ABSTRACT

The use of steel in buildings by architects is a common occurrence. However, architects are often limited by their technical knowledge of the different fire protection systems available and how they can be fully utilised in the architectural design. By understanding the various methods possible, the architect need not be at the mercy of the fire safety engineers, especially since the choice of fire protection materials can affect the overall aesthetic of the building drastically.

This dissertation is a study of the various ways in the fire protection of steel, how architects can use and have dealt with their consequent effects on the design and aesthetic of buildings, and their possible application in the Singapore context. However, due to the wide scope of the topic of fire safety, the focus here is on the passive measures for fire-resistant steel structure.

This study shows that there is much potential for architects to design either with exposed steel structure or utilising the steel aesthetic, thus enabling a dual function of the steel structure in structural support as well as architectural aesthetics instead of being hidden away. However, there are limitations in the use of some of the methods in terms of cost, precision and quality workmanship and acceptance by governing fire authorities. Nevertheless, architects that take the effort can capture the public’s imagination with their projects, for example, Pompidou Centre in Paris and the Hong Kong and Shanghai Bank in Hong Kong.