

ITEM SPECIAL - TREATING CONCRETE BRIDGE DECKS WITH HMWM RESIN

THIS WORK SHALL CONSIST OF PREPARING AND TREATING THE CONCRETE WEARING SURFACES OF BRIDGE DECKS WITH A PENETRATING SEALER IN ACCORDANCE WITH THESE SPECIFICATIONS, IN REASONABLY CLOSE CONFORMITY WITH THE PLANS AND THE MANUFACTURER'S RECOMMENDATIONS AND AS DIRECTED BY THE ENGINEER.

THE WORK ITEM SHALL NOT BE PERFORMED DURING THE PERIOD BEGINNING NOVEMBER 1ST AND ENDING MARCH 31ST.

ROADWAY DIRT AND DEBRIS SHALL FIRST BE REMOVED FROM THE AREA ON THE DECK TO BE TREATED. SURFACES TO WHICH THE SEALER IS TO BE APPLIED SHALL BE SWEEP SANDBLASTED, THEN MANUAL OR POWER BROOM SWEEP AND BLOWN WITH HIGH PRESSURE COMPRESSED AIR OR VACUUMED. ALL VISIBLE LOOSE MATERIAL SHALL BE REMOVED FROM THE CRACKS. THE SURFACE SHALL BE DRY AND FREE OF DUST, DIRT, ASPHALT, RUBBER, OR ANY COATINGS WHICH WOULD PREVENT THE PENETRATION OF THE HMWM RESIN. THE CLEANING EQUIPMENT SHALL BE FITTED WITH SUITABLE TRAPS, FILTERS, DRIP PANS, DRIERS, AND OTHER DEVICES TO PREVENT OIL AND OTHER FOREIGN MATERIAL FROM BEING DEPOSITED ON THE SURFACE. EXISTING PAVEMENT MARKINGS SHALL BE REMOVED UNDER THIS ITEM OF WORK ACCORDING TO SECTION 621.134 OF THE ODOT CMS. ALL TRACES OF ASPHALT OR PETROLEUM PRODUCTS AND CONCRETE CURING COMPOUNDS SHALL BE REMOVED BY THE ABRASIVE BLASTING PRIOR TO AIR SWEEPING. TRAFFIC SHALL NOT BE ALLOWED ON THE CLEAN SURFACE PRIOR TO APPLICATION OF THE SEALER.

THE MATERIAL USED FOR TREATING THE CONCRETE SHALL BE A LOW VISCOSITY, NON-FUMING, HIGH MOLECULAR WEIGHT METHACRYLATE (HMWM) RESIN CONFORMING TO THE FOLLOWING:

HMWM RESIN

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| VISCOSITY | MAXIMUM 25 CPS (BROOKFIELD RVT WITH UL ADAPTOR 50 RPM AT 77 DEG. F) CALIF. TEST 434 |
| DENSITY | GREATER THAN 8.76 LB/GAL AT 77 DEG. F. (ASTM 2849) |
| FLASH POINT | GREATER THAN 200 DEG. F. (PINSKY-MARTENS CC) |
| VAPOR PRESSURE | LESS THAN 1.0 MM HG AT 77 DEG F. (ASTM D-323) |
| TG (DSC) | GREATER THAN 58 DEG. C (ASTM D 3418) |

THE MATERIALS MAY BE OBTAINED FROM ONE OF THE FOLLOWING SUPPLIERS:

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| 3M 3M CENTER ST. PAUL, MN 55144 1-612-733-7119 | PORTER PAINT CO. 400 S. 13TH ST. LOUISVILLE, KY 40201 1-502-588-9335 |
| SIKA CORPORATION 201 POLITO AVENUE LYNDHURST, NEW JERSEY 07071 PHONE: 1-201-933-8800 | TRANSCO INDUSTRIES INC. 20 JONES ST. NEW ROCHELLE, N.Y. 10801 1-914-636-1000 |

