FIELD GUIDE

for Airport Pavement Maintenance Recommendation Tool

Field Guide for Airport Pavement Maintenance Recommendation Tool

Prepared for

Airport Cooperative Research Program
Transportation Research Board
of National Academies

Thomas J. Freeman, Jeffrey D. Borowiec, Bryan Wilson, Poura Arabali, Maryam Sakhaeifar

Texas A&M Transportation Institute
College Station, TX

March 2016

ACKNOWLEDGMENT OF SPONSORSHIP

This work was sponsored by one or more of the following as noted:

☐ American Association of State Highway and Transportation Officials, in cooperation with the Federal Highway Administration, and was conducted in the **National Cooperative Highway Research Program,**

☐ Federal Transit Administration and was conducted in the **Transit Cooperative Research Program**,

☒ Federal Aviation Administration and was conducted in the **Airport Cooperative Research Program,**

☐ Research and Innovative Technology Administration and was conducted in the **National Cooperative Freight Research Program,**

☐ Pipeline and Hazardous Materials Safety Administration and was conducted in the **Hazardous Materials Cooperative Research Program,**

which is administered by the Transportation Research Board of the National Academies.

DISCLAIMER

Table of Contents

Introduction

This field guide is a paper version of the web-based Airport Pavement Maintenance Recommendation Tool developed as part of the ACRP 09-11, *Pavement Maintenance Guidelines for General Aviation Airport Management*. The web-based tool has considerably more functionality than this document and can be accessed at (http://acrp0911.tti.tamu.edu). The guidebook describes how to address airfield pavement distress. A final report covers the detailed research behind these documents.

How to Use This Field Guide

The steps are:

1. Determine Airport Classification.
2. Choose Climatic Zone.
3. Identify Distress Types.
4. Determine Treatment.

For more detailed information about each of these steps, refer to the guidebook.

Distress Identification

See Chapter 2, Appendix A (for asphalt), and Appendix B (for concrete) of the guidebook for more information on how to determine distress type and severity.

More resources include the ASTM specification D5340 – 12, *Standard Test Method for Airport Pavement Condition Index Surveys* and the FAA Advisory Circular 150/5380-7B, *Airport Pavement Management Program (PMP).* The manuals are available at the FAA Airports websites:

http://www.faa.gov/documentLibrary/media/Advisory_Circular/Asphalt-Surfaced-Airfields-Distress-Manual.pdf

http://www.faa.gov/documentLibrary/media/Advisory_Circular/Concrete-Surfaced-Airfields-Distress-Manual.pdf

Step 1. Determine Airport Classification

FAA assigned general aviation airports into the following subcategories: national, regional, local, and basic. The categories focus on the role of the airport in communities and the nation, and not necessarily on airport size and features. Table 1 shows a description of each category.

Table 1. New Category Definitions of General Aviation Airports.

National
1. 5,000+ instrument operations, 11+ based jets, 20+ international flights, or 500+ interstate departures, or 2. 10,000+ enplanements and at least 1 charter enplanement by a large certified air carrier; or 3. 500+ million pounds of landed cargo weight.
Regional
1. Metropolitan Statistical Area (MSA) (Metro or Micro) and 10+ domestic flights over 500 miles, 1,000+ instrument operations, 1+ based jet, or 100+ based aircraft; or 2. The airport is located in a metropolitan or micropolitan statistical area, and the airport meets the definition of commercial service.
Local
1. 10+ instrument operations and 15+ based aircraft; or 2. 2,500+ passenger enplanements.
Basic
1. 10+ based aircraft; or 2. 4+ based helicopters; or 3. The airport is located 30+ miles from the nearest NPIAS airport; or 4. The airport is identified and used by the U.S. Forest Service, or U.S. Marshals, or U.S. Customs and Border Protection (designated, international, or landing rights), or U.S. Postal Service (air stops), or has Essential Air Service; or 5. The airport is a new or replacement facility activated after January 1, 2001; and 6. Publicly owned or privately owned and designated as a reliever with a minimum of 90 based aircraft.

Step 2. Choose Climatic Zone

There are different stresses, needs, and potentially maintenance treatments for an airport in the dry-cold areas versus the wet-warm areas. To account for these potential differences in treatments and timing of treatments, these climatic zones were developed as part of the Long-Term Pavement Performance (LTPP) research (Figure 1).

Select:

Wet Freeze	Wet No Freeze	Dry Freeze	Dry No Freeze

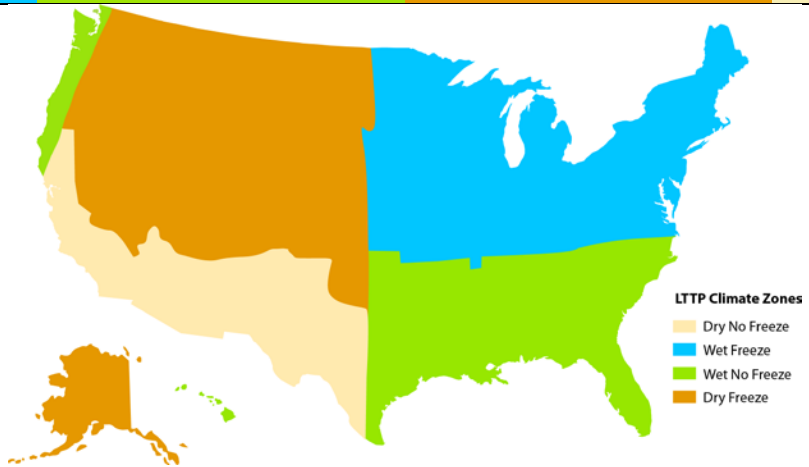


Figure 1. LTPP Climatic Zones.

Step 3. Identify Distress Types

See Appendices A (asphalt) and B (concrete) of the guidebook for a complete list of distress types and severity levels. This field guide contains an abbreviated version.

Identify the distress type/extent/severity that most closely matches the conditions at your facility. For example, if you have transverse cracks, spaced 40 ft apart that are ½-inch wide, you would use the combination of "Transverse Cracks 50 Ft Apart, Medium Severity." More than one distress type-severity-quantity can be selected, but the process of selecting a treatment (Step 4) must be completed for each combination.

Asphalt Pavement Distresses

Cracking

There are six types of cracking usually found on airport pavements.

Longitudinal/Transverse/Edge Cracking (Non-PCC Joint Reflective)

Description

Longitudinal cracks are parallel to the pavement's center line or laydown direction. They may be caused by (1) a poorly constructed paving lane joint, (2) shrinkage of the AC surface due to low temperatures or hardening of the asphalt, or (3) a reflective crack caused by cracks beneath the surface course, including cracks in PCC slabs (but not at PCC joints). These types of cracks are not usually load associated. If the pavement is fragmented along a crack, the crack is said to be spalled.

Transverse cracks extend across the pavement at approximately right angles to the pavement's center line or direction of laydown. They may be caused by (1) a poorly constructed paving lane joint, (2) shrinkage of the AC surface due to low temperatures or hardening of the asphalt, or (3) a reflective crack caused by cracks beneath the surface course, including cracks in PCC slabs (but not at PCC joints). They may be caused by (2) or (3). These types of cracks are not usually load associated. If the pavement is fragmented along a crack, the crack is said to be spalled.

Edge cracking is differentiated from Longitudinal cracking only the location of the cracks. Edge cracks occur within four feet of the edge. All severities are the same. Edge cracks are often treated differently than cracks in the middle of the pavement and are listed separately for this reason.

Severity Levels

Low	Medium	High
Cracks have only light spalling (little or no FOD potential) or no spalling, and can be filled or non-filled. If non-filled, the cracks have a mean width of ¼ inch (6 mm) or less; filled cracks are of any width, but their filler material is in satisfactory condition.	One of the following conditions exists: (1) cracks are moderately spalled (some FOD potential) and can be either filled or non-filled of any width; (2) filled cracks are not spalled or are lightly spalled, but filler is in unsatisfactory condition; (3) non-filled cracks are not spalled or are only lightly spalled, but the mean crack width is greater than ¼ inch (6 mm), or (4) light random cracking exists near the crack or at the corners of intersecting cracks.	Cracks are severely spalled and pieces are loose or missing causing definite FOD potential. Cracks can be either filled or non-filled of any width.

Longitudinal, Few Cracks

Low	Medium	High
Few Cracks		
		
Many Cracks		
		

Transverse Cracks, 20 or 50 Ft Apart

Low	Medium	High
		

Edge Cracks

Low	Medium	High
		

Joint Reflection Cracking from PCC (Longitudinal and Transverse)

Description

This distress occurs only on pavements having an asphalt or tar surface over a PCC slab. This category does not include reflection cracking from any other type of base (that is, cement stabilized, lime stabilized). Such cracks are listed as longitudinal and transverse cracks. Joint reflection cracking is caused mainly by movement of the PCC slab beneath the AC surface because of thermal and moisture changes; it is not load-related. However, traffic loading may cause a breakdown of the AC near the crack, resulting in spalling and FOD potential. If the pavement is fragmented along a crack, the crack is said to be spalled. Knowledge of slab dimensions beneath the AC surface will help to identify these cracks.

Severity Levels

Low	Medium	High
Cracks have only light spalling (little or no FOD potential) or no spalling, and can be filled or non-filled. If non-filled, the cracks have a mean width of ¼ inch (6 mm) or less; filled cracks are of any width, but their filler material is in satisfactory condition.	One of the following conditions exists: cracks are moderately spalled (some FOD potential) and can be either filled or non-filled of any width; filled cracks are not spalled or are lightly spalled, but filler is in unsatisfactory condition; non-filled cracks are not spalled or are only lightly spalled, but the mean crack width is greater than ¼ inch (6 mm); or light random cracking exists near the crack or at the corners of intersecting cracks.	Cracks are severely spalled with pieces loose or missing causing definite FOD potential. Cracks can be either filled or non-filled of any width.

Joint Reflection Cracking from PCC (Longitudinal and Transverse)		
Low	**Medium**	**High**
		

Block Cracking

Description

Block cracks are interconnected cracks that divide the pavement into approximately rectangular pieces. The blocks may range in size from approximately 1 by 1 ft to 10 by 10 ft (0.3 by 0.3 m to 3 by 3 m). Block cracking is caused mainly by shrinkage of the AC and daily temperature cycling (that results in daily stress/strain cycling). It is not load associated. The occurrence of block cracking usually indicates that the asphalt has hardened significantly. Block cracking normally occurs over a large portion of pavement area, but sometimes will occur only in non-traffic areas. This type of distress differs from alligator cracking in that the alligator cracks form smaller, many-sided pieces with sharp angles. Also unlike block cracks, alligator cracks are caused by repeated traffic loadings and are, therefore, located only in traffic areas (that is, wheel paths).

Severity Levels

Low	Medium	High
Blocks are defined by cracks that are non-spalled (sides of the crack are vertical) or lightly spalled, causing no FOD potential. Non-filled cracks have ¼ inch (6 mm) or less mean width and filled cracks have filler in satisfactory condition.	Blocks are defined by either: filled or non-filled cracks that are moderately spalled (some FOD potential); non-filled cracks that are not spalled or have only minor spalling (some FOD potential), but have a mean width greater than approximately ¼ inch (6 mm); or filled cracks greater than ¼ inch that are not spalled or have only minor spalling (some FOD potential), but have filler in unsatisfactory condition.	Blocks are well defined by cracks that are severely spalled, causing a definite FOD potential.

Block Crack

Low	Medium	High
		

Alligator or Fatigue Cracking

Description

Alligator or fatigue cracking is a series of interconnecting cracks caused by fatigue failure of the AC surface under repeated traffic loading. The cracking initiates at the bottom of the AC surface (or stabilized base) where tensile stress and strain are highest under a wheel load. The cracks propagate to the surface initially as a series of parallel cracks. After repeated traffic loading, the cracks connect, forming many-sided, sharp-angled pieces that develop a pattern resembling chicken wire or the skin of an alligator. The pieces are less than 2 ft (0.6 m) on the longest side.

Alligator cracking occurs only in areas that are subjected to repeated traffic loadings, such as wheel paths. Therefore, it would not occur over an entire area unless the entire area was subjected to traffic loading. (Pattern-type cracking that occurs over an entire area that is not subjected to loading is rated as block cracking, that is, not a load-associated distress.) Alligator cracking is considered a major structural distress.

Severity Levels

Low	Medium	High
Fine, longitudinal hairline cracks running parallel to one another with none or only a few interconnecting cracks. The cracks are not spalled.	Further development of light alligator cracking into a pattern or network of cracks that may be lightly spalled. Medium-severity alligator cracking is defined by a well-defined pattern of interconnecting cracks, where all pieces are securely held in place (good aggregate interlock between pieces).	Network or pattern cracking has progressed so that the pieces are well defined and spalled at the edges; some of the pieces rock under traffic and may cause FOD potential.

