

BRIDGE DECK PRESERVATION PRODUCT MATRIX

Drew Storey, Indiana DOT
Midwest Bridge Preservation Partnership Meeting
Kansas City, Missouri
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Project Objectives

- Identify the common field conditions that may require deck preservation treatments.
- Poll the NEBPP States to see what products were being used.
- Identify key attributes for each treatment
- Develop product matrices that could be used by the States to select appropriate products.

Deck Seal Matrix

PRODUCT NAME	PRODUCT SUPPLIER & WEB-SITE	PRIMARY BASE COMPONENT (MMA, EPOXY, etc.)	WEATHER RESTRICTIONS	DECK PREPARATION	SET-UP TIME	PATCH MAT'L COMPATABILITY	DECK AGE & CONDITION WHEN APPLIED	EXPECTED SERVICE LIFE	STATE DOT APPROVAL	ASTM/AASHTO (etc.) TEST PROCEDURES
KBP 204	Kwik Bond Polymers www.kwikbondpolymers.com	HMWM (High Molecular Weight Methacrylate)	Dry Surface, 40 degrees F and rising	Clean surface, shot blast is typical	2 hour traffic return	No known incompatibility	Out of wet cure as a minimum. This is a crack filler and surface penetrant that will do the most good if shrinkage cracks have developed prior to application of the HMWM.	5 - 10 years	Meets special provision/specification in many states (NY, OH, DE, CA, ID, MT, MN, NV, OK, WY, AZ). Approved list qualified in: MO, NE, NM.	Specific Gravity ASTM D1475 1.06; Viscosity ASTM D2196 <25 cp@, Flash Point ASTM D3278 >180 F, Compressive Strength ASTM D695 >2000 psi (2 hr) >3000 psi (24 hr), Tensile Strength ASTM D658 >2000 psi (7 day). More available, I listed what I thought was most important.
POLY-CARB MARK-127 (crack sealer)	www.poly-carb.com	Epoxy, < 10% elongation	50 degree F, <5% Deck Moisture	Shot Blast	3-4 hr @ 77 F	No Magnesium Phosphate	Any age, substrate must be sound	3-5+ years (surface); 7-10+ (cracks)	OH	
POLY-CARB MARK-135 (crack sealer)	www.poly-carb.com	Epoxy, < 20% elongation	50 degree F, <5% Deck Moisture	Shot Blast	4-5 hr @ 77 F	No Magnesium Phosphate	Any age, substrate must be sound	3-5+ years (surface); 7-10+ (cracks)	OH, PA and NH (supplemental specs)	
Enviroseal 40	BASF Corporation www.buildingsystems.basf.com	Silane	40°-110° F; No rain or below 40° F for 12 hours after app.	Fully cured; clean; no coatings	Typical dry time is approx 4 hrs at 70° F/50% humidity. High humidity extends dry time.	Cementitious patch mat'l; fully cured; no coating/curing compd	Fully Cured; clean; sound; Dry is best, but slightly damp OK	Varies based upon exposure and substrate. 3 years or longer when properly applied	CT, FL, IL, IN, ME, MA, MI, NM, NY, OH, PA, RI, AD, TN, WV, WI	NCHRP 244 Series II-cube test; NCHRP 244 IV-Southern Climate; ASHTO T259 & T260. See Data Guide for more info.
Hydrozo 100	BASF Corporation www.buildingsystems.basf.com	Silane	40° F or higher; No rain for 4 hours; OK down to 20° F if frost free	Fully cured; clean; No coatings	Typical dry time is approx 4 hrs at 70° F/50% humidity. High humidity extends dry time.	Cementitious patch mat'l; fully cured; no coating/curing compd	Fully Cured; clean; sound; Dry is best, but slightly damp OK	Varies based upon exposure and substrate. 5-7 years typ when properly applied	IL, ME, NY, OR, PA, VT	NCHRP 244 Series II-cube test; NCHRP 244 IV-Southern Climate; See Data Guide for more info.
Degadeck CSP	BASF Corporation www.buildingsystems.basf.com	MMA	14°-104° F Substrate Temp; Dry conditions	Fully cured; Clean; shotblast, gritblast, or brush-blast	Working time 10-15 min; 45-60 min cure	Cementitious patch mat'l fully cured; or MMA patch mat'l;	Fully Cured; clean; dry	Varies based upon exposure and movement in the substrate	CO, MD, MA, MN, NE, TN, VA	ASTM 638; See Data Guide for more info.
Sealate T-70MX30	Transpo Industries, www.transpo.com	High Molecular Weight Methacrylate (HMWM)	50 deg F min	shot blast recommended	5 hours min	compatible with most all patching materials	any age deck but should be in sound condition with no delaminations	excess of 10 years	ID, ME, MO, MT, NM, OR, TN, VA & WA	ASTM D2395, D1425, D1310, D93, D1644, D638, C3986, D695, D2369, C882, AASHTO T237
Sealate T-70	Transpo Industries, www.transpo.com	High Molecular Weight Methacrylate (HMWM)	50 deg F min	shot blast recommended	5 hours min	compatible with most all patching materials	any age deck but should be in sound condition with do delaminations	excess of 10 years	AL, CA, FL, MO, NM, OH, RI & WA	ASTM D2395, D1425, D1310, D93, D1644, D638, C3986, D695, D2369, C882, AASHTO T237
T-78	Transpo Industries, www.transpo.com	Methyl Methacrylate	40 deg F min	shot blast recommended	30 to 60 minutes	compatible with most all patching materials	any age deck but should be in sound condition with no delaminations	excess of 10 years	MN & MO	ASTM D2849, D1310, D1644, D638 & D3986