A COMPATIBLE PROMOTER/INITIATOR SYSTEM CAPABLE OF PROVIDING THE SAME PHYSICAL QUALITIES OF THE HARDENED RESIN AS IF PROMOTED/INITIATED WITH 2% COBALT NAPHTHANATE (6%) AND 2% CUMENE HYDROPEROXIDE SHALL ALSO BE PROVIDED. MATERIALS SHALL BE STORED AT 65-80 DEG F. THE SYSTEM SHALL PROVIDE A RESIN GEL TIME OF NOT LESS THAN 40 MINUTES TO NOT MORE THAN 1-1/2 HOURS AT THE TIME AND TEMPERATURE OF APPLICATION. THE GEL TIME SHALL BE ADJUSTED TO COMPENSATE FOR THE CHANGE IN TEMPERATURE THROUGHOUT THE DAY. THE TEMPERATURE OF THE SURFACES TO BE TREATED MAY RANGE FROM 50 DEG F TO 120 DEG F. THE CONTRACTOR SHALL ARRANGE TO HAVE A TECHNICAL REPRESENTATIVE ON SITE TO PROVIDE MIXING PROPORTIONS, EQUIPMENT SUITABILITY, AND SAFETY ADVICE TO THE CONTRACTOR AND ENGINEER. ANY CONFLICT BETWEEN THESE PROVISIONS AND REPRESENTATIVES ADVICE SHALL BE RESOLVED AT THE JOB SITE. THE TECHNICAL REPRESENTATIVE SHALL REMAIN AT THE JOB SITE UNTIL SUCH TIME AS HE AND THE ENGINEER AGREE THAT THE CONTRACTOR IS QUALIFIED IN ALL ASPECTS OF THE APPLICATION OF THE SEALER.

THE PROMOTER AND INITIATOR, IF SUPPLIED SEPARATE FROM THE RESIN, SHALL NOT CONTACT EACH OTHER DIRECTLY. CONTAINERS OF PROMOTERS OR INITIATORS SHALL NOT BE STORED TOGETHER IN A MANNER THAT WILL ALLOW LEAKAGE OR SPILLAGE FROM ONE TO CONTACT THE CONTAINERS OR MATERIAL OF THE OTHER.

MACHINE APPLICATION OF THE RESIN MAY BE PERFORMED BY USING A TWO-PART RESIN SYSTEM UTILIZING A PROMOTED RESIN FOR ONE PART AND AN INITIATED RESIN FOR THE OTHER PART. THIS TWO-PART RESIN SYSTEM MAY BE COMBINED AT A SPRAY BAR THROUGH SEPARATE POSITIVE DISPLACEMENT PUMPS. THE PUMP PRESSURE AT THE SPRAY BAR SHALL NOT BE GREAT ENOUGH TO CAUSE APPRECIABLE ATOMIZATION OF THE RESIN. COMPRESSED AIR SHALL NOT BE USED TO PRODUCE THE SPRAY.

CLEAN AND FLUSHING OF EQUIPMENT, TOOLS, ETC., SHALL BE DONE WITH AN APPROPRIATE SOLVENT, AS APPROVED BY THE ENGINEER, IN SUCH A MANNER TO MINIMIZE PERSONAL AND ENVIRONMENTAL HAZARDS. WORKMEN SHOULD BE ADVISED THE RESIN WILL SOFTEN GUM RUBBER SOLES, AND A FACEMASK SHOULD BE USED TO PROTECT FROM ACCIDENTAL SPLASHES. CLOTHING AND LEATHER SATURATED WITH RESIN WILL HARDEN AND BECOME USELESS.

