
AQUAPHALT
6.0
AQUAPHALT
the permanent repair for asphalt + concrete
GLOBALESCO

The #1 Rated Cold-Mix Asphalt Repair Material in USA

- **Aquaphalt is a cost-effective solution for repairing potholes, asphalt roadways, airport runways and concrete roads – any asphalt or concrete surface.**
- **Installation** Remove all debris inside damaged area (with broom or compressed air), pour in Aquaphalt, level off with a rake or trowel, add salt/potable water, compact with a hand tamper, roller or vibratory plate compactor.
- **Water-Activated** Aquaphalt's non-VOC binder reacts and hardens with only water – 4 liters of water per bucket is recommended. You can not over-fill.
- **Curing** Aquaphalt can be driven on in 30 minutes and takes 24 hours to fully cure.
- **Safety** Aquaphalt is free of harmful VOCs and is safe for people and pets.
- **Weather** Aquaphalt can be applied in any weather condition – Above 50C, rain, snow and below freezing.
- **Packaging** 23 kg buckets, anyone can use it, no special training required.
- **Immediate Use** No mixing required, use right out of the bucket – Pour, Water, Tamp & Relax!
- **Warranty** During Aquaphalt's case studies, a 20+ year lifespan was achieved, therefore, we offer a lifetime curing guarantee and a 4-year warranty.

Product Line

AQUAPHALT 4.0

For repairs less than 2 cm depth. Excellent for shallow repairs requiring stronger adhesion.

AQUAPHALT 6.0

Recommended for repairs of any depth, super fine finish and our best-selling option.

AQUAPHALT 9.0

For repairs greater than 3 cm depth. Excellent for deep repairs requiring multiple compactions.

HAND TAMPERS

Vibration-absorbing and reduces stress on forearms and back. Can be used by anyone, no training required.

What Is Aquaphalt?

- #1 Rated, permanent, cold-patch repair for asphalt and concrete
- 3-year warranty
- Manufactured in Charlotsville, Kentucky USA
- Used in USA for 10+ years, in EU for 20+ years
- Exclusive Middle East Distribution by:
  Specialty Chemicals & Coatings M.E.
- Used by DOTs, municipalities, government agencies, schools/universities, property management, asphalt maintenance contractors, and anyone who has roadway and parking areas requiring maintenance.
- Available in three aggregate sizes (depending on hole depth)
- Activated by only water
- Can be applied in 0C – 50C temperatures
- Roads are opened to traffic immediately and completely cured the following day
- No large crews, equipment or special tools required.

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3-Step Installation

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CAL TRANS

California USA

30-Bucket Road Patch in Summer (30C)

	✔ ✔ ✔ **Aquaphalt**	**Hot-Patch**
Productivity Gains	6 road patches per day	2 road patches per day
Labor Cost Reductions	1-2 workers	1 crew (5 men/driver)
Equipment Cost Reductions	1 truck + 1 hand tamper	1 truck + 1 hot mix trailer + 1 compactor

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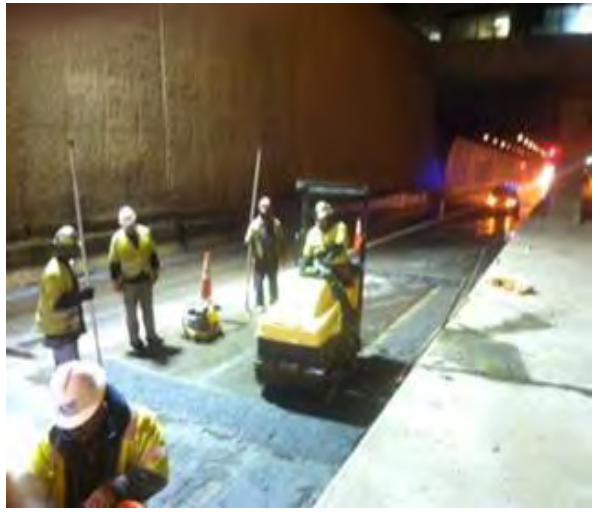
Monitor-Merrimac Bridge Tunnel