Alligator or Fatigue Cracking (10% or 30%)		
Low	**Medium**	**High**
		

Surface Distress

There are four types of surface distress usually found on airport pavements.

Weathering (Surface Wear)—Dense Mix Asphalt

Description

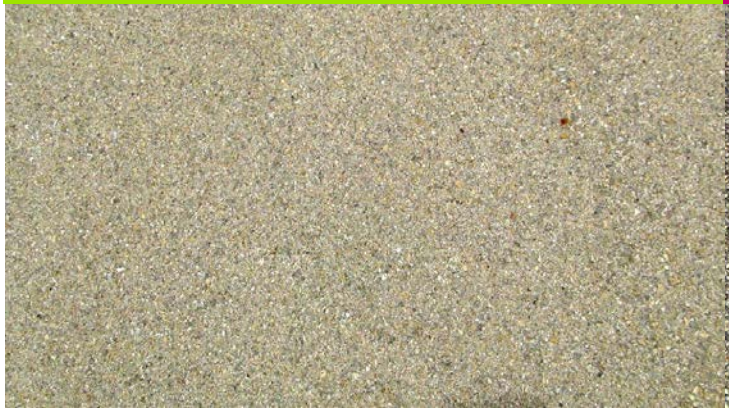
The wearing away of the asphalt binder and fine aggregate matrix from the pavement surface.

Severity Levels

For this tool, the pavement should be identified as either low severity (starting to weather) or high severity (definitely weathering).

Low	Medium	High
Asphalt surface beginning to show signs of aging which may be accelerated by climatic conditions. Loss is the fine aggregate matrix is noticeable and may be accompanied by fading of the asphalt color. Edges of the coarse aggregates are beginning to be exposed (less than 1 mm or 0.05 inches). Pavement may be relatively new (as new as 6 months old).	Loss of fine aggregate matrix is noticeable and edges of coarse aggregate have been exposed up to ¼ width (of the longest side) of the coarse aggregate due to the loss of fine aggregate matrix.	Edges of coarse aggregate have been exposed greater than ¼ width (of the longest side) of the coarse aggregate. There is considerable loss of fine aggregate matrix leading to potential or some loss of coarse aggregate.

Weathering (Surface Wear)

Low	High
	

Raveling

Description

Raveling is the dislodging of coarse aggregate particles from the pavement surface.

Dense Mix Severity Levels

As used herein, coarse aggregate refers to predominant coarse aggregate sizes of the asphalt mix. Aggregate clusters refer to when more than one adjoining coarse aggregate piece is missing. If in doubt about a severity level, three representative areas of 1 square yard each (1 m^2) should be examined and the number of missing coarse aggregate particles counted.

	Low	Medium	High
Severity Levels	(1) In a yd^2 (m^2) representative area, the number of coarse aggregate particles missing is between 5 and 20, and/or (2) missing aggregate clusters are less than 2 percent of the examined yd^2 (m^2) area. In low severity raveling, there is little or no FOD potential.	(1) In a yd^2 (m^2) representative area, the number of coarse aggregate particles missing is between 21 and 40, and/or (2) missing aggregate clusters are between 2 and 10 percent of the examined yd^2 (m^2) area. In medium severity raveling, there is some FOD potential.	(1) In a yd^2 (m^2) representative area, the number of coarse aggregate particles missing is over 40, and/or (2) missing aggregate clusters are more than 10 percent of the examined yd^2 (m^2) area. In high severity raveling, there is significant FOD potential.
Slurry Seal/Coal Tar over Dense Mix	(1) The scaled area is less than 1%. (2) In the case of coal tar where pattern cracking has developed, the surface cracks are less than ¼ inch (6 mm) wide.	(1) The scaled area is between 1 and 10%. (2) In the case of coal tar where pattern cracking has developed, the cracks are ¼ inch (6 mm) wide or greater.	(1) The scaled area is over 10%. (2) In the case of coal tar the surface is peeling off.

Raveling

Low | **High**

Patching

Description

A patch is considered a defect, no matter how well it is performing.

Severity Levels

Low	Medium	High
Patch is in good condition and is performing satisfactorily.	Patch is somewhat deteriorated and affects ride quality to some extent. Moderate amount of distress is present within the patch or has FOD potential, or both.	Patch is badly deteriorated and affects ride quality significantly or has high FOD potential. Patch soon needs replacement.

Patching (10% or 30% Slabs)

Low

Medium

High

Roughness

Roughness, as used in this tool, is a combination of several distress types, which are corrugation, depression, and swell. Regardless of the distress type, select the category that best matches the impact of the distress.

Corrugation

Corrugation is a series of closely spaced ridges and valleys (ripples) occurring at fairly regular intervals (usually less than 5 ft) (1.5 m) along the pavement. The ridges are perpendicular to the traffic direction. Traffic action combined with an unstable pavement surface or base usually causes this type of distress.

Severity	Runways and High-Speed Taxiways	Taxiways and Aprons	
L	< ¼ inch (6 mm)	< ½ inch (13 mm)	Corrugations are minor and do not significantly affect ride quality
M	¼ to ½ inch (6 to 13 mm)	½ to 1 inch (13 to 25 mm)	
H	> ½ inch (13 mm)	> 1 inch (25 mm)	

Depression

Depressions are localized pavement surface areas having elevations slightly lower than those of the surrounding pavement. In many instances, light depressions are not noticeable until after a rain, when ponding water creates “birdbath” areas; but the depressions can also be located without rain because of stains created by ponding of water. Depressions can be caused by settlement of the foundation soil or can be built during construction. Depressions cause roughness and, when filled with water of sufficient depth, could cause hydroplaning of aircraft.

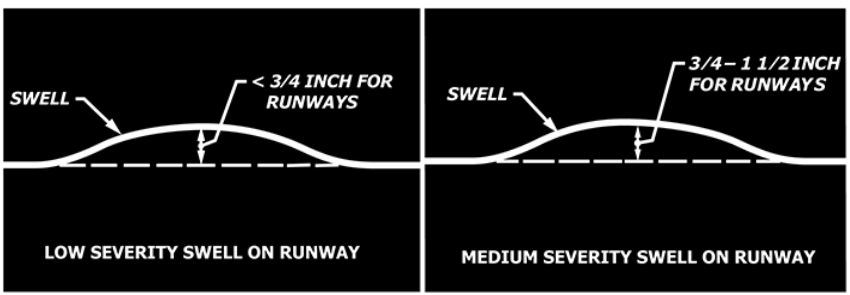
	Maximum Depth of Depression		**Severity Levels**
	Runways and High-Speed Taxiways	**Taxiways and Aprons**	
L	⅛ to ½ inch (3 to 13mm)	½ to 1 inch (13 to 25 mm)	Depression can be observed or located by stained areas, only slightly affects pavement riding quality, and may cause hydroplaning potential on runways (see measurement criteria below).
M	½ to 1 inch (13 to 25 mm)	1 to 2 inch (25 to 51 mm)	The depression can be observed, moderately affects pavement riding quality, and causes hydroplaning potential on runways (see measurement criteria below).
H	> 1 inch (> 25 mm)	> 2 inch (> 51 mm)	The depression can be readily observed, severely affects pavement riding quality, and causes definite hydroplaning potential (see measurement criteria below).

Swell

Swell is characterized by an upward bulge in the pavement's surface. A swell may occur sharply over a small area or as a longer, gradual wave. Either type of swell can be accompanied by surface cracking. A swell is usually caused by frost action in the subgrade or by swelling soil, but a small swell can also occur on the surface of an asphalt overlay (over PCC) as a result of a blowup in the PCC slab.

Severity	Height Differential	Severity Levels
L	< ¾ inch (20 mm)	Swell is barely visible and has a minor effect on the pavement's ride quality. (Low-severity swells may not always be observable, but their existence can be confirmed by driving a vehicle over the section. An upward acceleration will occur if the swell is present).
M	¾ to 1½ inch (20 to 40 mm)	Swell can be observed without difficulty and has a significant effect on the pavement's ride quality.
H	> 1½ inch (40 mm)	Swell can be readily observed and severely affects the pavement's ride quality.

Rate severity on high-speed taxiways using measurement criteria provided above. Double the height differential criteria for other taxiways and aprons.



For each area of analysis, select the combinations of distress type, extent, and severity found in that area:

Distress Type and Extent	Severity		
Few Longitudinal Cracks or Joints	Low Severity	Medium Severity	High Severity
Many Longitudinal Cracks	Low Severity	Medium Severity	High Severity
A Few Edge Cracks	Low Severity	Medium Severity	High Severity
Transverse Cracks 50 Ft Apart	Low Severity	Medium Severity	High Severity
Transverse Cracks 20 Ft Apart	Low Severity	Medium Severity	High Severity
Block Cracking	Low Severity	Medium Severity	High Severity
Reflection Cracking	Low Severity	Medium Severity	High Severity
Fatigue Cracking- 10% Of Area	Low Severity	Medium Severity	High Severity
Fatigue Cracking- 30%	Low Severity	Medium Severity	High Severity
Starting to Weather	Low Severity		
Definitely Weathering		Medium Severity	
Starting to Ravel	Low Severity		
Definitely Raveling		Medium Severity	
Patching- 10% of Area	Low Severity	Medium Severity	High Severity
Patching- 30% of Area	Low Severity	Medium Severity	High Severity
Roughness	Long Wavelength Swells	Many Long Wavelength Swells	Many Short Wavelength Bumps

Concrete Pavement Distresses

Joint Problems

There are two types of joint problems usually found on airport pavements.

Joint Seal Damage

Description

Joint seal damage is any condition that enables soil or rocks to accumulate in the joints or allows significant infiltration of water. Accumulation of incompressible materials prevents the slabs from expanding and may result in buckling, shattering, or spalling. A pliable joint filler bonded to the edges of the slabs protects the joints from accumulation of materials and also prevents water from seeping down and softening the foundation supporting the slab. Typical types of joint seal damage are: (1) stripping of joint sealant, (2) extrusion of joint sealant, (3) weed growth, (4) hardening of the filler (oxidation), (5) loss of bond to the slab edges, and (6) lack or absence of sealant in the joint.

Severity Levels

Low	Medium	High
Joint sealer is in generally good condition throughout the sample. Sealant is performing well with only a minor amount of any of the above types of damage present. Joint seal damage is at low severity if a few of the joints have sealer which has debonded from, but is still in contact with, the joint edge. This condition exists if a knife blade can be inserted between sealer and joint face without resistance.	Joint sealer is in generally fair condition over the entire surveyed sample with one or more of the above types of damage occurring to a moderate degree. Sealant needs replacement within two years. Joint seal damage is at medium severity if a few of the joints have any of the following conditions: (1) joint sealer is in place, but water access is possible through visible openings no more than ⅛ inch (3 mm) wide. If a knife blade cannot be inserted easily between sealer and joint face, this condition does not exist; (2) pumping debris are evident at the joint; (3) joint sealer is oxidized and lifeless but pliable (like a rope), and generally fills the joint opening; or (4) vegetation in the joint is obvious, but does not obscure the joint opening.	Joint sealer is in generally poor condition over the entire surveyed sample with one or more of the above types of damage occurring to a severe degree. Sealant needs immediate replacement. Joint seal damage is at high severity if 10% or more of the joint sealer exceeds limiting criteria listed above, or if 10% or more of sealer is missing.

Joint Seal Damage

Low	Medium	High
		

Spalling

For the purposes of this tool, the two types of spalling (transverse/longitudinal joint and corner) are combined.

Transverse and Longitudinal Joint

Joint spalling is the breakdown of the slab edges within 2 ft (0.6 m) of the side of the joint. A joint spall usually does not extend vertically through the slab but intersects the joint at an angle. Spalling results from excessive stresses at the joint or crack caused by infiltration of incompressible materials or traffic load. Weak concrete at the joint (caused by overworking) combined with traffic loads is another cause of spalling. Note: Frayed condition as used in this test method indicates material is no longer in place along a joint or crack. Spalling indicates material may or may not be missing along a joint or crack.

