THMLAY

SAFE. SMOOTH. DURABLE.

Toolkit

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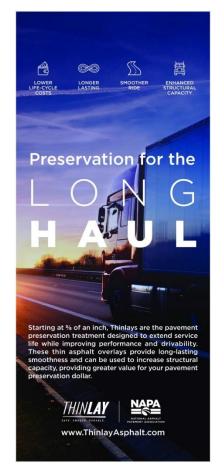
Thinlay Overview

With limited funding and aging roads, agencies need cost-effective, longlasting pavement preservation techniques. Thinlays are a suite of asphalt overlays that are developed for pavement preservation using proven pavement design principles. Early Thinlays have performed for more than ten years, double the life expectancy of other pavement preservation options.

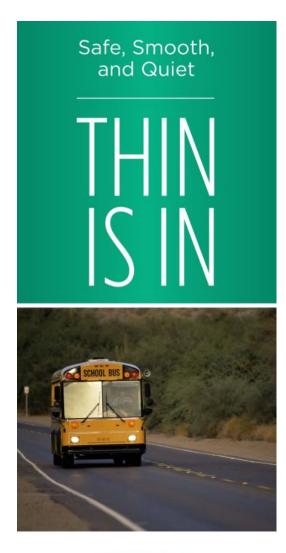
While Thinlays are not a cure for failed pavements, they do offer life extension to "good" or "fair" pavements. Designers and road owners should be aware of best opportunities to employ Thinlays, how to design and specify, best practices for construction and quality control along with performance measures. The material referenced within this document is a culmination of information from around the industry that will aid in the proper education of Thinlay application. The intended audience of this material is engineers and road owners.

Trade Show Materials Banner Ups

For conferences with engineers, for display at industry meetings, or in your office please consider these banner ups. All the options of the "Thin Is In" banner can be borrowed from the APA. Please contact the APA's Michelle Kirk at <u>mkirk@asphaltroads.org</u> to arrange delivery.

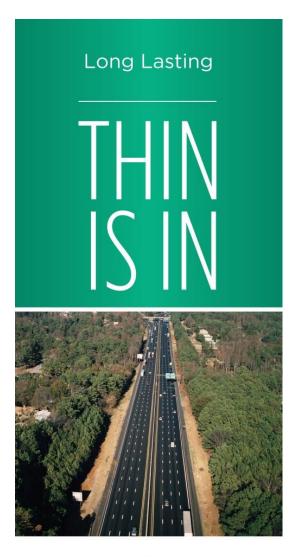


NAPA Long Haul Banner Up



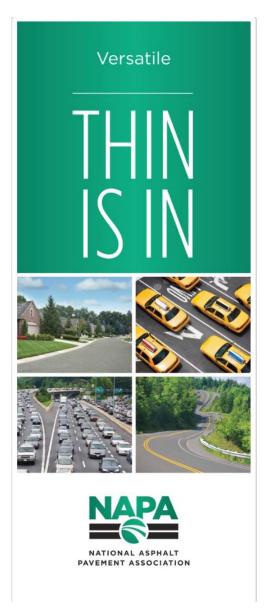


This Is In Safe, Smooth and Quiet





Thin Is In - Lasting

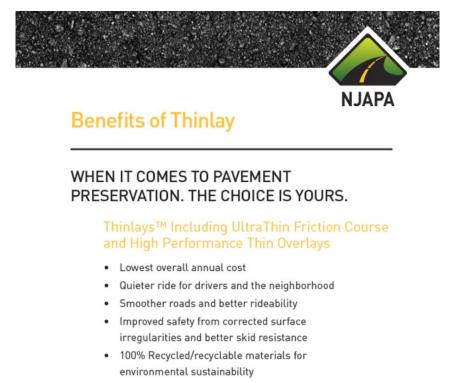


Thin Is In - Versatile

Promotional Cards and Flyers

Promotional cards and flyers are an easy to distribute, cost effective medium that conveys customized information to an intended audience. Consider using these cards and flyers at industry events, trade show booths, in mailings, or as flyers around your office lobby to educate stakeholders about the benefits of Thinlay.

 New Jersey Asphalt Pavement Association (NJAPA) has faced intense competition from other pavement preservation techniques. So NJAPA produced an arsenal of products, including this flyer citing the benefits of Thinlays. This can be customized to use in other states at events focused on road owners making pavement preservation decisions.

