



Polymer Composites as Construction Materials

Application Summary Sheet 23

Title: Column Wrapping

Target Audience: Design Engineers, Materials Suppliers, Composite Manufacturers

Keywords: Strengthening, Corrosion resistance, Impact, Earthquake, Polymer composites

Overview of application / summary:

There are numerous reasons for strengthening concrete columns including structural damage, seismic protection, loading increase, corrosion of metallic reinforcement and unsafe conditions. Composite column wrapping systems can offer protection against all of these and also overcome many of the problems encountered with traditional steel plate reinforcement such as corrosion, heavy weight and high installation costs.

The composite wrapping concept was developed mainly in the US for seismic reinforcement in high-risk areas such as California. Due to the potential social safety benefits of this application from improved protection, a large amount of research and development has gone before its rapid uptake in the construction sector. The versatility of composite materials is another key factor in its success. Various wrapping techniques are available and can be selected to suit a particular situation. They can be applied within confined spaces such as bridge structures and car parks and can easily accommodate details in a structure. The inherent corrosion resistance of the materials also makes them ideal for marine strengthening applications.

There is also a financial impact for construction companies. The corrosion resistant materials deliver an extended, maintenance free service life. Installation costs are dramatically reduced and the installation process is generally safer. Composite systems also offer the advantage that only the exact amount of material required has to be used, there is no wastage.

Systems utilising recycled plastics are now emerging, with obvious environmental benefits. Standards, installation specifications and procedures are under development at various bodies (such as NPL) to substantiate the widespread acceptance of this technology.

Impact of application

Engineering:

Prepared by BRE and Trend 2000 Ltd (Partners in Innovation Project)
For further information please consult the project website:

www.polymercomposites.co.uk

Financial:

Environmental:

Social

Robustness of research

Future developments

Where to get further information

Companies

Articles