Low	Medium	High
Spall over 2 ft (0.6 m) long: (1) spall is broken into no more than three pieces defined by low- or medium-severity cracks; little or no FOD potential exists; or (2) joint is lightly frayed; little or no FOD potential. Spall less than 2 ft long is broken into pieces or fragmented with little FOD or tire damage potential exists. Lightly frayed means the upper edge of the joint is broken away leaving a spall no wider than 1 in. (25 mm) and no deeper than ½ inch (13 mm). The material is missing and the joint creates little or no FOD potential.	Spall over 2 ft (0.6 m) long: (1) spall is broken into more than three pieces defined by light or medium cracks; (2) spall is broken into no more than three pieces with one or more of the cracks being severe with some FOD potential existing; or (3) joint is moderately frayed with some FOD potential. Spall less than 2 ft long: spall is broken into pieces or fragmented with some of the pieces loose or absent, causing considerable FOD or tire damage potential. Moderately frayed means the upper edge of the joint is broken away leaving a spall wider than 1 in. (25 mm) or deeper than ½ inch (13 mm). The material is mostly missing with some FOD potential.	Spall over 2 ft (0.6 m) long: (1) spall is broken into more than three pieces defined by one or more high-severity cracks with high FOD potential and high possibility of the pieces becoming dislodged, or (2) joint is severely frayed with high FOD potential.

Note: If less than 2 ft (0.6 m) of the joint is lightly frayed, the spall should not be counted.

Corner

Corner spalling is the raveling or breakdown of the slab within approximately 2 ft (0.6 m) of the corner. A corner spall differs from a corner break in that the spall usually angles downward to intersect the joint, while a break extends vertically through the slab.

Low	Medium	High
One of the following conditions exists: (1) spall is broken into one or two pieces defined by low-severity cracks (little or no FOD potential); or (2) spall is defined by one medium-severity crack (little or no FOD potential).	One of the following conditions exists: (1) spall is broken into two or more pieces defined by medium-severity crack(s), and a few small fragments may be absent or loose; (2) spall is defined by one severe, fragmented crack that may be accompanied by a few hairline cracks; or, (3) spall has deteriorated to the point where loose material is causing some FOD potential.	One of the following conditions exists: (1) spall is broken into two or more pieces defined by high-severity fragmented crack(s) with loose or absent fragments; (2) pieces of the spall have been displaced to the extent that a tire damage hazard exists; or (3) spall has deteriorated to the point where loose material is causing high FOD potential.

A corner spall smaller than 3 inches (76 mm) wide, measured from the edge of the slab, and filled with sealant is not recorded.

Spalling (Corner)

Low	Medium	High
		

Cracking

There are three types of cracking usually found on airport pavements.

Longitudinal, Transverse, and Diagonal Cracks (Mid-Panel Cracking)

Description

These cracks, that divide the slab into two or three pieces, are usually caused by a combination of load repetition, curling stresses, and shrinkage stresses. (For slabs divided into four or more pieces.) Low-severity cracks are usually warping- or friction-related and are not considered major structural distresses. Medium- or high-severity cracks are usually working cracks and are considered major structural distresses.

Note: Hairline cracks that are only a few feet long and do not extend across the entire slab are rated as shrinkage cracks.

Severity Levels

Low	Medium	High
Crack has little or minor spalling (no FOD potential). If non-filled, it has a mean width less than approximately ⅛ inch (3 mm). A filled crack can be of any width, but the filler material must be in satisfactory condition; or the slab is divided into three pieces by low-severity cracks.	One of the following conditions exists: (1) filled or non-filled crack is moderately spalled (some FOD potential); (2) a non-filled crack has a mean width between ⅛ and 1 inch (3 and 25 mm); (3) a filled crack is not spalled or only lightly spalled, but the filler is in unsatisfactory condition; or (4) the slab is divided into three pieces by two or more cracks, one of which is at least medium severity.	One of the following conditions exists: (1) filled or non-filled crack is severely spalled, causing definite FOD potential; (2) a non-filled crack has a mean width greater than approximately 1 inch (25 mm), creating a tire damage potential; or (3) the slab is divided into three pieces by two or more cracks, one of which is at least high severity.

Longitudinal, Transverse, and Diagonal (Mid-Panel Cracking, 20% or 40% Slabs)

Low	Medium	High
		

Corner Break

Description

A corner break is a crack that intersects the joints at a distance less than or equal to one half of the slab length on both sides, measured from the corner of the slab. For example, a slab with dimensions of 25 by 25 ft (7.5 by 7.5 m) that has a crack intersecting the joint 5 ft (1.5 m) from the corner on one side and 17 ft (5 m) on the other side is not considered a corner break; it is a diagonal crack. However, a crack that intersects 7 ft (2 m) on one side and 10 ft (3 m) on the other is considered a corner break. A corner break differs from a corner spall in that the crack extends vertically through the entire slab thickness, while a corner spall intersects the joint at an angle. Load repetition combined with loss of support and curling stresses usually cause corner breaks.

Severity Levels

Low	Medium	High
Crack has little or minor spalling (no FOD potential). If non-filled, it has a mean width less than approximately ⅛ inch (3 mm). A filled crack can be of any width, but the filler material must be in satisfactory condition. The area between the corner break and the joints is not cracked.	One of the following conditions exists: (1) filled or non-filled crack is moderately spalled (some FOD potential); (2) a non-filled crack has a mean width between ⅛ and 1 inch (3 and 25 mm); (3) a filled crack is not spalled or only lightly spalled, but the filler is in unsatisfactory condition; or (4) the area between the corner break and the joints is lightly cracked. Lightly cracked means one low-severity crack dividing the corner into two pieces.	One of the following conditions exists: (1) filled or non-filled crack is severely spalled, causing definite FOD potential; (2) a non-filled crack has a mean width greater than approximately 1 inch (25 mm), creating a tire damage potential; or (3) the area between the corner break and the joints is severely cracked.

Corner Break (10% or 30% Slabs)		
Low	Medium	High
		

Shattered Slab/Intersecting Cracks

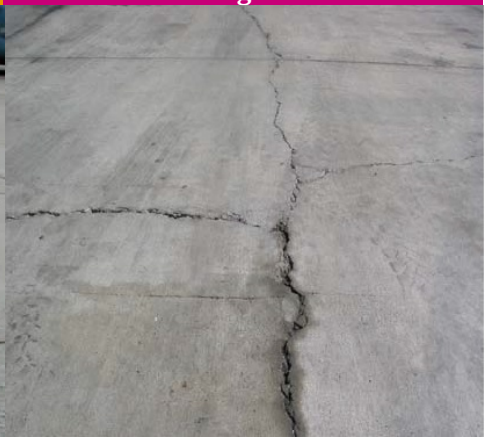
Description

Intersecting cracks are cracks that break the slab into four or more pieces due to overloading or inadequate support, or both. The high-severity level of this distress type, as defined as follows, is referred to as shattered slab. If all pieces or cracks are contained within a corner break, the distress is categorized as a severe corner break.

Severity Levels

Low	Medium	High
Slab is broken into four or five pieces predominantly defined by low-severity cracks.	Slab is broken into four or five pieces with over 15% of the cracks of medium severity (no high-severity cracks); slab is broken into six or more pieces with over 85% of the cracks of low severity.	At this level of severity, the slab is called shattered: (1) slab is broken into four or five pieces with some or all cracks of high severity; or (2) slab is broken into six or more pieces with over 15% of the cracks of medium or high severity.

Shattered Slab/Intersecting Cracks (10% or 30% Slabs)

Low	Medium	High
		

Surface Distress

There are two types of surface distress usually found on airport pavements.

Patching

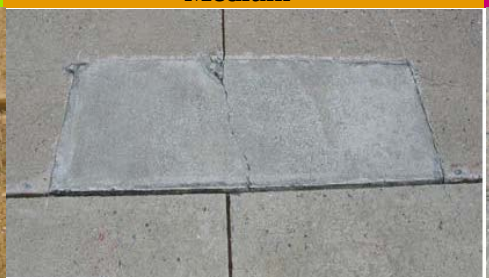
Description

A patch is an area where the origin al pavement has been removed and replaced by a filler material. For condition evaluation, patching is divided into two types: small (less than 5 ft^2 [0.5 m^2]) and large (over 5 ft^2). Large patches are described in the next section.

Severity Levels

Low	Medium	High
Patch is functioning well with very little or no deterioration.	Patch deterioration or moderate spalling, or both, can be seen around the edges. Patch material can be dislodged with considerable effort, causing some FOD potential.	Patch has deteriorated to a state that causes considerable roughness or high FOD potential, or both. The extent of the deterioration warrants replacement of the patch.

Patching (30% or 50% Slabs)

Low	Medium	High
		

Settlement or Faulting

Description

Settlement or faulting is a difference of elevation at a joint or crack caused by upheaval or consolidation.

Severity Levels

Severity levels are defined by the difference in elevation across the fault and the associated decrease in ride quality and safety as severity increases:

	Runways/Taxiways	**Aprons**
L	< ¼ inch (6 mm)	1/8 < ½ inch (3 to 13 mm)
M	¼ to ½ inch (6 to 13 mm)	½ to 1 inch (13 to 25 mm)
H	> ½ inch (13 mm)	> 1 inch (25 mm)

Settlement or Faulting (10% or 30% Slabs)		
Low	**Medium**	**High**
		

For each area of analysis, select the combinations of distress type, extent, and severity found in that area:

Distress Type and Extent		Severity		
Joint Seal Damage	None	Low Severity	Medium Severity	High Severity
Joint and Corner Spalls		Low Severity	Medium Severity	High Severity
Mid-Panel Cracks, 20% of slabs		Low Severity	Medium Severity	High Severity
Mid-Panel Cracks, 40% of slabs		Low Severity	Medium Severity	High Severity
Corner Breaks, 10% of slabs		Low Severity	Medium Severity	High Severity
Corner Breaks, 30% of slabs		Low Severity	Medium Severity	High Severity
Shattered Slabs, 10% of slabs		Low Severity	Medium Severity	High Severity
Shattered Slabs, 30% of slabs		Low Severity	Medium Severity	High Severity
Patches, 30% of slabs		Low Severity	Medium Severity	High Severity
Patches, 50% of slabs		Low Severity	Medium Severity	High Severity
Faulting, 10% of slabs		Low Severity	Medium Severity	High Severity
Faulting, 30% of slabs		Low Severity	Medium Severity	High Severity

Step 4. Determine Treatment

Using either asphalt or concrete pavement treatment tables, and previously identified airport classification, climatic zone, distress type-extent-severity, select the appropriate recommended and acceptable treatment. For all treatments except sealing and patching, it is recommended that a professional engineering firm with airport experience be engaged.

Example:

Airport Classification: Local
Climatic Zone: Dry-Freeze
Pavement Type: Concrete
Distress Type: Corner Breaks, 30% of slabs, Medium severity =

Recommended: Full-depth repair (local)
Acceptable: Crack/joint seal

If there are additional distress types, repeat step 4. For each distress combination, select the preferred treatment. A facility might select the acceptable treatment instead of the recommended treatment for many reasons, such as local contractors, availability of material, the time to complete the treatment, initial cost, etc.

Once the chosen treatment for each distress combination has been identified, the asphalt or concrete pavement treatment hierarchy table is consulted to determine whether a single treatment or multiple treatments should be performed. For example, if one combination suggested a fog seal and the other combination suggested an overlay, only the overlay would be performed. However, if the second combination suggested a crack seal, both would be performed.

