IDAHO TRANSPORTATION DEPARTMENT

PAVEMENT RATING GUIDE

2011

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1.0 Pavement Surface Distress Classification

The following graphics and methodology are the basic rules for pavement surface distress classification for the Idaho Transportation Department as of 2010.

Variables include:

- the size of cracks
- locations of cracks
- percentage of road surveyed that shows distress
- type of road surface

The variables will be listed with explanations, and then examples will be given to show how a classification index is given.

The surface distress evaluation shall be performed on the most traveled lane, which the majority of the time shall be the right-most lane. In cases with several lanes in the same direction, the lane with the worst pavement shall be rated.

Pavement, whether it is flexible (asphalt) or rigid (concrete) has cracking indices from 0.0 to 5.0 in 0.1 increments. 5.0 is good pavement with no visible distress and 0.0 is maximum distress classification.

It should be noted that the cracking indices of a roadway shall be returned to a 5.0 when a project is performed, unless that project is purely a maintenance project such as crack sealing or a sealcoat. Maintenance projects shall receive a crack index increase of 0.3.

2.0 Crack Severity- Flexible (Asphalt) Pavements

Crack severity measures the depth and width and thickness of a crack. It is rated on a 3-point scale, from slight to moderate to heavy.

2.1 Longitudinal and Transverse Cracking

Longitudinal cracking is pavement distress that forms cracks parallel to the centerline stripe (running in the direction of traffic). They are caused by inadequate bonding during construction or reflect cracking in the underlying pavement.

Transverse cracking is pavement distress that forms cracks perpendicular to the centerline stripe. They are often regularly spaced. The cause is movement due to temperature changes and hardening of the asphalt with aging.

Slight Severity: Crack width is hairline up to 1/8”

Moderate Severity: Crack width is 1/8”- 1/4” or there is a dip 3”- 6” wide at the crack

Heavy Severity: Crack width is more than 1/4” or there is a distinct dip of 6”- 8” wide or there is visible vegetation in the crack.

2.2 Alligator Cracking

Alligator cracking is interconnected cracks forming small pieces mimicking an alligator's skin. This is caused by failure of the surfacing due to traffic loading (fatigue) and very often also due to inadequate base or subbase support.

Slight Severity: Large alligator cracking, 3 feet or more in size

Moderate Severity: Alligator cracking 1 foot to 2 feet in size

Heavy Severity: Alligator cracking smaller than 1 foot in size

2.3 Block Cracking

Block cracking is interconnected longitudinal and transverse cracks forming large blocks. Blocks range in size from 1' to 10' or more across.

Slight Severity: Cracks are barely visible, and are about 10' by 10' in size

Moderate Severity: Cracks begin to form “branch-like” formations, breaking off into smaller cracks. Block size is 5’- 10’.

Heavy Severity: Crack widths are significant, block edges have begun to show alligator cracking and potholes may be starting to form.

2.4 Potholes/Patching

Patches are original surface repaired with new asphalt surface material. Potholes are loss of pavement material caused by traffic loading, fatigue and inadequate strength. They are often combined with poor drainage.

Slight Severity: A pothole is noticeably present.

Moderate Severity: The pothole needs remedial attention soon.

High Severity: The pothole needs immediate maintenance.

2.5 Edge Cracking

Edge cracking is the deterioration of the pavement surface edge. It is often caused by poor drainage.

Slight Severity: The edge is crumbling slightly and appears to have hairline alligator cracking. Shoulder is uneven.

Moderate Severity: The edge has crumbled and the shoulder is uneven, and the cracking is wider and easily visible at high speeds.

High Severity: The edge has completely fallen off of the pavement or the crack is very wide, making the pavement look crumbled or broken.

3.0 Crack Extent- Flexible (Asphalt) Pavements

Cracking extent measures the amount of cracking in a pavement section. It is rated on a 3-point scale, from light to moderate to heavy.

3.1 Transverse Cracking

Light Extent

Light extent of cracking corresponds to 1-4 cracks per 500 feet.

Moderate Extent

Moderate extent of cracking corresponds to 4-10 cracks per 500 feet.

Heavy Extent

Heavy extent of cracking corresponds to more than 10 in 500 feet, or less than 50 feet in between cracks.

