ESCSI

FEATURED PROJECT 04-2002 SOLITE

James River Bridge Restoration

LOCATION
I-95 Corridor
Richmond, Virginia

STRUCTURAL ENGINEER
Parsons Technology Group - Bridge and Tunnel Division (*formerly Finley-McNary Engineers*)

LIGHTWEIGHT PRODUCER
Solite Corporation

CONTRACTOR & PRECASTER
Archer Western Contractors, Ltd.

READY MIX SUPPLIER
Tidewater Materials

OWNER
Virginia Department of Transportation (VDOT)

SPAN SPECIFICATIONS
102 Spans
Typical: 88' x 22' 6"

LIGHTWEIGHT CONCRETE SPECIFICATIONS
Cube Strength
Span: 4300 psi (30 Mpa)
Filled Grid Panels: 5100 psi (35 Mpa)
Density: 115 lb/ft^3 (1850 kg/m^3)

Structural Lightweight Concrete Speeds Redecking of Bridge

James River Bridge, Richmond, VA, view looking south

VDOT'S BRIDGE RESTORATION ON I-95 CORRIDOR

The Virginia Department of Transportation is restoring 13 bridges along the I-95 corridor in the Richmond area during the next few years. The concrete driving surface and steel that supports it is being replaced. The bridges are located between the Maury Street interchange, just south of the James River, and Upham Brook in Henrico County.

WHY REPAIR IS NEEDED

The bridges were built in the late 1950's as part of the Richmond-Petersburg Turnpike. They have experienced heavy usage over the years, carrying three times the traffic at weights double that expected. Current traffic counts indicate more than 110,000 vehicles use the James River Bridge every day. Many of those vehicles are trucks carrying 40-ton loads. Weather has also deteriorated the tops of the bridges. The bridges are safe now, but the concrete and steel surfaces need to be replaced to maintain long-term safety.

Precast structural lightweight concrete span section with attached steel bridge supports as seen in casting yard

Span sections being fabricated and cured in casting yard

CONSTRUCTION SCHEDULE

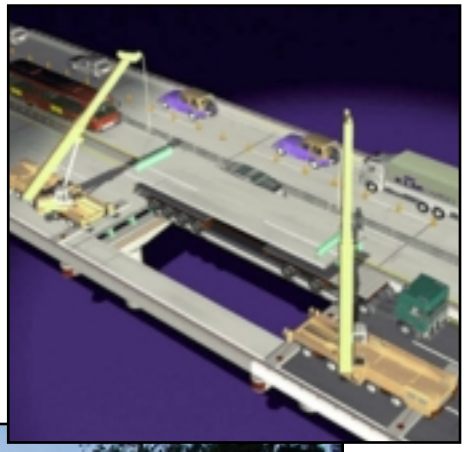
On-site construction began in June 2000. Crews are replacing a large section of the bridge surface each night (Monday through Thursday). The work is expected to be completed by late Spring 2002. Crews gradually divert traffic from one side of the bridge to the other. At night, one lane of the bridge is open in each direction on one side of the bridge, while crews work on the other side. All lanes are open to traffic by 6 a.m. the following morning.

Northbound view of James River Bridge in Richmond, VA

STRUCTURAL LIGHTWEIGHT PRECAST CONCRETE SECTIONS USED FOR RESURFACING

Conctruction crews cut and remove sections of the bridge surface creating a gap in the bridge surface that is prepared for the new segment. The old sections are hauled off the bridge. New, pre-constructed sections, fabricated in a nearby casting yard, are hauled onto the bridge and set in place. Because the durable, structural light-weight concrete precast sections are fully cured at the time of placement, the bridge can be reopened to traffic each day.

(Below) Rendering depicting process of section removal and replacement



Actual placement of precast span section (left)

For Additional Information About Structural Lightweight Concrete

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