Ultra Thin Overlay (<3/8”) Matrix

PRODUCT NAME	PRODUCT SUPPLIER & WEB-SITE	PRIMARY BASE COMPONENT (MMA, EPOXY, etc.)	WEATHER RESTRICTIONS	DECK PREPARATION	SET-UP TIME	PATCH MATL COMPATABILITY	DECK AGE & CONDITION WHEN APPLIED	EXPECTED SERVICE LIFE	STATE DOT APPROVAL	ASTM/AASHTO (etc.) TEST PROCEDURES	THICKNESS
SSI ReDeck 1/4" -3/8	highway@ssicm.com www.csbeher.com	urethane-epoxy 1 to ratio	60F-85F	shot blast day of intallation	1st coarse deck temp -80F -1.5 hr 2nd coarse deck temp -80F -3 hr	SSI Flexpatch	new concrete deck 28 days, old deck must be in decent shape	10 years	NVSDOT		
PPC MLS	Kwik Bond Polymers. Product data sheet: http://www.kwikbondpolymers.com/products/specsheets/KBP_FDS_PPCMLS.pdf	Polyester resin and broadcast aggregate (2 layer) with HMW primer. 3/8" nominal thickness.	dry surface, 40 degrees F and rising	clean and dry, shot blast is typical	2 hours per layer from 40 to 90 degrees.	No known incompatibility	Sound concrete, any age.	10 to 12 years. Longer with high performance aggregates. As with ALL multi layer broom and seed style overlays the service life is a function of aggregate abrasion resistance.	Approved in NV, placed in other states under special provision/specification.	Meets all requirements of AASHTO T34 Guide Specification for Polymer Bridge Deck Overlays, Multi Layer Chapter, Polyester Binder section. Resin: viscosity 500-1000 cps, tensile strength ASTM D638 >40psi, tensile elongation ASTM D638 >40%. Complete system (with aggregate): compressive strength ASTM C579 >5000 psi, adhesive strength ACI 503R >250 psi, permeability to chloride ion AASHTO T277 <100 coulombs.	3/4 inch nominal
Poly-Carb Mark-163 FLEXOGRID	www.poly-carb.com	Epoxy Urethane	50 degree F, Deck Moisture < 5%	Shot Blast	2-4 hrs-temperature dependant/coat	No Magnesium Phosphate	Any age, substrate must be sound	15+ years	PA, NH, MA, MD, ME, VT, NY, NJ, DE, RI and supplemental specs		
Poly-Carb Mark-163 LT (low temp)	www.poly-carb.com	Epoxy Urethane	30 degree F, Deck Moisture < 5%	Shot Blast	2-4 hrs-temperature dependant/coat	No Magnesium Phosphate	Any age, substrate must be sound	10+ years	PA, NY and supplemental specs		
