

Comparison between Y-type Perfobond Rib Shear Connector and Traditional Perfobond Rib Shear Connector with Push-out Tests

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Summary

Recently, steel and concrete composite structures are widely used due to the sectional efficiency. In composite structures shear connection should be guaranteed for composite behavior of two material. This should be ensured by the shear capacity of shear connector in the composite structures. This study evaluated behavior of Y-type perfobond rib shear connector which is superior in shear capacity and ductility than traditional perfobond rib shear connector by push-out tests. Y-type perfobond rib shear connector has higher shear capacity and ductility than the traditional perfobond rib shear connector by comparing and estimating the experimental results.

Keywords: Y-type perfobond rib shear connector; shear connection; push-out test

1. Introduction

Steel and concrete composite structures are widely used in these days. A shear connector is a basic requirement for composite structures as it prevents vertical and horizontal separation of steel and concrete whose characteristics are different from each other and ensures fully composited behavior of the two materials so that stress can be transferred effectively between the two. But as the forms of composite structures become more varied, the mechanical behavior of the shear connection gets more complex, the design and construction get more constrained, and higher workability on the construction site is required. Thus, a new form of shear connector is needed.

In this study, Y-type perfobond rib shear connector is proposed with the aim of improving ductility of the perfobond rib shear connector and workability of the transverse rebars which placed in dowel holes. Behavioral characteristics of the newly proposed and traditional perfobond rib shear connectors were compared by evaluating the shear capacity of the proposed Y-type perfobond rib shear connector. Push-out tests were conducted based on Eurocode-4.