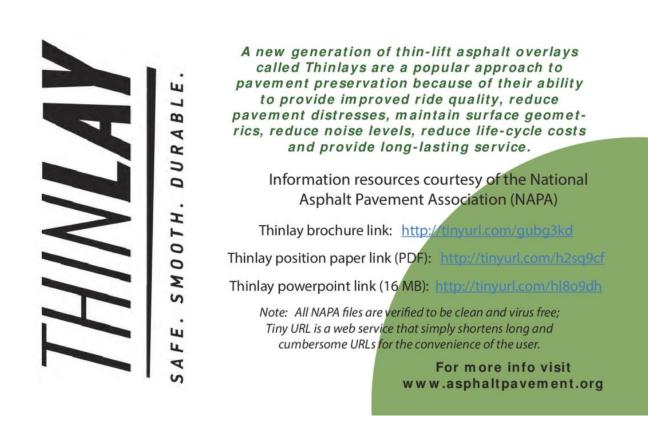


Micro-Surfacing and Slurry Seals

- Higher annual cost
- Rougher and louder ride
- Needs expensive, specialized equipment to install
- Does not correct surface irregularities
- Requires aggregate from new sources not recycled material

NJ Thinlays Benefit Card

2. The Asphalt Pavement Association of Indiana uses these business cards as handouts at promotional events. The front of the card contains contact information and the reverse holds information on Thinlay (sample below).



IAPA Thinlay Promotional Card

Marketing Tools

Branding is a name, term, design, symbol, or feature that identifies one seller's goods or services as distinct from another. The asphalt industry's pavement preservation brand is "Thinlay". Use of the logo helps further differentiate the asphalt pavement industry's preservation brand from the competition.



Ads

These ads can be used in local or national trade magazines, associations magazines, on websites, membership directories, and in e-newsletters. Design files are included for higher resolution.



Preservation for the Long Haul - Half Page Ad

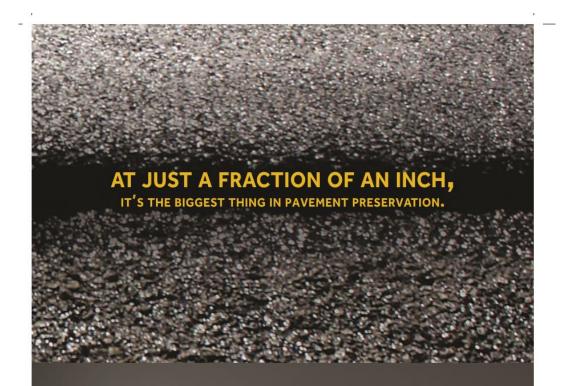
Preservation for the Long Haul - Half Page Design Files

Preservation for the Long Haul - Full Page Ad Preservation for the Long Haul - Full Page Design Files



OBJ

Preservation for the Long Haul with Friction



By any measure, Thinlay[™] thin asphalt overlays are the answer to our nation's immediate demand for pavement preservation. Starting at a depth of 3/4", this armor-like suite of asphalt mixes is tailored to local needs to prolong pavement life — making roads stronger, smoother, safer and more drivable. Driver safety is enhanced and fuel consumption and noise are reduced, all while using a process that can also recycle and reuse natural resources. In fact, Thinlays are the most cost-effective pavement preservation option for ensuring the long-lasting performance drivers demand.

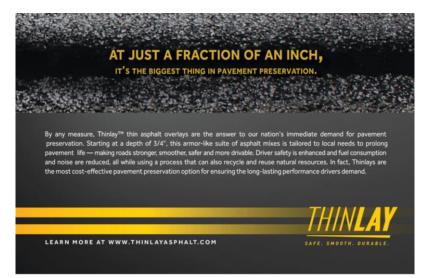


LEARN MORE AT WWW.ASPHALTPAVEMENT.ORG/THINISIN

NAPA Fraction of an Inch

Postcards

These postcards can be used at trade shows, industry meetings, for mailings to DOTs and DPWs, posted to association websites, or printed in your magazine or e-newsletter.



Thinlay Postcard 1



Thinlay Postcard 2

Brochures

Brochures can be an effective marketing tool, used to convey a product's features and offer consumer guidance. These short brochures help to articulate the benefits of Thinlays for a technical audience and can be used effectively in direct mailings, resources on your website, or at a tradeshow or industry meeting.

