Pakistan Building Code (Seismic Provisions 2007)

Chapter 2: Seismic Hazard — Advanced Professional Interpretation

Role of Chapter 2

Chapter 2 establishes the seismic hazard framework for Pakistan. It defines the expected earthquake ground motion level that buildings must be designed for and introduces the national seismic zoning system. This chapter directly controls design base shear, spectral demand, and overall seismic safety level.

1. Design Basis Ground Motion — Deep Technical Meaning

The code requires buildings to be designed for ground motion having a 10% probability of exceedance in 50 years (approximately 475-year return period).

Engineering Interpretation: Represents the Design Basis Earthquake (DBE), balances safety and economy, and aligns with international life-safety practice.

2. Seismic Zoning of Pakistan — Professional Interpretation

Seismic Zone	Peak Ground Acceleration Range	Relative Hazard Level
Zone 1	0.05–0.08 g	Low
Zone 2A	0.08–0.16 g	Moderate
Zone 2B	0.16–0.24 g	Moderately High
Zone 3	0.24–0.32 g	High
Zone 4	> 0.32 g	Very High

3. Site-Specific Hazard Analysis — When It Governs

The zoning map may be superseded when a site-specific hazard analysis is performed. This is typically required for important facilities, near-fault sites, unusual soils, or critical infrastructure.

Allowed methods include Probabilistic Seismic Hazard Analysis (PSHA), Deterministic Seismic Hazard Analysis (DSHA), or both.

4. Modeling of Ground Motion

Results of hazard analysis may be represented using response spectra or acceleration time histories, which are later used in Chapter 5 for seismic analysis procedures.