

APPLICATION OF GRADE III REINFORCED STEEL IN THE SHEARING WALL FRAME STRUCTURE OF JINJIANG GARDEN PROJECT

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Jinjiang Garden Project, located at riverside of Funan River in Chengdu, the capital city of Sichuan province, was designed by Sichuan Provincial Design Institute of Architecture in 2000 and has been already put into use. The great - based, twin - tower main building is of concrete shearing wall frame structure with 32 floors above ground and 3 floors under ground. The height of rooms is 99.90 m . The totally building is 115.30 m high, 114.489 m long with a 3 - floor skirt building. Floors 1 ~ 3 are for supermarket, floors above are for living. The living rooms are of shearing wall structure while floors 1 ~ 3 are of tube - shaped frame structure. A structure conversion has been built on floor 3 for conversion by using frame - supported beam for conversion. The sectional size of the tower is 35 m × 35 m, the auxiliary building is of frame structure and is connected with the twin towers. The strength level of concrete is as follows: C55 - C40 for shearing wall, C55 for frame - supported beam, C55 - C40 for frame column, C45 - C30 for framed beam and roof boarding. The foundation is of plate - type raft type.

The sectional sizes of the structures: 1 300 m × 1 300 m to 900 m × 900 mm frame column, 800 mm × 2 000 mm, 800 mm × 1 800 mm, 700 mm × 1 500 mm for frame - supported beam. Thickness

of the shearing wall: 250 ~ 450 mm for bottom tube and flooring wall, 300 ~ 200 mm for upper shearing wall.

There is sharing space between the skirt building and the twin - tower building with big hole on floor. Three - dimensional calculation software SATWE, programmed by China Academy of Architecture, has been applied for structure analysis in consideration of the elastic deformation in floor level. Since the Project is in an area of level 7 on earthquake protective standard, torsional coupling action has been taken into consideration into the calculation of seismic actions. The calculated result is 3.02s for the first self - vibration cycle and 1/1078 for the maximum displacement between floors under the Y direction seismic action.

Except for rafting foundation, 20MnSiV III steel bars produced by Pangang have been used for frame supports, the main building and the auxiliary building. For extremely important components such as frame - supported columns and frame - supported beams, cold - rolled straight threaded mechanical connector has been used for connection between steel bars for assurance of reliable loading and sufficient ductility. Electroslag welding has been adopted on the connectors used for connection between longitudinal steel bars in the invisible