Database-Assisted Design for Wind: Concepts, Software, and Example for High-Rise Reinforced Concrete Structures (Paperback)

By Nist

Createspace, United States, 2014. Paperback. Condition: New. Language: English . Brand New Book ***** Print on Demand *****. Time-domain analyses of wind effects on high-rise structures have been made possible in recent years by advances in wind pressure measurement and computer technology. Time domain solutions not only provide full phase information on structural responses to wind but can also account naturally for modes of vibration of any shape, including any number of higher modes of vibration, as well as for mode coupling. This study applies the Database-Assisted Design (DAD) methodology to the design of reinforced concrete high-rise structures. Given (a) the time histories of pressures, measured in the wind tunnel at a sufficient number of taps on the exterior faces of the building envelope for a sufficient number of mean speed directions, and (b) a preliminary design of the building, it is possible to calculate response databases for the demand-to-capacity indexes, inter-story drift, and top floor accelerations, that is, databases of responses induced by wind with any specified speed and direction. These responses are functions of the building s aerodynamic, geometric, structural, and dynamical features and are independent of the wind climate. The response databases are used in conjunction with...

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