Virginia - USA

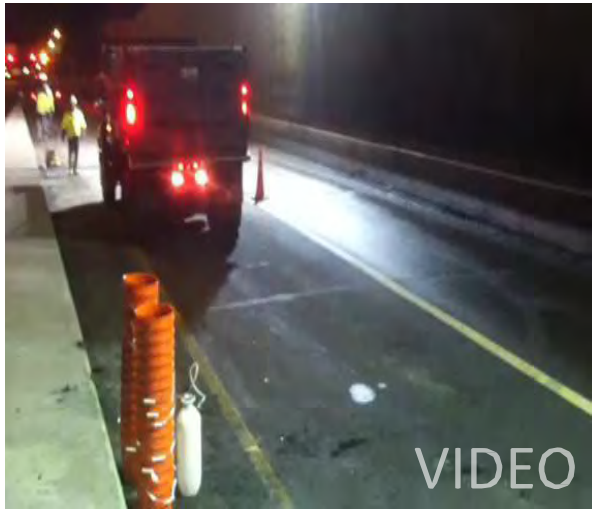
27’ below sea level with water seeping in.

Aquaphalt was placed, watered, and compacted.

Final compaction with a roller.



Open to traffic immediately after compaction.



“We repaired over 30 joints at the approaches of the MMBT in this manner. Regular hot mix would not have done the job in these wet and dirty conditions. These patches have been in place for over two years and have made me a believer.”

- Mark Range, Virginia Paving Company, (division of Lane Construction)

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Department of Transportation

Maine, USA

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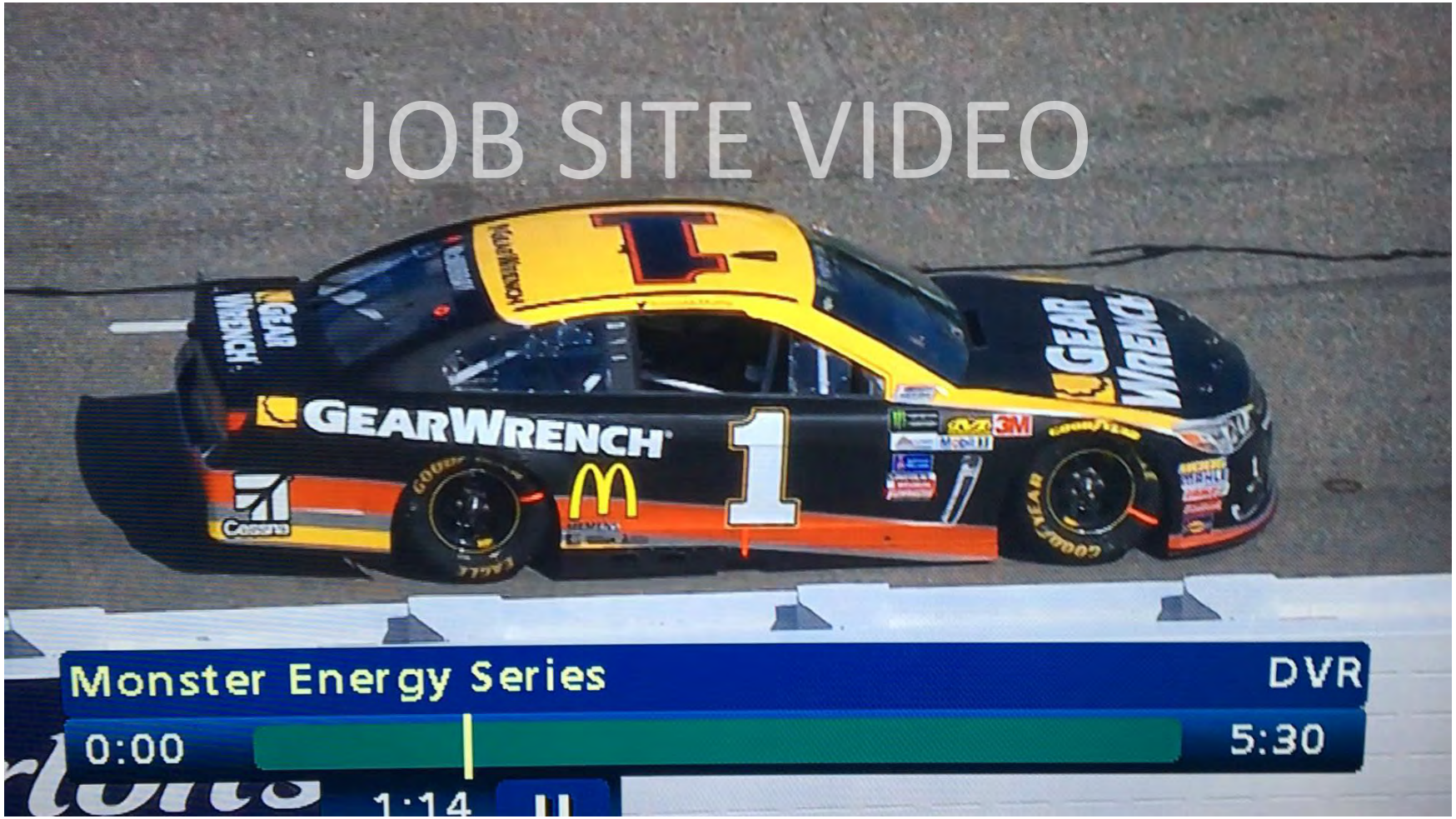
NASCAR

