

## Don't Ignore What's Under Your Feet

*Harry Carter*

Choosing the right products and processes extend pavement lifespan

You maintain numerous systems in your restaurants. Lighting, HVAC, plumbing and roofing often demand most of your focus because your customers can't enjoy their dining experience if they can't see the menu or if there are leaks in the ceiling. But shouldn't the vast area of asphalt right in front of your restaurants get your attention, too? Unfortunately, a parking lot is often overlooked until a liability issue occurs. The best way to project a positive image and avoid common pitfalls is to plan ahead by developing a pavement maintenance plan (PMP), which takes a big-picture, long-term approach to managing asphalt.

The most effective plan leverages the right products and application processes. This article takes an objective look at various site-specific factors that determine which products should be used and how they should be applied. Armed with this knowledge, you will be better equipped to discuss PMP, specify the right products and processes to get what you pay for, and improve pavement performance and longevity.

Understanding the Conditions

Preventive pavement maintenance begins with an assessment of the property. Some defects are beyond the scope of a PMP and require a higher degree of repairs (with funding from a capital budget). Walk your lots with a reputable paving contractor or engineering firm and take note of defects. Alligatored pavement, depressions and sinkholes, ponding, rutting, damaged catch basins and extensive potholes are problems that require varying degrees of structural remedies. Asphalt with cracks, oil stains and a gray or raveling surface can usually be addressed by a maintenance program.

Assessing the pavement across your portfolio can help you select the right product or service to address a specific problem. For example, a maintenance program will not fix a capital problem because it is not a structural remedy for pavement defects; it cannot prevent cracking caused by poor design, improper construction or fatigue. It cannot restore a worn-out pavement or cure defects in the base, sub-base or mix design of the asphalt. And it cannot remedy lousy workmanship. Simply put, pavement maintenance products help extend the life of asphalt pavements that are in good condition rather than pavement that is left exposed to environmental elements and petroleum fluids.

PMP Basics: The Key Elements for a Longer- Lasting Parking Lot

A good PMP consists of three primary maintenance procedures: crack sealing, sealcoating and lot marking. When the right products are properly and regularly applied, pavement usability and lifespan are extended. In fact, a regular maintenance plan can double the life of asphalt and enable you to defer costly resurfacing, improving the cash flow of your business.

With proper application, you get the results you pay for. Hire an experienced, reputable contractor and give them a specification to follow. The specification ensures the contractor adequately prepares the surface, uses the right materials (the ones you select for your properties, with advice from your material supplier) and applies them under the proper weather and temperature conditions. A specification can also enable you to compare multiple bids from contractors on an apples-to-apples basis. In short, a specification is a recipe for success on a job!

The First Step: Preventing Water Intrusion

With fluctuations in surface temperature, asphalt can move and crack. Crack sealing, the first step in a well-designed PMP, prevents surface water from seeping through cracks into the underlying base where it can wear away stones and create voids, which lead to potholes and other damage resulting from freeze/thaw. Crack sealing also helps prevent the introduction of incompressible objects into cracks, which will not compress as the crack contracts in warm weather, cracking asphalt along the edge of the joint.

Based on their ease of use and cost effectiveness (i.e., they can be applied quickly over a large parking area), most contractors will recommend hot-applied crack sealants. Also called hotpour, these asphalt-based sealants are heated to a liquid state at temperatures up to 400 degrees Fahrenheit. When heated, they flow like water into cracks and harden as they return to ambient temperature. Performance of crack sealants in different climates depends greatly on their softening point, which is the temperature at which the crack sealant begins to deform under pressure and becomes tacky. Crack sealants have been engineered to perform in specific temperature ranges, so work with a materials supplier to get the right products for your sites. For example, a higher softening point reduces tracking in hotter regions, while a crack sealer with a lower softening point is adequate in colder climates.

There are two different types of hot-pour crack sealants: direct fire, in which heat is applied directly to the sealant in direct fire kettles, and oiljacketed, in which heat is indirectly transferred from hot oil to melt the sealant in an oil-jacketed melter. Generally, an oil-jacketed melter provides better heat control (and less chance of burning or scorching the sealant) and is preferred for larger applications.

Prior to installation, insist that cracks be routed to at least a 1/2 inch wide and 3/4 inch deep to provide a 40-percent greater chance of sealant success. Routing opens small, random cracks and allows for better performance of the sealant by producing uniform edges on the cracks, a deeper reservoir for the sealer to fill and a better sidewall to enhance adhesion. After routing, your contractor should blow debris out of the crack and use a heat lance to eliminate bond-destroying moisture. The sealant should be applied in accordance with the manufacturer's recommended air and pavement temperature range, which is typically above 45 degrees Fahrenheit.

### The Second Step: Protecting Your Assets with the Right Sealer

Sealcoating is the next step, and it provides a protective barrier against UV rays, water and salt; some sealers also protect against oils and gasoline. A sealer locks in the components of asphalt pavement to help hold it together. It also helps to keep asphalt pavement flexible by sealing in the asphaltic oils. After new construction or resurfacing, it is advisable to wait one year before applying sealer. Thereafter, sealer should be reapplied approximately every 24 to 60 months, depending on the sealer used on the job, traffic and the pavement condition before application.

Most manufacturers make refined tar and asphalt-based sealers, and each type can be polymer modified or non-modified. Refined tar sealer is the most commonly used east of the Rockies, and, in contrast to asphalt sealer, is slower to oxidize, which provides longer-lasting protection against the elements and resistance to fading. Refined tar is also resistant to petroleum fluids, which readily softens and dissolves the asphalt that glues together stones in the pavement.

