



# Nineteen Years Later, Coating on North Carolina Tunnel Still Holding Up Beautifully

## Polyaspartic coating system keeps Beau Catcher Tunnel looking great, in spite of tough environmental conditions

### Top Coat:

2K polyaspartic aliphatic polyurea coating

### Location:

Asheville, North Carolina

### Owner:

North Carolina Department of Transportation

### Coating Supplier:

Hehr International Polymers  
Decatur, Georgia  
770-593-2220

### General Contractor:

Orbit International

Spectacular vistas along the magnificent Blue Ridge Mountains bring thousands of visitors to Asheville, North Carolina, every year. Naturally, the North Carolina Department of Transportation strives to ensure the tunnels and roadways that traverse this scenic highway blend in to the beautiful mountainous setting. When the 1,050-foot-long Beau Catcher Tunnel was renovated in the winter of 1996, the DOT was faced with many challenges. First of all, it wanted to reduce leaks and reduce the risk of rock slides. But it also wanted to remove nearly 50 years of graffiti and accumulated dirt and residue – and keep the surface protected for years to come.

General contractor, Orbit International of Waynesville, North Carolina, knew exactly what to do. They called upon Hehr International Polymers of Decatur, Georgia, to manufacture a two component, high-performance aliphatic polyurea that utilized the latest technology from Covestro LLC. The polyurethane coating system that they recommended was developed specifically to meet the unusual conditions inside the tunnel. When the temperature inside the tunnel rises, the substrates expand, and when the temperature drops, the substrates contract, causing the tunnel joints to move anywhere from 25-30%. The polyaspartic aliphatic polyurea coating bonded to the concrete walls of the tunnel, yet offered the elasticity necessary to accommodate changing temperatures and humidity.

Furthermore, it provided an anti-graffiti coating that was easy to clean and maintain. Because the new coating system was virtually weatherproof, it kept rain, snow and wind from damaging the structure's panels. Every year since 1996, the tunnel has been cleaned with a high-pressure hose — a hydroseeder that effectively knocks off all the grime and debris. Then it undergoes careful scrutiny by a team of DOT experts trained to inspect bridge, tunnel and road surfaces for needed repairs or potential problems.

According to DOT's Garry Moore, Division Bridge Maintenance Engineer, the coating system on the Beau Catcher Tunnel is living up to its expectations. "We wanted a surface that would look good and weather well," said Moore. "The coating system on this tunnel really takes a beating every year, with all the traffic and this high-pressure cleaning. But it is holding up very well. We'd certainly use this polyurethane system again in other tunnels." Because of its good looks and cleanability, the polyurethane coating system on the Beau Catcher Tunnel has saved the North Carolina DOT a considerable amount on tunnel maintenance and repair.

# HIGH PERFORMANCE POLYASPARTIC ALIPHATIC POLYUREA COATING GUIDELINE FOR THE NORTH CAROLINA HIGHWAY TUNNEL

## Polyaspartic Aliphatic Polyurea Coating

### Description

A new generation of aliphatic polyurea coating made from a new class of amine functional products reacted with aliphatic crosslinkers for polyurethanes. These materials have near zero VOCs and can be applied in low temperatures or high-humidity conditions.

### System Composition

#### Prime Coat:

Aromatic polyurea spray applied to approximately 50 mils (DFT)

#### Topcoat:

Polyaspartic aliphatic polyurea (HP 1313) spray applied to 16 mils (DFT)

Note: HP 1313 can be slowed down to 15-45 minutes gel time for roll and brush application.

### General Properties Of The Polyaspartic Aliphatic Polyurea Topcoat

- Improved adhesion to steel and plastic substance
- Outstanding weather and chemical resistance in any color
- Mix rates of materials are 1/1 ratio by volume
- General applications include use as Industrial coatings and flooring

### Performance Requirements of the Polyaspartic Aliphatic Polyurea Coating System

Physical Properties <small>(all properties tested in accordance with ASTM standards)</small>	Rigid	Semi-Flexible	Flexible
Tear Strength, P.L.I.	562	400	350
Tensile Strength, psi	2950	2500	2275
Elongation %	50	75	100
Shore D Hardness	75D	65D	40D
Abrasion Resistance mg loss, 1000 cycles	26	26	26
Working Temperature, °F	-40 to 200	-40 to 200	-40 to 200
Mix Ratio	100A/100B by volume		
Pot Life	2+ hours		
Dry to Touch, min.	15-45	15-4	15-45
Full Cure, hr.	1-2	1-2	1-2
Gloss Retention 45° South Florida 12 month weathering	99% at 60° 92% at 20°	99% at 60° 92% at 20°	99% at 60° 92% at 20°

(Pot life and dry time can be shortened with special additives.)  
\* Meets USDA requirements for incidental food contact.



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