New Hampshire USA Motor Speedway



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VDOT Virginia Department of Transportation

Department of Transportation

Virginia, USA

Report Origin: Todd M. Rorrer, Assistant Asphalt Program Manager

On January 16th, 2008 the Virginia Department of Transportation's Materials Division Asphalt Program partnered with Vialit Asphalt of Austria to install a field evaluation site of the company's cold mix asphalt, Rephalt.

Evaluation Site:

A deteriorated patch on US 60 West in New Kent County at Bottoms Bridge was selected for the evaluation site. This site would typically be repaired with hot mix asphalt (HMA), however the site was rapidly deteriorating and no HMA facilities were operational, therefore a 'permanent' cold patch solution was required.

Figure 1, Evaluation site on US Route 60 West at Bottoms Bridge.

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Construction / Installation:

Weather: The weather on the installation day was slightly overcast, cool and windy; the mean wind speed on the 16th was 6.5 mph with sustained gusts to 15mph. The previous and following night's low temperature was 23 degrees F with an average temperature of 34 degrees F. The ambient temperature during construction was 39 degrees F. The pavement temperature was 36 degrees F.

The existing distressed material was removed down to sound concrete. The leading half of the patch was found to be sound at a depth of approximately 5 to 6 inches (127 to 152.4 mm). The trailing half of the patch was deteriorated down to the subgrade in the center of the patch. The excavated patch was cleaned and blown free of loose debris, the deepest distressed portion was seated with a vibratory plate compactor.

Figure 2

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Figure 3, Two lifts 0/11mm mix were used as base and binder layers. The 'jumping jack' compactor was used for compaction on all layers lower than the final surface. Approximately 1 liter of water was added to each 25kg bucket before placement and an additional liter was "sprinkled" on the loose material before compaction.

Figure 4. A final 0/8mm lift was placed for the final riding surface of the patch. Edges were pinched with the 'jumping jack' compactor.

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Evaluating the Installation:

Figure 5, Evaluation site after one week of service.

Figure 6, Evaluation site as of 06/26/08.

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Figure 7. Material has maintained a uniform profile, very little to no pushing or shoving and no rutting. Tight joints have been maintained, material has not bled, or streaked away from the patch.

Figure 8, Four year follow-up photo, January 2012

Final Recommendations:

Five primary distress types were evaluated in the 1997 VTRC report used to generate VDOT's existing approved list: bleeding, rutting / dishing (further compaction under traffic), debonding, raveling and pushing & shoving. The Rephalt material did not exhibit any quantifiable distress in these five categories. To date the Rephalt cold mix material has met all expectations that the Virginia Department of Transportation has on cold mix patching materials.

