TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
PULCHOWK CAMPUS
DEPARTMENT OF CIVIL ENGINERING
M.Sc. Program in Structural Engineering

THESIS NO.: SS00145

BEHAVIOR ASSESSMENT OF LOCALLY MANUFRACTURED COUPLERS

Suraj Rajak

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A thesis
Submitted by

Suraj Rajak

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

MASTER OF SCIENCE
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CERTIFICATE

This is to certify that the thesis entitled **"BEHAVIOR ASSESSMENT OF LOCALLY MANUFRACTURED MECHANICAL COUPLERS"** being submitted by **Mr. Suraj Rajak (**Roll No. 064/MSS/114) in the partial fulfillment for the award of degree of Master of Science in Structural Engineering at Institute of Engineering, Tribhuvan University, Nepal is a record of bonafide works carried by him under my supervision and guidance. The thesis fulfills the requirement relating to the nature and the standard of the work for the award of M.Sc. in Structural Engineering.

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ABSTRACT

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Manufacturing, fabrication, and transportation limitations make it impossible to provide full length continuous bars in some reinforced concrete structures. In general, reinforcing bars are stocked by lengths of 12-18m. For that reason, and because it is often more convenient to work with shorter bar lengths, it is frequently necessary to splice bars in the field.

Proper splicing of reinforcing bars is crucial to the integrity of reinforced concrete. ACI Code states: “splices of reinforcement shall be made only as required or permitted on the design drawings, in the specifications, or as authorized by the engineer.” Great responsibility for design, specification, and performance of splices rests with the engineer who is familiar with the structural analysis and design stresses, probable construction conditions and final conditions of service can properly evaluate the variables to select the most efficient and economical splice method.

Lap splicing, which requires the overlapping of two parallel bars, has long been accepted as an effective, economical splicing method. In projects with smaller bar sizes such as ø20mm or smaller, lap splices have performed well over the long run. Continuing research, more demanding designs in concrete, new materials and the development of hybrid concrete/steel design have forced designers to consider alternatives to lap splices such as welded splices or mechanical connectors. However the welded splices are found to be more expensive, time consuming and need more workmanship. So in this study, mechanical connector is explored as an alternative to the traditional splicing methods.

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ST12	Second specimen of 16mmø reinforced bar for tensile test
ST13	Third specimen of 16mmø reinforced bar for tensile test
ST21	First specimen of 25mmø reinforced bar for tensile test
ST22	Second specimen of 25mmø reinforced bar for tensile test
ST23	Third specimen of 25mmø reinforced bar for tensile test
ST31	First specimen of 32mmø reinforced bar for tensile test
ST32	Second specimen of 32mmø reinforced bar for tensile test
ST33	Third specimen of 32mmø reinforced bar for tensile test
CT11	First specimen of Coupler used in 16mmø bar for tensile test
CT12	Second specimen of Coupler used in 16mmø bar for tensile test
CT13	Third specimen of Coupler used in 16mmø bar for tensile test
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LT112	Second specimen of 16mmø bar with 100mm lap length for tensile test
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LT122	Second specimen of 16mmø bar with 200mm lap length for tensile test
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