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Reliability-Based Codified Design of Concrete Structures

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Abstract : The main objective of this study is to develop an independent reliability based code for reinforced concrete (R/C) structural components and elements solely for the State of Kuwait and its neighboring countries. The proposed code will take into account the harsh Kuwait's harsh environment, loading conditions and material strengths. The method for developing such a code is based on structural reliability theory that takes into accounts the specific geographical and the various prescribed societal environment of the Kuwait region. These methods were developed according to the following four components: (1) loads, (2) structural strength, (3) reliability analysis, and (4) achieving target reliability levels (reliability index □'s). The final product from this study will be a design code for R/C structural elements that include beams and columns, and some other structural members. This reliability-based LRFD design code will provide appropriate, easy, fast, and economical approach for designing R/C structural elements such as, beams and columns, for both houses and bridges, and other concrete structures. In addition, this reliability-based codified design of R/C beams, columns, and, possibly, concrete slabs will improve the design and serviceability of R/C bridge and building systems in Kuwait and neighboring GCC countries. Also, it has the potential to reduce the cost of new concrete structures, as fewer materials are used with more design efficiency.

Keywords : live laod, design, evaluation, structural building
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