Poly-Carb Mark-154	www.poly-carb.com	Epoxy	50 degree F, Deck Moisture < 5%	Shot Blast	1-3 hrs-temperature dependant/coat	No Magnesium Phosphate	Any age, substrate must be sound	8-10+ years	supplemental specs		
Poly-Carb Mark-155 UREGRID	www.poly-carb.com	Polyurea	40 degree F, Deck Moisture < 5%	Shot Blast	2-4 hrs-temperature dependant (multi-system)	No Magnesium Phosphate	Any age, substrate must be sound	5+ years	supplemental specs	C836	
Poly-Carb SAFETYGRID (HFS- High Friction Surface)	www.poly-carb.com	Epoxy	50 degree F, Deck Moisture < 5%	Air or Shot Blast	1-3 hrs-temperature dependant	No Magnesium Phosphate	Any age, substrate must be sound	5+ years	supplemental specs		
Trafficguard EP35	BASF Corporation www.buildingsystems.basf.com	Epoxy	50-100°F, No rain within 12 hours	Mechanical prep to ICR1 CSP 6	15-25 min pot life, Cure time dependent upon Temp. See Data Guide.	Cementitious patch fully cured, epoxy patch with sand broadcast on surface.	Fully cured concrete; clean; dry; sound	5+ years Dependent upon service conditions	ID, LA, MO, NY, NC	ASTM C881, ASTM D695; ASTM D638, ASHTO T277, See Data Guide for more info.	
T-48 Slurry	Transpo Industries, www.transpo.com	Epoxy	50 deg f minimum	Shot blast	2-9 hours	mag phosphate not recommended	deck should be sound with no delaminations	10-20 years	IL, NM & TN	ASTM D2849, D1310, D1644, D695, D638, D2240, C109, D790, C307, D638, C1583-04, C631, C666, E274, AASHTO T237, ACI 503R	
T-48 Chip seal	Transpo Industries, www.transpo.com	Epoxy	50 deg f minimum	Shot blast	2-9 hours	mag phosphate not recommended	deck should be sound with no delaminations	10-20 years	SD	ASTM D2849, D1310, D1644, D695, D638, D2240, C109, D790, C307, D638, C1583-04, C631, C666, E274, AASHTO T237, ACI 503R	
T-18	Transpo Industries, www.transpo.com	Methyl Methacrylate	44 deg F minimum	Shot blast	1 hour	mag phosphate not recommended	deck should be sound with no delaminations	10-20 years	NJ	ASTM D2393, D2849, C881, D1310, D1644, D638, D695, D790, C307, C531, C1583 & D570	
E-Bond 526	Transpo Industries, www.transpo.com	Epoxy	50 deg F minimum	Shot blast	1-3 hours	mag phosphate not recommended	deck should be sound with no delaminations	10-20 years	IL, KS, MO, OK, TN & WS	ASTM D2393, C881, D638, C1583-04, C882, C579, D695, D540, AASHTO T277	

