

Jingang Cultural Center: Complex-shaped Fair-faced Concrete Structure

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Abstract

As one of the largest fair-faced concrete structures in China, the Jingang Cultural Center includes many complex-shaped fair-faced concrete structures. This study focuses on the structural characteristics of Jingang Cultural Center. Aiming at the representative components, such as a deepening design, mushroom body structure, ridge eave structure, and arch-shell structure, a series of measures are studied, and a series of methods are proposed to improve the forming quality of fair-faced concrete with complex-shaped structures and enhance the feasibility and economy of fair-faced concrete in complex-shaped structures.

Keywords: fair-faced concrete; complex special-shaped; deepening design; structural construction; construction simulation.

1 Introduction



Figure 1. The figure of Jingang Cultural Center

Jingang Cultural Center includes a large area covered by a special-shaped fair-faced concrete structure and a long large-span cantilever structure.

The maximum cantilever length is 8–10 m. The representative structures are mainly divided into 35 mushroom bodies with different shapes and no repeatability, 3,080 m of oblique-plane curved hollow prismatic eaves, and a landing arch-shell structure.

2 Deepening design of fair-faced crack-segmentation

Through the application of building information modelling (BIM) technology (Figure 2), the integrity, feasibility, economy, aesthetics, and correlation with the surrounding structure of the special-shaped fair-faced structure are multi-dimensionally considered, and a set of fair-faced crack-segmentation design standards are formulated.