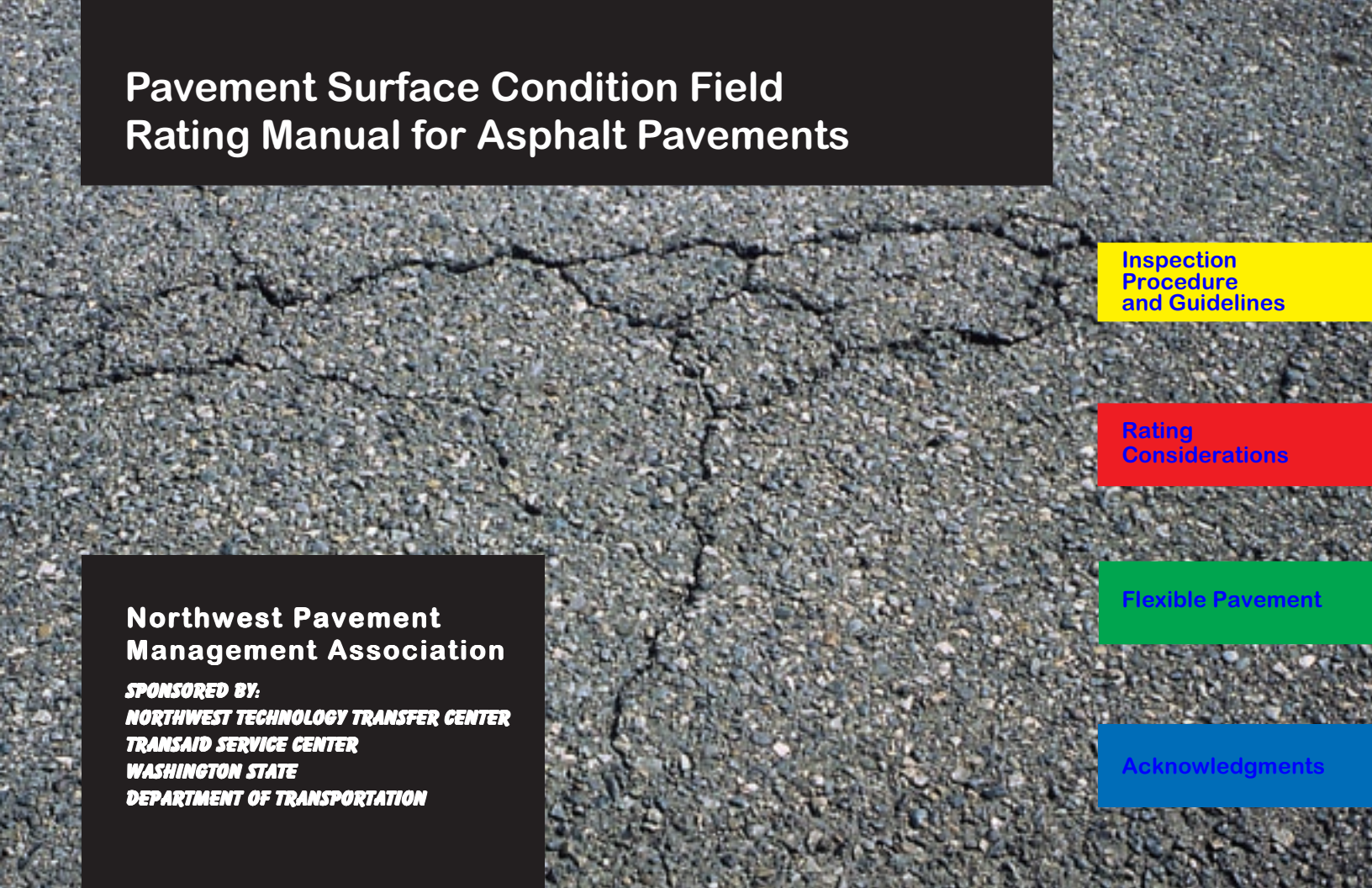
Pavement Surface Condition Field Rating Manual for Asphalt Pavements



Inspection Procedure and Guidelines

Rating Considerations

Flexible Pavement

Acknowledgments

Northwest Pavement Management Association

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NORTHWEST TECHNOLOGY TRANSFER CENTER
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CONTENTS

Inspection Procedure and Guidelines

These inspection procedures offer a method of determining pavement condition through observing and recording the presence of specific types and severities of defects or distresses in the pavement surface.

