

Project:

Lebanon Square Bridge

Location:

Lebanon Square, Cairo

Project completion:

2008

Owner/s:

Ministry of Housing, Utilities & Urban Communities (The Central Development Authority)

Applicator/Contractor:

Arab Contractors- Bridge Branch

Applicator:

GHALY for Specialized Contracting (Eng. Adel Ghaly)

Consultant:

ACE (Moharram.Bakhoum) / Dr. Ibrahim Mahfoz

Lebanon Square Bridge



Products used:

Mbrace Laminate 50x1.2 (1000 LM)

Mbrace Fiber CF120 (50 m²)

The Background

Lebanon square bridge is part of the 26th of July corridor overall route. Its importance stems from the fact that it accommodates most of the traffic flow between Cairo and the North West coast of Egypt including Alexandria. It is 600m in length and the superstructure is composed of precast pre-stressed concrete girders as well as one steel span of 52m.

The Challenge

According to the extension added to the existing bridge area, the side Lane of the bridge (which was designed before as a side walk lane) is now a main traffic lane.

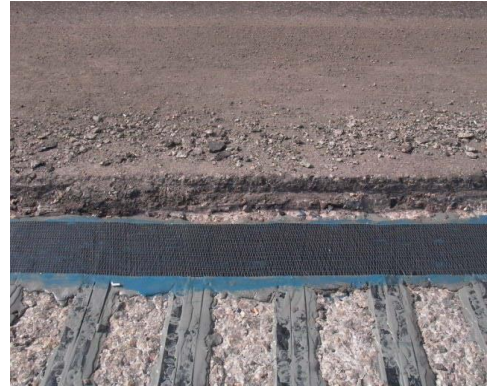
So the side cantilever load is totally changes from the light weight to a heavy weight

The main challenge was:

- To re-strengthen the affected area without affecting the traffic on the existing bridge area
- The limited period of work implementation
- Applying the pavement system for the strength element with asphalt its application temperature about 120c



Strengthening Lebanon Square Bridge with Mbrace FRP System



The Solution

The Mbrace FRP composite strengthening system is the Ideal solution for this case as it's provide a high tensile strength and excellent for supplemental flexural and shear reinforcement of concrete slabs and beams.

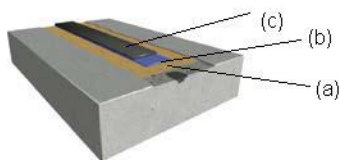
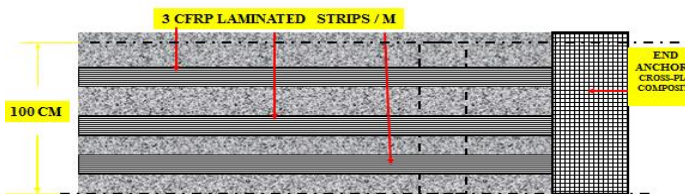
- Using Mbrace Laminate 50x1.2 for the bridge slab strengthening to increase the flexural strength.
- Using Mbrace Fiber CF120 as an end anchors for the applied Mbrace laminate system
- Using a thermal insulation system provided by Arab contractors / consultant to insulate the pavement system temperature away from the applied Mbrace system

The Customers Benefit

The client was satisfied with the performance of MASTER BUILDERS SOLUTIONS products, the implementation, and follow with the high technical support by MASTER BUILDERS SOLUTIONS throw qualified Engineers.

Mbrace Features and Benefits:

- An increase in load-bearing capacity (e.g. in structural conversion, following a change in load capacity)
- A reduced deflection due to serviceability/ working loads (increase in rigidity/stiffness)
- An increase in structure fatigue strength
- An ability to limit or assist in crack control (increase in durability from chlorides and freeze/thaw)
- An exact amount of reinforcement to be calculated and placed in relation to the performance required or the flow of stress
- Less and faster maintenance, thereby reducing long-term, ongoing costs
- MASTER BUILDERS SOLUTIONS provided the technical and after sales support
- MASTER BUILDERS SOLUTIONS provided the total solution for the client



- a) Concrete 2100
 b) Mbrace Laminte Adhesive
 c) Mbrace Laminte

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