Title	Structural System Selection for Tall Buildings on Rich Picture Concept and Analytical Hierarchy Process
Year	2011
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Abstract

In tall buildings, there are various systems such as structural, mechanical, electrical, plumbing, fire safety systems which are finalized by the proper coordination between the experts in the field. Among all the systems structural systems governs the overall characteristics of the building. Structural system includes Gravity and Lateral Load Resisting System in which system is affected by gravity and lateral load respectively. The main professional involved for designing structural system are Architect and Structural engineer along with other engineers. All professional forms a group and combine ideas for better flow of design process to come up with proper Structural System. Structural Systems and Designing is complex, so conflict arises between different professionals involved due to lack of communication and review of selection process in every design phase. Bridging this gap is necessary and is done by identifying the main conflict between the designers by using Rich Picture Concept and Responsibility Assignment Matrix and integrated solution is obtained by using Integrated Design Process.

The study is conducted to select appropriate Structural System for Tall Building in preliminary design phase. Seven questionnaire surveys was conducted to get the degree of importance to different criteria of the structural system and three key informants were interviewed to know the expertise of the designers about structural system selection. Several requirements, criteria and sub criteria of floor systems, lateral load resisting systems and foundation were studies. These features and expert knowledge were combined to get appropriate weights and score for the criteria of system. Analytical Hierarchy Process was used to get appropriate solution. Case study of East Tower was conducted to have clear concept about the system selection process and also to verify the Model developed by using Analytical Hierarchy Process in Microsoft Excel. Different scenarios were created by case study along with other two buildings with different structural properties. Scenario analysis did comparative study of results of all the buildings. Sensitivity Analysis showed the effect of the weight while selecting the Structural System.

Keywords Tall Building, Rich Picture, Design Development Process of Structural System, Relative Assignment Matrix, Integrated Design Process, Selection of Structural System, Analytical Hierarchy Process.