

Accepted Manuscript

Cracking Control Comparison In The Specifications Of Serviceability In Cracking For Frp Reinforced Concrete Beams

Minkwan JU, Youngwhan Park, Cheolwoo Park

PII: S0263-8223(17)30923-6
DOI: <http://dx.doi.org/10.1016/j.compstruct.2017.09.016>
Reference: COST 8879

To appear in: *Composite Structures*

Received Date: 21 March 2017
Revised Date: 28 July 2017
Accepted Date: 14 September 2017

Please cite this article as: JU, M., Park, Y., Park, C., Cracking Control Comparison In The Specifications Of Serviceability In Cracking For Frp Reinforced Concrete Beams, *Composite Structures* (2017), doi: <http://dx.doi.org/10.1016/j.compstruct.2017.09.016>



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.

CRACKING CONTROL COMPARISON IN THE SPECIFICATIONS OF SERVICEABILITY IN CRACKING FOR FRP REINFORCED CONCRETE BEAMS

Minkwan JU¹, Youngwhan PARK², and Cheolwoo PARK³

¹ Department of Civil and Environmental Engineering, Yonsei University, 50 Yonsei-ro, Seodaemun-gu, Seoul, 03722, Republic of Korea.

² Korea Institute of Civil Engineering and Building Technology, 315 Goyang-dae-ro, Ilsan-seo-gu, Goyang-si, Gyenggi-Do, 10223, Republic of Korea.

³ Department of Civil Engineering, Kangwon National University, 346 Joongang-ro, Samcheok-si, Kangwon, 25913, Republic of Korea.

ABSTRACT :

The purpose of this study is to examine the level of applicability of the four specifications of the serviceability in cracking for concrete beams reinforced with ribbed glass fiber-reinforced polymer (GFRP) bar. The four-point bending test was conducted with measuring the crack width at the bottom of the beams. For investigating the level of applicability of the four specifications of the serviceability in cracking, applied moment-maximum bar spacing was obtained by ACI 440 1R-15 for varying the bond coefficient, crack width, concrete cover depth, and the equivalent reinforcement ratio. Then, it compared with the relationships with the serviceability region specified by the four specifications. It was found that the evaluation of serviceability in cracking by the four specifications have provided quite different results according to the bond coefficient, allowable crack width as well as the equivalent reinforcement ratio. As a result, the four serviceability specifications should be seriously discussed for the cracking control of FRP reinforced concrete beams in case of considering some of influencing factor, especially for the equivalent reinforcement ratio.

Keywords: Ribbed GFRP bar, Serviceability in cracking, four-point bending test, equivalent reinforcement ratio.

Download English Version:

<https://daneshyari.com/en/article/4917766>

Download Persian Version:

<https://daneshyari.com/article/4917766>

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