

# GENERAL NOTES

LAK - 528 - 1.92

LAKE COUNTY  
LAK-528-1.92

FHWA REGION	STATE	PROJECT	7
5	OHIO		13

PLAN NO. BR-18-87

ITEM SPECIAL - TREATING CONCRETE BRIDGE DECKS WITH HMWM RESIN  
THIS WORK SHALL CONSIST OF PREPARING AND TREATING THE SPECIFIED CONCRETE SURFACE OF BRIDGE DECK 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 OF THE DECK TO BE TREATED. THE SURFACES TO WHICH THE SEALER IS TO BE APPLIED SHALL BE MANUAL OR POWER BROOM SWEEP AND BLOWN WITH COMPRESSED SO THAT THEY SHALL BE DRY AND FREE OF DUST, DIRT, ASPHALT, RUBBER, OR ANY COATINGS WHICH WOULD PREVENT THE PENETRATION OF THE HMWM RESIN.

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. TRAFFIC SHALL NOT BE ALLOWED ON THE CLEAN SURFACE PRIOR TO APPLICATION OF THE SEALER. EXISTING PAVEMENT MARKINGS SHALL BE REMOVED ACCORDING TO SECTION 621.134 OF THE ODOT CMS. THE MATERIAL USED FOR TREATING THE CONCRETE SHALL BE A LOW VISCOSITY, NON-FUMING, HIGH MOLECULAR WEIGHT METHACRYLATE (HMWM) RESIN CONFORMING TO THE FOLLOWING:

- VISCOSITY: HMWM RESIN  
MAXIMUM 25 CPS (BROOKFIELD #1 SPINDLE 50 RPM AT 77° F) CALIF. TEST 434
- DENISTY: GREATER THAN 8.76 LB/GAL AT 77° F.
- FLASH POINT: GREATER THAN 200° F. (PINSKY-MARTENS CC)
- VAPOR PRESSURE: LESS THAN 1.0 MM HG AT 77° F.
- TG (DSC): >58° C ASTM D 323

- THE MATERIALS MAY BE OBTAINED FROM THE FOLLOWING SUPPLIERS:
- ADHESIVE ENGINEERING: 1411 INDUSTRIAL ROAD, SAN CARLOS, CA 94070, PHONE: 1-213-627-7382
  - REVOLAN, INC.: 1631 SOUTH TENTH STREET, SAN JOSE, CA 95112, PHONE: 1-408-288-8658
  - SIKA CORPORATION: P.O. BOX 297, LYNDBURST, NEW JERSEY 07071, PHONE: 1-201-933-8800
  - ROHM AND HAAS COMPANY: 727 NORRISTOWN ROAD, SPRING HOUSE, PA 19477, PHONE: 1-215-641-7000

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° 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° F TO 120° 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.

CLEANING & 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° AND 120° F PRIOR TO RESIN APPLICATION. THE RESIN MAY NOT BE APPLIED WHEN RAIN IS FORECAST WITH 12 HOURS OR WHEN THE AMBIENT AIR TEMPERATURE IS BELOW 50° F. THE DECK SHALL BE PRE-MARKED TO CONTROL MIXED MATERIAL USAGE AND TO PROVIDE A RATE OF 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, QUANTITATIVE AND PERFORMANCE 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 PERFORMANCE 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.

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

THE DECK SURFACES 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 OPEN TO TRAFFIC. THE ENTIRE TREATED AREA OF THE BRIDGE DECK SHALL HAVE SAND BROADCAST BY MECHANICAL MEANS TO EFFECT A UNIFORM COVERAGE OF .25 TO .30 POUNDS PER SQUARE YARD. THE SAND SHALL BE A UNIFORMLY GRADED AGGREGATE CONFORMING TO THE QUALITY REQUIREMENTS OF SECTION 703 OF THE ODOT CMS AND SHALL CONFORM TO THE FOLLOWING LIMITS FOR GRADING:

SIEVE SIZE	% PASSING MAX.
NO. 4	100
NO. 8	90 - 100
NO. 20	5 - 10
NO. 50	0 - 5

IT IS THE INTENTION OF THIS SPECIFICATION TO ALLOW THE USE OF COMMERCIALY AVAILABLE BLAST SANDS OF NO. #8/20, 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 HARDENS, 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 MINIMUM MOISTURE CONTENT OF 0.5 OF THE PERCENT OF ABSORPTION WHEN TESTED IN ACCORDANCE TO CALIFORNIA TEST 226.

TRAFFIC AND EQUIPMENT SHALL NOT BE PERMITTED ON THE TREATED DECK UNTIL IT IS TACK FREE AND A MINIMUM OF 6 HOURS HAVE ELAPSED SINCE TREATMENT. 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 BLAST SAND 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:

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

STATE OF OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12 BRIDGE DEPARTMENT				
GENERAL NOTES				
BRIDGE NO. LAK-528-0192 OVER THE GRAND RIVER				
LAKE COUNTY				OHIO
DESIGNED DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE	REVISED
HC 7	HC 7	DW 4	GWM 3/18/87	
				SHEET 7/13

GENERAL NOTES