

Driving factors and obstacles in adopting structural steel in Hong Kong: Case studies

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Abstract

The construction applications of structural steel mainly include super high-rise buildings and long-span structures. The advantages offered by structural steel to the construction sector and building environment have long been recognised, as evidenced by the increasing market share of structural steelwork in many marketplaces, but not in Hong Kong. The annual import quantity of fabricated steel structures in Hong Kong is 0.2 - 0.3 million tons, which indicates a low demand for structural steelwork in the local construction industry. This study aims to identify the major barriers and potential driving factors to the use of structural steel in Hong Kong. Interviews were conducted with a private developer, three main contractors, and two steel specialist contractors. These industry professionals offered four construction applications that addressed the major problems and driving factors for using steel-framed structures. The four cases included a Chinese opera centre, a swimming pool, a 24-story hotel, and a commercial building. These case studies reveal that steel-framed structures are adopted only for projects that have technical requirements. Otherwise, reinforced concrete structures are used because steel-framed structures are cost-efficient for super high-rise and long-span structures but not for normal types of buildings. The fast construction of structural steelwork can result in an early return on investment, which may outweigh the high construction cost. This advantage will be particularly significant for retail building projects with high land prices in Hong Kong. This study offers strategies for facilitating the fast construction of structural steelwork. If these strategies are implemented to resolve problems, then the application of steel-framed structures to many tall buildings in Hong Kong can be feasible.

Keywords: *Case study; Construction application; Structural steelwork; Composite structure.*