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THE TECHNOLOGY OF PROTECTION

‘ELIMINATOR’ WATERPROOFING KEEPS THE TRAFFIC FLOWING

MEMBRANE ACCOMODATES REGULAR TRAFFIC PRIOR TO PAVING

Traditional sheet and hot mop bridge deck waterproofing systems have many limitations, compromising their ability to protect the structure. An additional drawback is their inability to accommodate direct traffic load due to the damage that traffic causes and the skidding hazard that the membrane represents, particularly in wet conditions. This durability drawback can necessitate paving of the membrane at each bridge closure window, leading to low productivity in membrane application and surfacing, which with their multiple mobilizations, traffic management and traffic disruption cause greatly increased costs.

The Eliminator waterproofing system solves these issues, enabling bridge owners to provide the very highest level of deck protection with the minimum amount of disruption. Apart from being exceptionally durable and rapid-curing, and with proven protection against water and chlorides, Eliminator can be traversed prior to paving by regular traffic without damage to the membrane, minimizing lane closures and mobilizations. The unique physical properties of Eliminator that allow this method of working not only present economic efficiencies for the client and contractor, but also reduce the cost to the general economy caused by traffic disruption and delays. Typically, the first coat of Eliminator membrane is applied at 80 mils thickness, and the second at 40 mils; uniquely, and unlike other polymer products, Eliminator does not gel for several minutes, and this allows aggregate to be broadcast into and then bound by the second coat, providing a durable, temporary skid-resistant surface that can be trafficked by all traffic within one hour. On projects in New York and Maine the membrane was left open to traffic for up to three weeks, and remained undamaged.

Below: Deer Isle Bridge, Maine.
The Eliminator membrane was trafficked for up to three weeks before paving, without damage.

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PROJECT PROFILES

Projects in which the Eliminator membrane has been opened to direct traffic loads include:

PROJECT	CLIENT	STATE	SQUARE FEET	DATE
Deer Isle Bridge	Maine DOT	Maine	50,500	2008
Atlantic Beach Bridge	City of Nassau, NY	New York	6,600	2008
NJ State Route 295, from Repaupo Rd to Rte 45	New Jersey DOT	New Jersey	<107,000	2007-8
Alta Bypass Road	Utah DOT	Utah	6,000	2007
NYS Region 10 Crossover Bridges	New York State DOT	New York	67,277	2007
Hartford-Windsor I-91	Connecticut DOT	Connecticut	41,000	2007
Liberty International Airport, Newark, Bridges & Ramps	Port Authority of NY & NJ	New York/New Jersey	>100,000	2003-7
Goethals Bridge	Port Authority of NY & NJ	New York/New Jersey	360,000	2005-6
Bear Mountain Bridge	NY State Bridge Authority	New York	89,500	1996

Above: I-91, Hartford, CT.

Following installation of the Eliminator membrane and aggregate broadcast to the left two lanes on the previous night, vehicles now drive directly over the membrane, while the adjacent lanes can then prepared for waterproofing and the entire deck paved. This effects considerable savings in paving mobilizations and hence costs, and minimizes disruption to traffic.

<u>Above: Goethals Bridge, NY & NJ</u>
Eliminator second coat (gray) is sprayed over the first coat (yellow) and a #8 aggregate is broadcast into the freshly-applied membrane to provide a temporarily trafficable wearing surface. The thixotropy of the Eliminator membrane enables it to follow the profile of the heavily-tined concrete surface and hold thickness even on the peaks of the striations.

With an annual traffic volume of over 26 million vehicles, the four lanes of the Goethals Bridge provide a major traffic route for its owner and operator, the Port Authority of New York & New Jersey, over the Arthur Kill between Elizabeth and Staten Island. In 2003 the Port Authority embarked on a major rehabilitation of the bridge deck. To minimize disruption to road users, all major deck works were required to be carried out in limited night time possessions. The works included the removal of asphalt surfacing, repair of spalled concrete deck, application of high performance waterproofing and new surfacing, and new joints, extending the longevity of the structure and giving a smoother ride for its users.

In each small night work window the GC was required to repair the deck, prepare the surface and apply the sprayed waterproofing to the complete area between joints, each an average of 10,000 square feet. The cost to the project of a surfacing contractor then constantly mobilizing at night for such relatively small areas on a deck with a total area of 360,000 square feet was going to be considerable, and would have delayed the completion. The solution was provided by the application of the Eliminator sprayed waterproofing membrane on two consecutive nights, with the first night's application directly trafficked for a day, before the completed 20,000 ft^2 was then paved in a single hit on the second night. To provide a high friction skid-reducing surface a large #8 aggregate was broadcast into the second coat of Eliminator. On many occasions the membrane was trafficked for several days: inspections showed that the Eliminator remained undamaged by the heavy traffic, under both rapid stop-start and high speed movements.

Above: I-91, Hartford, CT

Connecticut DOT required the use of Eliminator on two box beam bridges as part of its I-91 upgrade project north of Hartford, the state capital. As a key arterial route into the city with a high ADT, there could be no lane closures until nightly after 8.00pm, with traffic maintained in at least one lane. On the right of the picture, traffic traverses the Eliminator; to the left, the applicator applies the second coat of Eliminator over the yellow first coat while an operative checks wet film thickness and another operative (hidden) applies anti-skid aggregate into the wet gray coat.

Above & Next Page: Atlantic Beach Bridge, NY

Above: Different phases of one stage of the project are seen in the short deck area immediately beyond the foreground asphalt. From left to right: left lane is now fully completed and open to the

public; second left lane has been waterproofed, paved and is now being compacted; center three lanes have been waterproofed, and are now tack coated immediately prior to paving; extreme right hand lane comprises Eliminator with aggregate scatter being temporarily trafficked.
Below: Traffic traverses Eliminator with aggregate broadcast in the far lane, while in the near lane the first coat of Eliminator (yellow) awaits the second coat with aggregate.

The versatility of the Eliminator waterproofing membrane has enabled owners and engineers around the world to address and remedy structural problems and other issues quickly and effectively. High tensile adhesive and tensile elongation strengths, excellent crack-bridging even below freezing, rapid application, and an ability to address aesthetics, contribute to making Eliminator unequalled for the high-strength protection of both problematic existing structures as well as new ones with long design lives.