Asphalt Pavement Treatment Tables

	Wet – Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Basic	Few long crack, Low severity	Do nothing	Crack seal/fill
	Few long crack, Med severity	Do nothing	Crack seal/fill
	Few long crack, High severity	Crack seal/fill	Patch/recon area
	Many long crack, Low severity	Do nothing, or AC overlay/mill+overlay	Crack seal/fill
	Many long crack, Med severity	Patch/reconstruct area or do nothing	Crack seal/fill
	Many long crack, High severity	AC overlay/mill+overlay	Patch/recon area
Asphalt	Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
	Trans crack, 50ft apart, Med severity	AC overlay/mill+overlay or do nothing	Crack seal/fill
	Trans crack, 50ft apart, High severity	Crack seal/fill	Patch/recon area
	Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
	Trans crack, 20ft apart, Med severity	AC overlay/mill+overlay or do nothing	Crack seal/fill
	Trans crack, 20ft apart, High severity	Crack seal/fill	Asphalt overlay/mill+overlay
	Block crack, Low severity	Do nothing	Crack seal/fill
	Block crack, Med severity	Do nothing	Crack seal/fill
	Block crack, High severity	Chip/cape seal	AC overlay/mill+overlay

Basic

Asphalt

Wet – Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Crack seal/fill	Do nothing
Few edge crack, Med severity	AC overlay/mill+overlay or patch/recon area	Crack seal/fill
Few edge crack, High severity	AC overlay/mill+overlay	Patch/recon area
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	AC overlay/mill+overlay or do nothing	Crack seal/fill
Reflection crack, High severity	AC overlay/mill+overlay or rehab/recon	Patch/recon area
Fatigue crack, 10%, Low severity	Do nothing	Crack seal/fill
Fatigue crack, 10%, Med severity	Fog/coal tar seal	Patch/recon area
Fatigue crack, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, Low severity	Fog/coal tar seal	AC overlay/mill+overlay or rehab/recon
Fatigue crack, 30%, Med severity	Patch/reconstruct area or rehab/recon	AC overlay/mill+overlay
Fatigue crack, 30%, High severity	AC overlay/mill+overlay or patch/recon area	Rehab/recon

	Wet – Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Basic	Start to weather	Fog/coal tar seal, rejuvenator	Do nothing
	Definitely weather	Do nothing	Fog/coal tar seal, rejuvenator
	Starting to ravel	Fog/coal tar seal, rejuvenator	Chip/cape seal
	Definitely ravel	Chip/cape seal	AC overlay/mill+overlay
Asphalt	Patch, 10%, Low severity	Slurry/micro	Do nothing
	Patch, 10%, Med severity	Do nothing	Slurry/micro or patch/recon area
	Patch, 10%, High severity	Patch/recon area	AC overlay/mill+overlay
	Patch, 30%, Low severity	Fog/coal tar seal	Do nothing
	Patch, 30%, Med severity	Fog/coal tar seal	Patch/recon area
	Patch, 30%, High severity	Patch/recon area	AC overlay/mill+overlay
	Rough, Long Wave Swell	Patch/recon area	Do nothing
	Rough, Many Long Wave Swell	Patch/recon area	AC overlay/mill+overlay
	Rough, Many Short Wave Bump	Patch/recon area	AC overlay/mill+overlay

Basic

Asphalt

Wet – No Freeze: Cracking

Distress	Acceptable	Recommended
Few long crack, Low severity	Do nothing or rejuvenator	Crack seal/fill
Few long crack, Med severity	Do nothing or rejuvenator	Crack seal/fill
Few long crack, High severity	AC overlay/mill+overlay	Patch/recon area
Many long crack, Low severity	Do nothing	Crack seal/fill
Many long crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Many long crack, High severity	Crack seal/fill	AC overlay/mill+overlay
Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, Med severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, High severity	AC overlay/mill+overlay	Crack seal/fill
Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 20ft apart, Med severity	Chip/cape seal	Crack seal/fill
Trans crack, 20ft apart, High severity	AC overlay/mill+overlay	Crack seal/fill
Block crack, Low severity	Do nothing	Crack seal/fill
Block crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Block crack, High severity	Chip/cape seal	AC overlay/mill+overlay

Basic

Asphalt

Wet – No Freeze: Cracking		
Distress	**Acceptable**	**Recommended**
Few edge crack, Low severity	Crack seal/fill	Do nothing
Few edge crack, Med severity	Rejuvenator	Crack seal/fill
Few edge crack, High severity	Crack seal/fill or rejuvenator	Patch/recon area
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	Crack seal/fill	Crack seal/fill
Reflection crack, High severity	Rehab/recon	Patch/recon area
Fatigue crack, 10%, Low severity	Patch/recon area	Crack seal/fill
Fatigue crack, 10%, Med severity	Chip/cape seal	Crack seal/fill
Fatigue crack, 10%, High severity	Chip/cape seal	Patch/recon area
Fatigue crack, 30%, Low severity	Rejuvenator	AC overlay/mill+overlay
Fatigue crack, 30%, Med severity	Patch/recon area	AC overlay/mill+overlay
Fatigue crack, 30%, High severity	AC overlay/mill+overlay	Rehab/recon

Basic

Asphalt

Wet – No Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Do nothing or rejuvenator	Fog/coal tar seal
Definitely weather	Rejuvenator or fog/coal tar seal	Slurry/micro
Starting to ravel	Slurry/micro	Rejuvenator
Definitely ravel	Chip/cape seal	AC overlay/mill+overlay
Patch, 10%, Low severity	Do nothing	Do nothing
Patch, 10%, Med severity	Fog/coal tar seal	Do nothing
Patch, 10%, High severity	Slurry/micro or chip/cape seal	Patch/recon area
Patch, 30%, Low severity	Crack seal/fill	Do nothing
Patch, 30%, Med severity	Chip/cape seal	AC overlay/mill+overlay
Patch, 30%, High severity	Rehab/recon	AC overlay/mill+overlay
Rough, Long Wave Swell	Patch/recon area	Do nothing
Rough, Many Long Wave Swell	Patch/recon area	AC overlay/mill+overlay
Rough, Many Short Wave Bump	Patch/recon area	AC overlay/mill+overlay

Basic

Asphalt

Dry – Freeze: Cracking		
Distress	**Acceptable**	**Recommended**
Few long crack, Low severity	Do nothing	Crack seal/fill
Few long crack, Med severity	Crack seal/fill	Crack seal/fill
Few long crack, High severity	Crack seal/fill	Patch/recon area
Many long crack, Low severity	Do nothing	Crack seal/fill
Many long crack, Med severity	Crack seal/fill	Crack seal/fill
Many long crack, High severity	Patch/recon area	AC overlay/mill+overlay
Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, Med severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, High severity	AC overlay/mill+overlay	Crack seal/fill
Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 20ft apart, Med severity	Chip/cape seal	Crack seal/fill
Trans crack, 20ft apart, High severity	Chip/cape seal	AC overlay/mill+overlay
Block crack, Low severity	Do nothing	Crack seal/fill
Block crack, Med severity	Chip/cape seal	Crack seal/fill
Block crack, High severity	Chip/cape seal	AC overlay/mill+overlay

Basic

Asphalt

Dry – Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Do nothing	Crack seal/fill
Few edge crack, Med severity	Crack seal/fill	Crack seal/fill
Few edge crack, High severity	Crack seal/fill	Patch/recon area
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	Crack seal/fill	Crack seal/fill
Reflection crack, High severity	Crack seal/fill or Rehab/recon	Patch/recon area
Fatigue crack, 10%, Low severity	Rejuvenator	Crack seal/fill
Fatigue crack, 10%, Med severity	Chip/cape seal	Patch/recon area
Fatigue crack, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, Low severity	Chip/cape seal	AC overlay/mill+overlay
Fatigue crack, 30%, Med severity	Chip/cape seal	Patch/recon area
Fatigue crack, 30%, High severity	AC overlay/mill+overlay	Patch/recon area

Basic

Asphalt

Dry – Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Fog/coal tar seal	Rejuvenator
Definitely weather	Fog/coal tar seal	Slurry/micro
Starting to ravel	Slurry/micro	Chip/cape seal
Definitely ravel	Slurry/micro	Chip/cape seal
Patch, 10%, Low severity	Crack seal/fill	Do nothing
Patch, 10%, Med severity	Slurry/micro or fog/coal tar seal	Do nothing
Patch, 10%, High severity	Slurry/micro or fog/coal tar seal	Patch/recon area
Patch, 30%, Low severity	Crack seal/fill	Do nothing
Patch, 30%, Med severity	Patch/recon area	AC overlay/mill+overlay
Patch, 30%, High severity	Patch/recon area	AC overlay/mill+overlay
Rough, Long Wave Swell	Patch/recon area	Do nothing
Rough, Many Long Wave Swell	AC overlay/mill+overlay	Do nothing
Rough, Many Short Wave Bump	AC overlay/mill+overlay	Do nothing

Dry – No Freeze: Cracking

	Distress	Acceptable	Recommended
Basic	Few long crack, Low severity	Crack seal/fill	Do nothing
	Few long crack, Med severity	Do nothing	Crack seal/fill
	Few long crack, High severity	Crack seal/fill	Patch/recon area
	Many long crack, Low severity	Crack seal/fill	Do nothing
	Many long crack, Med severity	Do nothing	Crack seal/fill
	Many long crack, High severity	Crack seal/fill	AC overlay/mill+overlay
Asphalt	Trans crack, 50ft apart, Low severity	Crack seal/fill	Do nothing
	Trans crack, 50ft apart, Med severity	Do nothing	Crack seal/fill
	Trans crack, 50ft apart, High severity	Patch/recon area	Crack seal/fill
	Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
	Trans crack, 20ft apart, Med severity	Do nothing	Crack seal/fill
	Trans crack, 20ft apart, High severity	Chip/cape seal	Crack seal/fill
	Block crack, Low severity	Crack seal/fill	Do nothing
	Block crack, Med severity	Do nothing	Crack seal/fill
	Block crack, High severity	Crack seal/fill	AC overlay/mill+overlay

Basic

Asphalt

Dry – No Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Crack seal/fill	Do nothing
Few edge crack, Med severity	Do nothing	Crack seal/fill
Few edge crack, High severity	Crack seal/fill	Patch/recon area
Reflection crack, Low severity	Crack seal/fill	Do nothing
Reflection crack, Med severity	Do nothing	Crack seal/fill
Reflection crack, High severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, Low severity	Do nothing	Crack seal/fill
Fatigue crack, 10%, Med severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, Low severity	Rejuvenator	AC overlay/mill+overlay
Fatigue crack, 30%, Med severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, High severity	Patch/recon area	Rehab/recon

Basic

Asphalt

Dry – No Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Fog/coal tar seal	Rejuvenator
Definitely weather	Rejuvenator	Fog/coal tar seal
Starting to ravel	Fog/coal tar seal	Slurry/micro
Definitely ravel	Slurry/micro	Chip/cape seal
Patch, 10%, Low severity	Crack seal/fill	Do nothing
Patch, 10%, Med severity	Do nothing	Crack seal/fill
Patch, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Patch, 30%, Low severity	Crack seal/fill	Do nothing
Patch, 30%, Med severity	AC overlay/mill+overlay	Chip/cape seal or slurry/micro
Patch, 30%, High severity	Chip/cape seal or slurry/micro	AC overlay/mill+overlay
Rough, Long Wave Swell	Patch/recon area	Do nothing
Rough, Many Long Wave Swell	AC overlay/mill+overlay	Do nothing
Rough, Many Short Wave Bump	AC overlay/mill+overlay	Do nothing

Local

Asphalt

Wet – Freeze: Cracking

Distress	Acceptable	Recommended
Few long crack, Low severity	Do nothing	Crack seal/fill
Few long crack, Med severity	Crack seal/fill	Crack seal/fill
Few long crack, High severity	Crack seal/fill	Patch/recon area
Many long crack, Low severity	Rejuvenator or fog/coal tar seal	Crack seal/fill
Many long crack, Med severity	AC Overlay/mill+ overlay	Crack seal/fill
Many long crack, High severity	Rehab/recon	AC Overlay/mill+ overlay
Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, Med severity	Crack seal/fill	Crack seal/fill
Trans crack, 50ft apart, High severity	Patch/recon area	AC overlay/mill+overlay
Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 20ft apart, Med severity	Crack seal/fill	AC overlay/mill+overlay
Trans crack, 20ft apart, High severity	Chip/cape seal	AC overlay/mill+overlay
Block crack, Low severity	Rejuvenator	Crack seal/fill
Block crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Block crack, High severity	Rehab/recon	AC overlay/mill+overlay

Local

Asphalt

Wet – Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Do nothing	Crack seal/fill
Few edge crack, Med severity	Patch/recon area	Crack seal/fill
Few edge crack, High severity	Crack seal/fill	Patch/recon area
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	Crack seal/fill	Crack seal/fill
Reflection crack, High severity	Rehab/recon	Patch/recon area
Fatigue crack, 10%, Low severity	Do nothing	Crack seal/fill
Fatigue crack, 10%, Med severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, Low severity	Rehab/recon	AC overlay/mill+overlay
Fatigue crack, 30%, Med severity	Rehab/recon	AC overlay/mill+overlay
Fatigue crack, 30%, High severity	AC overlay/mill+overlay	Rehab/recon

	Wet – Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Local	Start to weather	Rejuvenator	Do nothing
	Definitely weather	Fog/coal tar seal	Rejuvenator
	Starting to ravel	Fog/coal tar seal	Slurry/micro
	Definitely ravel	Slurry/micro or chip/cape seal	AC overlay/mill+overlay
Asphalt	Patch, 10%, Low severity	Crack seal/fill	Do nothing
	Patch, 10%, Med severity	Patch/recon area	Crack seal/fill
	Patch, 10%, High severity	Chip/cape seal	Patch/recon area
	Patch, 30%, Low severity	Crack seal/fill	Do nothing
	Patch, 30%, Med severity	AC overlay/mill+overlay	Patch/recon area
	Patch, 30%, High severity	Patch/recon area	AC overlay/mill+overlay
	Rough, Long Wave Swell	Do nothing	Do nothing
	Rough, Many Long Wave Swell	Patch/recon area	AC overlay/mill+overlay
	Rough, Many Short Wave Bump	Patch/recon area	AC overlay/mill+overlay