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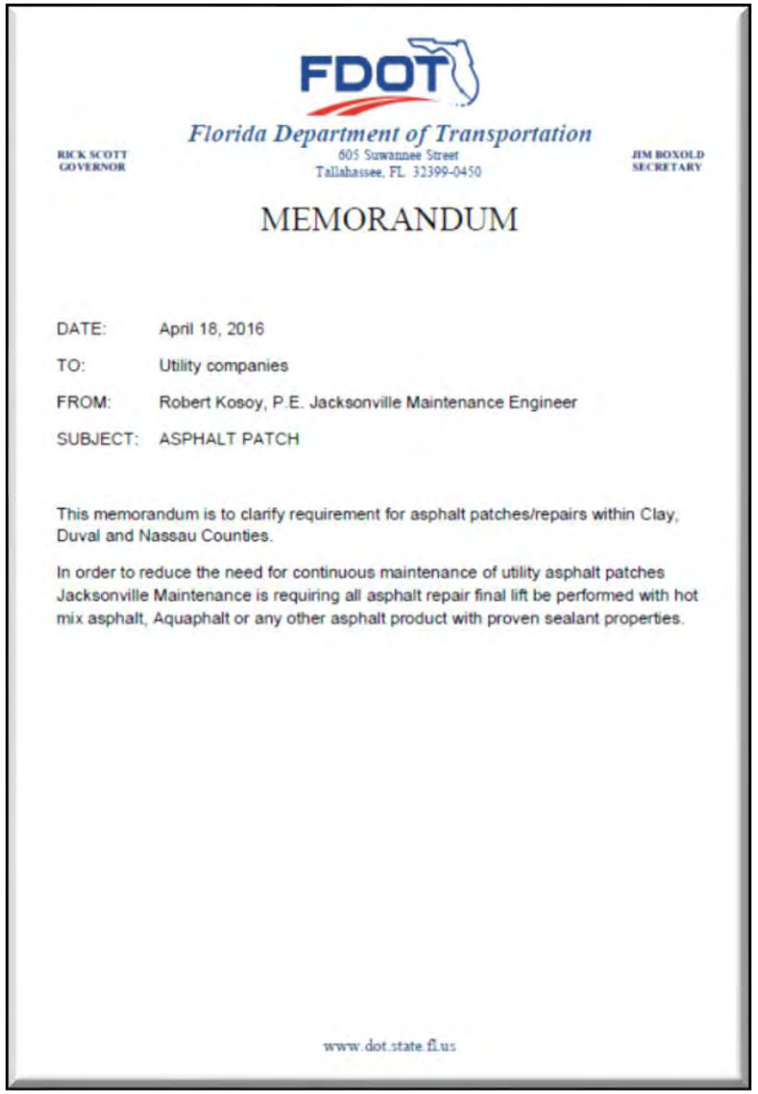
Department of Transportation

Florida, USA



FDOT

Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JIM BOXOLD
SECRETARY

MEMORANDUM

DATE: April 18, 2016

TO: Utility companies

FROM: Robert Kosoy, P.E. Jacksonville Maintenance Engineer

SUBJECT: ASPHALT PATCH

This memorandum is to clarify requirement for asphalt patches/repairs within Clay, Duval and Nassau Counties.

In order to reduce the need for continuous maintenance of utility asphalt patches Jacksonville Maintenance is requiring all asphalt repair final lift be performed with hot mix asphalt, Aquaphalt or any other asphalt product with proven sealant properties.

www.dot.state.fl.us

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Froehling & Robertson Evaluation

Virginia, USA

FROEHLING & ROBERTSON, INC.
Engineering Stability Since 1881

6181 Rockfish Gap Turnpike
Crozet, Virginia 22932-3330
T 434.823.5154 | F 434.823.4764

COLD PATCH EVALUATION

CLIENT:	Michael Wertheim Road Stone Production, LLC 1230 River Road Charlottesville, VA 22901 C:434-906-1273 Michael@slwilliamson.com	**PROJECT:** **Record No:** **Date:**	Cold Patch Evaluation 71R-3115 April 7, 2014

Froehling & Robertson, Inc. (F&R) was asked to evaluate two competing products used in pothole repairs as "High Quality Cold Patch Material" designed for applicable weather patching in wet, dry, or sub-freezing conditions. The two products are identified as Aquaphalt from Roadstone Production versus Bond-X from Seaboard Asphalt. It is our understanding that VDOT awards a yearly contract for asphalt cold patch material. There are two categories of material warranty, Type 1 (6 month warranty) and Type 2 (12 month warranty). Aquaphalt is categorized as a Type 2, however the contract was awarded to a Type 1 product (Bond-X) with the understanding they would provide a 12 month warranty. As per the attached specs, all products are supposed to be able to be installed in wet conditions, which are not proving to be the case according to VDOT. VDOT has asked Aquaphalt to perform testing showing why Bond-X fails in wet conditions and Aquaphalt does not. F&R has used the Final Report by Brian D. Prowell and Alan G Franklin, "Evaluation of Cold Mixes for Winter Pothole Repair," dated November 1995 and other FHWA reports to evaluate the performance of the two materials under similar conditions in a field trial under wet conditions.

