

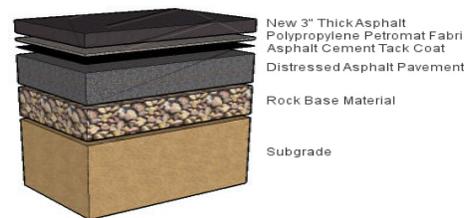


# Asphalt and Parking Lot Repairs What - When - How



## Overview

Over time, asphalt can lose integrity and flexibility. Simply because a parking lot is showing wear and tear, serious cracking, or standing water does not necessarily mean it needs to be replaced or completely rebuilt from the sub-base up. The type of repairs that are often addressed during the lifetime of the parking lot vary in range of scope and cost, but typically fall under one of these six main categories.



## Regular Maintenance

It is important to implement a **pavement maintenance plan** and start budgeting for asphalt maintenance as soon as the new pavement is installed. Yearly crack filling and routine seal-coating should begin during the second year to keep your pavement in the best possible condition. Any cracks that are spotted should be repaired immediately. If there's more extensive damage, consider resurfacing the top layer as soon as you can to prevent further damage.



### Common Asphalt Maintenance Questions:

#### How Long Should New Asphalt Last?

Asphalt's longevity depends on three primary factors: the geology of the soil, the installation quality, and the maintenance it receives. When done properly, **resurfacing** existing asphalt can add an extra 8-15 years of life to the current asphalt. A newly installed or **reconstructed** parking lot will last anywhere between 20-30 years with proper care and maintenance

## Seal Coating

Once the top coat of the asphalt binder has been lost the surface will become brittle and start to ravel (top layer of rocks will loosen and start to come out), the flexibility will lessen and cracks will appear. Water will get into the cracks going down to the base layer and damage the pavement's load bearing capacity. Seal-coating provides a flexible, stable and homogeneous compound to act as a barrier to protect asphalt surfaces from the damaging effects of the elements.



## Common Asphalt Seal-Coating Questions:

### When should a parking lot be seal-coated for the first time?

Approximately one year from installation. Ideally, new asphalt should be sealed as soon as the surface has fully cured (as little as 6 months). Sealer can only be applied when it is sunny and the temperature is 50°F and rising.

### How does seal-coating work?

Seal-coating is like sun block for the binder within the asphalt. It is this binder that needs to be protected from deterioration. This binder is highly subject to problems with ultraviolet rays, moisture and traffic overload. By placing a sealcoat over the asphalt you are placing a protective barrier over the asphalt. Applying a sealcoat every 3-6 years will double the life of your asphalt, saving you from having to carry out costly repairs.

### How Long before new seal-coating can be driven on?

Ideally it should be allowed to cure for 24 hours or at least overnight.

### Why are there tire marks showing on the newly seal-coated parking lot?

The material dries to the touch in a few hours but it takes several weeks to fully harden, especially in the hot sun. Expect tire and steering marks as the sand is sheared away from the sealer but over time these marks will go away.

### Will sealcoat waterproof cracked pavement?

Absolutely not! A sealcoat is a preservative coating but has no structural value. Minor cracks should be sealed with a hot pour, rubberized material prior to sealcoating. Network cracked (alligator cracking) areas should be excavated and repaired with a sufficient thickness of asphalt prior to sealcoating.

### Will sealcoating add another couple of years of life to old, cracked pavement?

Unfortunately no. This is a common misconception. Sealcoating at the end of a pavement life cycle is a waste of money. It would be like someone painting a car that had rusted out. Cracks will only be highlighted and water will continue to have a free path to the base layer. If a driveway or parking lot is too far gone, it is better to save the money spent on seal-coating and apply it towards more extensive repairs.

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## Asphalt Resurfacing (Overlay)

If the surface has become heavily oxidized with some cracking, but the base remains structurally sound, the property owner can choose to have the area resurfaced (also known as overlaying) with a new layer of asphalt. Not to be confused with seal coating, resurfacing adds an additional layer of asphalt over the older one. This new layer is generally 1.5 – 2 inches in depth.

The finished results after overlaying will only be as good as the existing surface that it is going on top of. All existing damage to the old pavement—such as cracks, soft spots and holes—will need to be repaired before the resurfacing. Linear cracks (cracks that form nearly straight lines) and those that are less than a quarter-inch wide can be repaired easily with liquid crack-fillers. Cracks that are larger than a quarter-inch wide or that are more than a few inches deep often signal more significant issues; filling in the cracks will only temporarily solve the problem. Any existing cracks that go un-repaired will reflect through the new layer of asphalt.

If an asphalt parking lot is approaching 20 years of age or if 25-35% of the total surface area is in need of substantial repair due to subgrade or other significant damage, it is generally more economical and effective long term to completely reconstruct the parking lot.



## Common Asphalt Resurfacing Questions:

### How long should newly resurfaced pavement last?

Factors that determine pavement lifespan include weather patterns, the harshness of winter (freeze-thaw cycles), how many heavy trucks use the pavement in question, the thickness of the new asphalt layer, the exact condition of the subgrade prior to resurfacing and how well the new surface is taken care of through routine maintenance. An average pavement overlay lifespan can be from 8-15 years, depending on the above factors.

