DISTRESS IDENTIFICATION

Guidance for determining the type, severity, density and cause of asphalt pavement distresses.

Asphalt pavements are generally affected by two major distresses – cracking and rutting. Cracking occurs when the asphalt is not flexible enough to withstand the applied loads, and rutting occurs when the asphalt is too flexible to resist these loads. Accurate distress identification is the key to determining the right treatment for the right pavement at the right time.

Cracking in a pavement can be detrimental to its structure. Often, cracking begins at the bottom of the asphalt layer, so by the time a crack is visible at the surface, the entire pavement layer is affected. After a crack has formed, water (a.k.a., “the enemy”), can penetrate the structure, softening the subgrade and accelerating deterioration. Common types of cracks include:

- Fatigue cracks are caused by excessive traffic loads or inadequate layer support. Severe fatigue cracking is often referred to as ‘alligator cracking’. This type of cracking indicates a structural failure, and is usually most evident in the wheel path. Potholes may develop in these locations.
- Transverse cracks are perpendicular to the direction of traffic. They are not usually structural, and may be caused by aging, uneven support from the base or subgrade, or segregation during construction.
- Longitudinal cracks are parallel to the direction of traffic. Cracking in the wheel path indicates a structural issue, while cracks outside the wheel path may be caused by low density or segregation.
- Block cracking forms a pattern of rectangular cracks, usually related to aging.
- Reflective cracking is typical of asphalt is placed over a concrete pavement.
- Edge cracks appear near unconfined lane edges with no shoulder or curb.

**How To Measure?** Place a ruler perpendicular to the crack and determine the width. Because cracks are not uniform, it is sometimes difficult to assign crack width. Some portions of the crack may be ¼” wide, while another portion may be ½” wide. The recorded crack width should be the largest width present for 10% or more of the total crack length.

Rutting: Longitudinal depressions in the wheel path indicate a lack of stability in the pavement structure. These ruts trap water and ice, causing potential safety issues. Rutting is the consolidation or lateral movement of the pavement layer, caused by either movement in the surface mixture or insufficient subgrade support. Mixture rutting is limited to the surface layer, and can be corrected by removing and replacing the surface. Subgrade rutting involves consolidation in the underlying layers, and requires deeper solution. Related distresses include shoving, bleeding, flushing, and stripping.

**How To Measure?** Place a rut bar (straightedge) across the rut and measure the vertical distance to the surface. Actual measurements are best, but general severity levels may be assigned as:

- Mild: < ¼”
- Moderate: ¼” to ½”
- Severe: > ½”