The elements of pavement condition rating are as follows:

1. The type of defect.
2. The severity of the defect.
3. The extent to which the road surface is affected by the defect.

There are several types of defects and several possible severities and extents for each defect. These are described and illustrated for flexible pavements in the following pages of this manual.

Rating Considerations

Listed below are important factors to consider when you collect pavement condition data.

- Each agency must decide whether to record the extent of the **predominant severity** of each defect type or to record the extent of **each severity** of each defect type. The agency must also decide whether to estimate/measure and record these extents using finite values or standardized ranges of values.

  *If the **predominate severity** procedure is used for each type of defect observed*, you should record only one severity, the **predominant severity**. Always record the higher rated severity if approximately equal proportions of more than one severity exist. The purpose is to establish a severity that represents the typical condition of the roadway segment. The extent you record is always the overall extent associated with all levels of severity for a given distress type. *This extent may be a range of values or it may be a finite value*. Your individual agency may wish to note (in the comments section of the form) the occurrence of any level of severity that is significantly higher than what you have recorded in the rating.

*If you are recording the extent associated with **each severity** of each distress type*, then instead of recording the total extent and the **predominant severity**, you will record the extent of **each severity** of each type of defect. It is recommended that a finite value (the actual percentage or count) of the extent is recorded for each of the severity categories as use of ranges will probably result in too large an extent for the total of the severities.

- Roads can be rated on foot or by vehicle. In urban areas, rating is frequently done on foot. The best driving speeds for observing the defects range from 2 to 5 miles per hour. A single lane is generally used, but if time and funds allow, an agency can measure more than one lane.

  ***Note:** Different values will likely be obtained in walking vs. driving and the agency needs to be aware of possible problems in comparing results obtained by using more than one technique.*

- The relative sun angle and direction of viewing the roadway surface will greatly affect your visual observation. Be sure to view the pavement from more than one direction occasionally during the survey to assure the true nature of the pavement surface is being observed.

- The time of year and weather (moisture and temperature) conditions over a given time period can also affect the severity and visibility of certain distresses. If at all possible, rate the roadway network at a similar time of the year and only while the pavement is dry.
- When rating a roadway, you must observe the entire area of the traveled roadway segment or sample and determine the defect severities and extents over this full pavement surface area.
- When rating composite pavements (such as asphalt over rigid pavement), classify cracks that may correspond with the concrete joints as distresses and rate these, and other cracks, as the type of crack they represent (transverse or longitudinal).
- When rating the width of cracks, use the average width, not the extremes. Cracks often vary in width and the intent is to rate the overall severity of the crack.

- Condition ratings apply only to the traveled surface of a road. Do not include the conditions of shoulders or other adjacent areas. Shoulder condition, drainage information, or other items may be accounted for and collected separately from or with the pavement rating data.
- Areas within the curb returns are considered a part of the intersection for rating purposes. Intersections are generally rated with a higher functional class street or in a given direction. Intersections may also be separately rated and recorded. Each agency needs to develop its own policy.
- If opposite sides of the roadway or individual lanes are rated separately, use separate forms and enter the data into the database as separate multilane segments.
- When any type of defect is not observed, write an “N” in the first space on the field form for that defect. The “N” indicates clearly that a defect was not present and reduces the potential for confusion when the data are entered into the database.
- Your PMS manager may wish you to observe and collect additional information during the survey. This might include such things as historical and physical information, documenting new segments, or noting items needing repair.
- It is important that you receive clear direction from the PMS manager on all details related to data collection prior to beginning the survey project.

Flexible Pavement Distresses

1. Rutting and Wear

Rutting is a surface depression within the wheel path. Rutting results from a permanent deformation in any of the pavement layers or subgrades, usually caused by consolidation or lateral movement of the materials due to traffic loads. When the upper pavement layers are severely rutted, the pavement along the edges of the rutted area may be raised. Usually, the rutting occurs gradually across the wheel path, reaching a maximum depth in the center of the wheel path. Ruts are most obvious after rainfall when they are full of water.

Wear is surface depression in the wheel path resulting from tire abrasion.

Measurement for Rutting

Severity: The average rut depth in the wheel path for the segment or sample.

Recommended ranges for estimated severity.

Low — 1/4-inch to 1/2-inch

Medium — 1/2-inch to 3/4-inch

High — over 3/4-inch

Extent: The extent of rutting is assumed to be the full length of the segment in the wheel path.

Measure: Take measurements in as many locations as is practical and average them.

