An Experimental and Numerical Study on the Pultruded GFRP I-Sections Beams

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Abstract : Using steel in bridges' construction because of their desired tensile and compressive strength and light weight especially in large spans was widely popular. Disadvantages of steel such as corrosion, buckling and weaknesses in high temperature and unsuitable weld could be solve with using Fibres Reinforced Polymer (FRP) profiles. The FRP is a remarkable class of composite polymers that can improve structural elements behaviour like corrosion resistance, fir resistance with good proofing and electricity and magnetic non-conductor. Nowadays except FRP reinforced bars and laminates, FRP I-beams are made and studied. The main reason for using FRP profiles is, prevent of corrosion and increase the load carrying capacity and durability, especially in large spans in bridges' deck. In this paper, behaviour of I-section glass fibres reinforced polymer (GFRP) beam is discussed under point loads with numerical models and results has been compared and verified with experimental tests.

Keywords : glass fibres reinforced polymer, composite, I-section beam, durability, finite element method, numerical model
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