

Filling and Sealing the Cracks

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Any asphalt-paved surface is subject to cracking at some point during the duration of its life. Cracks occur when stress is built up in the surface layer that exceeds the strength of the pavement causing fissures or cracks. Cracks come in many sizes and shapes – categories of cracks include fatigue cracks, longitudinal cracks, transverse cracks, block cracks, reflection cracks, and edge cracks. These cracks should be treated in order to preserve the lifespan of the paved surface. The purpose of crack treatment is to protect underlying pavement from water infiltration, destructive impurities and incompressibles; to maintain pavement integrity and strength; and to improve ride quality smoothness and reduce pavement deterioration. To receive the most benefit from crack treatment, treat the pavement early when the cracks first appear in order to preserve and extend the life of the pavement for the maximum amount of time possible.

The approach to crack treatment is different for different customer types. For example, home owners or very small businesses may receive benefit using cold-pour crack treatment, which does not require equipment to install. For more longevity, homeowners and small businesses may advance to direct-fire hot-applied sealants that require minimal equipment to install. Larger businesses, airports, roads and highways though will require hot-applied crack treatment and more equipment to install.

Determining crack type

In order to properly repair a crack, first assess the pavement condition to understand the amount and severity of the distress. This will help you determine if treating the crack will provide benefit to the pavement. Some pavements are in too poor of a condition to benefit from crack treatment. Most pavements though will be able to be treated and receive years of benefit.

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Crack Filling and Sealing

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Next determine the movement of the cracks in the pavement. Pavement is flexible and does move. Some causes of pavement movement include changes in the temperature due to sun and climate, traffic moving over the surface and movement in the soil. Cracks can be separated into categories of "working" and "non-working" cracks. According to the Federal Highway Administration's definition, working cracks are cracks that move greater than or equal 1/8 inch (3 mm) annually. Non-working cracks move less than 1/8 inch (3 mm) annually. While all cracks have the potential to be working cracks, generally transverse or longitudinal cracks are considered working cracks.

After determining crack movement, determine the service life you desire for your crack treatment. If your customer desires a long service life such as five to seven years or longer, you will need to rout or saw the cracks and use high-performance sealer or filler. If a couple of years of service life is adequate, you don't need to rout or saw the cracks as long as you continue to use a high-performance sealant or filler. Routing or sawing is the process of using a machine to clean

the crack. By routing or sawing the crack you will remove the dirt and debris, remove the oxidized and deteriorated asphalt near the crack, and create a new, clean reservoir and a strong surface to bond with the crack treatment that can double the service life of the treatment. The rotary-impact router is the most recommended and commonly used machine because it has the highest production rate, the lowest cost of operation, good maneuverability, and causes minimal additional damage to the pavement when using carbide-tipped router bits. New innovations in routing such as self-propelled machines with dust control make routing easier and cleaner than ever before.

Now that you know the pavement condition, the movement of the cracks, the service life you desire, and whether you are placing the material in a reservoir or capping the crack, it is time to select the crack treatment. **Stay tuned : We will be covering crack treatments in next month's article.**

To learn more about crack filling and sealing, please contact:

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