Rutting

2. *Alligator Cracking*

Alligator fatigue cracking is associated with loads and is usually limited to areas of repeated traffic loading. The cracks surface initially as a series of parallel longitudinal cracks within the wheel path that progresses with time and loads to a more branched pattern that begins to interconnect. The stage at which several discontinuous longitudinal cracks begin to interconnect, is defined as alligator cracking. Eventually the cracks interconnect sufficiently to form many pieces, resembling the pattern of an alligator.

On narrow, two-lane roads, alligator cracking may form along the center line rather than in the customary wheel paths.

Almost always, the pattern of the cracking (the longer dimension of the connected cracks) is parallel to the roadway or direction of vehicle travel. However, alligator cracking occasionally occurs in a pattern transverse to the roadway direction because of poor trench compaction, settlement, or frost action.

Pot holes and other occurrences of destroyed or missing pavement are accumulated as high severity alligator cracking and may also be noted in the comments area of the field form.

Severity:

Low — Branched, longitudinal, discontinuous thin cracks are beginning to interconnect and form the typical alligator pattern with no spalling.

Medium — Cracking is completely interconnected and has fully developed an alligator pattern. Some spalling may appear at the edges of cracks. The cracks may be greater than 1/4-inch wide, but the pavement pieces are still in place.

High — The pattern of cracking is well developed. Spalling is very apparent at the crack. Individual pieces may be loosened and may rock under traffic. Pieces may be missing. Pumping of fines up through the cracks may be evident.

Low

Medium

High

Option A — Measurement for Alligator Cracking

Extent: The extent of alligator cracking is related to the length of wheel paths. There are two wheel paths in every lane. Therefore, a 100-foot lane has 200 feet of wheel paths. Accurate measurement and recording as a percentage of wheel path length is preferable.

Recommended ranges for estimated extent.

1 percent to 9 percent of both wheel paths
10 percent to 24 percent of both wheel paths
25 percent to 49 percent of both wheel paths
50 percent to 100 percent of both wheel paths

Measure: Accumulate the lengths along the surveyed lane of each severity of the alligator cracking as it occurs in both wheel paths. Divide the accumulated lengths by twice the length of the segment (two wheel paths per lane). Multiply by 100 to get percent, and round to a whole number.

Option B — Measurement for Alligator Cracking

Extent: The extent of alligator cracking is related to the entire survey area.

Measure: Alligator Cracking is measured in square feet. The major difficulty in measuring this type of distress is that two or three levels of severity often exist within one distressed area. If these portions can be easily distinguished from each other, they should be measured and recorded separately. However, if the different levels of severity cannot be divided easily, the entire area should be rated at the highest severity level present.

3. *Longitudinal Cracking*

Longitudinal cracks run roughly parallel to the roadway center line. Longitudinal cracks associated with the beginning of alligator cracking are generally discontinuous, broken, and occur in the wheel path. However, any longitudinal crack that is clearly within the wheel path should be rated.

Note: Do not include cracks which reside only within 6 inches of a lane edge. These cracks are assumed to be caused by, or related to, a paving construction joint and should be rated as nonwheel path longitudinal cracking. If your survey includes an item for joint or crack seal condition, you should include the seal condition of these lane edge construction joints in that survey item.

Severity:

Low — The cracks have very little or no spalling along the edges and are less than 1/4-inch in width. If the cracks are sealed and the width of the crack prior to sealing is invisible, they should be classified as Low Severity.

Medium — The cracks have little or no spalling but they are greater than 1/4-inch in width. There may be a few randomly spaced low severity connecting cracks near the main crack or at the corners of intersecting cracks.

High — Cracks are spalled and there may be several randomly spaced cracks near the main crack or at the corners of intersecting cracks. Pieces are visibly missing along the crack. At some point, this longitudinal cracking becomes alligator cracking.

Low

Medium

High

Option A — Measurement for Longitudinal Cracking

Extent: The extent of longitudinal cracking is recorded as a percent of the length of the surveyed segment.

Recommended ranges for estimated extent.

1 percent to 99 percent of length of segment
100 percent to 199 percent of length of segment
200 percent or more of length of segment

Measure: Accumulate the lengths along the surveyed lane of each severity of the longitudinal cracking as it occurs. Divide the accumulated lengths by the length of the segment. Multiply by 100 to get percent, and round to a whole number.

Option B — Measurement for Longitudinal Cracking

Extent: The extent of longitudinal cracking is related to the entire survey area.

Measure: Longitudinal cracks are measured in linear feet. The length and severity of each crack should be recorded after identification.

