

Accepted Manuscript

Experimental study on seismic performance of new RCS connection

Xuan Huy Nguyen, Quang-Huy Nguyen, Dang Dung Le, Olivia Mirza

PII: S2352-0124(16)30074-1
DOI: doi: [10.1016/j.istruc.2016.09.006](https://doi.org/10.1016/j.istruc.2016.09.006)
Reference: ISTRUC 149

To appear in:

Received date: 10 June 2016
Revised date: 24 August 2016
Accepted date: 12 September 2016

Please cite this article as: Nguyen Xuan Huy, Nguyen Quang-Huy, Le Dang Dung, Mirza Olivia, Experimental study on seismic performance of new RCS connection, (2016), doi: [10.1016/j.istruc.2016.09.006](https://doi.org/10.1016/j.istruc.2016.09.006)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Experimental study on seismic performance of new RCS connection

Xuan Huy Nguyen^a, Quang-Huy Nguyen^b, Dang Dung Le^a, Olivia Mirza^c

^aUniversity of Transport and Communications, 3 Cau Giay Street, Hanoi, Vietnam

^bINSA de Rennes, 20 avenue des Buttes de Coësmes, CS 70839, F-35708 Rennes Cedex 7, France

^cInstitute for Infrastructure Engineering, University of Western Sydney, Penrith, NSW 2751, Australia

Abstract

This paper deals with an experimental study on seismic performance of a new type of exterior RCS connection, in which a steel profile embedded inside RC column is directly welded to the steel beam. A full scale exterior hybrid joint was built and tested under reversed-cyclic loading at the University of Transport and Communications of Vietnam. Seismic performance in term of load bearing capacity, story drift capacity, ductility, energy dissipation and stiffness degradation were evaluated. The test specimen showed a good response to cyclic load reversals. The experimental results indicated that the test specimen performed in a ductile manner and the stiffness degradation during the cycles performed was gradual. It was concluded that the studied RCS joint could be used as dissipative element in the structures of ductility class medium (DCM).

Keywords: Hybrid structures, beam-column, RCS joint, seismic performance, mechanical testing.

1. Introduction

Hybrid RCS frames consisting of reinforced concrete (RC) column and steel (S) beam have been used at an increasing rate for mid- to high-rise buildings during the last 30 years. RCS frames possess several advantages from structural, economical and construction view points compared to either traditional RC or steel frames. As described by Griffis (1986), RCS frames effectively combine structural steel and reinforced concrete members to their best advantage. From construction view point, these systems are usually built by first erecting a steel skeleton, which allows the performance of different construction tasks along the height of the building. Engineering practices show that beams and columns made of two different materials may fully develop the merits of each of them, and thus combine rationality with economy in terms of material selection. RC columns

Email address: quang-huy.nguyen@insa-rennes.fr (Quang-Huy Nguyen)

Download English Version:

<https://daneshyari.com/en/article/4927943>

Download Persian Version:

<https://daneshyari.com/article/4927943>

[Daneshyari.com](https://daneshyari.com)