THE SURFACE TO BE TREATED SHALL BE VISIBLY DRY AND ITS TEMPERATURE BETWEEN 50 DEG AND 120 DEG F PRIOR TO RESIN APPLICATION. THE RESIN MAY NOT BE APPLIED WITHIN 24 HOURS AFTER A RAIN OR WHEN RAIN IS FORECAST WITHIN 12 HOURS OR WHEN THE AMBIENT AIR TEMPERATURE IS BELOW 50 DEG F. THE DECK SHALL BE PRE-MARKED CONTROL MIXED MATERIAL USAGE AND TO PROVIDE A RATE APPLICATION OF APPROXIMATELY 100 SQUARE FEET PER GALLON. THE EXACT RATE SHALL BE DETERMINED BY THE ENGINEER BUT WILL NOT EXCEED 150 SQUARE FEET PER GALLON. A TEST PATCH SHALL BE INSTALLED, CURED AND APPROVED BY THE ENGINEER PRIOR TO COMMENCING FULL SCALE DECK TREATMENT OPERATIONS.

BEFORE USING THE MATERIAL THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR COPIES OF THE MANUFACTURER'S CERTIFIED TEST DATA SHOWING THAT THE MATERIAL COMPLIES WITH THE QUALITATIVE AND QUANTITATIVE REQUIREMENTS OF THIS SPECIFICATION. THE TEST DATA SHALL BE DEVELOPED BY AN INDEPENDENT APPROVED TESTING LABORATORY, AND SHALL INCLUDE THE BRAND NAME OF THE MATERIAL, NAME OF MANUFACTURER, NUMBER OF THE LOT TESTED AND DATE OF MANUFACTURE. WHEN THE MATERIAL HAS BEEN APPROVED BY THE DIRECTOR, FURTHER TESTING BY THE MANUFACTURER WILL NOT BE REQUIRED UNLESS THE FORMULATION OR MANUFACTURING PROCESS HAS BEEN CHANGED, IN WHICH CASE NEW CERTIFIED TEST RESULTS WILL BE REQUIRED.

THE MANUFACTURER SHALL CERTIFY THAT THE FORMULATION IS THE SAME AS THAT FOR WHICH DATA HAS BEEN SUBMITTED. THE STATE RESERVES THE RIGHT TO SAMPLE AND TEST DELIVERED LOTS FOR COMPLIANCE.

THE DECK SURFACE TO BE TREATED SHALL BE FLOODED WITH RESIN, ALLOWING PENETRATION INTO THE CONCRETE AND FILLING OF ALL CRACKS. THE INITIATED MIX OF PROMOTED RESIN SHALL BE LIMITED TO 5 GALLONS AT A TIME FOR MANUAL APPLICATION. A SIGNIFICANT INCREASE IN VISCOSITY SHALL BE CAUSE FOR REJECTION. THE TREATMENT SHALL BE APPLIED WITHIN 5 MINUTES AFTER COMPLETE MIXING. EXCESS MATERIAL SHALL BE REDISTRIBUTED BY SQUEEGEE OR BROOMS WITHIN 10 MINUTES AFTER APPLICATION.

THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO PREVENT THE RESIN FROM FLOWING INTO LANES OF OPEN TRAFFIC. THE ENTIRE TREATED AREA OF THE BRIDGE DECK SHALL HAVE SAND BROADCAST BY MECHANICAL MEANS TO EFFECT A UNIFORM COVERAGE OF 0.80 TO 1.20 POUNDS PER SQUARE YARD. THE SAND SHALL BE A UNIFORMLY GRADED AGGREGATE CONFORMING TO THE QUALITY REQUIREMENTS SECTION 703 OF THE ODOT CMS AND SHALL CONFORM TO THE FOLLOWING LIMITS FOR GRADING:

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| SIEVE SIZE | % PASSING |
| NO. 4 | 100 |
| NO. 8 | 90-100 |
| NO. 20 | 5-15 |
| NO. 50 | 0-5 |

IT IS THE INTENTION OF THIS SPECIFICATION TO ALLOW THE USE OF COMMERCIALY AVAILABLE BLAST SANDS APPLIED BY A COMMON LAWN BROADCAST TYPE SEEDER/SPREADER. SAND SHALL BE PLACED BETWEEN 10 TO 15 MINUTES BEHIND THE RESIN SPREADING FRONT AND BEFORE ANY JELLING OF THE RESIN OCCURS.