3.2 Longitudinal cracking

Light Extent

Light extent of cracking corresponds to 100 feet or less of cracking per 500 feet.

Moderate Extent

Moderate extent of cracking corresponds to 100- 500 feet of cracking per 500 feet.

Heavy Extent

Heavy extent of cracking corresponds to more than 500 feet of racking in 500 feet.

3.3 Alligator, Block, Edge and Pothole/Patching cracking

Light Extent

Light extent of cracking corresponds to 10% of less of the total evaluation section having cracking.

Moderate Extent

Moderate extent of cracking corresponds to 10-40% of the total evaluation section having cracking.

Heavy Extent

Heavy extent of cracking corresponds to more than 40% of the total evaluation section having cracking.

4.0 Crack Index Ratings- Typical Examples for Flexible (Asphalt) Pavements

Pavement Rating: 5.0

Pavement is brand new or in excellent condition. No cracks are visible. Pavement requires no maintenance.

Pavement Rating: 4.5

4 or less transverse cracks in 500 feet. Short hair-line transverse cracks near the edge, 10'- 15' spacing. Little or no maintenance required.

Pavement Rating: 4.0

Longitudinal crack near the edge for most of the section. Fine alligator cracks near the edge of the pavement, 10' - 15' spacing. Transverse cracks at 20' spacing. No patching or very little patching. First signs of aging are showing. Some traffic wear is showing.

Pavement Rating: 3.5

1 longitudinal crack near the wheelpath and transverse cracks at 80' spacing. First signs of block cracking are visible. Occasional patching.

Pavement Rating: 3.0

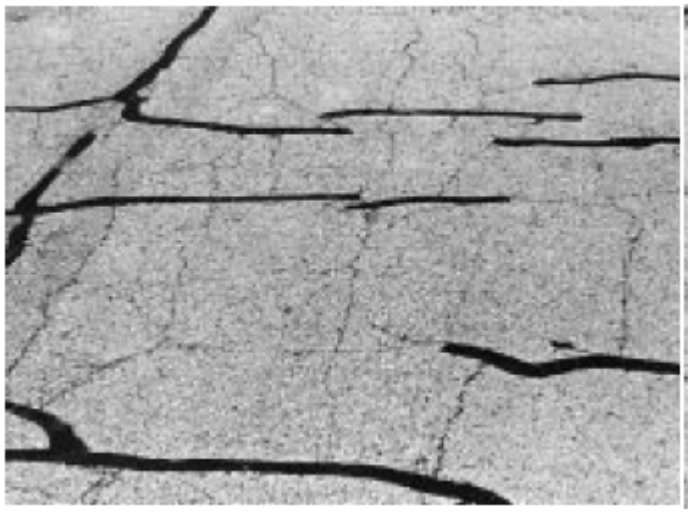
Transverse cracks at 15' spacing. Longitudinal crack in the wheelpath. Block cracking over 50% of the surface. Patching in fair condition. Slight rutting or distortions (1/2" deep or less).

Pavement Rating: 2.5

1 longitudinal crack in the wheelpath and transverse cracks at 40' spacing. One or two short longitudinal cracks in the wheelpath and transverse cracks at 20' spacing. Less than 25% of the surface with alligator cracking. Patches in fair to poor condition. Occasional potholes.

Pavement Rating: 2.0

Transverse cracks at 7' spacing. Transverse cracks at 20' spacing, longitudinal in wheelpath, some alligator cracking (25%- 50% of the surface). Severe block cracking.



Pavement Rating: 1.5

Transverse and longitudinal cracks plus some alligator cracking in the wheelpath. Alligator cracking over 50% of the surface. Severe distortions (over 2" deep). Extensive patching in poor condition. Several potholes.

Pavement Rating: 1.0

Large block (more than 10') alligator cracking over 75% of the surface. Extensive patching in very poor condition. Several potholes. Severe distress with extensive loss of surface integrity.

Pavement Rating: 0.0

Total pavement failure requiring reconstruction.

5.0 Crack Severity- Rigid (Concrete) Pavements

Crack severity measures the depth and width and thickness of a crack. It is rated on a 3-point scale, from slight to moderate to heavy.