However, refined tar is economically available only in the eastern and Midwest U.S. because refined tar production is confined to five producers located in the eastern U.S. and southeastern Canada. This makes refined tar sealer too costly to produce in or deliver to western states. In contrast, asphalt bitumen, used to make asphalt-based sealers, is widely available across the U.S., which makes asphalt-based sealer available throughout the country. Though not fuel-resistant or as durable as refined tar, asphalt-based sealers protect and extend the service life of asphalt pavements.

In addition to basic refined tar and asphalt emulsion sealers, there are premium, polymer-modified versions of each type. Polymers enhance film strength and decrease tearing and cracking due to expansion and contraction of asphalt during changes in pavement temperature. While these premium grades cost more up front, they are more cost-effective in the long term and more beneficial to the restaurant's bottom line. Restaurant owners often state that sealcoating is the most disruptive maintenance procedure to their business. Including a polymer-modified, higher-performing pavement sealer in your specification may cost 15 to 25 percent more on the front end but can add 50 to 65 percent longer life than conventional, non-modified sealers on the back end. This reduces both frequency of applications and disruptions while lowering annualized maintenance cost during the pavement's lifecycle.

Despite a growing body of science that supports their safe use, refined tar sealers have come under pressure from some environmental groups. They have even been banned in some places. On the other hand, asphalt emulsion and other non-refined tar sealers are suitable for use nationwide. Your manufacturer or contractor can answer any questions about this issue.

Be sure to ask your contractor about additives, too. The climate can help dictate the use of additives to enhance

adhesion (bonding to pavement), cohesion (strength of the film), drying and curing time to improve color and to reduce tracking. Sand should also be added to increase traction.

On the day of the job, pavement and ambient air temperatures should be at least 50 degrees Fahrenheit (and rising) up to 95 degrees Fahrenheit. There should be no rain, fog or frost for 24 hours prior to and after application. For best results, the surface should be power washed and blown or swept prior to application. Any oil or gas spots should be pre-treated, and oxidized surfaces should be primed.

Sealer can be applied using two methods: squeegee or spray. Squeegee is a slower process than spray application. With squeegees, the material is not under pressure and is not affected by wind. When applied (using a broom, brush, rubber squeegee or machine), it fills voids in the pavement. But, it can be more difficult to control the application rate and squeegee marks may appear if not properly spread. In contrast, the spray method applies sealer evenly over the entire surface, better controls material yield and leaves no marks. But it is not recommended for windy conditions. With either method, uniform coverage is critical, and the first coat must dry completely—usually over a four-hour period—before a second coat is applied.

One common mistake to avoid is opening the parking lot too soon after sealcoating. Sealer can be dry to the touch in minutes, but that doesn't mean it is ready for traffic. A newly applied, dry-to-the-touch coating can tear or re-absorb water if car tires, rain or sprinklers are introduced too soon after application. That is why it is very important to disengage sprinklers and keep traffic off a newly sealed surface for a minimum of 24 hours. The complete curing process, when water has fully evaporated from the coating and a hard film has formed, can take as long as three weeks to one month. It is normal to see some minor wheel scarring for a week or two after job completion, especially during the warmer parts of the day. This condition will decrease with each passing day until the coating reaches final cure.

### The Third Step: Marking the Way

The finishing touch is applying clearly marked striping. This procedure is critical to direct people and traffic safely around the property. After the initial application, restriping should occur every two to three years. This timeframe may vary depending on the amount of sun exposure, traffic load or snowplow damage the site has endured, all of which contribute to fading or otherwise compromising paint lines.

For striping over new asphalt or fresh sealer, use a fast-dry latex acrylic, which is water based. An acetone acrylic paint, which is solvent-based, also may be used for better performance and longer-lasting lines. The solvent-based acrylic will last longer than the water-based one because it has a much harder resin after curing that improves resistance to abrasion over time. Crosswalks, stop bars and other cross-traffic markings should be painted using more durable solvent-based paints: chlorinated rubber, alkyd or acetone acrylic. If truck-mounted sweepers are used for periodic lot maintenance, then the entire lot should be striped with the acetone acrylic paint.

When re-striping existing lines, solvent-based paints will perform much better and last longer than other options. Re-striping of existing latex lines with latex paint can cause poor bonding issues, resulting in delamination. Solvent and water-based paints should be applied with airless or air-pressurized paint machines to create crisp, professional lines.

Be sure your contractor uses a paint that complies with local air quality laws, which can vary from region to region and from state to state. All paint types are available in low-VOC formulas to comply with air quality laws in all states.

Ultimately, a pavement maintenance plan is only as good as the products and processes that are specified. It is imperative to understand the site-specific factors within your portfolio that impact choice of materials, equipment and application processes to achieve successful results. Without this knowledge, the entire plan may be compromised and end up costing you more in the long run. By educating yourself and asking the right questions, you can be sure you're making the best decisions for the long-term health of your pavement assets. Now, about that roof

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Harry Carter, Regional General Manager for GemSeal Pavement Products, has decades of sales experience, both in the roofing and paving industries. For the last 34 years, he has directed sales and operations in the Atlanta and Greensboro, N.C., markets. Relating with clients has strengthened his understanding of common pavement challenges and allows him to anticipate needs and recommend effective solutions.