TESTING TO FAILURE OF RC BRIDGE DECK
STRENGTHENING WITH MF-FRP STRIPS

Objectives:
The MF-FRP method was applied for the first time in the field to an existing bridge structure, which was subjected to ultimate load testing to determine the in-situ performance of the strengthening system.

Background:
An innovative technique for repairing RC structures by attaching FRP strengthening strips to the underside of the concrete member using powder actuated fasteners and mechanical anchors has been developed.

Materials:
- Hybrid Strip of E-glass roving and carbon tow
- Mechanical fasteners
- Anchors
- Powder Actuated
- Fastening Gun

Test Setup:

Results:
The test confirms an increment in the load capacity:
- 11% for the slab strengthened with 3 MF-FRP
- 30% for the slab strengthened with 5 MF-FRP

Advantages:
- Use of simple hand-tools, lightweight materials and unskilled labor.
- No surface preparation and immediate use of the strengthened structure

Test Matrix:
- 37 in wide reinforced concrete slab strengthened with 3 MF-FRP strips
- 39 in wide reinforced concrete slab strengthened with 5 MF-FRP strips

Damages on the Strengthening:
- Testing of the FRP Plate
- Rotation of the Fasteners