

Wichian Kaewkhampa 2011: Anchorage Behavior of Headed Reinforcement Bar in CCT Nodes. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Assistant Professor Wanchai Yodsudjai, D.Eng. 155 pages.

The paper expresses the observation of anchorage performance of headed bar reinforced concrete beam specimens, including the behavior of the compression-compression-tension CCT Nodes. The CCT Nodes are modeled in reinforced concrete beams with various types of reinforcing bars e.g. two different models of headed bar connections named BARTEC and GRIPTEC which provide the contradiction in surface roughness assembled with small and large circular shape headed bar also including 90° standard hooked bars.

Specimens were cast with two different compressive strength concretes 23.5 MPa and 31.4 MPa as well as two sizes of reinforcing bars 20 mm and 32 mm. The test result present the anchorage mechanism of headed reinforcing bar in (CCT) nodes and the influence of head type varieties including CCT Node behavior. The current provision related to Strut and Tie Modeling and technical limitation in ACI-318 is evaluated against the observed result. This will eventually lead to the conclusion of the versatility and restriction of use of headed bars to replace the conventional use of hooked bars in congested discontinuity area.

The result indicated that the final anchorage capacity consists of peak bearing capacity of head and reduced bond. For the same head type, the ultimate head capacity was increased with the increasing relative head area. With the same bar size Bartec headed bar had greater ultimate anchorage capacity than Griptec headed bar. The ultimate head capacity of Griptec headed bar was not influenced by the obstruction of rebar deformation which was greater than  $2d_b$ . The ultimate anchorage capacity of headed reinforcement bar was equal or greater than the 90° standard hooked reinforcement bar.

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