4. *Nonwheel Path Longitudinal Cracking*

Nonwheel path longitudinal cracks run roughly parallel to the roadway center line. They may be caused by a poorly constructed paving joint, a reflective crack caused by joints and cracks beneath the surface course, including joints and cracks near the edge of the pavement. These types of cracks are not load-associated.

Low severity nonwheel path longitudinal cracking looks very similar to low severity alligator cracking; however, low severity alligator cracking always occurs in the wheel path and should be rated as alligator cracking.

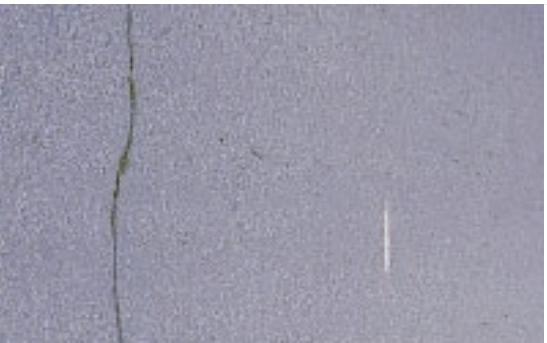
Severity:

Low — The cracks have very little or no spalling along the edges and are less than 1/4-inch in width. If the cracks are sealed and the width of the crack prior to sealing is invisible, they should be classified as Low Severity.

Medium — The cracks have little or no spalling but they are greater than 1/4-inch in width. There may be a few randomly spaced low severity connecting cracks near the main crack or at the corners of intersecting cracks.

High — Cracks are spalled and there may be several randomly spaced cracks near the main crack or at the corners of intersecting cracks. Pieces are visibly missing along the crack.

Low



Medium

High

Option A — Measurement for Nonwheel Path Longitudinal Cracking

Extent: The extent of nonwheel path longitudinal cracking is recorded as a percent of the length of the surveyed segment.

Recommended ranges for estimated extent.

1 percent to 99 percent of length of segment
100 percent to 199 percent of length of segment
200 percent or more of length of segment

Measure: Accumulate the lengths along the surveyed lane of each severity of the nonwheel path longitudinal cracking as it occurs. Divide the accumulated lengths by the length of the segment. Multiply by 100 to get percent, and round to a whole number.

Option B — Measurement for Nonwheel Path Longitudinal Cracking

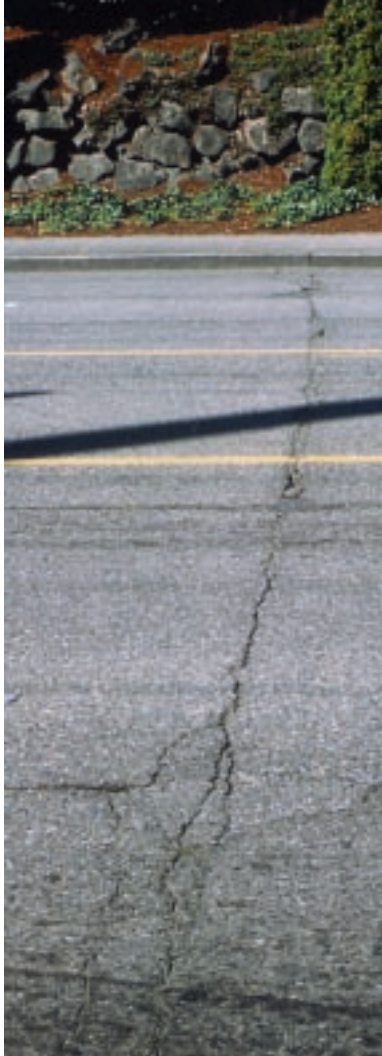
Extent: The extent of nonwheel path longitudinal cracking is related to the entire survey area.

Measure: Nonwheel path longitudinal cracks are measured in linear feet. The length and severity of each crack should be recorded after identification.

5. *Transverse Cracking*

Transverse cracks run roughly perpendicular to the roadway center line. They may be caused by surface shrinkage due to low temperatures, hardening of the asphalt, or cracks in underlying pavement layers such as PCCP slabs. They may extend partially or fully across the roadway.

Consider only those transverse cracks that are a minimum of two feet in length.



Severity:

Low — The cracks have very little or no spalling along the edges and are less than 1/4-inch in width. If the cracks are sealed and the width of the crack prior to sealing is invisible, they should be classified as Low Severity.

Medium — The cracks have little or no spalling but they are greater than 1/4-inch in width. There may be a few randomly spaced low severity connecting cracks near the main crack or at the corners of intersecting cracks.

