

ABSTRACT

The compression strength of concrete is high, but concrete's tensile strength is only 10-20% of its compression strength. Steel rebar is needed to resist the tensile stress from the load induced to the concrete. Bamboo could be used as steel reinforce alternative material due to its high tensile strength and application of bamboo reinforce could reduce the material cost of reinforced concrete significantly. Bamboo as concrete reinforcement had so many researched by scientists, like Morisco (1990) that compared the tensile strength of some bamboo varieties and steel, obtained that some varieties of bamboo had the tensile strength more than steel's tensile strength, about 150-500 MPa. Whereas, steel that commonly used for construction is only 240 MPa. The application of bamboo as concrete longitudinal reinforce has the main barrier, the bond strength between bamboo reinforce and concrete is very low. That caused by the high hygroscopic characteristic and the plain surface of bamboo, unlikely the deformed steel rebar.

The method used to this research was the bond strength test between reinforce and concrete toward the varnish coated bamboo petung reinforce with notch. While the notch that used for the bamboo reinforce was the parallel notch at two-side of the reinforce, which the notch dimension was calculated based on tensions that work on the reinforce surface (Azadeh, 2013). Then, the research compared the bond strength between varnish coated bamboo reinforce without notch, varnish coated bamboo reinforce with notch, and deformed steel rebar.

The research conducted the result that, the notch at the varnish coated bamboo reinforce could increase the bond strength between the reinforce and the concrete about 248% to 296%. While the notch dimension variations didn't give significant effect to the bond strength of the bamboo reinforce. However, the varnish coated bamboo reinforce with notch bond strength is 183% to 191% lower than deformed steel rebar.

Keywords: *bond strength (pull-out), bamboo reinforce, notch, reinforced concrete*