

LOCAL BOND STRESS-SLIP RELATIONSHIP OF BRAIDED ARAMID FIBER BAR OBTAINED FROM PRETENSIONED BOND TEST

Saburo SETO*¹ and Hiroko KURUSHIMA*²

ABSTRACT: Braided aramid fiber bar was used in pretensioned bond test. Local bond stress-local slip relationships were obtained from the strain distribution along the embedded bar. The embedded length was made large enough not to cause strain change at center of specimen. Experimental variable was concrete strength. The local bond stress-slip relationship of braided aramid fiber bar varies with test method such as a pretensioned bond test, a pull bond test with long embedment and a pullout test with short embedment. The effect of concrete strength on the local bond stress-slip relationship of braided aramid fiber bar differs with test method.

KEYWORDS: braided aramid fiber bar, local bond stress-slip relationship, pretensioned bond test, concrete strength, pull bond test

1. INTRODUCTION

Continuous fiber reinforcing materials such as braided aramid fiber bar and carbon fiber strand are going to be applied to concrete structures. A design concept of concrete structures reinforced or prestressed with continuous fiber reinforcing materials has already been reported by JSCE committee[1]. However, bond characteristics between the reinforcing materials and concrete have not been clarified yet and research work is necessary to determine anchorage length or to estimate deformations of the structures.

In the bond characteristics a local bond stress-slip relationship is the most basic law for representing interaction between * * * * *
* * * * *

* * * * *

anchorage zone of pretensioned prestressed concrete members was larger than that obtained from a pull bond test[4,5].

2. EXPERIMENTS

2.1 MATERIALS

(1) Reinforcing materials

A braided aramid fiber bar having 14.0mm nominal diameter was used. The shape of the bar is shown in **Fig.1**.

*1 Department of Civil Engineering, Sanyo University, Dr. E., Member of JCI

*2 Tokyo Branch Office, Tozai Corporation, M. E., Member of JCI