### Can you resurface over cracked pavement?

Yes, sometimes. Linear cracks (cracks that form nearly straight lines) can be filled with a hot rubberized sealant. Alligator or network cracking requires much more extensive work to fix. If a small area has alligator or network cracking, it should be fixed prior to resurfacing. If the entire lot has 25-35% alligator or network cracking, complete pavement reconstruction (not just resurfacing) is most likely needed.

### Why can't a parking lot be resurfaced or reconstructed during the winter months?

Resurfacing in cold weather leads to cold "seams" which can contribute to premature deterioration and failure. The general rule of thumb is to pave when temperatures are 50° F and rising. In fact – the hotter the weather the better the asphalt will seal and last over time.

### How long before traffic is permitted on a newly resurfaced lot?

Rubber tire traffic will not damage the new asphalt but care should be taken to avoid sharp turns (especially steering marks created by non-moving vehicles and sharp turns).

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## Pothole Repairs

Potholes are caused by weakening of asphalt, which is caused by a weakening of the subbase - and that is generally caused by two things: water, and wear and tear. Preventative measures can be taken against both of these. Potholes can be prevented by filling cracks as soon as they appear.



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## Crack-Fill

Linear cracks (cracks that form nearly straight lines) can be filled with a hot rubberized sealant, or paving fabric can be laid over cracks before resurfacing. Alligator or network cracking require much more extensive work to repair. If the entire lot has alligator or network cracking covering 25-35% of its surface, or has more extensive damage, complete pavement reconstruction (not just parking lot resurfacing) is probably needed.



### Common Asphalt Crack-Fill Questions:

#### What causes the cracks in my asphalt?

All pavement failure starts with a crack. Asphalt cracking is caused primarily by the effects of sun and moisture and ground movements. Asphalt is flexible when new, but with age it becomes more rigid and is less able to tolerate vertical deflections. This causes tension and pulling apart in the pavement and eventually cracking. Once the crack is open, moisture is able to reach the pavement subsurface and soften it, or freeze and expand it. Soon the pavement begins to deteriorate around the crack, creating a larger problem.

#### What causes alligator or network cracking?

Usually alligator cracking is caused by excessive deflection of the pavement due to an unstable base or

due to repeated traffic loads heavier than what the road was built to withstand. If this cracking is not addressed then it will expand and cause more damage. Eventually these areas may even develop rolls, low areas and potholes in the pavement surface and mud and dirt can begin to emerge through the cracks from below the base layer.

#### **When should cracks be sealed?**

The sooner the better. Any crack will allow moisture to penetrate to the subsurface and the larger the cracks the faster this happens. The goal of a good pavement management plan should be to keep the moisture from entering the asphalt pavement; however, only isolated cracks should be sealed, never alligatored or networked areas as this type of cracking demonstrates far more damage than the cost of crack filling can address.

#### **Why can't alligatored areas be crack-sealed?**

When alligatored areas appear in a parking lot it means that water has penetrated the sub-grade layer and the pavement can no longer support the weight of the traffic. Crack-sealing is not the solution at this stage.

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## **Reconstruction**

This is the most extensive asphalt repair and can be applied to the entire parking lot or specifically marked areas. The first step is removing the top layer of the asphalt and a portion of the base layer through the use of a milling machine. A new portion of base layer and top coat layer of asphalt is then installed. When there is extensive damage or alligator (network) cracks (25-35% of the surface area or more), it is more effective and cost-efficient long term to completely reconstruct than to do an overlay.



#### **Common Asphalt Resurfacing Questions:**

##### **When should pavement be reconstructed?**

When there is extensive damage or alligator or network cracking (25-35% of the surface area or more), it is more effective and cost-efficient long term to completely reconstruct than to do an overlay.

##### **How does cold weather effect lot reconstruction**

Reconstructing asphalt in cold weather leads to cold "seams" which can contribute to premature deterioration and failure. The general rule of thumb is to pave when temperatures are 50° F and rising. In fact, the hotter the weather the greater the compaction and seal as the asphalt cures.

##### **How long should completely reconstructed pavement last?**

This again is dependent on many factors as outlines above for resurfacing. On average, however, with proper routine maintenance a newly reconstructed parking lot or road can last from 15-25 years.

##### **Why are there scuff marks on new asphalt surfaces?**

Scuffing of newly sealed or paved surfaces are inevitable as it is the nature of asphalt material combined with hot weather. After about a month those scuff marks are rarely noticeable. The scuffs are just the sand being displaced and will wash away. Asphalt requires about 6 months to fully cure. Until that time it is tender and best to be a little careful. Avoid tight turns, and turning the steering wheel when the vehicle is not moving. Avoid sudden stops if you can.

##### **Why doesn't asphalt stay that nice rich black color?**

The UV rays from the sun breakdown the carbon bonds in the asphalt oil thus causing the color to change from black to gray. The gray color of the asphalt is a good indicator that a seal coat is needed.