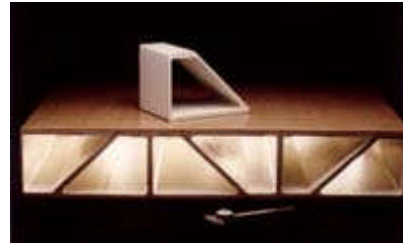


High Strength, Light Weight, Hollow Trapezoidal Beam Reinforces Vehicular Bridges



SPI Composites Institute Award of Excellence 1998 - Infrastructure

Now, fiber reinforced plastic composite bridges are revolutionizing the infrastructure market. Bridge deck components pultruded by Glasforms, Inc. for Martin Marietta Materials have made composites more competitive with traditional materials. Glasforms trapezoidal deck beams are laminated together with other fiberglass components in pre-assembled sections. The light weight, factory fabricated bridge sections are delivered to the site for easy installation in a matter of days, reducing traffic disruption. The high strength decks and components provide a greater stiffness of 15 to 20% over an equivalent concrete bridge. The inherent corrosion resistance of composites increase the life of the bridge beyond traditional materials. This two-lane vehicular bridge, measuring 24 feet wide x 33 feet long, was installed in the summer of 1997 on Smith Road in Butler County, Ohio. The composite bridge weighs only 22,000 pounds while supporting up to 70,000 pounds of asphalt road surface and 2 fully loaded semi truck-trailers.

At 1/5 the weight of a comparable concrete bridge, the composite bridge reduces the requirements for the supporting superstructure and increases its seismic safety. After installation, the finished bridge is tested to assure that it deflects less than .4" over the 33 foot span under a load of 144,000 pounds per the specifications of the American Association of State Highway and Transportation Officials.

A major challenge in economically pultruding the large trapezoidal sections (6.5" height x 9.2" base) is the fiber input. Glasforms engineered the reinforcement fiber architecture and a compatible resin formulation to meet the design criteria of Martin Marietta Materials. Glasforms' advanced resin injection system allows the use of lower cost, heavy weight fiber fabrics to reduce raw material costs and labor. Glasforms incorporates multiple plies of a tri-axial (0°, ±45°) fabric weighing 60 ounces per square yard-to date, the heaviest fabric ever used in pultrusion.

Process: Pultrusion

Materials: Tri-Axial (0°, ±45°) E-glass fiber reinforced isophthalic polyester

Properties: High strength to weight ratio, high transverse properties and corrosion resistance

Size: 6.5" height x 9.2" base x .250" to .50" wall thickness; Approx. 8 lb/ft

For additional information write or call:

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