 HMA Ultra-Thin Brochure – Created by the Asphalt Pavement Association of Michigan, this two-page brochure highlights HMA Ultra-Thin, an industry name for Thinlays. The brochure compares the cost benefit of various Thinlay applications along with other popular pavement preservation techniques.



HMA Ultra-Thin

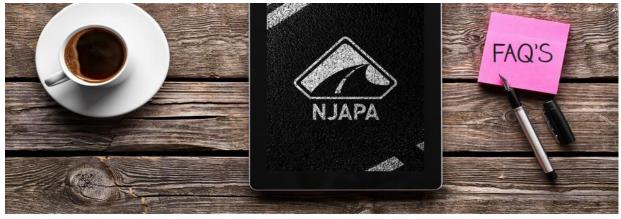
High Value Pavement Enhancement

Preventive Maintenance Treatments Cost Comparison

Treatment	\$/syd **	Cost/mile (24' wide)	Life extension range* (years)	Life extension range* average (years)	Cost/mil per year
Chip Seal-Double	\$2.96	\$41,675	3-5	4	\$10,419
Micro-Surface	\$3.15	\$44,350	3-5	4	\$11,088
Ultra-Thin Low	\$2.80	\$39,422	5-9	7	\$ 5,632
Ultra-Thin Medium	\$2.76	\$38,859	5-9	7	\$ 5,551
Ultra-Thin High	\$3.20	\$45,054	5-9	7	\$ 6,436
* Average Life Extension estimat					
** Unit Prices based on Weighte	d bid prices fr	om last 12 MDOT le	ettings (thru January 20)14)	
DAGED					
	ating of 4,				
 Structur 	ally sound	pavement			
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A. John Becsey, P.		ASPHALT	S	Charles E. Mills, P.E.	
Executive Director		PAVEMENT		Director of Engineerin	
jbecsey@apa-mi.o	B	Association		cmills@apa-mi.org	
		MICHIGAN			
		e: 517.323.7800	02 º Okemos, MI 488 º Fax: 517.323.6505	64	
		www.apa			

HMA Ultra-Thin

1. New Jersey Asphalt Pavement Association created the FAQ brochure below. This can be reformatted for local use.



Q What is Pavement Preservation ?

A Pavement preservation is a strategy to enhance pavement performance by extending the life of existing pavements, improving safety, and meeting user expectations.

Q What are the various Pavement — Preservation Options?

- A While there are a variety of asphalt pavement options, the primary pavement preservation choices are:
 - ThinlaysTM ThinlaysTM are hot mix asphalt pavements that are placed in a thin overlay of less than 1.5 inches. They can be placed as thin as 5/8 of an inch, and are typically ¾ to 1 inch thick.
 - Micro-Surfacing Micro-Surfacing is a technique where asphalt binder and aggregate are sprayed onto an existing pavement. Micro-Surfacing is placed at less than 3/8".
 - Slurry Seal Slurry Seal is another technique where asphalt binder and aggregate are sprayed onto an existing pavement. Slurry Seal is placed at less than ¼".
 - Chip Seal and Cape Seal Chip Seal and Cape Seal are techniques similar to Micro-Surfacing. Chip Seal is a technique where asphalt binder is sprayed onto an existing road surface and fine aggregate is immediately placed on top of it. Cape Seal is a technique where a Chip Seal is overlayed with a Micro-Surfacing treatment

Q When should I choose each option?

Pavement preservation is best done when you choose the right treatment for the right road at the right time. It is important to know the condition of your road before deciding which treatment is the right one. Pavements that are not displaying any distress are candidates for slurry seal, micro-surfacing, and chip / cape seals. Distressed pavements, provided the distress is not major, are candidates for ThinlaysTM. Even severely distressed pavements can be preserved with ThinlaysTM - these would require milling to remove the distressed material first.

Q What option is most cost effective?

Studies show that ThinlaysTM, including Ultra-Thin Friction Course and High Performance Thin Overlays have the lowest overall annual cost. UTFC and HPTO each have an annual cost per lane mile which is lower than both Micro-Surfacing and Slurry Seal.

Q What option is best to improve ride quality?

A Ride quality is measured by the International Roughness Index, or IRI. ThinlaysTM provide an average improvement to pavement smoothness of 18%-36%. Micro-Surfacing and Slurry Seal teatments will typically improve smoothness by less than 10% and often will provide no improvement.

Q Are there safety issues I should consider?