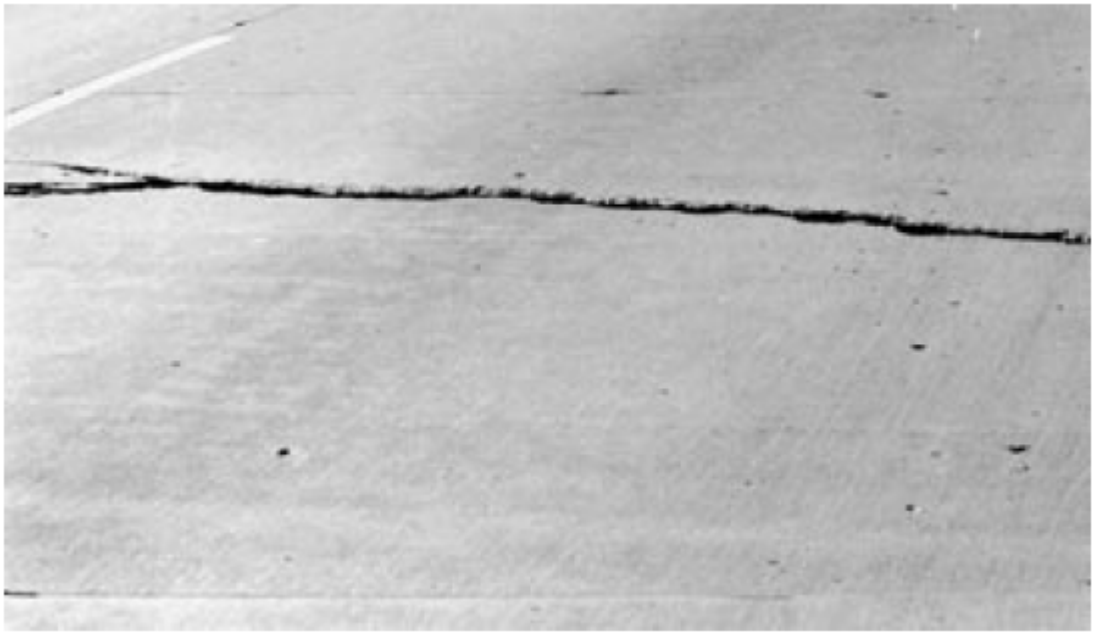
5.1 Transverse slab cracks

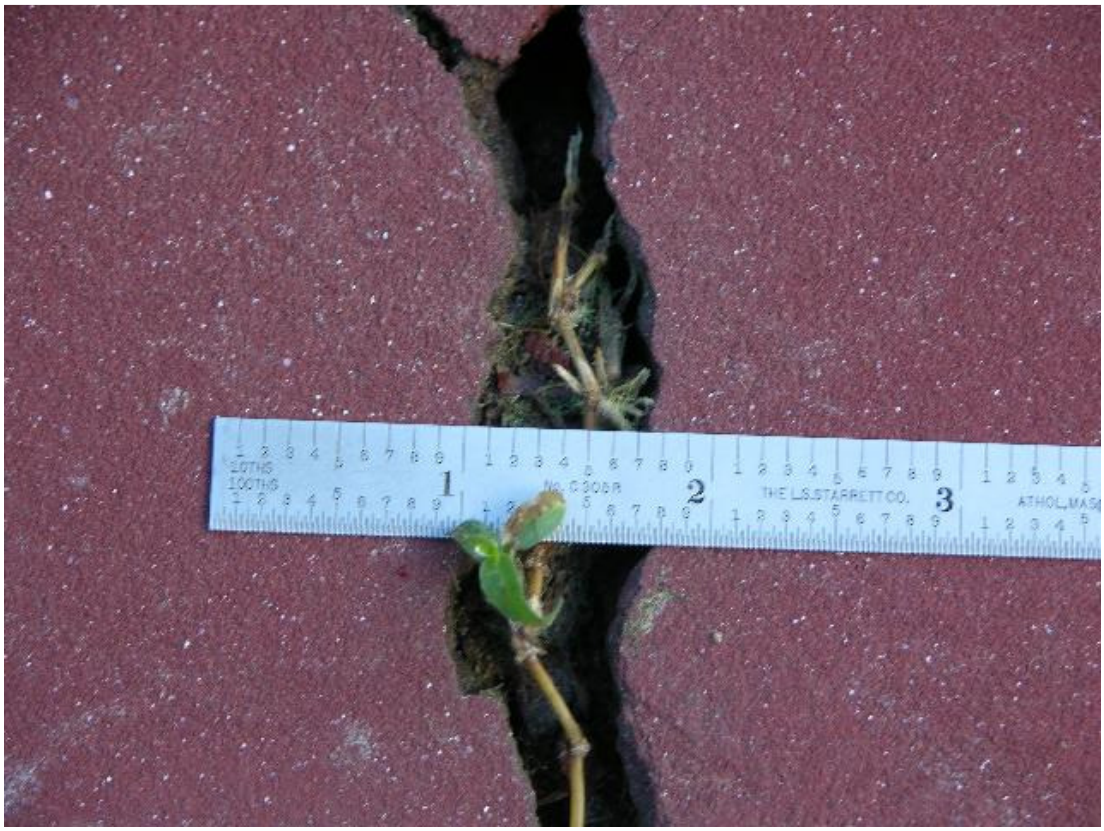
Transverse slab cracks appear parallel to joints and can be caused by thermal stresses, poor subgrade support or heavy loadings.