Thin Overlay (3/8" to 1") Matrix

PRODUCT NAME	PRODUCT SUPPLIER & WEB-SITE	PRIMARY BASE COMPONENT (MMA, EPOXY, etc.)	WEATHER RESTRICTIONS	DECK PREPARATION	SET-UP TIME	PATCH MAT'L COMPATABILITY	DECK AGE & CONDITION WHEN APPLIED	EXPECTED SERVICE LIFE	STATE DOT APPROVAL	ASTM/AASHTO (etc.) PROCEDURES	TEST	THICKNESS
PPC 1121	Kwik Bond Polymers. Product data sheet: http://www.kwikbondpolymers.com/product/specsheets/KBP_PDS_PPC1121EC.pdf	polyester resin mixed with aggregates, HMWM primer	Dry	clean surface, shot blast is typical	2 hour traffic return	no known incompatibility	sound concrete, any age	30+ years	Placed by special provision/specification in: AK, WA, OR, CA, NV, ID, MT, WY, UT, AZ, CO, NM, MN, MO, FL, PA, DE, NJ, NY, VT.	Meets requirements of AASHTO T34 Guide Specification for Polymer Bridge Deck Overlays, Pre-Mixed Chapter, Polyester binder section. Resin: viscosity <200 cps, tensile strength ASTM D638 >2500 psi, tensile elongation ASTM D638 35% min. Complete system (mixed with aggregates): tensile strength ASTM C307 800 psi, compressive strength ASTM C39 7000 psi, adhesion saturated surface dry >500 psi.		3/4, in to 12 in in single lift
Poly-Carb Mark-163 FLEXOGRID	www.poly-carb.com	Epoxy Urethane	50 degree F, < 5% Deck Moisture	Shot Blast	2-4 hrs-temperature dependant/coat	No Magnesium Phosphate	Any age, substrate must be sound	15+ years	PA, NH, MA, MD, ME, VT, NY, NJ, DE, RI and supplemental specs			
Poly-Carb Mark-163 LT (Low temp)	www.poly-carb.com	Epoxy Urethane	30 degree F, < 5% Deck Moisture	Shot Blast	2-4 hrs-temperature dependant/coat	No Magnesium Phosphate	Any age, substrate must be sound	10+ years	supplemental specs			
Poly-Carb Mark-154	www.poly-carb.com	Epoxy	50 degree F, < 5% Deck Moisture	Shot Blast	1-3 hrs-temperature dependant/coat	No Magnesium Phosphate	Any age, substrate must be sound	8-10+ years	PA, NY and supplemental specs			
Poly-Carb Mark-155 UREGRID	www.poly-carb.com	Polyurea	40 degree F, < 5% Deck Moisture	Shot Blast	2-4 hrs-temperature dependant (multi-system)	No Magnesium Phosphate	Any age, substrate must be sound	5+ years	supplemental specs	C836		

Overlay (>1”) Matrix

PRODUCT NAME	PRODUCT SUPPLIER & WEB-SITE	PRIMARY BASE COMPONENT (MMA, EPOXY, etc.)	WEATHER RESTRICTIONS	DECK PREPARATION	SET-UP TIME	PATCH MAT'L COMPATABILITY	DECK AGE & CONDITION WHEN APPLIED	EXPECTED SERVICE LIFE	STATE DOT APPROVAL	ASTM/AASHTO (etc.) TEST PROCEDURES	
VESLMC	www.rapidset.com	RS Cement SB Latex	Normal Concrete	Scarified	3 hours to open	Not Gypsum	New or Repaired	25-30 years	most	Normal Concrete	
Very Early Strength Latex Modified Concrete											
PMCC - Polymer Modified Cement Concrete	www.rapidset.com	Low P Cement	Normal Concrete	Scarified	3 hours to open	Not Gypsum	New or Repaired	25-30 years	some	Normal Concrete	
PPC 1121	Kwik Bond Polymers. Product data sheet: http://www.kwikbondpolymers.com/product/specsheets/KBP_PDS_PPC1121EC.pdf	polyester resin mixed with aggregates, HMWM primer	Dry	clean surface, shot blast is typical	2 hour traffic return	no known incompatibility	sound concrete, any age	30+ years	Placed by special provision/specification in: AK, WA, OR, CA, NV, ID, MT, WY, UT, AZ, CO, NM, MN, MO, FL, PA, DE, NJ, NY, VT.	Meets requirements of AASTHOT34 Guide Specification for Polymer Bridge Deck Overlays, Pre-Mixed Chapter, Polyester binder section. Resin: viscosity <200 cps, tensile strength ASTM D638 >2500 psi, tensile elongation ASTM D638 35% min. Complete system (mixed with aggregates): tensile strength ASTM C307 800 psi, compressive strength ASTM C39 7000 psi, adhesion saturated surface dry >500 psi.	3/4 in. - 12 in. in single lift

