

Chip Seal on Concrete Bridge Deck Survey Results (March 2007)

Moe Jamshidi of NDOR wrote: What experiences, if any, has your DOT had with the application of chips seals on bridge decks. My staff was discussing various deck treatments when the subject of a chip seal was brought up. We currently specify CRS-2P emulsion and clean chips for chip seals on our asphalt pavements, but have not applied this treatment to any concrete surfaces. Any success stories, failures, and lessons learned will be appreciated.

State	Name	Have you used Chip Seals on Concrete Bridge Decks?		Comment
		Yes	No	
RI	Colin Franco	X		We have had great success with RUBBERIZED ASPHALT chip seal . It acts as a waterproofing sealant and a durable non skid surface on the bridge deck
NV	Dean C. Weitzel		X	
Maine	Bruce Yeaton		X	Sorry but Maine DOT does not have any experience with chip seals on bridge decks (or for that matter on asphalt pavements). But we are hoping to do a chip seal on a couple low volume asphalt pavements this summer.
KS	Lon Ingram	X		KDOT has sealed bridge decks with CRS-1HP and expanded shale light weight aggregate. We have had good luck with the seals adhering to the structures. Typically our seals are considered to be short term protection until a repair action can be scheduled for a structure. Our general practice is not to cover bridge decks with asphalt surfaces because we have experienced accelerated deterioration if/when the bituminous layer debonds and moisture is free to accumulate allowing for increased wet freeze-thaw cycles.
SC	Milt Fletcher		X	
AL	Randy Mountcastle	X		We used the attached specification on several concrete pavements and one bridge deck. We've had good results so far. This is basically a generic version of Novachip.
Utah	Tim Biel		X	We put a lot of chip seals over bridge decks, but they all have a 2" or 3" HMA overlay on them first. We do not apply chipseals to a concrete surface.
FL	Richard Kessler		X	To my knowledge, Florida DOT does not use any form of asphalt treatment on bridge decks.

IL	David Lippert	X	<p>For state routes Illinois does not routinely use chip seals on bridges. They are used once in a while if the bridge surface is HMA with a water proofing system. Very similar to any chip seal on HMA.</p> <p>Our locals often use chip seals directly on box beam structures (these do not have a PCC deck or water proofing cover over the beams). Not sure any real data or information to relate. These roads are very low volume and usually don't use salt so the bridge and seal usually performs well. Typically, CRS-2 or HFE is used - no polymers. After a few years of application the asphalt does "drip through" the beam joints.</p>
IL	James.Klein	X	<p>I don't know all the mix types, but many locals like the chip seals. We do not officially recognize this as a treatment in our manuals. However, its use appears widespread and some use the seal to repair the bituminous mixes with the waterproofing underlay. I tried to get an initiative going just late last year to study. The hope was that this could be an approved treatment on PPC deck beams so that it could be recommended and included for payment for new construction. However, I don't have time and nobody seemed interested enough to take the lead, so it has kind foundered.</p> <p>NY does not have any experience with chip seals on any concrete surfaces (decks or pavements). We have (via Maintenance contracts) applied micro surfacing and Novachip to bridge decks in an attempt to seal cracks in decks. this has been mostly experimental and only used on a few occasions. General review indicates that if the cracks are working, they tend to reflect up thru the thin overlay.</p>
NY	Donald Streeter	X	
NH	Alan Rawson	X	
WI	James Parry	X	
MD	Paul Finnerty	X	
KY	Wesley Glass	X	
DC	Wasi Khan	X	<p>We have no experience in using Chip Seal on bridge decks. We have used asphalt overlay on bridge decks in the past but have stopped using it due to chloride penetration through cracks in asphalt.</p> <p>We have not applied a chip seal to a bridge deck, so we have no experience to help you. It will be interesting to see if anyone has, since I wonder about the adhesion to concrete. We can't even get paint strips to adhere very well to decks and concrete pavement.</p>
WY	Rick Harvey	X	
Arkansas	Jerry Westerman	X	
CA	Shakir Shatnawi	X	<p>Caltrans has used polymer modified emulsions with 1/4, 5/16 and 3/8 aggregates on the decks successfully. Caltrans has also used hot applied chip seals with asphalt rubber binders for bridge decks. (See complete answer in the supplemental PDF file)</p>

LA WA	Luanna Cambas Tom Baker	X	X	We might have some incidental ones here and there, but they would be pretty rare. When we design a new bridge we use a thicker concrete cover and do not expect to have to overlay for 50 years or more. If we do overlay, it is usually with a more durable surface (polyester concrete, microsilica/flyash/latex concrete, etc). That said, a chip seal on a bridge should function at least as well as on pavement.
OR Clackam as County Roads OR	Darrel Burnum Mike DUNNING	X	X	We have chip sealed over two concrete decks with good luck. We used Wright Asphalts AC 15-5TR product for a binder. The thought was that with the 5% tire rubber, it would produce an enhanced membrane to seal up the deck. It seems to have worked well. Both projects are still performing quite well at 8 years old.
				We would normally place a membrane waterproofing on a concrete deck prior to placing the AC. A chip seal would put rather large aggregates right on the membrane. I doubt that the membrane would remain water-tight last very long. In some cases the design of membrane requires a certain amount of heat from the AC overlay to properly adhere the AC to the membrane. Chip Seals probably wouldn't have enough heat to do this properly. In addition, the AC part of the deck gives some level of protection against water intrusion all by itself. I doubt that the chip seal would offer anything close to the protection that a B or C mix would offer. Also, since we put expansion joints on each end, and curbs on each side, by design, we are basically building a swimming pool with AC in it. I doubt that a chip seal would last very long in that environment. Freezing weather might aggravate this situation further. The surfacing on a bridge deck protects the membrane against abrasion. Even in the best of worlds, chip seals don't last as long as regular overlays. This means we would potentially be replacing the membrane each time at additional cost. I suppose if you put the chip seal on top of a sound AC
Virginia	William R. Bailey		X	
Michigan	John F. Staton		X	
CT	Keith Lane		X	I believe the question has to do with applying the chip seal to a concrete surface, which we have not done to the best of my knowledge. We do place chip seals over short bridges/culverts as per our maintenance department, but that is over a course of HMA which is already in place between the chip seal and the concrete surface.