

Accepted Manuscript

Investigation of Compressive Bond Behavior of Steel Rebar Embedded in Concrete With Partial Recycled Aggregate Replacement

S. Moallemi Pour, M. Shahria Alam

PII: S2352-0124(16)30043-1
DOI: doi: [10.1016/j.istruc.2016.06.010](https://doi.org/10.1016/j.istruc.2016.06.010)
Reference: ISTRUC 127

To appear in:

Received date: 25 March 2016
Revised date: 24 June 2016
Accepted date: 24 June 2016

Please cite this article as: Pour S. Moallemi, Alam M. Shahria, Investigation of Compressive Bond Behavior of Steel Rebar Embedded in Concrete With Partial Recycled Aggregate Replacement, (2016), doi: [10.1016/j.istruc.2016.06.010](https://doi.org/10.1016/j.istruc.2016.06.010)

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.



Investigation of compressive bond behavior of steel rebar embedded in concrete with partial recycled aggregate replacement

S. Moallemi Pour¹ and M. Shahria Alam²

¹ M.A.Sc Student, School of Engineering, University of British Columbia, Kelowna, BC,

sadaf.moallemipour@alumni.ubc.ca.

² Associate Professor, School of Engineering, University of British Columbia, Kelowna, BC, shahria.alam@ubc.ca.

ABSTRACT

This study examines the effect of recycled concrete aggregate (RCA) on the bond strength of concrete and deformed steel bars. Here, 144 push-out tests were performed. Four RCA replacement percentages (i.e. 0%, 30%, 40%, and 50%) and three sizes of deformed steel bars (i.e. 10M, 15M, and 20M) were used. Moreover, the effect of embedment length and concrete cover to bar diameter ratio on the bond strength was considered. It was found that under constant mix proportions, an increase in the bar size and the embedment length to bar diameter ratio lead to a reduction in the bond strength. Like regular concrete, larger concrete cover helps improve the bond behaviour. On an average, specimens made of partial RCA had bond strengths similar to regular concrete. In some cases, 30% replacement of natural aggregate by RCA illustrated the best results among all the mixes. A new formula for calculating the bond strength is proposed based on the test results.

Keywords: Recycle Concrete Aggregate, Push-out Test, Bond Strength

Download English Version:

<https://daneshyari.com/en/article/6774709>

Download Persian Version:

<https://daneshyari.com/article/6774709>

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