Professional Engineers often consider the Skid Resistance of a roadway as an important safety factor. ThinlaysTM have been shown to be skid resistant. While Micro-Surfacing and Slurry Seals can also provide improved skid resistance, the roughness of these surfaces is noisier and less pedestrian-friendly.

Thinlay FAQ NJAPA

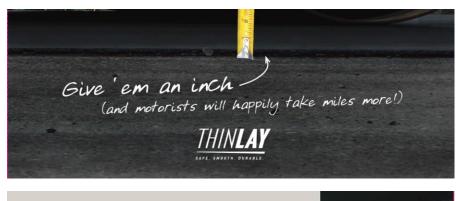
2. Flexible Pavements of Ohio produced these three marketing cards outlining the benefits of Thinlay in terms of fatigue life, service life, and annual cost of ownership.

FPO Marketing Brochure

Card #1: When it comes to pavement preservation, Thinlay provides the best of both worlds.



Card #2: Give 'em an inch (and motorists will happily take miles more!)



The Right Choice for **Preserving Pavements**

As a pavement preventation and As a pavenent preventation and maintenance strategy, a thin-lift asphalt overlay – or Thinlay – is unmatched by other common surface treatments, including microsurfacing, slurry seals and chip sealing. It's the only preventative maintenance technique that *adds strength* to well-built pavements while helping extend their useful life.





SLURRY MICRO THINLAY

CHIP SEAL

Card #3: Why Thinlay? Why Today?



Infographic

Infographics are graphical representations of data that can be quickly understood. This Thinlay infographic was crafted by NAPA to discuss the quantifiable benefits of Thinlay in ways that resonate with road owners, as determined by market research. The top two concerns of road owners are cost and performance. This infographic provides ownership cost data along

with service life expectations and ride quality numbers.



Thinlay Infographic

Videos

- Thinlay YouTube Video This video was produced in 2012 by Mike Huner on 10th Avenue in Nashville, TN. It discusses recycling and warm mix in downtown Nashville.
- 2. The Plantmix Asphalt Industry of Kentucky (PAIKY) is working on creating a Thinlay marketing video that can be used nationally. It will be posted upon availability.

Social Media

Social media marketing helps to validate a brand and when done correctly informs consumers about trends and products in an interactive environment.

Although some pieces are keyed to particular days (ex: National Dictionary Day), below are pieces that can be used throughout the year on social media platforms to promote Thinlays.

1.

Asphalt Industry #NationalTechnologyDay Highlight:

An innovative pavement preservation technology responsible for a new generation of thin-lift asphalt overlays that can be as thin as 5/8 inch and have proven better performance than others. Thin asphalt overlays are safe, reduce costs and are sustainable through asphalt's 100% recyclability.

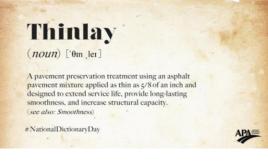
Thinlay Dictionary Day 1

2.

deed, or work. 6. A thought or notion. 7. A piece of information. 8. A matter of concern. 9. A turn of events. 10. things The general state of affairs; conditions. 11. Stang A uniquely suitable and satisfying activity: doing his own thing. See Syns at forte ¹ , $ < OE thing.]$ think (thingk) $\Rightarrow v$ thought (thô), think-ing 1. To have or formulate in the mind. 2a. To ponder. b. To reason. 3. To believe: suppose. 4. To call to mind; remember. 5. To visualize;	theor ter ch When this is We have See U this-th
Thinlay (thila) \blacktriangleright <i>n</i> . A pavement preservation treatment using asphalt pavement mixture applied as thin as ½ of an inch and designed to extend service life, provide long-lasting smoothness, and increase structural capacity.	plants purpli this•th down thith•e that pl
thin-ner (thin'ər) $\triangleright n$. A liquid, as turpentine, mixed with paint to reduce viscosity. thin-skinned (thĭn'skĭnd') $\triangleright adj$. 1. Having a thin rind or skin. 2. Oversensitive. third (thūrd) $\triangleright n$. 1. The ordinal number match- ing the number 3 in a corie a.	tant sid thole y gunwa OE tho Thom- the 12

Thinlay Dictionary Day 2

3.



Thinlay Dictionary Day 3

Website Promotion

Website connect an association to its members, road owners, and the driving public. Association websites provide a wealth of educational materials, member connectivity, and highlight industry products. Highlighting Thinlays on your association website promotes the brand, educates road owners and drivers, and establishes credibility of Thinlays as a pavement preservation option.