	Wet – No Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Local	Few long crack, Low severity	Do nothing	Crack seal/fill
	Few long crack, Med severity	Do nothing	Crack seal/fill
	Few long crack, High severity	Crack seal/fill	Patch/recon area
	Many long crack, Low severity	Rejuvenator	Chip/cape seal
	Many long crack, Med severity	AC overlay/mill+overlay	Chip/cape seal
Asphalt	Many long crack, High severity	Crack seal/fill	AC overlay/mill+overlay
	Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
	Trans crack, 50ft apart, Med severity	Crack seal/fill	Crack seal/fill
	Trans crack, 50ft apart, High severity	Patch/recon area	AC overlay/mill+overlay
	Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
	Trans crack, 20ft apart, Med severity	Crack seal/fill	AC overlay/mill+overlay
	Trans crack, 20ft apart, High severity	Crack seal/fill	AC overlay/mill+overlay
	Block crack, Low severity	Do nothing	Crack seal/fill
	Block crack, Med severity	Rejuvenator	Crack seal/fill
	Block crack, High severity	Rehab/recon	AC overlay/mill+overlay

	Wet – No Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Local	Few edge crack, Low severity	Do nothing	Crack seal/fill
	Few edge crack, Med severity	Patch/recon area	Crack seal/fill
	Few edge crack, High severity	Crack seal/fill	Patch/recon area
	Reflection crack, Low severity	Do nothing	Crack seal/fill
	Reflection crack, Med severity	Crack seal/fill	Crack seal/fill
Asphalt	Reflection crack, High severity	Patch/recon area	Rehab/recon
	Fatigue crack, 10%, Low severity	Rejuvenator	Patch/recon area
	Fatigue crack, 10%, Med severity	Rejuvenator	Patch/recon area
	Fatigue crack, 10%, High severity	Rejuvenator	Patch/recon area
	Fatigue crack, 30%, Low severity	Rejuvenator	Patch/recon area
	Fatigue crack, 30%, Med severity	Rejuvenator	Patch/recon area
	Fatigue crack, 30%, High severity	Patch/recon area	Rehab/recon

Local

Asphalt

Wet – No Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Fog/coal tar seal	Rejuvenator
Definitely weather	Rejuvenator or fog/coal tar seal	Slurry/micro
Starting to ravel	Rejuvenator or fog/coal tar seal	Slurry/micro
Definitely ravel	Slurry/micro or chip/cape seal	AC overlay/mill+overlay
Patch, 10%, Low severity	Crack seal/fill	Do nothing
Patch, 10%, Med severity	Crack seal/fill	Patch/recon area
Patch, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Patch, 30%, Low severity	Crack seal/fill	Do nothing
Patch, 30%, Med severity	Slurry/micro or chip/cape seal	Patch/recon area
Patch, 30%, High severity	AC overlay/mill+overlay	Patch/recon area
Rough, Long Wave Swell	Patch/recon area	Do nothing
Rough, Many Long Wave Swell	Patch/recon area	Do nothing
Rough, Many Short Wave Bump	Patch/recon area	AC overlay/mill+overlay

	Dry – Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Local	Few long crack, Low severity	Rejuvenator	Crack seal/fill
	Few long crack, Med severity	Fog/coal tar seal	Crack seal/fill
	Few long crack, High severity	Crack seal/fill	Patch/recon area
	Many long crack, Low severity	Fog/coal tar seal or rejuvenator	Crack seal/fill
	Many long crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Asphalt	Many long crack, High severity	AC overlay/mill+overlay	Rehab/recon
	Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
	Trans crack, 50ft apart, Med severity	Crack seal/fill	Crack seal/fill
	Trans crack, 50ft apart, High severity	Crack seal/fill	AC overlay/mill+overlay
	Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
	Trans crack, 20ft apart, Med severity	Crack seal/fill	Crack seal/fill
	Trans crack, 20ft apart, High severity	Crack seal/fill	AC overlay/mill+overlay
	Block crack, Low severity	Do nothing	Fog/Coal Tar seal
	Block crack, Med severity	Crack seal/fill	AC overlay/mill+overlay
	Block crack, High severity	AC overlay/mill+ overlay	Rehab/recon

Local

Asphalt

Dry – Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Crack seal/fill	Do nothing
Few edge crack, Med severity	Patch/recon area	Crack seal/fill
Few edge crack, High severity	Crack seal/fill	Patch/recon area
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	Crack seal/fill	Crack seal/fill
Reflection crack, High severity	Patch/recon area	Rehab/recon
Fatigue crack, 10%, Low severity	Fog/coal tar seal or rejuvenator	Crack seal/fill
Fatigue crack, 10%, Med severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, High severity	AC overlay/mill+ overlay	Patch/recon area
Fatigue crack, 30%, Low severity	Fog/coal tar seal	AC overlay/mill+ overlay
Fatigue crack, 30%, Med severity	Patch/recon area	AC overlay/mill+ overlay
Fatigue crack, 30%, High severity	Patch/recon area	Rehab/recon

Local

Asphalt

Dry – Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Rejuvenator	Slurry/micro or fog/coal tar seal
Definitely weather	Rejuvenator	Slurry/micro or fog/coal tar seal
Starting to ravel	AC overlay/mill+overlay	Slurry/micro or fog/coal tar seal
Definitely ravel	Slurry/micro or chip/cape seal	AC overlay/mill+overlay
Patch, 10%, Low severity	Crack seal/fill	Do nothing
Patch, 10%, Med severity	Patch/recon area	Do nothing
Patch, 10%, High severity	AC overlay/mill+ overlay	Patch/recon area
Patch, 30%, Low severity	Crack seal/fill	Do nothing
Patch, 30%, Med severity	Patch/recon area	Chip/cape seal
Patch, 30%, High severity	Rehab/recon	AC overlay/mill+ overlay
Rough, Long Wave Swell	Patch/recon area	Do nothing
Rough, Many Long Wave Swell	Patch/recon area	AC overlay/mill+overlay
Rough, Many Short Wave Bump	Patch/recon area	AC overlay/mill+overlay

Dry – No Freeze: Cracking

	Distress	Acceptable	Recommended
Local	Few long crack, Low severity	Do nothing	Crack seal/fill
	Few long crack, Med severity	Do nothing	Crack seal/fill
	Few long crack, High severity	Crack seal/fill	Patch/recon area
	Many long crack, Low severity	Fog/coal tar seal	Chip/cape seal
	Many long crack, Med severity	Slurry/micro or fog/coal tar seal or crack seal	Chip/cape seal
	Many long crack, High severity	Patch/recon area	AC overlay/mill+overlay
Asphalt	Trans crack, 50ft apart, Low severity	Crack seal/fill	Do nothing
	Trans crack, 50ft apart, Med severity	Do nothing	Crack seal/fill
	Trans crack, 50ft apart, High severity	AC overlay/mill+overlay	Crack seal/fill
	Trans crack, 20ft apart, Low severity	Crack seal/fill	Fog/coal tar seal
	Trans crack, 20ft apart, Med severity	Chip/cape seal	AC overlay/mill+overlay
	Trans crack, 20ft apart, High severity	Chip/cape seal	AC overlay/mill+overlay
	Block crack, Low severity	Do nothing or Crack seal/fill	Fog/coal tar seal
	Block crack, Med severity	Crack seal/fill	Chip/cape seal
	Block crack, High severity	Crack seal/fill	AC overlay/mill+overlay

Local

Asphalt

Dry – No Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Do nothing	Crack seal/fill
Few edge crack, Med severity	Do nothing	Crack seal/fill
Few edge crack, High severity	Patch/recon area	Crack seal/fill
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	Do nothing	Crack seal/fill
Reflection crack, High severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, Low severity	Crack seal/fill	Do nothing
Fatigue crack, 10%, Med severity	Do nothing or crack seal/fill	Patch/recon area
Fatigue crack, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, Low severity	Patch/recon area	AC overlay/mill+overlay
Fatigue crack, 30%, Med severity	AC overlay/mill+overlay or patch/recon area	Rehab/recon
Fatigue crack, 30%, High severity	AC overlay/mill+overlay or patch/recon area	Rehab/recon

	Dry – No Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Local	Start to weather	Slurry/micro or chip/cape seal	Fog/coal tar seal
	Definitely weather	Slurry/micro or chip/cape seal	Fog/coal tar seal
	Starting to ravel	Slurry/micro or chip/cape seal	Fog/coal tar seal
	Definitely ravel	Slurry/micro or chip/cape seal	Fog/coal tar seal
Asphalt	Patch, 10%, Low severity	Crack seal/fill	Do nothing
	Patch, 10%, Med severity	Do nothing	Patch/recon area
	Patch, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
	Patch, 30%, Low severity	Slurry/micro or chip/cape seal	Do nothing
	Patch, 30%, Med severity	Slurry/micro or fog/coal tar seal	Chip/cape seal
	Patch, 30%, High severity	Patch/recon area or rehab/recon	AC overlay/mill+overlay
	Rough, Long Wave Swell	Patch/recon area	Do nothing
	Rough, Many Long Wave Swell	Patch/recon area	AC overlay/mill+overlay
	Rough, Many Short Wave Bump	Patch/recon area	AC overlay/mill+overlay

Regional

Asphalt

Wet – Freeze: Cracking

Distress	Acceptable	Recommended
Few long crack, Low severity	Do nothing	Crack seal/fill
Few long crack, Med severity	Crack seal/fill	Crack seal/fill
Few long crack, High severity	Crack seal/fill or AC overlay/mill+overlay	Patch/recon area
Many long crack, Low severity	Do nothing	Crack seal/fill
Many long crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Many long crack, High severity	AC overlay/mill+overlay	Rehab/recon
Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, Med severity	Rejuvenator, fog/coal tar seal	Crack seal/fill
Trans crack, 50ft apart, High severity	Crack seal/fill	Patch/recon area
Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 20ft apart, Med severity	AC overlay/mill+overlay	Crack seal/fill
Trans crack, 20ft apart, High severity	Chip/cape seal	AC overlay/mill+overlay
Block crack, Low severity	Do nothing	Crack seal/fill
Block crack, Med severity	Chip/cape seal	Crack seal/fill
Block crack, High severity	Rehab/recon	AC overlay/mill+overlay

Regional

Asphalt

Wet – Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Do nothing	Crack seal/fill
Few edge crack, Med severity	Patch/recon area	Crack seal/fill
Few edge crack, High severity	Crack seal/fill	Patch/recon area
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	Crack seal/fill	Crack seal/fill
Reflection crack, High severity	Rehab/recon	Patch/recon area
Fatigue crack, 10%, Low severity	Patch/recon area	Crack seal/fill
Fatigue crack, 10%, Med severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, Low severity	Patch/recon area	AC overlay/mill+overlay
Fatigue crack, 30%, Med severity	Patch/recon area	AC overlay/mill+overlay
Fatigue crack, 30%, High severity	Patch/recon area	Rehab/recon

Regional

Asphalt

Wet – Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Slurry/micro or fog/coal tar seal	Rejuvenator
Definitely weather	Fog/coal tar seal or rejuvenator	Slurry/micro
Starting to ravel	Fog/coal tar seal or rejuvenator	Slurry/micro
Definitely ravel	Slurry/micro or chip/cape seal	AC overlay/mill+overlay
Patch, 10%, Low severity	Crack seal/fill	Do nothing
Patch, 10%, Med severity	Crack seal/fill	Patch/recon area
Patch, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Patch, 30%, Low severity	Slurry/micro	Do nothing
Patch, 30%, Med severity	Patch/recon area	AC overlay/mill+overlay
Patch, 30%, High severity	AC overlay/mill+overlay	Patch/recon area
Rough, Long Wave Swell	AC overlay/mill+overlay	Do nothing
Rough, Many Long Wave Swell	Patch/recon area	AC overlay/mill+overlay
Rough, Many Short Wave Bump	Patch/recon area	AC overlay/mill+overlay

Regional

Asphalt

Wet – No Freeze: Cracking

Distress	Acceptable	Recommended
Few long crack, Low severity	Do nothing	Crack seal/fill
Few long crack, Med severity	Do nothing	Crack seal/fill
Few long crack, High severity	Crack seal/fill	Patch/recon area
Many long crack, Low severity	Do nothing	Crack seal/fill
Many long crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Many long crack, High severity	Patch/recon area	AC overlay/mill+overlay
Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, Med severity	Crack seal/fill	Crack seal/fill
Trans crack, 50ft apart, High severity	Patch/recon area	Crack seal/fill
Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 20ft apart, Med severity	AC overlay/mill+overlay	Crack seal/fill
Trans crack, 20ft apart, High severity	Chip/cape seal	AC overlay/mill+overlay
Block crack, Low severity	Do nothing	Crack seal/fill
Block crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Block crack, High severity	Rehab/recon	AC overlay/mill+overlay

