Application And Innovation of High-Strength Concrete in High-Rise Building Structures

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Abstract

In the process of popularization and application of high-strength materials, it is often difficult to design their strength and ductility. Starting from the seismic design of complex high-rise building structures, this paper proposes a performance-based design method based on the predetermined yield mode, which can comprehensively consider the strength and ductility of structural members. On the basis of this seismic design method, a high-strength concrete high-rise energy dissipation structural system and a high-performance assembled high-rise building structural system are proposed that can give full play to the strength of high-strength materials and the ductility of energy dissipation members. The research results can provide technical support for the application of high-strength concrete in high-rise building structures.

Keywords: high-strength concrete; high-rise building; strength; ductility; predetermined yield mode; application; innovation

1 Performance-Based Design Method Based on Predetermined Yield Mode

1.1 Design Process

The basic process of the seismic-performance-based design method based on predetermined yield mode is shown in Figure 1.

Considering that the "three-level" fortification target is the most basic requirement of structural seismic design in China, the predetermined yield mode should also be based on the minimum standard.

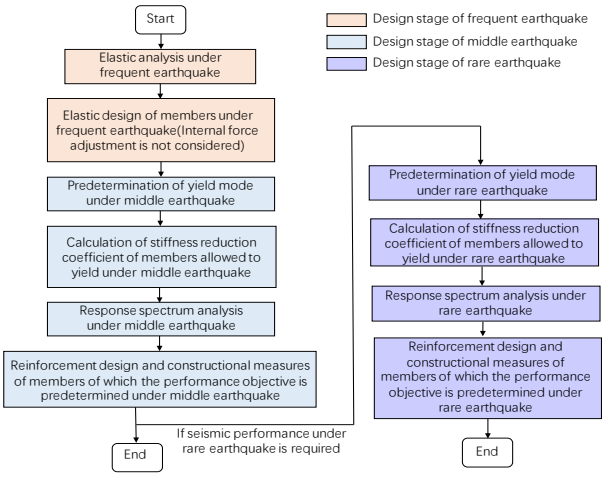

Figure 1. Seismic design method based on predetermined yield mode

1.2 Advantages of the Method

The seismic-performance-based design method based on predetermined yield mode has the following advantages:(1) The failure sequence of the structure is gradually controlled. At the same time, the design process is simpler and more reasonable, and complex internal force adjustment is avoided. (2) The obtained stiffness reduction coefficient of structural members can reflect the real stress state of the structure. (3)

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