The patches used the semi-permanent method described as: where water and debris are removed with the sides of the patched area chiseled to square up the edge of the patch to provide near vertical sides into sound pavement prior to the patch material being placed. The patch is then compacted using compaction equipment smaller than the patch area with the repair opened to traffic as soon as the maintenance workers and equipment are clear.

The cold patch repair will be judged on the following:

- **Stability**-how patch resists displacement by traffic
- **Stickiness**-adhesion when patch is feathered to thin edges
- **Resistance to water action**-to keep binder from stripping off the aggregate, and the result of freezing water at the bottom of the repair causing delamination of the patch from the original pavement
- **Durability**-resistance to disintegration

- **Workability**-to allow material to be easily shoveled and shaped, affected by temperature

On Friday, 2/7/2014, a site needing repair was chosen that is located at the gated entrance to Rockydale Quarry. This location was selected for a field evaluation using both cold patch products to repair a dished area (1.5 to 1.75 inches in depth) at the entrance (Refer to sketch). Note that location is such that the wheel track on the passenger side of unloaded tandem axle trucks entering the facility would traverse both products (the Seaboard Patch first followed by the Aquaphalt patch) and loaded tandem axle trucks leaving the quarry loaded with crushed rock would have the driver side wheels traverse both products (first the Aquaphalt, then the Seaboard Asphalt).

Figure 1. Site Map with rectangle showing dished area.

Both products required the following sequence of application:

- **Preparation**-sweep area to be repaired with broom to remove loose debris, dirt, ice, or standing water
- **Application**-No heating or mixing required, simply shovel into pothole straight from container. If fault is deep i.e. over 6 inches, apply in two inch layers, compacting each layer in succession. Shovel enough material into the fault to lightly crown the patch. When completed compress the "patch." Area can be opened to traffic immediately.

The edges of the dished area were chiseled to form more vertical edges, with loose material removed to a sound stable base. The area was wetted and broomed to remove standing water.

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Froehling & Robertson Evaluation

Virginia, USA

Figure 2. Hot Mix on left, chiseled area Cold patch evaluation

Figure 3. Area cleaned, wetted, & broomed near side Bond-X, far side Aquaphalt

Aquaphalt was spread and raked to same level towards the inside portion of the quarry with Bond-X raked and spread on the entrance side of the quarry. The finer Aquaphalt was slightly easier to rake and spread than the coarser Bond-X material, but both materials are deemed similar in **workability**.

Figure 4. Aquaphalt spread & raked

Figure 5. Bond-X spread & raked

Figure 6. Both wetted 2 gallons water

Figure 7. Both Compacted with Flat Plate

After both areas were shoveled, raked to crown and compacted with same number of passes using a Makita flat plate compactor. Temperature during placement varied from 38°F to 40°F. After compaction, the Bond-X had 99 pcf wet density with 37% voids, had a coarser surface texture and had more sheen. The Aquaphalt had 104 pcf wet density with 34% voids and had a finer surface texture with less sheen. At this time a loaded tandem axle truck left the quarry with a 5/16" rut measured in both the Aquaphalt (quarry side) and Bond-X (gate side) of the patch. Both materials have similar **stability**.

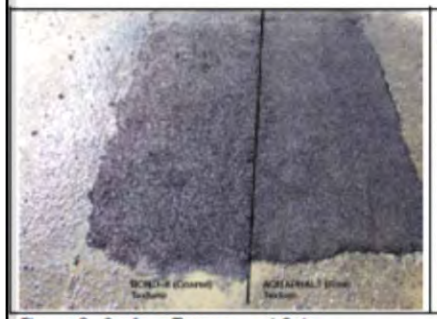

Figure 8. Surface Texture and Color

Figure 9. Loaded Tandem Axle Truck Rut

The first visit to evaluate the performance after installation was on Wednesday, 26 February, 2014, 19 days after installation of the cold patches. Temperatures ranged from an overnight low of 15°F to a daily high of 68°F with 6 days of snow and one day of rain. Approximately 260 empty tandem axle dump trucks arrived (average weight 12 to 14 tons) and these same 260 tandem axle dump trucks left weighing from 30 to 32 tons traversed both materials used for

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Virginia, USA

the cold patch. The Bond-X side had one depression where patch material had been removed approximately 1.25 inches to the original dished pavement and a second area where a depression had started (**durability** and **resistance to water action** issues)..

