

Polymer Composites as Construction Materials

Application Summary Sheet 6

Title: Bridge Enclosure Systems

Target Audience : Civil Engineers

Keywords: Bridges, enclosure systems, corrosion protection

Overview of application / summary:

Bridge enclosure systems are advanced cladding systems for the sides and underside of bridges which usually fulfil two main purposes - protection of the structure from corrosion (eg salt water spray), and to allow safe inspection and maintenance of the bridge underside by personnel - without disruption to traffic. They can also be used for aesthetic reasons and as a conduit for services.

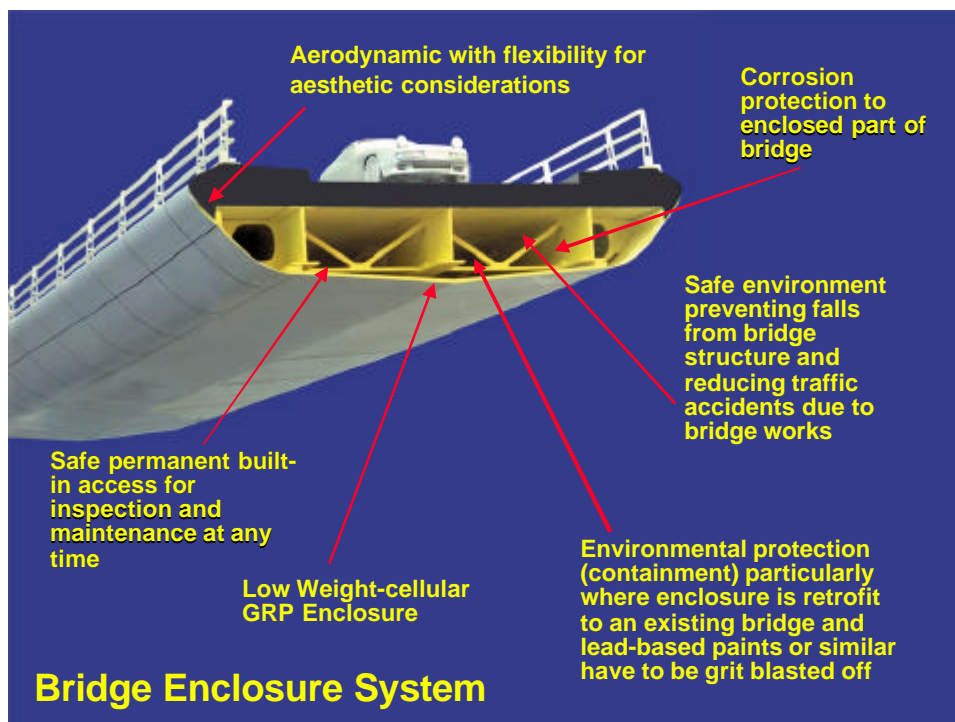


Photo courtesy of Strongwell

Examples



Severn Crossing Approach



Bromley South Bridge

Bromley South Bridge is the major element of a road built to remove traffic from the town centre. It passes between residential and business areas, and includes a crossing over the main line railway. The plate girders of the main spans of the bridge are enclosed in a GRP membrane enclosure, in order to provide access for inspection and maintenance and to enhance the appearance of this section of the bridge. The 'caretaker' system was used with Maunsell Structural Plastics ACCS components (see *Bridges* application sheet). Great importance has been given to the appearance of the scheme. The bridge parapets, pier and abutments are clad in intricately patterned brickwork, with panels manufactured from GRP to simulate brickwork.

Second Severn Crossing - Bridge enclosure systems were used on three motorway approach spans to the new bridge across the Severn estuary.

Impact of Application

Financial:

Additional cost of enclosure system offset by reduced maintenance requirement on bridge structure
Allows lower specification paintwork to steelwork

Environmental:

Protects structure of bridge offsetting need for repairs/replacement

Social:

Allows safe access for maintenance and inspection.

Engineering:

Lightweight

Durable

Easy to handle on site

Reduced requirement for lifting gear

Benefits to bridge appearance /aesthetic appeal

Protection of bridge elements from salt spray/corrosion

Provides protected conduit for services

Enclose system itself is low maintenance

Where to get further information:

Bridge Enclosure Report by Richard Irving of Strongwell

www.polymercomposites.co.uk/bridgeenclosures

www.strongwell.com