



High capacity saw tooth connectors – experimental testing and numerical studies

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Summary

Saw tooth connectors are designed to transfer significant concentrated forces between steel members and slender concrete slabs, when traditional steel to concrete connections like headed studs are not strong enough. This paper presents the results of the first experimental study of saw tooth connections in order to clarify the ultimate load and the load displacement behaviour. In this context the fracture of structural concrete subjected to compressive forces is reviewed.

Keywords: Concentrated load transfer, saw tooth connector, strut-and-tie models, concrete fracture

1. Introduction

The anchorage of concentrated forces in reinforced concrete is a frequent issue in structural engineering. The cable anchorage of a cable stayed bridge is a typical detail where high concentrated forces are transferred into a concrete slab. Such areas of concentrated load transfer are also typical for hybrid structures. Saw tooth connectors can be used to detail such junctions between the structural materials (Fig. 1).

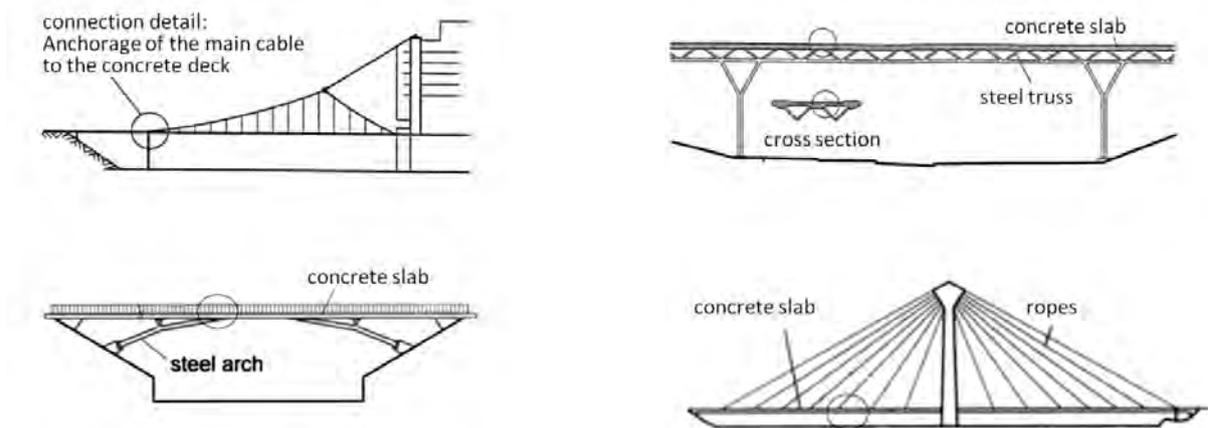


Fig. 1: Examples for the application of saw tooth connectors in bridge design

Saw tooth connectors were developed for locations where significant concentrated forces from steel members meet with a concrete slab where traditional steel to concrete connections like headed studs