Regional

Asphalt

Wet – No Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Crack seal/fill	Do nothing
Few edge crack, Med severity	Patch/recon area	Crack seal/fill
Few edge crack, High severity	Crack seal/fill	Patch/recon area
Reflection crack, Low severity	Crack seal/fill	Do nothing
Reflection crack, Med severity	Crack seal/fill	Crack seal/fill
Reflection crack, High severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, Low severity	Crack seal/fill	Do nothing
Fatigue crack, 10%, Med severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, High severity	AC Overlay/mill+ overlay or patch/recon area	Patch/recon area
Fatigue crack, 30%, Low severity	Patch/recon area	AC overlay/mill+overlay
Fatigue crack, 30%, Med severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, High severity	Patch/recon area	Rehab/recon

Regional

Asphalt

Wet – No Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Fog/coal tar seal	Rejuvenator
Definitely weather	Rejuvenator	Slurry/micro
Starting to ravel	Rejuvenator	Slurry/micro
Definitely ravel	Slurry/micro or chip/cape seal	AC overlay/mill+overlay
Patch, 10%, Low severity	Crack seal/fill	Do nothing
Patch, 10%, Med severity	Crack seal/fill	Patch/recon area
Patch, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Patch, 30%, Low severity	Slurry/micro or chip/cape seal	Do nothing
Patch, 30%, Med severity	Patch/recon area	AC overlay/mill+overlay
Patch, 30%, High severity	AC overlay/mill+overlay	Rehab/recon
Rough, Long Wave Swell	AC overlay/mill+overlay	Do nothing
Rough, Many Long Wave Swell	AC overlay/mill+overlay or do nothing	Patch/recon area
Rough, Many Short Wave Bump	AC overlay/mill+overlay	Patch/recon area

Regional

Asphalt

Dry – Freeze: Cracking

Distress	Acceptable	Recommended
Few long crack, Low severity	Do nothing	Crack seal/fill
Few long crack, Med severity	Crack seal/fill	Crack seal/fill
Few long crack, High severity	Crack seal/fill	Patch/recon area
Many long crack, Low severity	Do nothing	Crack seal/fill
Many long crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Many long crack, High severity	Crack seal/fill	Rehab/recon
Trans crack, 50ft apart, Low severity	Crack seal/fill	Do nothing
Trans crack, 50ft apart, Med severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, High severity	AC overlay/mill+overlay	Crack seal/fill
Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 20ft apart, Med severity	Chip/cape seal or AC overlay/mill+ overlay	Crack seal/fill
Trans crack, 20ft apart, High severity	Chip/cape seal or AC overlay/mill+ overlay	Crack seal/fill
Block crack, Low severity	Do nothing	Crack seal/fill
Block crack, Med severity	Chip/cape seal	Crack seal/fill
Block crack, High severity	Chip/cape seal or AC overlay/mill+overlay	Rehab/recon

Regional

Asphalt

Dry – Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Crack seal/fill	Do nothing
Few edge crack, Med severity	Patch/recon area	Crack seal/fill
Few edge crack, High severity	Patch/recon area	AC overlay/mill+overlay
Reflection crack, Low severity	Crack seal/fill	Do nothing
Reflection crack, Med severity	Crack seal/fill	Crack seal/fill
Reflection crack, High severity	Patch/recon area	Rehab/recon
Fatigue crack, 10%, Low severity	Patch/recon area	Crack seal/fill
Fatigue crack, 10%, Med severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, Low severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, Med severity	Patch/recon area	Rehab/recon
Fatigue crack, 30%, High severity	Patch/recon area	Rehab/recon

Regional

Asphalt

Dry – Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Do nothing	Slurry/micro, fog/coal tar seal, rejuvenator
Definitely weather	Slurry/micro	Rejuvenator
Starting to ravel	AC overlay/mill+overlay	Slurry/micro or Chip/cape seal
Definitely ravel	Slurry/micro or chip/cape seal	AC overlay/mill+overlay
Patch, 10%, Low severity	Crack seal/fill	Do nothing
Patch, 10%, Med severity	Crack seal/fill	Do nothing
Patch, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Patch, 30%, Low severity	AC overlay/mill+overlay	Do nothing
Patch, 30%, Med severity	Chip/cape seal or AC overlay/mill+overlay	AC overlay/mill+overlay
Patch, 30%, High severity	AC overlay/mill+overlay	Patch/recon area
Rough, Long Wave Swell	Do nothing	AC overlay/mill+overlay
Rough, Many Long Wave Swell	Patch/recon area	AC overlay/mill+overlay
Rough, Many Short Wave Bump	Patch/recon area	AC overlay/mill+overlay

Regional

Asphalt

Dry – No Freeze: Cracking

Distress	Acceptable	Recommended
Few long crack, Low severity	Do nothing	Crack seal/fill
Few long crack, Med severity	Crack seal/fill	Crack seal/fill
Few long crack, High severity	Crack seal/fill	Patch/recon area
Many long crack, Low severity	Do nothing	Crack seal/fill
Many long crack, Med severity	Crack seal/fill	Crack seal/fill
Many long crack, High severity	Crack seal/fill	AC overlay/mill+overlay
Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, Med severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, High severity	Crack seal/fill	Patch/recon area
Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 20ft apart, Med severity	Crack seal/fill or AC overlay/mill+overlay	Crack seal/fill
Trans crack, 20ft apart, High severity	Crack seal/fill	AC overlay/mill+overlay
Block crack, Low severity	Do nothing	Crack seal/fill
Block crack, Med severity	Chip/cape seal	Crack seal/fill
Block crack, High severity	Chip/cape seal	AC overlay/mill+overlay

Regional

Asphalt

Dry – No Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Do nothing	Crack seal/fill
Few edge crack, Med severity	Patch/recon area	Crack seal/fill
Few edge crack, High severity	Crack seal/fill	Patch/recon area
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	Crack seal/fill	Crack seal/fill
Reflection crack, High severity	Rehab/recon	Patch/recon area
Fatigue crack, 10%, Low severity	Do nothing	Crack seal/fill
Fatigue crack, 10%, Med severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, High severity	Rehab/recon	Patch/recon area
Fatigue crack, 30%, Low severity	Patch/recon area	AC overlay/mill+overlay
Fatigue crack, 30%, Med severity	Patch/recon area	AC overlay/mill+overlay
Fatigue crack, 30%, High severity	Patch/recon area	Rehab/recon

Regional

Asphalt

Dry – No Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Slurry/micro	Rejuvenator
Definitely weather	Chip/cape seal	Fog/coal tar seal
Starting to ravel	Chip/cape seal	Slurry/micro
Definitely ravel	Slurry/micro or chip/cape seal	AC overlay/mill+overlay
Patch, 10%, Low severity	Do nothing	Crack seal/fill
Patch, 10%, Med severity	Crack seal/fill	Patch/recon area
Patch, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Patch, 30%, Low severity	Slurry/micro	Do nothing
Patch, 30%, Med severity	Chip/cape seal	AC overlay/mill+overlay
Patch, 30%, High severity	AC overlay/mill+overlay	Rehab/recon
Rough, Long Wave Swell	AC overlay/mill+overlay	Do nothing
Rough, Many Long Wave Swell	Patch/recon area	AC overlay/mill+overlay
Rough, Many Short Wave Bump	Patch/recon area	AC overlay/mill+overlay

National

Asphalt

Wet – Freeze: Cracking

Distress	Acceptable	Recommended
Few long crack, Low severity	Do nothing	Crack seal/fill
Few long crack, Med severity	Crack seal/fill	Crack seal/fill
Few long crack, High severity	Crack seal/fill	Patch/recon area
Many long crack, Low severity	Do nothing	Crack seal/fill
Many long crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Many long crack, High severity	AC overlay/mill+overlay	Rehab or Reconstruct
Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, Med severity	Crack seal/fill	Crack seal/fill
Trans crack, 50ft apart, High severity	Crack seal/fill	Patch/recon area
Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 20ft apart, Med severity	AC overlay/mill+overlay	Crack seal/fill
Trans crack, 20ft apart, High severity	Crack seal/fill or Chip/cape seal	AC overlay/mill+overlay
Block crack, Low severity	Do nothing, Chip/cape seal	Crack seal/fill
Block crack, Med severity	Chip/cape seal or AC overlay/mill+overlay	Crack seal/fill
Block crack, High severity	Chip/cape seal or AC overlay/mill+overlay	Rehab or Reconstruct

National

Asphalt

Wet – Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Crack seal/fill	Do nothing
Few edge crack, Med severity	Patch/recon area	Crack seal/fill
Few edge crack, High severity	Crack seal/fill	Patch/recon area
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	Crack seal/fill	Crack seal/fill
Reflection crack, High severity	Patch/recon area	Rehab or Reconstruct
Fatigue crack, 10%, Low severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, Med severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, High severity	Rehab/recon	Patch/recon area
Fatigue crack, 30%, Low severity	Patch/recon area	Rehab or Reconstruct
Fatigue crack, 30%, Med severity	Patch/recon area	Rehab or Reconstruct
Fatigue crack, 30%, High severity	Patch/recon area	Rehab or Reconstruct

National

Asphalt

Wet – Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Do nothing	Rejuvenator or fog/coal tar seal
Definitely weather	Rejuvenator or fog/coal tar seal	Slurry/micro
Starting to ravel	Rejuvenator or fog/coal tar seal	Slurry/micro
Definitely ravel	Chip/cape seal	AC overlay/mill+overlay
Patch, 10%, Low severity	Crack seal/fill	Do nothing
Patch, 10%, Med severity	Crack seal/fill	Patch/recon area
Patch, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Patch, 30%, Low severity	Slurry/micro or chip/cape seal	Do nothing
Patch, 30%, Med severity	Chip/cape seal	AC overlay/mill+overlay
Patch, 30%, High severity	AC overlay/mill+ overlay or patch/recon area	Rehab or Reconstruct
Rough, Long Wave Swell	Patch/recon area	AC overlay/mill+ overlay or do nothing
Rough, Many Long Wave Swell	Rehab or Reconstruct	AC overlay/mill+overlay
Rough, Many Short Wave Bump	AC overlay/mill+overlay	Patch/recon area

National

Asphalt

Wet – No Freeze: Cracking

Distress	Acceptable	Recommended
Few long crack, Low severity	Do nothing	Crack seal/fill
Few long crack, Med severity	Crack seal/fill	Crack seal/fill
Few long crack, High severity	Crack seal/fill	Patch/recon area
Many long crack, Low severity	Rejuvenator, fog/coal tar seal	Crack seal/fill
Many long crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Many long crack, High severity	AC overlay/mill+overlay	Patch/recon area
Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, Med severity	Crack seal/fill	Crack seal/fill
Trans crack, 50ft apart, High severity	AC overlay/mill+overlay	Patch/recon area
Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 20ft apart, Med severity	AC overlay/mill+overlay	Crack seal/fill
Trans crack, 20ft apart, High severity	Crack seal/fill	AC overlay/mill+overlay
Block crack, Low severity	Do nothing, chip/cape seal	Crack seal/fill
Block crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Block crack, High severity	AC overlay/mill+overlay	Rehab/recon

National

Asphalt

Wet – No Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Do nothing	Crack seal/fill
Few edge crack, Med severity	Patch/recon area	Crack seal/fill
Few edge crack, High severity	Crack seal/fill	Patch/recon area
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	Crack seal/fill	Crack seal/fill
Reflection crack, High severity	Patch/recon area	Rehab/recon
Fatigue crack, 10%, Low severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, Med severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, High severity	AC overlay/mill+overlay	Rehab/recon
Fatigue crack, 30%, Low severity	AC overlay/mill+overlay or patch/recon area	Rehab/recon
Fatigue crack, 30%, Med severity	AC overlay/mill+overlay or patch/recon area	Rehab/recon
Fatigue crack, 30%, High severity	Patch/recon area	Rehab/recon