High — Cracks are spalled and there may be several randomly spaced cracks near the main crack or at the corners of intersecting cracks. Pieces are visibly missing along the crack.

Low

Medium

High

Option A — Measurement for Transverse Cracking

Extent: The extent of transverse cracking is quantified as a frequency of occurrence expressed as a count per 100 feet of lane length.

Recommended ranges for estimated extent.

1 to 4 cracks per 100 feet
5 to 9 cracks per 100 feet
10 or more cracks per 100 feet

Measure: Accumulate the count along the surveyed lane of each severity of transverse crack as it occurs. Divide the accumulated counts by the length of the segment. Multiply by 100 to get the frequency, and round to a whole number.

Option B — Measurement of Transverse Cracking

Extent: The extent of transverse cracking is related to the entire survey area.

Measure: Transverse cracks are measured in linear feet. The length and severity of each crack should be recorded after identification.

6. *Raveling and Aging*

Raveling and aging are pavement surface deterioration that occurs when aggregate particles are dislodged (raveling) or oxidation causes loss of the asphalt binder (aging). An ACP loses its smooth surface and begins to appear very open and rough.

The severity is rated by the degree of aggregate and binder loss. Rate the overall severity within the segment as the most predominate observed level.

This distress is measured or observed differently depending on whether the road surface is BST or ACP. Care should be exercised when rating chip sealed pavements, as they tend to look raveled because of the inherent nature of the chip seal surface. However, raveling in chip sealed pavements (loss of aggregate) actually results in a condition of excess asphalt, and should be rated as flushing (see next distress, Flushing/Bleeding).

Severity:

Low — The aggregate and/or binder has started to wear away but has not progressed significantly. The pavement only appears slightly aged and slightly rough.

Medium — The aggregate and/or binder has worn away and the surface texture is moderately rough and pitted. Loose particles may be present, and fine aggregate is partially missing from the surface.

High — The aggregate and/or binder have worn away significantly, and the surface texture is deeply pitted and very rough. Fine aggregate is essentially missing from the surface, and pitting extends to a depth approaching one half the coarse aggregate size.

High

Low

Medium

High

Extent: The extent of raveling is estimated and expressed relative to the surface area of the surveyed lane.

Recommended ranges for estimated extent.

Localized — Patchy areas, usually in the wheel paths.

Wheel Path — Majority of wheel tracks are affected, but little or none elsewhere in the lane.

Entire Lane — Most of the lane is affected.

Measure: Estimate the severity and extent.

7. *Flushing/Bleeding*

Flushing and bleeding is indicated by an excess of bituminous material on the pavement surface which presents a shiny, glass-like reflective surface that may become sticky in hot temperatures.

At the lower severity levels, the extents “localized” and “wheel path” may be difficult to differentiate; however, as the severity increases, “wheel path” becomes more well defined. Wheel path refers to tire tracking area and may be used to represent the condition of only one wheel track being heavily involved.

This distress is measured or observed differently depending on whether the road surface is BST or ACP. In BST pavements, loss of aggregate (raveling), commonly referred to as “chip loss”, leaves the binder exposed. This condition looks like flushing, and should be rated as flushing.

Severity:

Low — Minor amounts of the aggregate have been covered by excess asphalt but the condition has not progressed significantly.

Medium — Significant quantities of the surface aggregate have been covered with excessive asphalt. However, much of the coarse surface aggregate is exposed, even in those areas showing flushing.

High — Most of the aggregate is covered by excessive asphalt in the affected area. The area appears wet and is sticky in hot weather.

Low

Medium

High

Extent: The extent of flushing is estimated and expressed relative to the surface area of the surveyed lane.

Recommended ranges for estimated extent.

Localized — Patchy areas, usually in the wheel paths.

Wheel Path — Majority of wheel tracks are affected, but little or none elsewhere in the lane.

Entire Lane — Most of the lane is affected.

Measure: Estimate the severity and extent.

8. Patching

A patch is an area of pavement which has been replaced with new material to repair the existing pavement or access the utility.

A patch is considered a defect no matter how well it is performing (a patched area or adjacent area usually does not perform as well as an original pavement section). Generally, some roughness is associated with this distress. In general, a patch is less than a typical rehabilitation in size and scope. They are less than full roadway width and/or are less than project length. Some agencies may have patches as long as the work defined by another agency as a rehabilitation.

