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Investigation of Bending Behavior of Ultra High Performance Concrete with Steel and Glass Fiber Polymer Reinforcement

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Abstract : It is one of the most difficult areas of civil engineering to provide long-lasting structures with the rapid development of concrete and reinforced concrete structures. Concrete is a living material, and the structure where the concrete is located is constantly exposed to external influences. One of these effects is reinforcement corrosion. Reinforcement corrosion of reinforced concrete structures leads to a significant decrease in the carrying capacity of the structural elements, as well as reduced service life. It is undesirable that the service life should be completed sooner than expected. In recent years, advances in glass fiber technology and its use with concrete have developed rapidly. As a result of inability to protect steel reinforcements against corrosion, fiberglass reinforcements have started to be investigated as an alternative material to steel reinforcements, and researches and experimental studies are still continuing. Glass fiber reinforcements have become an alternative material to steel reinforcement because they are resistant to corrosion, lightweight and simple to install compared to steel reinforcement. Glass fiber reinforcements are not corroded and have higher tensile strength, longer life, lighter and insulating properties compared to steel reinforcement. In experimental studies, glass fiber reinforcements have been shown to show superior mechanical properties similar to beams produced with steel reinforcement. The performance of long-term use of glass fiber fibers continues with accelerated experimental studies.

Keywords : glass fiber polymer reinforcement, steel fiber concrete, ultra high performance concrete, bending, GFRP
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