



Selection and Design of Integrated Coating Systems for Structural Components of All Steel Residential Towers

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Abstract

The all-steel structure has the advantages of small size and small number of vertical components, and the all-steel structure can realize more spacious apartment types and flexible building space. The steel structure members of the all-steel residential tower need to the use of paint or other methods to meet the requirements of safety, durability and aesthetics. In the aspect of safety, the fire-resistant time of steel structure members is improved by fire-resistant coating. Based on the engineering background of the all-steel residential tower, this paper discusses several reasonable and feasible alternatives of the integrated coating system for steel structure members, and further expounds the selection of the coating scheme and the main design points. At the end of the paper, a 100m and a 150m all-steel residential tower are taken as examples to introduce how to apply the integrated thinking to the selection and design of the coating system, indicating that the integrated coating design can better meet the safety, durability and aesthetic requirements of the all-steel residential tower structural system.

Keywords: All-steel residential tower, integrated painting design, steel structure fire protection design, steel structure anti-corrosion design, steel structure appearance design

1 Introduction

The all-steel structure has the advantages of small size and small number of vertical components, and the all-steel structure can realize more spacious apartment types and flexible building space. The steel structure members of the all-steel residential tower need to the use of paint or other methods to meet the requirements of safety, durability and aesthetics. In the aspect of safety, the fire-resistant time of steel structure members is improved by

fire-resistant coating. Durability through anti-corrosion coating to resist the corrosion of steel plates, especially outdoor, underground and wet parts; Aesthetically, the coating system needs to meet the smallest possible thickness, a flat dense surface and a tight fit with steel structure members. At present, the current fire protection design code of the construction industry, steel structure design code for fire protection and anti-corrosion single-function coating has given more clear technical requirements, in addition to the appearance of exposed steel structure