National

Asphalt

Wet – No Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Fog/coal tar seal	Rejuvenator
Definitely weather	Rejuvenator or fog/coal tar seal	Slurry/micro
Starting to ravel	Rejuvenator or fog/coal tar seal	Slurry/micro
Definitely ravel	Slurry/micro or chip/cape seal	AC overlay/mill+overlay
Patch, 10%, Low severity	Crack seal/fill	Do nothing
Patch, 10%, Med severity	Crack seal/fill	Patch/recon area
Patch, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Patch, 30%, Low severity	Slurry/micro or cape/chip seal	Do nothing
Patch, 30%, Med severity	Cape/Chip seal	AC overlay/mill+overlay
Patch, 30%, High severity	AC overlay/mill+overlay	Rehab/recon
Rough, Long Wave Swell	AC overlay/mill+overlay	Do nothing
Rough, Many Long Wave Swell	Patch/recon area	AC overlay/mill+overlay
Rough, Many Short Wave Bump	Patch/recon area	AC overlay/mill+overlay

National

Asphalt

Dry – Freeze: Cracking

Distress	Acceptable	Recommended
Few long crack, Low severity	Do nothing	Crack seal/fill
Few long crack, Med severity	Crack seal/fill	Crack seal/fill
Few long crack, High severity	Crack seal/fill	Patch/recon area
Many long crack, Low severity	Do nothing	Crack seal/fill
Many long crack, Med severity	AC overlay/mill+overlay	Crack seal/fill
Many long crack, High severity	AC overlay/mill+overlay	Rehab/recon
Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, Med severity	Crack seal/fill	Crack seal/fill
Trans crack, 50ft apart, High severity	Crack seal/fill	Patch/recon area
Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 20ft apart, Med severity	AC overlay/mill+overlay	Crack seal/fill
Trans crack, 20ft apart, High severity	Crack seal/fill or chip/cape seal	AC overlay/mill+overlay
Block crack, Low severity	Do nothing	Crack seal/fill
Block crack, Med severity	Crack seal/fill	Chip/cape seal
Block crack, High severity	Chip/cape seal	Rehab/recon

National

Asphalt

Dry – Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Crack seal/fill	Do nothing
Few edge crack, Med severity	Patch/recon area	Crack seal/fill
Few edge crack, High severity	Crack seal/fill	Patch/recon area
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	Chip/cape seal or AC overlay or mill+overlay	Crack seal/fill
Reflection crack, High severity	Patch/recon area	Rehab/recon
Fatigue crack, 10%, Low severity	Patch/recon area	Crack seal/fill
Fatigue crack, 10%, Med severity	Crack seal/fill	Patch/recon area
Fatigue crack, 10%, High severity	Crack seal/fill	Patch/recon area
Fatigue crack, 30%, Low severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, Med severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, High severity	Patch/recon area	Rehab/recon

National

Asphalt

Dry – Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Slurry/micro	Rejuvenator or fog/coal tar seal
Definitely weather	Slurry/micro	Rejuvenator or fog/coal tar seal
Starting to ravel	Rejuvenator or fog/coal tar seal	Slurry/micro
Definitely ravel	Slurry/micro or chip/cape seal	AC overlay/mill+overlay
Patch, 10%, Low severity	Crack seal/fill	Do nothing
Patch, 10%, Med severity	Crack seal/fill	Patch/recon area
Patch, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Patch, 30%, Low severity	Crack seal/fill	Do nothing
Patch, 30%, Med severity	Chip/cape seal	AC overlay/mill+overlay
Patch, 30%, High severity	AC overlay/mill+overlay	Rehab/recon
Rough, Long Wave Swell	AC overlay/mill+overlay	Do nothing
Rough, Many Long Wave Swell	Patch/recon area	AC overlay/mill+overlay
Rough, Many Short Wave Bump	Patch/recon area	Patch/recon area

National

Asphalt

Dry – No Freeze: Cracking

Distress	Acceptable	Recommended
Few long crack, Low severity	Crack seal/fill	Do nothing
Few long crack, Med severity	Crack seal/fill	Crack seal/fill
Few long crack, High severity	Crack seal/fill	Patch/recon area
Many long crack, Low severity	Crack seal/fill	Do nothing
Many long crack, Med severity	Crack seal/fill	AC overlay/mill+overlay
Many long crack, High severity	AC overlay/mill+overlay	Rehab/recon
Trans crack, 50ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 50ft apart, Med severity	Crack seal/fill	Crack seal/fill
Trans crack, 50ft apart, High severity	Crack seal/fill	Patch/recon area
Trans crack, 20ft apart, Low severity	Do nothing	Crack seal/fill
Trans crack, 20ft apart, Med severity	AC overlay/mill+overlay	Crack seal/fill
Trans crack, 20ft apart, High severity	Crack seal/fill	AC overlay/mill+overlay
Block crack, Low severity	Do nothing	Crack seal/fill
Block crack, Med severity	Crack seal/fill	Crack seal/fill
Block crack, High severity	Rehab/recon	Patch/recon area

National

Asphalt

Dry – No Freeze: Cracking

Distress	Acceptable	Recommended
Few edge crack, Low severity	Rejuvenator, fog/coal tar seal	Crack seal/fill
Few edge crack, Med severity	Patch/recon area	Crack seal/fill
Few edge crack, High severity	Crack seal/fill	Patch/recon area
Reflection crack, Low severity	Do nothing	Crack seal/fill
Reflection crack, Med severity	Crack seal/fill or chip/cape seal	Crack seal/fill
Reflection crack, High severity	Patch/recon area	Rehab/recon
Fatigue crack, 10%, Low severity	Patch/recon area	Crack seal/fill
Fatigue crack, 10%, Med severity	Patch/recon area	Crack seal/fill
Fatigue crack, 10%, High severity	Crack seal/fill	Patch/recon area
Fatigue crack, 30%, Low severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, Med severity	AC overlay/mill+overlay	Patch/recon area
Fatigue crack, 30%, High severity	Rehab/recon	Patch/recon area

National

Asphalt

Dry – No Freeze: Surface Distress

Distress	Acceptable	Recommended
Start to weather	Fog/coal tar seal or slurry/micro	Rejuvenator
Definitely weather	Fog/coal tar seal	Slurry/micro
Starting to ravel	Slurry/micro	Fog/coal tar seal
Definitely ravel	Slurry/micro or chip/cape seal	AC overlay/mill+overlay
Patch, 10%, Low severity	Crack seal/fill	Do nothing
Patch, 10%, Med severity	Crack seal/fill	Patch/recon area
Patch, 10%, High severity	AC overlay/mill+overlay	Patch/recon area
Patch, 30%, Low severity	Crack seal/fill	Do nothing
Patch, 30%, Med severity	Chip/cape seal	Rehab/recon
Patch, 30%, High severity	AC overlay/mill+overlay	Rehab/recon
Rough, Long Wave Swell	AC overlay/mill+overlay	Do nothing
Rough, Many Long Wave Swell	Patch/recon area	AC overlay/mill+overlay
Rough, Many Short Wave Bump	Patch/recon area	AC overlay/mill+overlay

Asphalt Maintenance Treatment Hierarchy

First Treatment	Second Treatment		
Treatment	**Do Nothing**	**Crack Seal/Fill**	**Rejuvenator**
Do nothing	Do nothing	Crack seal/fill	Rejuvenator
Crack seal/fill	Crack seal/fill	Crack seal/fill	Both
Rejuvenator	Rejuvenator	Both	Rejuvenator
Fog/coal tar seal	Fog/coal tar seal	Both	Fog/coal tar seal
Slurry/micro	Slurry/micro	Both	Slurry/micro
Chip/cape seal	Chip/cape seal	Both	Chip/cape seal
AC overlay/mill+ overlay	AC overlay/mill+ overlay	AC overlay/mill+ overlay	AC overlay/mill+ overlay
Patch/reconstruct area	Patch/reconstruct area	Both	Both
Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct

Asphalt Maintenance Treatment Hierarchy

First Treatment	Second Treatment		
Treatment	**Fog/Coal Tar Seal**	**Slurry/Micro**	**Chip/Cape Seal**
Do nothing	Fog/coal tar seal	Slurry/micro	Chip/cape seal
Crack seal/fill	Both	Both	Both
Rejuvenator	Fog/coal tar seal	Slurry/micro	Chip/cape seal
Fog/coal tar seal	Fog/coal tar seal	Slurry/micro	Chip/cape seal
Slurry/micro	Slurry/micro	Slurry/micro	Chip/cape seal
Chip/cape seal	Chip/cape seal	Chip/cape seal	Chip/cape seal
AC overlay/mill+ overlay	AC overlay/mill+ overlay	AC overlay/mill+ overlay	AC overlay/mill+ overlay
Patch/reconstruct area	Both	Both	Both
Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct

Asphalt Maintenance Treatment Hierarchy

First Treatment — Second Treatment

Treatment	AC Overlay/Mill+ Overlay	Patch/Reconstruct Area	Rehab/Reconstruct
Do nothing	AC overlay/mill+ overlay	Patch/reconstruct area	Rehab/reconstruct
Crack seal/fill	Both	Both	Rehab/reconstruct
Rejuvenator	AC overlay/mill+ overlay	Both	Rehab/reconstruct
Fog/coal tar seal	AC overlay/mill+ overlay	Both	Rehab/reconstruct
Slurry/micro	AC overlay/mill+ overlay	Both	Rehab/reconstruct
Chip/cape seal	AC overlay/mill+ overlay	Both	Rehab/reconstruct
AC overlay/mill+ overlay	AC overlay/mill+ overlay	Both	Rehab/reconstruct
Patch/reconstruct area	Both	Patch/reconstruct area	Rehab/reconstruct
Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct

Basic

Concrete

Wet – Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint Seal, Still Good	Do nothing	Do nothing
Joint Seal Low severity	Do nothing	Do nothing
Joint Seal Med severity	Do nothing	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Crack/joint seal	Do nothing
Joint/Corner Spall Med severity	Crack/joint seal	Do nothing
Joint/Corner Spall High severity	Crack/joint seal	Partial depth repair

	Wet – Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Basic	Mid-Panel Crack, 20% slabs, Low severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 20% slabs, Med severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 20% slabs, High severity	Partial depth repair	Full-depth repair (local)
	Mid-Panel Crack, 40% slabs, Low severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 40% slabs, Med severity	Crack/joint seal	Full-depth repair (local)
Concrete	Mid-Panel Crack, 40% slabs, High severity	Rehab/reconstruct	Full-depth repair (local)
	Corner Brk, 10% slabs, Low severity	Crack/joint seal	Do nothing
	Corner Brk, 10% slabs, Med severity	Do nothing	Crack/joint seal
	Corner Brk, 10% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
	Corner Brk, 30% slabs, Low severity	Crack/joint seal	Do nothing
	Corner Brk, 30% slabs, Med severity	Full-depth repair	Crack/joint seal
	Corner Brk, 30% slabs, High severity	Crack/joint seal	Full-depth repair (local)
	10% Shattered, Low severity	Crack/joint seal	Do nothing
	10% Shattered, Med severity	Full-depth repair (local)	Crack/joint seal
	10% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)
	30% Shattered, Low severity	Crack/joint seal	Do nothing
	30% Shattered, Med severity	Full-depth repair (local)	Crack/joint seal
	30% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)

	Wet – Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Basic	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Do nothing	Partial depth repair
	30% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Full-depth repair (local)	Partial depth repair
	50% slabs, Patches High severity	Full-depth repair (local)	Partial depth repair
Concrete	10% slabs, Fault Low severity	Do nothing	Do nothing
	10% slabs, Fault Med severity	Do nothing	Crack/joint seal
	10% slabs, Fault High severity	Grinding/grooving	Slab stabilization/jacking/underseal
	30% slabs, Fault Low severity	Crack/joint seal	Do nothing
	30% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
	30% slabs, Fault High severity	Grinding/grooving	Rehab/reconstruct

Basic

Concrete

Wet – No Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint Seal, Still Good	Do nothing	Do nothing
Joint Seal Low severity	Do nothing	Crack/joint seal
Joint Seal Med severity	Do nothing	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Do nothing	Crack/joint seal
Joint/Corner Spall Med severity	Do nothing	Crack/joint seal
Joint/Corner Spall High severity	Partial depth repair	Crack/joint seal