Sheet Membrane Matrix

PRODUCT NAME	PRODUCT SUPPLIER & WEBSITE	PRIMARY BASE COMPONENT & SOLIDS CONTENT	WEATHER RESTRICTIONS	DECK PREPARATION	SET-UP TIME	PATCH MAT'L COMPATABILITY	DECK AGE & CONDITION WHEN APPLIED	EXPECTED SERVICE LIFE	STATE DOT APPROVAL	ASTM/AASHTO(etc.) TEST PROCEDURES	ISO 9001 CERTIFIED MANUFACTURING FACILITY?	APPROVED APPLICATOR PROGRAM?
Monolithic Membrane 6125	American Hydrotech, Inc. www.hydrotechusa.com	Hot fluid-applied, rubberized asphalt										
Scudoplast CAR (no product information on website)	BSI Corporation www.bsi-corp.com											
Royston 10-A (no product by this name on the website)												
10 AN Easy Pave, 713B Primer (no product by this name on the website)												
104-AHT, 740 Primer, 104CM Mastic (no product by this name on the website)												
10A-65 Bridge Deck Membrane	Chase Corporation www.chasecorp.com	Embossed release film, polymer modified bitumen, woven fiberglass reinforcement, 1/4 mil. mylar top surface	Ambient temp. of 25°F or higher. Membrane should not be applied if weather will not permit for the paving of asphalt on top of the membrane prior to rain.	Ensure that surface is contaminant and laitance free. Surface must be swept and blown clean prior to adhesive and membrane application.						ASTM D 882 (2) ASTM D 146 (5) ASTM D 1000 ASTM D 36 ASTM E 96, method B ASTM E 154 ASTM D 5, compound penetration Adhesion test with primer 713A, TW100331 Adhesion test with primer 713B, TW100331 ASTM D 1876, Mod., TW100333		
10A-65 Easy Pave		Embossed release film, polymer modified bitumen, woven fiberglass reinforcement, spun bonded polyester mat	Membrane should be applied at surface and ambient temperatures of 25°F or higher.	Ensure that surface is contaminant and laitance free. Surface must be swept and blown clean prior to adhesive and membrane application.						ASTM D 882 (2) ASTM D 146 (5) ASTM D 1000 ASTM D 36 ASTM E 96, method B ASTM E 154 ASTM D 5, compound penetration Adhesion test with primer 713B, TW100331 ASTM D 1876, Mod., TW100333		
108-ARN (no product by this name on the website)												
Bridge Deck Membrane	Bridge Preservation LLC www.bridgepreservation.com	Cold liquid applied elastomeric polymer & 100% (No VOCs)	-20°F - 150°F	Concrete must be clean and sound. Prepare concrete surfaces to SSPC SP13/NACE No 6. Surface Preparation of Concrete.	1 hour	Cementitious-based material recommended	Any age, sound concrete required	50 - 100 years	Yes. Please contact Bridge Preservation LLC for more information	ASTM C 836-00 ASTM D 4541 ASTM D 2240 ASTM D 638 ASTM D 624 ASTM D 4060 ASTM E 96 ASTM D 257-99	Yes	Yes

