2012 ibc structural seismic design manual volume 4 examples for steel framed

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2012 IBC Structural Seismic Design Manual Volume 4 Examples for Steel Framed Buildings

Question 1: How do I determine the seismic design category for a steel framed building? Answer: The seismic design category is determined based on the mapped spectral accelerations and the building's location and occupancy. Refer to Chapters 16 and 18 of the 2012 IBC for specific guidance.

Question 2: What are the different seismic force-resisting systems allowed for steel framed buildings? Answer: Permissible seismic force-resisting systems for steel framed buildings include moment frames, braced frames, ordinary concentrically braced frames, special concentrically braced frames, eccentrically braced frames, and buckling-restrained braced frames.

Question 3: How do I design a special moment resisting frame? Answer: Special moment resisting frames must meet specific detailing requirements stipulated in the 2012 IBC Structural Seismic Design Manual Volume 4 (SSDM). These include beam-to-column connections that can sustain inelastic rotations, column capacity design, and strong column-weak beam behavior.

Question 4: What are the criteria for designing steel bracing systems? Answer: Steel bracing systems must be designed to resist the applied seismic forces in both tension and compression. They must satisfy the requirements for compactness, slenderness, brace alignment, connection strength, and column stability.

Question 5: How do I calculate the allowable drift for a steel framed building? Answer: The allowable drift is based on the seismic design category, building height, and occupancy. The SSDM provides equations and tables for determining the permissible drift limits. Engineers must also consider the potential for non-structural damage and human comfort when assessing drift.

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