7.0 \times 10^{-7}/\text{yr}$ $\beta = 4.0$
Failure that is sudden and results in wide spread progression of damage	$P_F = 5.0 \times 10^{-6}/\text{yr}$ $\beta = 3.5$	$P_F = 7.0 \times 10^{-7}/\text{yr}$ $\beta = 4.0$	$P_F = 2.5 \times 10^{-7}/\text{yr}$ $\beta = 4.25$	$P_F = 1.0 \times 10^{-7}/\text{yr}$ $\beta = 4.5$

¹The reliability indices are provided for a 50-year service period, while the probabilities of failure have been annualized. The equations presented in Section 2.3.6, Load Combinations for Non-Specified Loads, are based on reliability indices for 50 years because the load combination requirements in 2.3.2 are based on the 50-year maximum loads.

²Commentary to Section 2.5 includes references to publications that describe the historic development of these target reliabilities.

Table C.1.3.1b Anticipated reliability (maximum probability of failure) for earthquake¹

Risk Category I and II	
Total or partial structural collapse	10% conditioned on the occurrence of Maximum Considered Earthquake shaking
Failure that could result in endangerment of individual lives	25% conditioned on the occurrence of Maximum Considered effects
Risk Category III	
Total or partial structural collapse	6% conditioned on the occurrence of Maximum Considered Earthquake shaking
Failure that could result in endangerment of individual lives	15% conditioned on the occurrence of Maximum Considered Earthquake shaking
Risk Category IV	
Total or partial structural collapse	3% conditioned on the occurrence of Maximum Considered Earthquake shaking
Failure that could result in endangerment of individual lives	10% conditioned on the occurrence of Maximum Considered Earthquake shaking

¹Refer to the NEHRP Recommended Provisions Seismic Regulation for Buildings and Other Structures, FEMA P750, for discussion of the basis of seismic reliabilities.

S100-07 North American Specification for the Design of Cold Formed Steel Structural Members

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