An experimental investigation on the properties and behavior of Steel Fiber Reinforced Concrete (SFC) has been conducted to determine the strength and behavior of Steel Fiber Reinforced Concrete under combined tension-compression loading. The behavior of Steel Fiber Reinforced Concrete (SFRC) is significantly influenced by the type of Steel Fiber used, and the reinforcement fraction of Steel Fiber. In the current study, the behavior of Steel Fiber Reinforced Concrete to buried structures is characterized by the peak strength, residual strength, and the post-cracking behavior of Steel Fiber Reinforced Concrete under multi-axial stress. The burial of SFRC specimens in the soil is found to be reliable, easier, and economical compared to traditional methods. It is used to distinguish the peak strength, residual strength, and post-cracking behavior of SFRC. In the current study, the behavior of SFRC beams is evaluated under four-point bending, double rectangular beam, and double punch testing. The behavior of SFRC beams is analyzed using the CANDE program, and the results are compared with those of previous studies. The CANDE program is recognized as the primary design and analysis tool for buried structures in the United States. It is found that the inclusion of small percentage volume of fraction of Steel Fiber (Vf = 0.75%) increases the ductility and shear strength of SFRC. The results of the current study can be used to design and optimize the behavior of SFRC for different structural applications.

Steel Fiber Reinforced Concrete Behaviour Modelling And Design Transitions In Civil And Environmental Engineering | 51f33048790c8f30f3b0d3d3089ad75b
toughness stiffness and crack resistance, of different SFRC mixtures with less scatter results compared to other material test methods. The situation of high compressive load transmitted onto limited area of concrete member occurs frequently in a variety of industrial and engineering structures. Hence, numerous investigations have been conducted in the past to study the behavior of concrete under such loading, but mostly of plain and conventionally reinforced concretes. With the increasingly widespread use of steel fibers in the field of structural application, it is therefore of great interest to investigate the performance of steel fiber reinforced concrete (SFRC) subjected to concentrated load. The objective of the present PhD thesis was to characterize the load-bearing and fracture behavior of SFRC under concentrated loading (i.e. point loading) by means of experimental approach. Based on the experimental results, it can be concluded that the presence of steel fibers substantially improved the load-bearing behavior of concrete under concentrated load and changed the failure mode of concrete from a brittle to a ductile one. The findings acquired here can be used as fundamental information for the composition and optimization of SFRC mixtures, the production of SFRC concrete elements as well as for the constructive design and practical application of SFRC structural members exposed to concentrated load. This is the first publication ever focusing strictly on the creep behaviour in cracked sections of Fibre Reinforced Concrete (FRC). The research program described herein is focused on developing such equipment to study the behavior of SFRC under combined loadings. A review of the state-of-the-art research on the tensile strength of SFRC is given and a review of various methods of applying tensile stresses to concrete specimens is presented. The problem is attributed to a lack of suitable equipment for simultaneously applying tensile and compressive stresses. The research program described herein is focused on developing such equipment to study the behavior of SFRC under combined loadings. A review of the state-of-the-art research on the tensile strength of SFRC is given and a review of various methods of applying tensile stresses to concrete specimens is presented. The problem is to overcome in applying a pure principal tensile stress are discussed. This book contains the proceedings of the international workshop “Designing and Building with Ultra-High Performance Fibre-Reinforced Concrete (UHPPRC): State of the Art and Development”, organized by AFGC, the French Association for Civil Engineering and French branch of fib, in Marseille (France), November 17-18, 2009. This workshop was focused on the experience of a lot of recent UHPPRC realizations. Through more than 50 papers, this book details the experience of many countries in UHPPRC construction and design, including projects from Japan, Germany, Australia, Austria, USA, Denmark, the Netherlands, Canada... and France. The projects are categorized as novel architectural solutions, new frontiers for bridges, new equipments and structural components, and extending the service life of structures. The last part presents major research results, durability and sustainability aspects, and the updated AFGC Recommendations on UHPPRC.

Copyright code: 51f33048790c8f30f3b0d3d3089ad75b

Page 2/2