IF THE SURFACE CONTAINS LARGE DEEP CRACKS, THE LOW-VISCOSITY LIQUID COULD RUN COMPLETELY THROUGH THE CONCRETE SLAB. IN THESE AREAS, A SECOND COAT WILL BE REQUIRED AFTER THE FIRST COAT HAS STARTED TO CURE.

BEFORE THE MONOMER HARDERS, IMPERFECTIONS OR SPALLS WITH STANDING LIQUID SHALL BE FILLED WITH COMMERCIAL QUALITY CONCRETE OR SANDBLAST SAND, AND FINISHED TO A UNIFORM SURFACE. THE SAND SHALL HAVE A MAXIMUM MOISTURE CONTENT OF 0.5 OF THE PERCENT OF ABSORPTION WHEN TESTED IN ACCORDANCE TO A CALIFORNIA TEST 226.

TRAFFIC AND EQUIPMENT SHALL NOT BE PERMITTED ON THE TREATED DECK UNTIL IT IS TACK FREE, A MINIMUM OF 6 HOURS HAVE ELAPSED SINCE TREATMENT AND THE SAND COVER ADHERES SUFFICIENTLY TO RESIST BRUSHING BY HAND. THE TREATMENT SHALL BE PROTECTED FROM MOISTURE FOR NOT LESS THAN 4 HOURS AFTER PLACEMENT.

THE YARDAGE UNDER THIS ITEM WILL BE THE NUMBER OF SQUARE YARDS OF CONCRETE BRIDGE DECK WHICH ARE PREPARED, TREATED WITH HIGH MOLECULAR WEIGHT METHACRYLATE RESIN AND ARE COMPLETE IN PLACE AND ACCEPTED.

THE ACCEPTED QUANTITIES OF DECK TREATMENT WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE YARD, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL LABOR, MATERIALS, INCLUDING CATALYSTS, TOOLS, EQUIPMENT AND INCIDENTALS, AND FOR PERFORMING ALL THE WORK INVOLVED IN PREPARING AND TREATING THE CONCRETE SURFACES ACCORDING TO SPECIFICATIONS.

PAYMENT WILL BE MADE UNDER:

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| ITEM | UNIT | DESCRIPTION |
| SPECIAL | SQUARE YARD | TREATING CONCRETE BRIDGE DECKS WITH HMWM RESIN |

ITEM 516 -VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS... (ALL CASES)

STRUCTURAL STEEL UNDER THIS ITEM WILL NOT REQUIRE SHOP DRAWINGS PRIOR TO FABRICATION. THE CONTRACTOR SHALL MAKE NECESSARY MEASUREMENTS AND PREPARE SKETCHES, DRAWINGS, TABLES, ETC. THE ENGINEER SHALL HAVE AUTHORITY AND RESPONSIBILITY FOR ENSURING THAT THE FABRICATED STEEL IS ACCEPTABLE. TECHNICAL ASSISTANCE WILL BE PROVIDED ON REQUEST BY THE BUREAU OF BRIDGES. MILL TEST REPORTS AND SHIPPING DOCUMENTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INCORPORATING STEEL ITEMS INTO THE WORK, AS REQUIRED BY 501.07. AFTER FABRICATION THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL TO ENSURE THAT THE DRAWINGS DEPICT THE STEEL AS ACTUALLY INCORPORATED INTO THE WORK. THE ENGINEER WILL THEN SEND ONE APPROVED SET TO THE BUREAU OF BRIDGES FOR INFORMATION. THE FABRICATOR SHALL FURNISH A 35 MILLIMETER MICROFILM COPY OF EACH SHOP DRAWING, WHICH SHALL BE MOUNTED ON AN APERTURE CARD AS SPECIFIED IN 501.05.