

Corrosion Resistant Composite Dowel Bars Serve to Transfer Vehicle Loads in Nation's Highways



As our nation's highways age, the economic burden involved in repairing and maintaining highways is rapidly increasing and becoming a significant portion of the annual highway maintenance budget. Commercial and recreational traffic loads are degrading existing materials at an ever increasing rate and traffic volume limits closure of roadways for repairs and upgrades.

State department of transportation engineers are pursuing innovative materials to increase the life of highways and reduce maintenance costs. The solution for segmented concrete pavement roadways is the use of composite dowel bars as load transfer mechanisms between paving slabs. The highest level of stress and deflection in segmented pavement is found at the joints and the most cost effective load transfer mechanisms are smooth, round, corrosion resistant dowel bars. The conventional epoxy coated steel rods degrade as friction wears the epoxy coating. Thus, the high pH environment and salt used for de-icing in cold winter climates attack the bar. As the bars corrode, they expand locking up the joint or deteriorate resulting in poor load transfer. The result is pavement faulting (pot holes).

The 1.5" diameter high strength, unidirectional fiberglass reinforced composite rods transfer single axis wheel loads in excess of 18,000 lbs. for a fatigue life exceeding 5 million cycles. Furthermore, their corrosion resistance maintains a smooth surface for the life of the dowel which is critical to permit the pads to expand and contract with temperature changes.

Process: Pultrusion

Materials: Unidirectional E-glass fiber reinforcement in a proprietary resin

Properties: High flexural and transverse strength, corrosion resistance

Size: 1.5" dia. x 18" long, approx. 2.25 lb./ea.

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