

# **Designing Reinforced Concrete Composite Sections Based on Stiffness and Strength**

by

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## **Abstract**

This paper discusses the design considerations used to produce a new generation of structurally efficient, reinforced concrete composite panels capable of resisting the dangerous stresses produced by reverse bending. Results show that a good design can be achieved by strategically positioning layers of a relatively stiff and strong material, such as steel or graphite, within a weak but flexible polymer enhanced concrete mixture. When the reinforcement is placed symmetrically about the geometrical center of the composite section, the structure becomes "adaptive;" and, exhibits the same degree of structural integrity when subjected to equal but opposite bending couples.

Since the structural design takes the concrete on the tension side of the composite section into account, the analysis is different from that taken by conventional reinforced concrete designers. Potential uses range from construction of low cost housing in developing countries to production of lightweight structures for aerospace applications.