"PREDICTION OF TIME FOR CRACKING FOR RC T-BEAM GIRDER SUBJECTED TO CHLORIDE INDUCED CORROSION"

PROJECT REPORT

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In partial fulfilment of the requirements for the degree of

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CERTIFICATE

Certified that the project work entitled "**PREDICTION OF TIME FOR CRACKING FOR RC T-BEAM GIRDER SUBJECTED TO CHLORIDE INDUCED CORROSION**" is a bonafide work carried out by

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Are bonafide students of Department of Civil Engineering of Alva's Institute of Engineering and Technology in partial fulfilment for the award of BACHELOR OF ENGINEERING in **CIVIL ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2019-2020. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

Cracking of reinforced concrete members is a highly random phenomenon. The evaluation of cracking resistance of a reinforced concrete structural element Is Important from a view point of its performance in limit state of serviceability in cracking. Deterministic analysis of cracking moment for all the beams is carried out. Probabilistic analysis of cracking from different cross sections of RC T- beam bridge girders is performed. For this purpose, different cross sections of RC T-beam bridge girders designed according to MORTH. Probability of cracking of each cross sections of beam is determined using relative frequency approach within the framework. The probability of failure against cracking is found to be very high. Also, an attempt has been made in comparing the various models available so as to assess the suitability of the model for almost precise prediction of crack width as the uncertainties involved in the model parameters. The study showed a large scatter among the different code equations and models by researchers. The variation of Steel stress with crack width is found to be significant from the serviceability criteria. The performance of structures working in heavy corrosion environment like elements of bridges and parking structures is affected by the cracking resistance of the structure. This study summarizes and reviews the various models associated with the two stages of corrosion namely, corrosion initiation and corrosion propagation for both uncracked concrete. Service life of the member is predicted using the durability-based service life design methodology in the literature. Also, the influences of temperature and relative humidity on process control and corrosion rate of steel reinforcement in concrete were investigated comprehensively. To show the importance of the environmental conditions on the corrosion mechanism, and usefulness of the evaluation procedure, an example of typical conceptual RC bridge girder is assumed to be located at different location along Indian coast is illustrated.