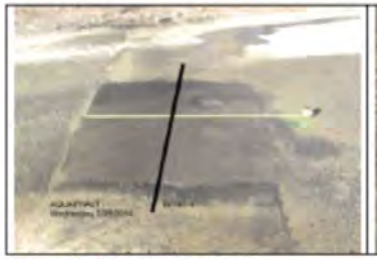

Figure 10. Patch loss of material

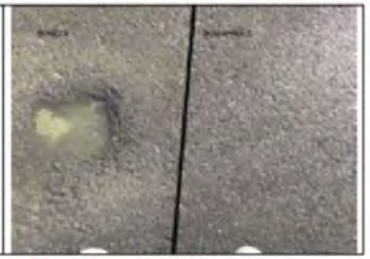

Figure 11. Close-up of Bond-X Patch

The Bond-X patch, probably due to overnight freeze and thaw cycles where water has frozen, is beginning to delaminate (see Figure 11) from the existing pavement.

The second visit to evaluate the performance after installation was on Friday, 21 March 2014, 23 days after installation of the cold patches. Temperatures ranged from an overnight low of 1°F to a daily high of 75°F with 4 days of snow and four days of rain. The Bond-X side had one depression where patch material had enlarged from the first visit to a depth of about 1.25 inches to expose the original dished pavement. The delamination had started to connect to the earlier second depression observed starting on the first visit. Both cold patches had some raveling on the surface where wheel path wear had removed some of the surface aggregate from the binder.

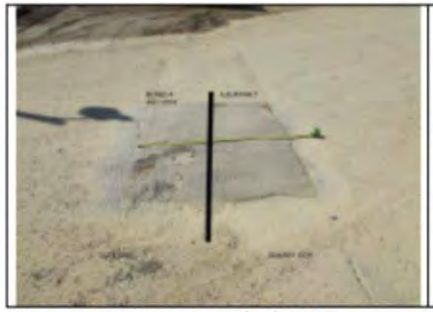

Figure 12. Both patches 3/21/2014

Figure 13. Bond-X delamination close up

Based on the above information where both materials were placed under the same wet conditions, had similar compactive effort, with equal ESAL loadings, equal snow/rain events, and equal freeze thaw cycles, the field conditions demonstrate that the Bond-X material delaminated due to **durability, stickiness** and **resistance to water action issues**, whereas the Aquaphalt material did not.

We have enjoyed working with you on this evaluation of the two cold patch materials. Please contact us if you have any questions regarding the test method or opinion presented in this report or if we may be of further service.

Respectfully yours,
Froehling & Robertson, Inc.

John L Pappas

John L. Pappas, PE
Senior CMT Engineer

reviewed by
Clyde A. Simmons III, P.E.
Senior Geotechnical Engineer

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[Aquaphalt - The One Time Fix for Asphalt and Concrete on Vimeo]

[Aquaphalt Instructional Video on Vimeo]

OUR CLIENTS
(Partial List)

MIDDLE EAST

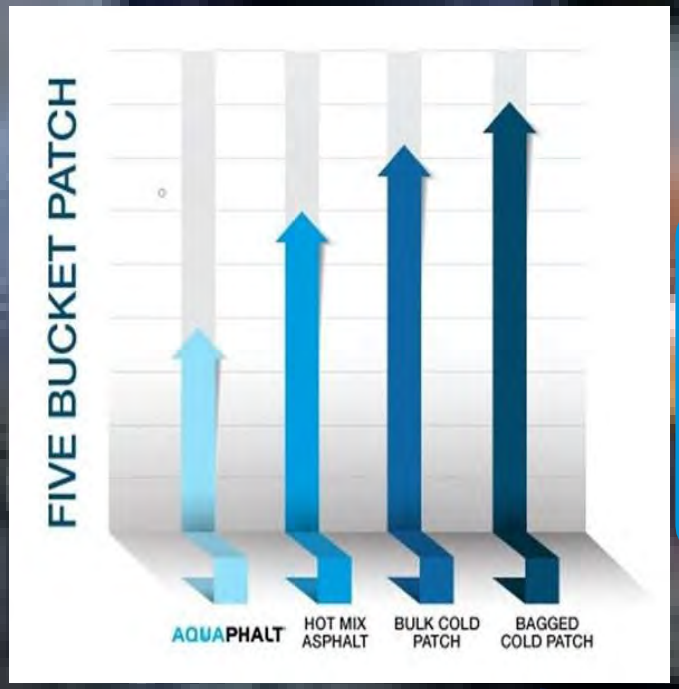
- BAHRAIN
  - Bahrain International Airport (since 2015)
  - Gulf Petroleum Industries
  - Midal Cables
  - Roads & Project Maintenance Division (MOT)
  - TCO (Term Contract Order) Mandate
- SAUDI ARABIA
  - King Fahad International Airport (since 2023)
  - Riyadh Municipality (Undergoing Trials)
- IRAQ
  - Multiple Kuwait Military Airbases (CONFIDENTIAL)
  - Multiple USA Military Airbases (CONFIDENTIAL)

