

## Embedment Design Concept of Signature Tower in Chennai

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**Abstract :** Assumptions in model inputs: Grade of concrete=40 N/mm<sup>2</sup> (for slab), Grade of concrete=40 N/mm<sup>2</sup> (for shear wall), Grade of Structural steel (plate girder)=350 N/mm<sup>2</sup> (yield strength), Ultimate strength of structural steel=490 N/mm<sup>2</sup>, Grade of rebar=500 N/mm<sup>2</sup> (yield strength), Applied Load=1716 kN (un-factored). Following assumptions are made for the mathematical modelling of RCC with steel embedment: (1) The bond between the structural steel and concrete is neglected. (2) The stiffener is provided with shear studs to transfer the shear force. Hence nodal connectivity is established between solid nodes (concrete) and shell elements (stiffener) at those locations. (3) As the end reinforcements transfer either tension/compression, it is modeled as line element and connected to solid nodes. (4) In order to capture the bearing of bottom flange on to the concrete, the line element of plan size of solid equal to the cross section of line elements is connected between solid and shell elements below for bottom flange and above for top flange. (5) As the concrete cannot resist tension at the interface (i.e., between structural steel and RCC), the tensile stiffness is assigned as zero and only compressive stiffness is enabled to take. Hence, non-linear static analysis option is invoked.

**Keywords :** structure, construction, signature tower, embedment design concept

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