These pieces were created to incorporate directly on webpages and can be used on your association page, your members websites, in e-newsletters, or in an e-magazine.



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Preservation for the Long Haul - Web Box



Preservation for the Long Haul Web Banner

Resource Website

Thinlay Website – This NAPA sponsored website contains articles and information contained within this document. It serves as a quick reference to parties interested in an overview of Thinlays.

PowerPoint Presentations

PowerPoints provide audiences with a visual aid and are an avenue to present opinions, ideas, and facts. There are many presentations available within the Asphalt Vault (<u>www.AsphaltVault.com</u>) that can be utilized for lunch and learns, keynote addresses, technical meetings, or as a demo at a tradeshow.

1. Innovations in Thin Asphalt Overlays: "Ohio's Smoothseal"

A 46 slide PowerPoint presentation prepared by Cliff Ursich of Flexible Pavements of Ohio outlining how ODOT and the asphalt industry developed Smoothseal, a fine-graded polymer modified asphalt concrete mixture.

2. Thinlay Asphalt Overlays for Pavement Preservation

A presentation prepared by Jim Purcell with NJAPA presented to the NJ Association of Counties in 2017.

3. Thin Mix Overlays - World of Asphalt 2018

Given by Bruce Barkevich of NY Construction Materials and Bill Schmitz of Gernatt Asphalt Products on the background of Thinlay applications, materials required, and operational changes necessary as well as identifying limitations for Thinlay applications.

4. Paving for Performance: Thinlays

Brett Williams with NAPA presented this at the Paving for Performance conference in October 2017. This presentation offers many slides on the benefits of Thinlays, project selection, mix types, and construction practices.

5. <u>AL APA Thinlift Asphalt and Microsurfacing Comparison of</u> <u>Projects</u>

Presentation by Mel Monk (Alabama Asphalt Pavement Association) given to the MS/AL Engineering Societies June 2018. This presentation discusses the need for pavement preservation, best project candidates, benefits of Thinlay versus other preservation options and finally a review of an ALDOT project comparing a Thinlift project and a microsurfacing project both done on the same roadway.

Flexible Pavements of Ohio - Thinlay Presentation - 67 slides created by Cliff Ursich and given in 2018 at the Rocky Mountain Asphalt Conference on the benefits of Thinlays.

7. Preserving Performance Using Thinlays – This presentation by Dan Staebell was given in February of 2018 at a Missouri Asphalt Pavement Association meeting. This presentation is a general overview of Thinlay project selection, material choice and construction technique

Learning Module

Prepared by NCAT in 2017 to provide education of Thinlay applications, this learning module includes speaker notes, an instructor workbook, and participant workbook. This course can be taught to decision makers regarding the superiority of Thinlay as a pavement preservation option takes approximately 1 hour to present.



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Participant Workbook

National Webinars

Webinars are a great marketing tool because they are a convent way to credibly train and educate attendees on a brand, product, or service. Webinars also offer an opportunity for the instructors to gather feedback from the audience, build contacts, and establish trust.

- <u>Recorded Thinlay Webinar</u>- This webinar on thin overlays was presented by Dave Newcomb, Ph.D., P.E., NAPA Vice President for Research and Technology on July 15, 2009. To access, scroll down to the middle of the page to download.
- <u>Recorded Thinlay Webinar 2</u>- This recorded webinar is housed by the Asphalt Institute. To access, scroll down to the middle of the page to download. Danny Gierhart, Asphalt Institute, Mike Heitzman, and Kent Hanson, formerly with NAPA, recorded this in 2016. The webinar discusses project selection, design, and construction.
- Thinlay Webinar for Contractors Brett Williams with NAPA is working alongside Craig Parker of Silver Star Construction Co. and Chuck Fuller with TxAPA to develop a national webinar for contractors on best practices for Thinlay construction. This webinar is forecasted for the fourth quarter of 2018.