USA

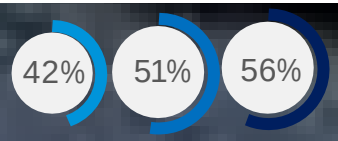
- D.O.T.
  - Florida
  - Tennessee
  - California
  - Maine
  - Vermont
  - Pennsylvania
  - Virginia
  - New York
- AIRPORTS
  - McCarren/Las Vegas
  - Dulles/Washington
  - Raleigh/Durham
  - Hartfield/Atlanta
  - Dallas/Fort Worth
  - Boston/Logan
  - Raleigh/Durham
  - NY/JFK
- RETAIL
  - Amazon
  - Wal Mart
  - Home Depot
  - Lowes
  - Ace Hardware
- OTHER
  - NASCAR
  - FEDEX
  - US Army Corps of Engineers
  - NYHA (NY Housing Auth.)
  - NCAT (Nat. Asphalt Center)

CASE STUDY #1

Lifecycle Cost of Aquaphalt vs. Competition
(Labor + Material) – 3 years



AQUAPHALT Savings vs.



Aquaphalt consistently provides superior long-lasting durability in study after study, which reduces long term costs!

CASE STUDY #2

National Center For Asphalt Technology
Auburn University, Alabama USA - 2018

National Center for Asphalt Technology
NCAT
at AUBURN UNIVERSITY

APPROVED

January 8, 2016

Michael Wertheim
National Director of Aquaphalt Sales
Roadstone Production, LLC
1230 River Road, PO Box 648
Charlottesville, VA 22902

Dear Mr. Wertheim,

This letter is provided to objectively document recent experiences with your Aquaphalt product at the National Center for Asphalt Technology (NCAT) at Auburn University.

In June, 2015, the NCAT Pavement Test Track received a pallet of 4-gallon buckets of Aquaphalt to use during a large coring operation in preparation for the 2015 pavement preservation experiment on US-280. A total of 100 cores, of varying depths, were taken from four future test sections in order to facilitate cold recycle (CR) mix designs. Aquaphalt was used to patch almost every core. These four test sections, which consisted of 4-inch CR binder layers with 1-inch aged binder ratio (ABR) thin overlay surfaces, were completed on September 9th and 10th of 2015. At the time the sections were completed, Aquaphalt had been in place for three months on the high ADT roadway (supporting more than 5,500 vehicles per day in the westbound truck/test lane) with no noticeable failures.

In this application, Aquaphalt met our needs in an ideal way. Test sections on US-280 were miles away from the NCAT Pavement Test Track and required a large quantity of patching material. A cold patch product was necessary that would survive in the demanding high ADT environment of US-280. The packaging was easy to use and could be resealed when not needed. The product instructions were simple to understand, noting that we did not follow them precisely. Instead of carrying water with us solely for use with Aquaphalt, we actually used the residual water in each hole from the coring procedure. This seemed to work well. The aggregate size in the product also seemed to be appropriate for 6-inch core holes. It was not difficult to compact, and the finished surface had a smooth texture that blended well with the existing roadway.

Based on this positive experience, the NCAT Pavement Test Track would not hesitate to use Aquaphalt in the future. We look forward to the opportunity to work with you again soon.

Sincerely,

Jennifer Dukes
NCAT Pavement Test Track

Cc: Dr. R. Buzz Powell, PE (NCAT Assistant Director and Test Track Manager)
File

National Center For Asphalt Technology

Auburn University, Alabama USA

National Center for Asphalt Technology
NCAT
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