

Study on improvement of strength of Beam-column Joints at railway RC rigid-framed viaducts.

Michihiro Kunii

Staff member

East Japan Railway Company

Tokyo, Japan

michihiro-kunii@jreast.co.jp



Joined East Japan Railway Company in April 2010
Currently engaged in concrete structure related work

Daisuke Tsukishima

East Japan Railway Company

Tokyo, Japan

tsukishima@jreast.co.jp

Mareki Kuraoka

East Japan Railway Company

Tokyo, Japan

m-kuraoka@jreast.co.jp

Contact: michihiro-kunii@jreast.co.jp

1 Abstract

In Japan, in order to make the city centering around the station, we are developing the underpass of the station as a commercial facility. Therefore, a structure that enlarges the column span and reduces the cross-sectional height of the beam to widen the under-elevated space is desired. However, while the amount of reinforcing bars increases, the beam-column joints become smaller, so that the reinforcing bars are overcrowded in the beam column joints. In addition, since the fixing length of the reinforcing bars is insufficient, or the strength of the beam-column joint cannot be sufficiently secured, problems such as not having a sufficient proof stress on the joint portion which should originally be stronger than the beam and column member. In this report, we developed a fixing method of reinforcing bars of column beams which improves the proof strength of beam-column joint and also simple reinforcing bars even in the case of small beam-column joint, and applied to station construction work, we report on them.

Keywords: railway RC rigid-framed viaducts; beam-column Joints.

2 Introduction

In the design of railway RC frame viaducts, in the case of developing the elevated part of the station area, a structure capable of enlarging the space below the elevated space by expanding the spacing between columns and reducing the height of the cross section of the beam is desired. (shown in Figure 1) . However, beam-to-column joints

(hereinafter referred to as joints) have to be in a state where the reinforcing bars become over-packed, it is difficult to secure the fixing length of the reinforcing bars, and furthermore, they must be stronger than the column members and beam members There are problems such as lack of proof stress at joints. It is common to secure the cross-sectional height that can secure the anchoring length of the column axial direction rebar, and anchor by semicircular hook.

<https://doi.org/10.2749/newyork.2019.0683>

Distributed by Structurae