

## Carbon Fibre Strengthening

University of Essex, STEM Building

### SCOPE

- // Concrete Repair
- // Structural Reinforcement & Strengthening
- // Anti-Carbonation Coatings

### DETAILS

- // Concrete Frame Podium Beams
- // Structural Strengthening to 14LM of beams
- // Beams & Columns protected with anti-carbonation coatings



# Case Study //

## Concrete Repair and Protection

Client | **Kier Construction**  
Role | **Specialist Sub-Contractor**

**Before:** Structurally Unsound Beams



**After:** Fully Protected Beams

**Cemplas were engaged to design and complete reinforcement and strengthening works to the concrete frame podium which links the university building and a new building structure.**

Upon completing a non-intrusive cover meter survey and a carbonation test; it was discovered that the second beam – which would endure heavy use – required

**Before:** Beams and Columns Unprotected

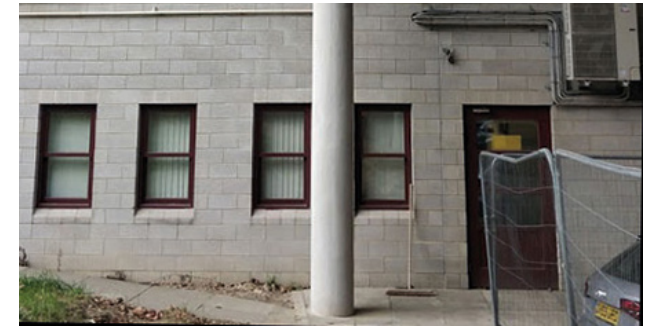


**During:** Application of Mapeband

strengthening to support the loads. The results showed noteworthy corrosion to the existing footbridge while the columns demonstrated steel corrosion and delamination of the concrete. To reinforce the steel a corrosion-inhibiting protective mortar was utilized before the concrete could be repaired.

This was followed the installation of Mapeband – a high-

**Before:** Concrete Delamination



**After:** Fully Repaired and Protected Columns

strength carbon fibre fabric – to the 14LM of beams and columns to strengthen and reinforce them. A 2mm coat of Mapelastic Guard was applied to all surfaces to provide effective anti-carbonation and anti-corrosive protection to the structural elements.

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**Cemplas Waterproofing & Concrete Repairs Ltd**  
Cemplas House, 25a Breakfield, Ullswater Industrial Estate, Coulsdon CR5 2HS

T: 020 8654 3149 F: 020 8656 6984  
E: [info@cemplas.co.uk](mailto:info@cemplas.co.uk) W: [www.cemplas.co.uk](http://www.cemplas.co.uk)



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