Master's Thesis Defense Announcement

STRUCTURAL BEHAVIOR OF SIXTY DEGREE SKEW REINFORCING IN INVERTED-T BENT CAPS IN BRIDGES

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Thesis Committee: Dr. Y. L. Mo (Chair), Dr. Cumaraswamy Vipulanandan, and Dr. Lu Gao

Abstract

Reinforced concrete inverted-T bent caps (ITBCs) are widely used in the state of Texas due to their pleasant aesthetics and to improve the vertical clearance. Most of the inverted-T bent caps are characterized by a skew angle higher than 45 degrees. The design of skewed inverted-T bent caps is generally carried out using traditional empirical procedures provided in TxDOT Bridge Design Manual (2015) conforming to AASHTO (American Association of Highway and Transportation) LRFD (2014) Bridge Design Specifications. The skewed transverse reinforcement can affect the overall structural performance of the inverted-T bent caps. Thus, the research has been conducted to evaluate the performance of traditional transverse reinforcement and proposed skewed transverse reinforcement in zero as well as sixty-degree skewed inverted-T bent cap specimens in terms of strength and serviceability criteria. The research findings indicate that the inverted-T bent caps designed with the proposed skewed transverse reinforcement have better cracking performance as compared to the inverted-T bent caps designed with the traditional transverse reinforcement. Also, the proposed arrangement of skewed transverse reinforcement can reduce the complexities of design and construction procedures. The proposed reinforcing details could be recommended for designing the skewed inverted-T bent caps in future to achieve an enhanced structural performance in terms of serviceability.