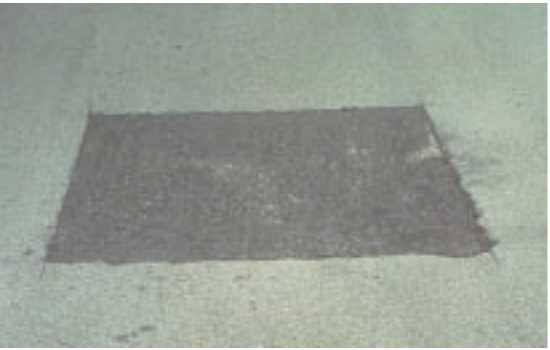
Temporary patches, as well as localized permanent repairs (dig-out repair), are included in this distress category. Utility cut patches are also included as part of the patching values.

Low — Patch has at most low severity distress of any type.

Medium — Patch has medium severity distress of any type.

High — Patch has high severity distress of any type.

low



Medium

Low

Medium

High

Option A — Measurement for Patching

Extent: The extent of patching is related to the length of wheel paths. Each half of the lane is considered one wheel path.

Recommended ranges for estimated extent.

1 percent to 9 percent of both wheel paths
10 percent to 24 percent of both wheel paths
25 percent or more of both wheel paths.

Option B — Measurement for Patching

Extent: The extent of patching is related to the entire survey area.

Measure: Patching is measured in square feet of entire inspection area. No other distresses (e.g., rutting or cracking) are recorded within a patch. Other distresses in the patch area are used to determine the severity level of the patch.

9. *Original WSDOT Patching*

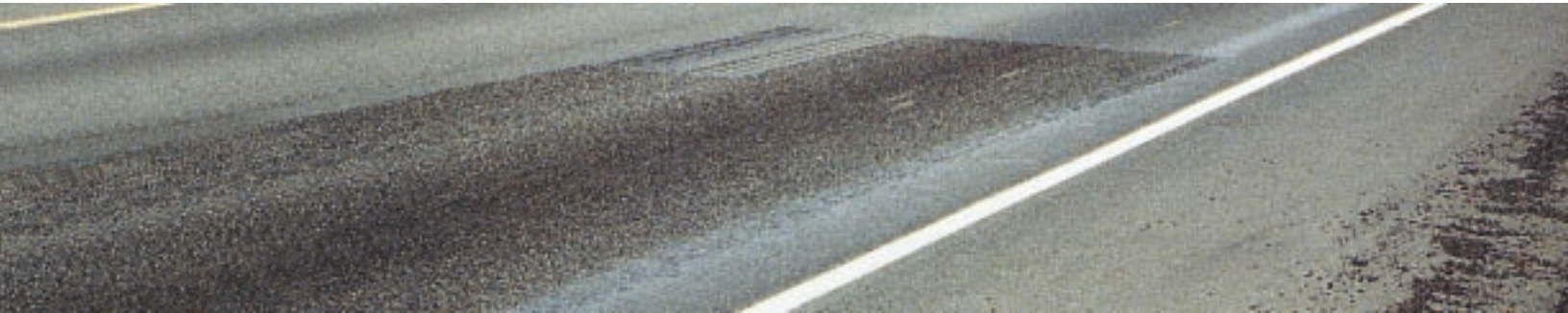
In general, a patch is less than a typical rehabilitation in size and scope. They are less than full roadway width and/or are of less than project length. Some agencies may have patches as long as the work defined by another agency as a rehabilitation. WSDOT defines a lane with “new surfacing” as a patch if it is less than about half a mile in length. Definition of minimum rehabilitation vs. maximum patch length is a matter of agency policy.

Temporary patches, as well as localized permanent repairs (dig-out repair), are included in this distress category. The patches or repairs which are obviously the result of utility work are the exception, and are not included as part of the patching values.

While appropriately done repairs are an asset rather than a liability to the life of a segment of pavement, the fact that they were required (other than for utility work) generally indicates some failure in the pavement structure.

If any patch (including a utility patch) shows surface defects, such as alligator cracking, accumulate those defects also, and include them in the overall segment rating.

Patching



Severity: Severity of patching is defined in three categories which are most easily recognized by the method of construction.

Low — The lowest severity is BST patching or chip seal patching. It is constructed by spraying hot asphalt onto the roadway (usually using a truck with a spray bar) and then spreading and rolling crushed stone onto the surface. It is identified by its nearly straight edges, rough texture, and surface contours which mimic the surface below. This is assumed to cover low severity cracking or raveling.

Medium — Blade patching is the medium severity patching. It has edges shaped to the contours of the surrounding pavement and is of variable thickness with feathered edges. This type is assumed to cover (or replace) medium to severe alligator cracking, pot holes, rutting, or other significant pavement defects. Cold patches are of this type.