Spray Applied Membrane Matrix

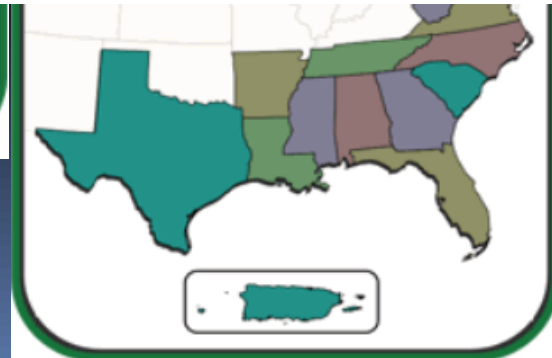
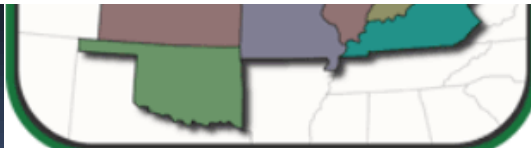
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VESLMC	www.rapidset.com	RS Cement SB Latex	Normal Concrete	Scarified	3 hours to open	Not Gypsum	New or Repaired	25-30 years	most	Normal Concrete	
Very Early Strength Latex Modified Concrete											
PMCC - Polymer Modified Cement Concrete	www.rapidset.com	Low P Cement	Normal Concrete	Scarified	3 hours to open	Not Gypsum	New or Repaired	25-30 years	some	Normal Concrete	
PPC 1121	Kwik Bond Polymers. Product data sheet: http://www.kwikbondpolymers.com/product/specsheets/KBP_PDS_PPC1121EC.pdf	polyester resin mixed with aggregates, HMWM primer	Dry	clean surface, shot blast is typical	2 hour traffic return	no known incompatibility	sound concrete, any age	30+ years	Placed by special provision/specification in: AK, WA, OR, CA, NV, ID, MT, WY, UT, AZ, CO, NM, MN, MO, FL, PA, DE, NJ, NY, VT.	Meets requirements of AASTHOT34 Guide Specification for Polymer Bridge Deck Overlays, Pre-Mixed Chapter, Polyester binder section. Resin: viscosity <200 cps, tensile strength ASTM D638 >2500 psi, tensile elongation ASTM D638 35% min. Complete system (mixed with aggregates): tensile strength ASTM C307 800 psi, compressive strength ASTM C39 7000 psi, adhesion saturated surface dry >500 psi.	3/4 in. - 12 in. in single lift

Going Nationwide



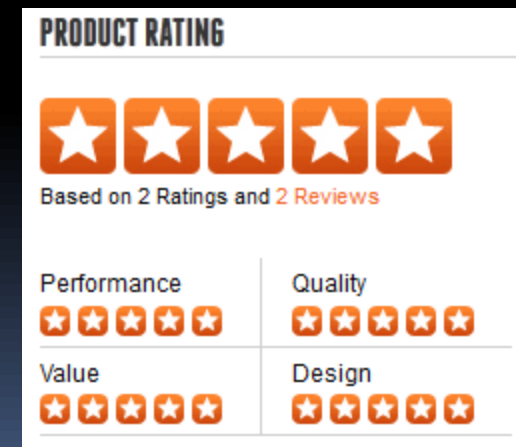
*Proposal for A Nationwide Pilot to
Develop a Product and Technology
Database and Web Based Software*

Submitted by: The National Bridge Deck Preservation Working Group



Pilot Project Proposal

- Dynamic Web Database
 - Bridge Deck Products
 - Expandable to Other Products and Tools
- Product Information Source
 - Available Products
 - Sharing of Specifications
 - Sharing of photos/video
 - Industry product information
 - User reviews of products



Next Steps

- Gain Nation TSP₂ Support
- Solicit Support from Regional Partnerships
- Solicit Support of SCOBS and SCOM
- Solicit FHWA Support
- Build the Database and Web Software

Thank You - Questions