

Developing of pretensioned RC beams with BFRP reinforcement.

A) GRIPPING DEVICES

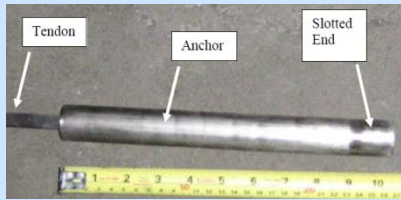


Figure 1. Hughes and brother's anchor to grip BFRP tendons

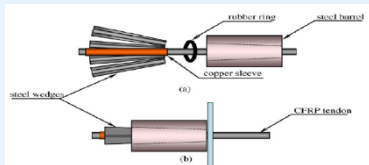


Figure 2. Waterloo anchors as another approach to anchor BFRP tendons (Elrefai et al, 2007)

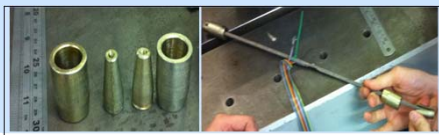


Figure 3. Tensile test for BFRP bars anchored with traditional steel wedges

Figure 3 shows the results of a tensile test for BFRP bars anchored with traditional steel wedges. The image shows the test setup and the resulting failure of the anchor. The text indicates that the traditional steel wedges are not appropriate for gripping BFRP reinforcement (by the author).

Figure 5: 200mm In length steel tubes helped to obtain realistic results about tensile capacity of BFRP bars



B) DESIGN AND PREPARATION OF SAMPLES AND TESTING EQUIPMENT

Figure 6. Timber moulds with steel reaction angles attached to the reaction floor to cast pre-tensioned concrete beams reinforced with BFRP

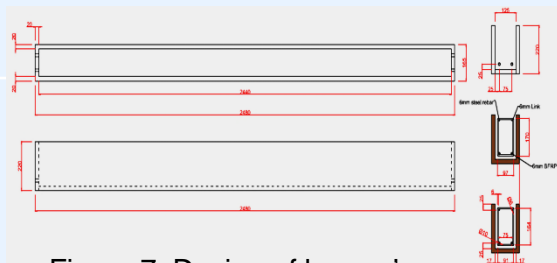
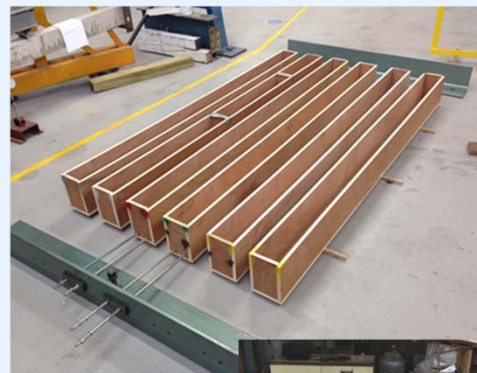


Figure 7. Design of beams' formwork and reinforcement (above) and production of reinforcement cages (to the right).



C) FINITE ELEMENT MODELLING (ANSYS)

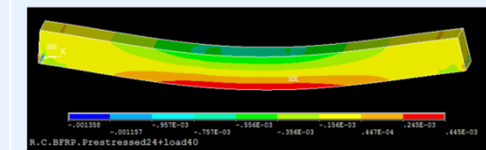
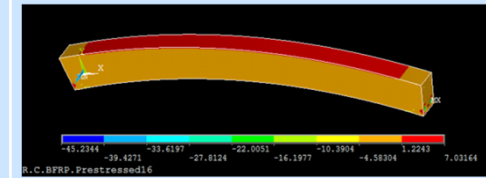


Figure 8. FEM results from prestressing only and combined prestress and external load.

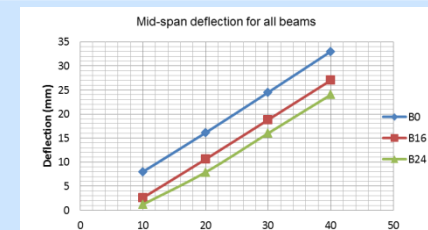


Figure 9. Deflections due to pre-stress and external forces obtained from FE modelling.

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