High — Dig-Out or Full Depth patching is the most severe of the types rated. A patch (or repair) of this type is constructed by neatly cutting out a full depth portion of the pavement, removing all disturbed materials, and refilling the void with an appropriate pavement section. This appropriately reconstructed section should be as strong as the original pavement section, perhaps even stronger. This type of patch is assumed to replace severe alligator cracking.

Chip Seal Repair Low

Blade Repair Medium

Dig Out High

Extent: The extent of patching is related to the length of wheel paths. Accurate measurement expressed as a percentage of wheel path length is preferable. Each half of the lane is considered one wheel path. This form of measurement is identical to that of alligator cracking because the general assumption is that patching replaces alligator cracking.

Recommended ranges for estimated extent.

1 percent to 9 percent of both wheel paths
10 percent to 24 percent of both wheel paths
25 percent or more of both wheel paths

Note: Patching was included in the WSPMS because without a deduction for patching, a roadway which is virtually made of patches would appear to be a "perfect" segment or project. This would result in the segment or project never being included in a prioritized list of pavements needing rehabilitation.

If an agency has separate maintenance districts, or crews assigned to specific areas, the more efficient crew/district can be penalized by the pavement management system for doing a better job. If its roadways rate higher as a result of better maintenance operations, those roadways might not receive repair and rehabilitation funds as a result.

The way in which the PMS uses these distress severities can vary, and the desired effect can be accommodated by using different deduct values to reflect the needs of the agency. If patching and/or repairs are

not deemed a serious issue within your agency, then reduce or remove the optional local deducts associated with the patching severities.

Measure: Accumulate the lengths along the surveyed lane of each severity (type) of patching as it occurs in both wheel paths. Divide the accumulated lengths by twice the length of the segment (two wheel paths per lane). Multiply by 100 to get percent, and round to a whole number.

10. Corrugation and Waves

This distress category covers a general form of surface distress which is not limited to the wheel path, although they may occur in the wheel path. The distress may occur in isolated areas, such as at intersections, or it may occur over a large part of the roadway surface.

Corrugations and waves are regularly occurring transverse undulations in the pavement surface. Corrugations occur as closely spaced ripples, while waves are undulations whose distance from peak to valley is more than 3 feet.

Severity: The severity of corrugation is defined as the maximum vertical deviation from a 10-foot straightedge placed on the pavement parallel to the center line of the roadway.

Low — $^1/_8$-inch to 2 inches per 10 feet.

Medium — 2 inches to 4 inches per 10 feet.

High — Over 4 inches per 10 feet.

Option A — Measurement of Corrugation and Waves

Extent: The extent of corrugations is expressed in percent of the lane area affected.

1 percent to 9 percent of the area of the segment
10 percent to 24 percent of the area of the segment
25 percent or more of the area of the segment

Measure: Determine severity by measuring the maximum difference in elevation that occurs within a 10-foot straightedge length centered over the area of displacement. Rate the overall distress by using the highest observed level.

Option B — Measurement of Corrugation and Waves

Extent: The extent of corrugations is expressed in square feet of the entire survey area.

Measure: Determine severity by measuring the maximum difference in elevation that occurs within a 10-foot straightedge length centered over the area of displacement. Rate the overall distress by using the highest observed level.

11. *Sags and Humps*

This distress category also covers forms of surface distress that are not limited to the wheel path, although they generally include the wheel paths. The distress usually occurs in isolated areas of the roadway surface.

Sags and humps are localized depressions or elevated areas of the pavement that result from settlement, pavement shoving, displacement due to subgrade swelling, or displacement due to tree roots.

Severity: The severity of sags or humps, like corrugation, is defined as the maximum vertical deviation from a 10-foot straightedge placed on the pavement parallel to the center line of the roadway.

Low — 1/8-inch to 2 inches per 10 feet.

Medium — 2 inches to 4 inches per 10 feet.

High — Over 4 inches per 10 feet.

Option A — Measurement for Sags and Humps

Extent: The extent of sags and humps is expressed in percent of the lane area affected.

1 percent to 9 percent of the area of the segment
10 percent to 24 percent of the area of the segment
25 percent or more of the area of the segment

Measure: Determine severity by measuring the maximum difference in elevation that occurs within a 10-foot straightedge length centered over the area of displacement. Rate the overall distress by using the highest observed level.

Option B — Measurement for Sags and Humps

Extent: The extent of sags and humps is expressed in square feet of the entire survey area.

