

Asphalt Paving Inspection and Maintenance

Inspection and Evaluation

- The first step is an evaluation of all parking areas and access roads with respect to surface condition, structural strength and drainage.
- Inspection should be made by walking the parking areas and access roads. This enables the inspector to notice small cracks and defects.
- In all cases of “Pavement Distress”, it is important to determine the cause or causes of failure. This determination will facilitate repairs that will both correct the defect and prevent its recurrence.

What to Look for:

Pavement in need of maintenance or repair can exhibit any or all of the following conditions:

- **Raveling** - This is the progressive separation of aggregate particles in a pavement from the surface downward. Fine aggregates come off first and leave little “pock marks” in the pavement surface. As process continues, larger and larger particles are broken free, and the pavement soon has a rough and jagged appearance. Raveling can result from lack of compaction during construction, construction during wet or cold weather, dirty or disintegrating aggregate or poor mix design.
- **Alligator Cracks** - These are interconnected cracks forming a series of small blocks resembling an alligator’s skin or chicken wire. In most cases, alligator cracking is caused by excessive deflection of the surface over unstable sub-grade or lower courses of pavement. Affected areas in most cases are not large; sometimes they will cover entire sections of a pavement, when this condition exists, it usually is due to repeated loadings exceeding the load-carrying capacity of the pavement.
- **Upheaval** - Upheaval is the localized upward displacement of a pavement due to swelling of the subgrade or some portion of the pavement structure. In colder climates, upheaval is commonly caused by expansion of ice in the lower courses of the pavement sub-grade. It may be caused by the swelling effect of moisture on expansive soils.

- **Pot Holes** – These are bowl shaped holes of various sizes in the pavement, resulting from localized disintegration of the pavement under traffic. Contributory factors can be improper asphalt mix design, insufficient pavement thickness, or poor drainage.
- **Grade Depressions** – Depressions are localized low areas of limited size which may or may not be accompanied by cracking. They may be caused by traffic heavier than that for which the pavement was designed, by settlement of the lower pavement layers, or by poor construction methods. A depressed cracked area frequently denotes a plastic failure in the base or sub-grade.

What to Do:

For pavement in good condition, fine cracking and some raveling of the fine aggregate may be exhibited, which are the ordinary effects of some wear and tear. The remedy for this condition is the application of a light seal coat, such as fog seal or an emulsified asphalt slurry seal. A seal coat is a thin asphalt surface treatment used to waterproof and improve the texture of an asphalt wearing surface (service life should be one to two years).

For pavement in fair condition, which is characterized by random cracks of up to 1/2" in width, and raveled aggregate. The random cracks should be filled with emulsified asphalt slurry, or a light grade of liquid asphalt mixed with fine sand. The cracks should be prepared for filling by removing vegetation, cleaning with a broom or a stream of compressed air and the application of a soil sterilizing agent if weed growth is anticipated. Cracks are then filled using a hand squeegee and a broom. After the cracks have been filled, the parking lot or road access should be covered with an asphalt overlay (service life should be six to 10 years).

Pavement in poor condition may display random cracks, raveled aggregate, depressions, local alligator cracked areas, pot holes and perhaps upheaval. First, the areas of local distress should be repaired. This is accomplished by constructing a full-depth asphalt patch. done as follows:

- Remove the surface and base as deep as necessary to reach firm support, extending at least a foot into the good pavement outside the cracked area. Make cut square or rectangular with faces straight and vertical.
- If water is cause of failure, install sub surface drainage if necessary. Then compact the subgrade until it is firm and unyielding.
- Apply a tack coat to the vertical faces. This is a light application of liquid asphalt or emulsion used to ensure a bond between the existing pavement and the patch.
- Backfill the hole with a dense-graded hot asphalt plant-mix.

- Compact in layers if the hole is more than 6 inches deep. Compact each layer thoroughly. Compaction should be done with equipment suited to size of the job. A vibratory plate compactor is excellent for small patches; a roller may be more practical for larger areas.
- Use a straightedge or a string line to check the riding quality of the patch.

Following the repair of local distress, the cracks should be filled. Depressed areas should be restored to the proper cross-section by applying a leveling or wedge course. An asphalt overlay (service life should be six to 10 years) or an asphalt seal coat (service life should be two to four years) should then be applied.

Other Maintenance Techniques:

These suggested repair procedures are not the only effective maintenance techniques. Some parking lots will develop problems other than the more common pavement defects discussed. Alternative methods and materials are commonly used in some areas to adapt to local conditions. The examples given should provide a useful guide to the types of repairs generally required to maintain a parking lot and access roads.

Preventive maintenance means the early detection and repair of minor defects, before major corrective action is necessary; it is the only proper way to care for a parking lot and access roads. A parking lot is an investment, as is a building or any other structure. Moreover, proper maintenance will serve to carefully protect and preserve the asphalt surface for many years.

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 10733 Sunset Office Drive
 Suite 300
 St. Louis, MO 63127-1020
800-843-5233
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