Slight Severity: Crack width is hairline up to 1/8”

Moderate Severity: Crack width is 1/8”- 3/8”

Heavy Severity: Crack width is larger than ½" or has visible vegetation



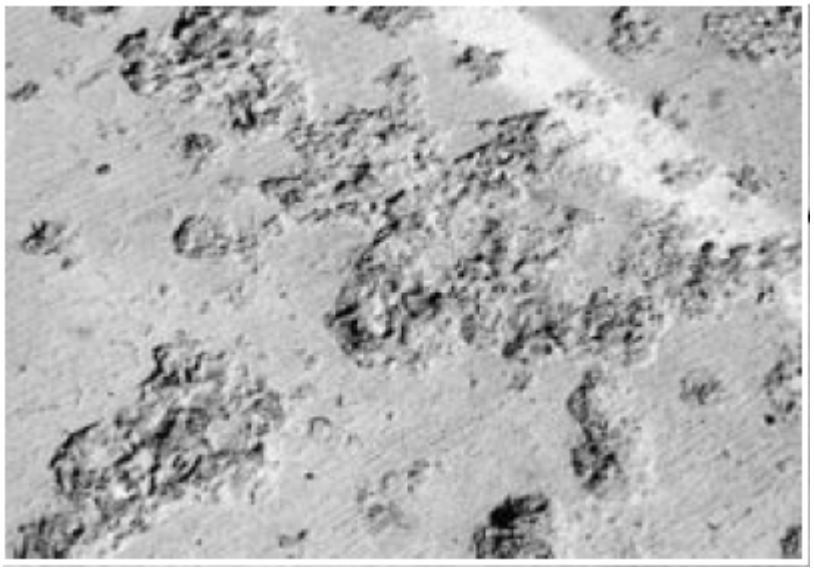


5.2 Scaling

Scaling is surface deterioration that causes loss of fine aggregate and mortar. Often caused by concrete which has not been air-entrained, the surface becomes susceptible to freeze-thaw damage. Scaling is also aggravated by the use of deicing chemicals.

Slight Severity: Scaling is less than 1/2" in depth.

Moderate Severity: Scaling is between ½" and 1" in depth.



High Severity: Scaling is deeper than 1” in depth.

5.3 Spalling

Spalling is the loss of a piece of the concrete pavement from the surface or along the edges of cracks and joints. Cracking or freeze-thaw action may break the concrete loose, or spalling may be caused by poor quality materials.

Slight Severity: Spalling does not occur near a crack and is less than ½’ in area.

Moderate Severity: Spalling is less than 3” from the crack face.

High Severity: Spalling is greater than 3” from the crack face.

5.4 Corner Cracking

Corner cracking is diagonal cracks near the corner of a concrete slab, forming a triangle with a longitudinal and transverse joint. Usually these cracks are within one foot of the corner of the slab.

Slight Severity: Corner crack appears to be hairline and is within 6" of the joint.