Measure: Determine severity by measuring the maximum difference in elevation that occurs within a 10-foot straightedge length centered over the area of displacement. Rate the overall distress by using the highest observed level.

12. Block Cracking

Block cracks divide the pavement surface into nearly rectangular pieces with cracks that intersect at about 90 degrees. This type of distress differs from alligator cracking in that alligator cracks form smaller, irregular shaped pieces with sharp angles. Also, alligator cracks are caused by repeated traffic loadings and are, therefore, generally located in traffic areas (i.e., the wheel paths).

Block cracking is caused principally by shrinkage of the asphalt concrete and daily temperature cycling. It is not load-associated, although load can increase the severity of individual cracks. The occurrence of block cracking usually indicates that the asphalt has hardened significantly through aging. Block cracking normally occurs over a large portion of the pavement area including nontraffic areas. However, various fatigue related defects may occur in the same segment.

Severity: The severity of block cracking is defined by the average size of the blocks and the average width of the cracks that separate them.

Block Size

Low — 9 × 9 feet or greater.

Medium — 5 × 5 feet to 8 × 8 feet blocks.

High — 4 × 4 feet blocks or less.

Crack Size

Low — Less than 1/4 inch.

Medium — Over 1/4 inch.

High — Spalled.

Option A — Measurement of Block Cracking

Extent: The extent of block cracking is assumed to be the full surveyed segment. If the block cracking does not extend throughout the segment, then rate the segment using longitudinal and transverse cracking.

Measure: Estimate the typical size of the blocks and select the appropriate standard block size and crack size.

Option B — Measurement of Block Cracking

Extent: The extent of block cracking is assumed to be square feet or percent of length. If the block cracking does not extend throughout the segment, then rate the segment using longitudinal and transverse cracking.

Measure: Measure the typical size of the blocks and select the appropriate standard block size and crack size.

13. Pavement Edge Condition

Edge raveling occurs when the pavement edge breaks away from roadways without curbs or paved shoulders. However, edge conditions can still occur with paved shoulders. Edge patching is the repair of this condition. The “lane less than 10 feet” distress indicates that the edge raveling has progressed to the point where the pavement width from the center line to the outer edge of roadway has been reduced to less than 10 feet.

Severity: The severity of Pavement Edge Condition is defined as follows.

Low — Edge Raveling

Medium — Edge Patching

High — Edge lane less than 10 feet.

Measure: Accumulate the lengths along the surveyed lane of each type edge defect as it occurs. Divide the accumulated lengths by the length of the segment. Multiply by 100 to get percent, and round to a whole number.

Extent: The extent of pavement edge conditions is recorded as a percentage of the length of the surveyed segment. Recommended ranges for estimated extent.

1 percent to 9 percent of the length of the segment
10 percent to 24 percent of the length of the segment
25 percent or more of the length of the segment

Edge Raveling

Edge Patching

14. Crack Seal Condition

Rate the condition of any existing crack (or joint) sealant. There may be separate information fields available for recording the amount (total length) of seal and the year it was installed or recording the absence of any sealant on the entire section.

Severity:

None — There are no sealed cracks.

Low — Sealant in good to excellent condition.

Medium — Hairline failure in the sealant allows a minimal amount of water to pass.

High — The sealant is severely cracked and may allow significant quantities of water to pass. The sealant is wide open (or nonexistent) and will allow water to pass freely.

Low

Medium

High

Extent: The extent of crack sealing is quantified as the percent of the total length of the cracks (or joints) in the segment which exhibit the seal condition.

1 percent to 9 percent of the total length of cracks or joints
10 percent to 24 percent of the total length of cracks or joints
25 percent or more of the total length of cracks or joints

Measure: Count (or estimate) and accumulate the length of cracks and joints that exhibit each severity of seal condition. Count (or estimate) the total length of cracks and joints in the segment. Divide each of the accumulated lengths of condition by the total length of cracks and joints, multiply by 100, and round to a whole number.

Acknowledgments to the First Revision

The revision of this manual is the result of cooperation among the members of the Northwest Pavement Management Association, their respective agencies, the County Road Administration Board, the Washington State Department of Transportation (WSDOT), and private industry. The following individuals contributed considerable time and effort in reviewing drafts.

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Cities

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Forks
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Lacey
Lynden
Moses Lake
Normandy Park
Olympia
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Seattle
Shelton
Spokane
Sunnyside

Counties

Ada (Idaho)
Adams
Asotin
Benton
Clallam
Columbia
Franklin
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