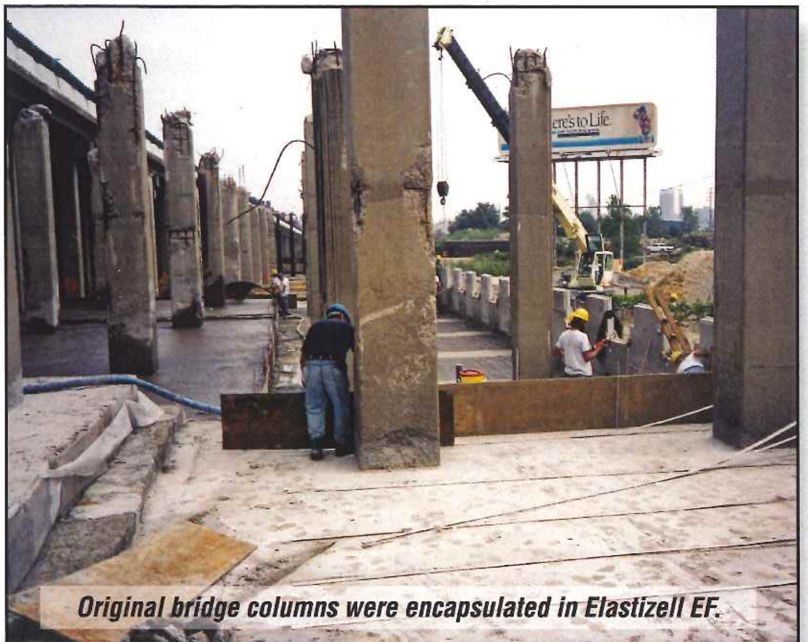
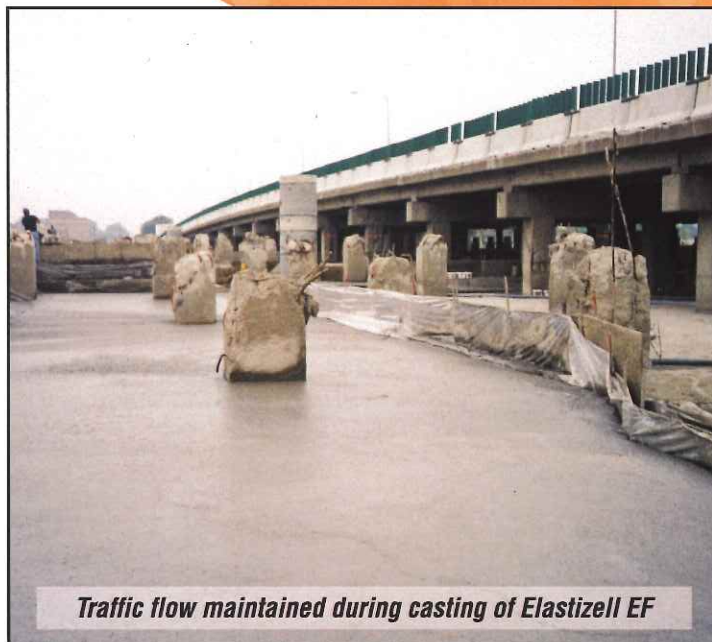
Elastizell EF Upgrades Deteriorated Bridge Structure Without Total Removal



Original bridge columns were encapsulated in Elastizell EF.



Traffic flow maintained during casting of Elastizell EF

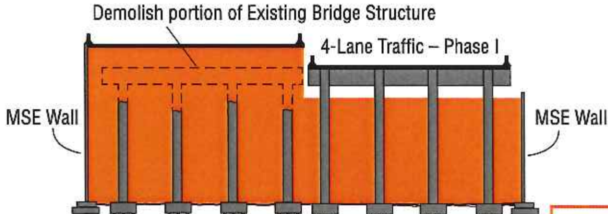
Problem

A 50-span bridge suffered from deterioration over the years, and it was deemed necessary to replace this structure. This was a critical traffic artery. How could this bridge be replaced and maintain traffic during construction?

Discussion

The poor soils at the site would require long lengths of pilings to support a new bridge. This site was previously a landfill, so deep foundations may encounter unforeseen complications. Simply replacing the bridge spans may cause excessive settlement of the existing foundations.

The state DOT evaluated numerous potential solutions for this project. The cost of maintaining bridge spans was a life cycle cost consideration in evaluating the various design solutions.



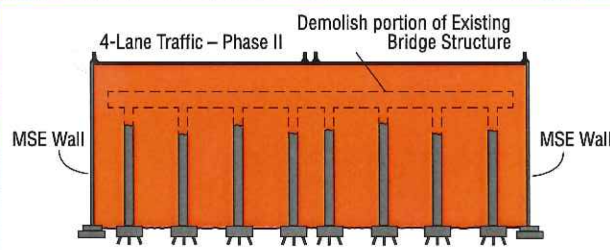
PHASE I – 65000 CUBIC YARDS, ELASTIZELL EF

Solution

Elastizell EF was used to fill beneath the existing bridge spans. The existing columns and foundations were kept to reduce waste. Traffic flow was maintained during each phase of construction which is shown in the diagram. The underlying soils would not be overloaded by the lightweight Elastizell EF which was strong enough to support highway traffic.

Advantages

- *Four lanes of traffic were maintained during construction.*
- *Demolition of the existing structure is reduced, saving time and waste disposal.*
- *Elastizell EF is only 20% the weight of compacted fill and provides a permanent base for a new, wider roadway.*
- *Eliminating bridge spans greatly reduces life cycle maintenance costs.*
- *This is a very simple solution to a complicated project.*



PHASE II – 10000 CUBIC YARDS

= ELASTIZELL EF

BASIC PHYSICAL PROPERTIES

Elastizell EF

*Greater values may be obtained if required per Elastizell Corporation design.

CLASS	MAXIMUM CAST DENSITY pcf (kg/m^3)	MINIMUM COMPRESSIVE STRENGTH* psi (Mpa)	ULTIMATE BEARING CAPACITY Tons/sf (kN/m^2)
I	24 (384)	10 (0.07)	0.7 (69)
II	30 (480)	40 (0.28)	2.9 (276)
III	36 (576)	80 (0.55)	5.8 (552)
IV	42 (672)	120 (0.83)	8.6 (827)
V	50 (800)	160 (1.10)	11.5 (1103)
VI	80 (1280)	300 (2.07)	21.6 (2068)

Comparison of Maximum Fill Material Densities

ELASTIZELL EF

Class I	24 pcf (384 kg/m^3)	Water	62.4 pcf (1000 kg/m^3)
Class II	30 pcf (480 kg/m^3)	Lightweight Aggregates	60-90 pcf (961-1442 kg/m^3)
Class III	36 pcf (576 kg/m^3)	Flowable Fills	90+ pcf (1442+ kg/m^3)
Class IV	42 pcf (672 kg/m^3)	Soils	120 pcf (1922 kg/m^3)
Class V	50 pcf (800 kg/m^3)	Aggregates, Asphalts	125 pcf (2002 kg/m^3)
Class VI	80 pcf (1280 kg/m^3)	Lean Concrete	145 pcf (2323 kg/m^3)

For specific design values and more detailed specifications, as well as design assistance, please contact the ELASTIZELL CORPORATION OF AMERICA or our local applicator below.

Cellular Concrete

ENGINEERED FILL

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