Moderate Severity: Corner cracks are deeper and wider than hairline but no pieces have come loose.

High Severity: Corner cracks are wide and deep and large pieces may be missing.

5.4 Meander Cracking

Meander cracking appears to wander randomly. They may cross a slab diagonally or meander like a serpent. Meander cracks may be caused by settlement due to unstable subsoil or drainage problems, or by utility trench settlement.

Slight Severity: Meander cracks are hairline in width.

Moderate Severity: Meander cracks are up to ½" in width and up to ½" deep.

High Severity: Meander cracks are larger than ½" in width and are over ½" deep.

5.5 Faulting

Joints and cracks may fault of develop a step between adjacent slabs. Faulting is caused by pumping of subgrade soils and creation of voids.

Slight Severity: Faults are less than ½" in depth.

Moderate Severity: Faulting is between ½" and 1" in depth.

High Severity: Faulting is larger than 1” in depth

6.0 Crack Extent- Rigid (Concrete) Pavements

Cracking extent measures the amount of cracking in a pavement section. It is rated on a 3-point scale, from light to moderate to heavy.

6.1 Transverse Slab, Corner and Meander Cracking

Light Extent

Light extent of cracking corresponds to less than 1 crack per 10 slabs.

Moderate Extent

Moderate extent of cracking corresponds to 1-2 cracks per 10 slabs.

Heavy Extent

Heavy extent of cracking corresponds to more than 2 cracks per 10 slabs.

6.2 Scaling and Spalling

Light Extent

Light extent of cracking corresponds to occurrence in less than 1 in 10 slabs.

Moderate Extent

Moderate extent of cracking corresponds to occurrence in 1-2 slabs in 10.

Heavy Extent

Heavy extent of cracking corresponds to occurrence in more than 2 slabs in 10.

6.3 Faulting

Light Extent

Light extent of cracking corresponds to 10% of less of the total evaluation section having faulting.

Moderate Extent

Moderate extent of cracking corresponds to 10-40% of the total evaluation section having faulting.

Heavy Extent

Heavy extent of cracking corresponds to more than 40% of the total evaluation section having faulting.

7.0 Crack Index Ratings- Typical Examples for Rigid (Concrete) Pavements

Pavement Rating: 5.0

Pavement is brand new or in excellent condition. No cracks are visible. Pavement requires no maintenance.

Pavement Rating: 4.5

Slight traffic wear in wheelpath. Slight map cracking or pop outs. 1 transverse crack in about every 25 slabs. No maintenance required.

Pavement Rating: 4.0

1 transverse cracks in every 10 slabs. 2 diagonal cracks in 10 slabs. 1 longitudinal crack (15' long) in every 10 slabs. Some pop-outs, map cracking or minor surface defects. Partial loss of joint sealant. Isolated meander cracks.

Pavement Rating: 3.5

More extensive surface scaling. Some open joints. Isolated transverse or longitudinal cracks, tight or well sealed. Few utility patches. First noticeable settlement or heave area.

Pavement Rating: 3.0

1 transverse and 2 diagonal cracks in about 10 slabs. 4 diagonal cracks in 10 slabs. 2 longitudinal cracks about 15' in length in 10 slabs. Moderate to severe polishing over 25% of the surface. Some joints and cracks have begun spalling. First signs of joint or cracks faulting (1/4"). Multiple corner cracks.

Pavement Rating: 2.5

Transverse cracks at approximately 20' spacing. Severe polishing, scaling, map cracking or spalling over 50% of the area. Pumping and faulting of joints (1/2") with fair ride. Several slabs have multiple transverse or meander cracks with moderate spalling.

Pavement Rating: 2.0

Most joints and cracks are open, with multiple parallel cracks, severe spalling or faulting. D-cracking is evident. Severe faulting (1") giving poor ride. Extensive patching. Many transverse and meander cracks.

Pavement Rating: 1.5

Extensive slab cracking, severely spalled and patched. Joints failed. Patching in very poor condition. Severe and extensive settlements or frost heaves.

Pavement Rating: 1.0

Restricted speed. Extensive potholes. Almost total loss of pavement integrity. Total reconstruction required.

Pavement Rating: 0.0

Total failure of pavement.