Technical Documents

- Thinlays for Pavement Preservation PEC project to be released August 2018. This paper is a guidance document developed by NCAT.
- <u>NAPA Position Paper</u> Originally published in May 2014 this paper outlines NAPA's key positions, the plan to employ, and the associated industry partners.
- 3. <u>Pavement Preservation Techniques by State</u> This survey was completed in July 2014 by the State Asphalt Pavement Associations.
- FPO Technical Bulletin on Thinlays Flexible Pavements of Ohio produced a bulletin in September of 2017 offering a general overview of Thinlays from materials selection to placement.
- PDOT Evaluation of Thin Hot Mix Asphalt Four-year project by Pennsylvania to develop relevant specifications for Thinlay applications.
- Thin Asphalt Concrete Overlays NCHRP TRB 's National Cooperative Highway Research Program (NCHRP) Synthesis 464 documents the current state of the practice as well as research efforts on the use of thin asphalt concrete overlays for pavement maintenance, rehabilitation, and preservation. Published May 2016.
- Thin Asphalt Overlays for Pavement Preservation IS 135 NAPA document published in 2009. Provides guidance on choosing thin asphalt overlays, selecting materials, designing mixes, ensuring proper construction and quality control and expected performance benefits.

Articles

- 1. <u>Asphalt Pavement Magazine "A New Hit in Music City"</u> Asphalt Pavement Magazine – Jan/Feb 2013
- 2. <u>New Jersey Overlays I-280 with Warm Mix</u> Asphalt Pavement Magazine – May/June 2012
- 3. <u>Thin Asphalt Overlays: Next Word in Pavement Preservation</u> Pavement Preservation Journal – Spring 2015
- 4. <u>Texas Considers Ultra-thin HMA Alternatives to Seal Coat</u> Pavement Preservation Journal – Spring 2015
- 5. <u>Perpetual Pavement an Inch at a Time</u> Better Roads – Spring 2015
- 6. <u>Thinlays for Pavement Preservation</u> Asphalt Pavement Magazine – Mar/Apr 2014

ADA Curb Requirements

ADA Ruling on Resurfacing from DOJ

Competitive Summary

The following is an excerpt from "Thinlays for Pavement Preservation" referenced previously in "Technical Documents."

The primary purpose of pavement preservation is to preserve a road that is in good condition to help delay or reduce the cost of reconstruction. Simply allowing roads to deteriorate to the point where major rehabilitation or reconstruction is needed costs significantly more than preserving roads that are in good condition (Peshkin et al., 2011). Ideally, preservation treatments seal the surface and provide a smooth, quiet, safe ride for traffic. The surface should also be durable to minimize future closures and reduce life cycle cost.

The most common treatments are thin overlays, chip seals, and microsurfacing. Although placing a thin asphalt pavement layer on existing pavement is not a new concept, Thinlays are different from traditional thin overlays because they utilize finer aggregate structures and often incorporate more durable asphalt binders. The finer aggregates allow for the aggregate structure to lock together better when placed thin, and the more durable binders provide added crack resistance.

The typical NMAS in a Thinlay is 6.4 or 9.5 mm (often referred to as 1/4- or 3/8-inch mixes, respectfully), with the finest Thinlays having a NMAS of 4.75 mm. A 4.75 mm NMAS Thinlay may be placed as thin as 5/8 inch, a 6.4 mm NMAS Thinlay may be placed as thin as 3/4 inch, and a 9.5 mm NMAS Thinlay may be placed as thin as 1 inch.

Chip seals have been used for many years to provide a waterproof surface on low volume roads. Chip seals can also be used to treat pavement surface raveling and oxidation. Chip seal placement involves spraying an asphalt emulsion layer and immediately covering it with aggregate chips. The chips are then rolled to seat them in the emulsion and to help with bonding.

Chip seals (often referred to as bituminous surface treatments) are sometimes placed in multiple layers. One layer, consisting of asphalt emulsion and chips, is followed by another layer. Although the cost of a chip seal will vary considerably depending on whether it is a single or double chip seal, chip seals often have the lowest initial cost among the common preservation treatments. The benefits of chip seals are not as significant, however, and often do not last as long as the benefits of the other common pavement preservation treatments. Other drawbacks, such as loose chips, variable life, and relatively high noise, also detract from the appeal of relatively low initial cost.

Microsurfacing was developed in the 1960s and 1970s in Germany to provide a mixture that could be used to fill ruts and prevent water ponding and hydroplaning (ISSA, n.d.). Microsurfacing was adopted in the United States in the early 1980s. Initially it was used to fill ruts, but its use has expanded to general pavement preservation. Microsurfacing incorporates polymers and other additives in an asphalt emulsion. Although the additives improve performance, they significantly increase cost and cure time. Microsurfacing costs also vary considerably depending on whether the treatment is applied in one layer or multiple layers.