Basic

Concrete

Wet – No Freeze: Cracking

Distress	Acceptable	Recommended
Mid-Panel Crack, 20% slabs, Low severity	Do nothing	Crack/joint seal
Mid-Panel Crack, 20% slabs, Med severity	Crack/joint seal	Crack/joint seal
Mid-Panel Crack, 20% slabs, High severity	Crack/joint seal	Full-depth repair (local)
Mid-Panel Crack, 40% slabs, Low severity	Do nothing	Crack/joint seal
Mid-Panel Crack, 40% slabs, Med severity	Crack/joint seal or full-depth repair	Rehab/reconstruct
Mid-Panel Crack, 40% slabs, High severity	Full-depth repair	Rehab/reconstruct
Corner Brk, 10% slabs, Low severity	Do nothing	Crack/joint seal
Corner Brk, 10% slabs, Med severity	Do nothing	Crack/joint seal
Corner Brk, 10% slabs, High severity	Crack/joint seal	Full-depth repair (local)
Corner Brk, 30% slabs, Low severity	Do nothing	Crack/joint seal
Corner Brk, 30% slabs, Med severity	Full-depth repair or do nothing	Crack/joint seal
Corner Brk, 30% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
10% Shattered, Low severity	Crack/joint seal	Crack/joint seal
10% Shattered, Med severity	Crack/joint seal	Full-depth repair (local)
10% Shattered, High severity	Concrete/asphalt overlay	Full-depth repair (local)
30% Shattered, Low severity	Do nothing	Crack/joint seal
30% Shattered, Med severity	Crack/joint seal	Full-depth repair (local)
30% Shattered, High severity	Concrete/asphalt overlay	Full-depth repair (local)

	Wet – No Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Basic	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Do nothing	Partial depth repair
	30% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
Concrete	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Partial depth repair	Full-depth repair (local)
	50% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
	10% slabs, Fault Low severity	Do nothing	Crack/joint seal
	10% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Crack/joint seal
	10% slabs, Fault High severity	Slab stabilization/jacking/underseal	Grinding/grooving
	30% slabs, Fault Low severity	Slab stabilization/jacking/underseal or crack/joint seal	Do nothing
	30% slabs, Fault Med severity	Slab stabilization/jacking/underseal or crack/joint seal	Grinding/grooving
	30% slabs, Fault High severity	Slab stabilization/jacking/underseal	Grinding/grooving

Basic

Concrete

Dry – Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint seal, still good	Do nothing	Do nothing
Joint Seal Low severity	Do nothing	Do nothing
Joint Seal Med severity	Do nothing	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Crack/joint seal	Do nothing
Joint/Corner Spall Med severity	Crack/joint seal	Do nothing
Joint/Corner Spall High severity	Crack/joint seal	Partial depth repair

	Dry – Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Basic	Mid-Panel Crack, 20% slabs, Low severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 20% slabs, Med severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 20% slabs, High severity	Partial depth repair	Full-depth repair (local)
	Mid-Panel Crack, 40% slabs, Low severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 40% slabs, Med severity	Crack/joint seal	Full-depth repair (local)
	Mid-Panel Crack, 40% slabs, High severity	Rehab/reconstruct	Full-depth repair (local)
Concrete	Corner Brk, 10% slabs, Low severity	Crack/joint seal	Do nothing
	Corner Brk, 10% slabs, Med severity	Do nothing	Crack/joint seal
	Corner Brk, 10% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
	Corner Brk, 30% slabs, Low severity	Crack/joint seal	Do nothing
	Corner Brk, 30% slabs, Med severity	Full-depth repair	Crack/joint seal
	Corner Brk, 30% slabs, High severity	Crack/joint seal	Full-depth repair (local)
	10% Shattered, Low severity	Crack/joint seal	Do nothing
	10% Shattered, Med severity	Full-depth repair (local)	Crack/joint seal
	10% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)
	30% Shattered, Low severity	Crack/joint seal	Do nothing
	30% Shattered, Med severity	Full-depth repair (local)	Crack/joint seal
	30% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)

	Dry – Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Basic	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Do nothing	Partial depth repair
	30% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Full-depth repair (local)	Partial depth repair
	50% slabs, Patches High severity	Full-depth repair (local)	Partial depth repair
Concrete	10% slabs, Fault Low severity	Do nothing	Do nothing
	10% slabs, Fault Med severity	Do nothing	Crack/joint seal
	10% slabs, Fault High severity	Grinding/grooving	Slab stabilization/jacking/underseal
	30% slabs, Fault Low severity	Crack/joint seal	Do nothing
	30% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
	30% slabs, Fault High severity	Grinding/grooving	Rehab/reconstruct

Basic

Concrete

Dry – No Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint seal, still good	Do nothing	Do nothing
Joint Seal Low severity	Do nothing	Do nothing
Joint Seal Med severity	Do nothing	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Crack/joint seal	Do nothing
Joint/Corner Spall Med severity	Crack/joint seal	Do nothing
Joint/Corner Spall High severity	Crack/joint seal	Partial depth repair

	Dry – No Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Basic	Mid-Panel Crack, 20% slabs, Low severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 20% slabs, Med severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 20% slabs, High severity	Partial depth repair	Full-depth repair (local)
	Mid-Panel Crack, 40% slabs, Low severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 40% slabs, Med severity	Crack/joint seal	Full-depth repair (local)
Concrete	Mid-Panel Crack, 40% slabs, High severity	Rehab/reconstruct	Full-depth repair (local)
	Corner Brk, 10% slabs, Low severity	Crack/joint seal	Do nothing
	Corner Brk, 10% slabs, Med severity	Do nothing	Crack/joint seal
	Corner Brk, 10% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
	Corner Brk, 30% slabs, Low severity	Crack/joint seal	Do nothing
	Corner Brk, 30% slabs, Med severity	Full-depth repair	Crack/joint seal
	Corner Brk, 30% slabs, High severity	Crack/joint seal	Full-depth repair (local)
	10% Shattered, Low severity	Crack/joint seal	Do nothing
	10% Shattered, Med severity	Full-depth repair (local)	Crack/joint seal
	10% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)
	30% Shattered, Low severity	Crack/joint seal	Do nothing
	30% Shattered, Med severity	Full-depth repair (local)	Crack/joint seal
	30% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)

	Dry – No Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Basic	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Do nothing	Partial depth repair
	30% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Partial depth repair	Full-depth repair (local)
	50% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
Concrete	10% slabs, Fault Low severity	Do nothing	Crack/joint seal
	10% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Crack/joint seal
	10% slabs, Fault High severity	Slab stabilization/jacking/underseal	Grinding/grooving
	30% slabs, Fault Low severity	Slab stabilization/jacking/underseal or crack/joint seal	Do nothing
	30% slabs, Fault Med severity	Slab stabilization/jacking/underseal or crack/joint seal	Grinding/grooving
	30% slabs, Fault High severity	Slab stabilization/jacking/underseal	Grinding/grooving

Local

Concrete

Wet – Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint seal, still good	Do nothing	Do nothing
Joint Seal Low severity	Do nothing	Crack/joint seal
Joint Seal Med severity	Do nothing	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Partial depth repair or crack/joint seal	Do nothing
Joint/Corner Spall Med severity	Partial depth repair	Crack/joint seal
Joint/Corner Spall High severity	Crack/joint seal	Partial depth repair

	Wet – Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Local	Mid-Panel Crack, 20% slabs, Low severity	Do nothing	Crack/joint seal
	Mid-Panel Crack, 20% slabs, Med severity	Crack/joint seal	Partial depth repair
	Mid-Panel Crack, 20% slabs, High severity	Full-depth repair (local)	Partial depth repair
	Mid-Panel Crack, 40% slabs, Low severity	Do nothing	Crack/joint seal
	Mid-Panel Crack, 40% slabs, Med severity	Concrete/asphalt overlay or partial depth repair	Crack/joint seal
Concrete	Mid-Panel Crack, 40% slabs, High severity	Full-depth repair (local)	Partial depth repair
	Corner Brk, 10% slabs, Low severity	Do nothing	Crack/joint seal
	Corner Brk, 10% slabs, Med severity	Full-depth repair (local)	Crack/joint seal
	Corner Brk, 10% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
	Corner Brk, 30% slabs, Low severity	Do nothing or Full-depth repair (local)	Crack/joint seal
	Corner Brk, 30% slabs, Med severity	Crack/joint seal	Full-depth repair (local)
	Corner Brk, 30% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
	10% Shattered, Low severity	Do nothing	Crack/joint seal
	10% Shattered, Med severity	Crack/joint seal	Full-depth repair (local)
	10% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)
	30% Shattered, Low severity	Do nothing	Crack/joint seal
	30% Shattered, Med severity	Crack/joint seal	Full-depth repair (local)
	30% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)

	Wet – Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Local	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Do nothing	Partial depth repair
	30% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Full-depth repair (local)	Partial depth repair
	50% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
Concrete	10% slabs, Fault Low severity	Do nothing	Do nothing
	10% slabs, Fault Med severity	Do nothing	Slab stabilization/jacking/underseal
	10% slabs, Fault High severity	Full-depth repair (local)	Full-depth repair (local)
	30% slabs, Fault Low severity	Do nothing	Do nothing
	30% slabs, Fault Med severity	Do nothing	Slab stabilization/jacking/underseal
	30% slabs, Fault High severity	Full-depth repair (local)	Rehab/reconstruct

Local

Concrete

Wet – No Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint seal, still good	Do nothing	Do nothing
Joint Seal Low severity	Do nothing	Crack/joint seal
Joint Seal Med severity	Crack/joint seal	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Crack/joint seal	Do nothing
Joint/Corner Spall Med severity	Crack/joint seal or do nothing	Partial depth repair
Joint/Corner Spall High severity	Crack/joint seal	Partial depth repair

	Wet – No Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Local	Mid-Panel Crack, 20% slabs, Low severity	Do nothing	Crack/joint seal
	Mid-Panel Crack, 20% slabs, Med severity	Do nothing	Crack/joint seal
	Mid-Panel Crack, 20% slabs, High severity	Crack/joint seal	Partial depth repair
	Mid-Panel Crack, 40% slabs, Low severity	Do nothing	Crack/joint seal
	Mid-Panel Crack, 40% slabs, Med severity	Partial depth repair	Crack/joint seal
	Mid-Panel Crack, 40% slabs, High severity	Crack/joint seal	Rehab/reconstruct
Concrete	Corner Brk, 10% slabs, Low severity	Crack/joint seal	Do nothing
	Corner Brk, 10% slabs, Med severity	Full-depth repair (local)	Crack/joint seal
	Corner Brk, 10% slabs, High severity	Crack/joint seal	Full-depth repair (local)
	Corner Brk, 30% slabs, Low severity	Do nothing	Crack/joint seal
	Corner Brk, 30% slabs, Med severity	Full-depth repair or do nothing	Crack/joint seal
	Corner Brk, 30% slabs, High severity	Full-depth repair (local)	Rehab/reconstruct
	10% Shattered, Low severity	Full-depth repair or do nothing	Crack/joint seal
	10% Shattered, Med severity	Crack/joint seal	Full-depth repair (local)
	10% Shattered, High severity	Concrete/asphalt overlay	Full-depth repair (local)
	30% Shattered, Low severity	Do nothing	Crack/joint seal
	30% Shattered, Med severity	Rehab/reconstruct	Full-depth repair (local)
	30% Shattered, High severity	Concrete/asphalt overlay	Rehab/reconstruct

Wet – No Freeze: Surface Distress

	Distress	Acceptable	Recommended
Local	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Partial depth repair or do nothing	Do nothing
	30% slabs, Patches High severity	Partial depth repair or do nothing	Full-depth repair (local)
	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Concrete/asphalt overlay or do nothing	Partial depth repair
	50% slabs, Patches High severity	Rehab/reconstruct	Concrete/asphalt overlay
Concrete	10% slabs, Fault Low severity	Do nothing	Partial depth repair
	10% slabs, Fault Med severity	Slab stabilization/jacking/underseal or do nothing	Partial depth repair
	10% slabs, Fault High severity	Slab stabilization/jacking/underseal	Cross-stitching/dowelbar retrofit
	30% slabs, Fault Low severity	Full-depth repair (local)	Concrete/asphalt overlay
	30% slabs, Fault Med severity	Rehab/reconstruct	Concrete/asphalt overlay
	30% slabs, Fault High severity	Concrete/Asphalt overlay	Rehab/reconstruct

Local

Concrete

Dry – Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint seal, still good	Do nothing	Do nothing
Joint Seal Low severity	Do nothing	Crack/joint seal
Joint Seal Med severity	Do nothing	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Partial depth repair or crack/joint seal	Do nothing
Joint/Corner Spall Med severity	Crack/joint seal	Partial depth repair
Joint/Corner Spall High severity	Partial depth repair	Partial depth repair

	Dry – Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Local	Mid-Panel Crack, 20% slabs, Low severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 20% slabs, Med severity	Partial depth repair or full-depth repair (local)	Crack/joint seal
	Mid-Panel Crack, 20% slabs, High severity	Concrete/Asphalt overlay	Crack/joint seal
	Mid-Panel Crack, 40% slabs, Low severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 40% slabs, Med severity	Partial depth repair	Crack/joint seal
	Mid-Panel Crack, 40% slabs, High severity	Full-depth repair (local)	Rehab/reconstruct
Concrete	Corner Brk, 10% slabs, Low severity	Crack/joint seal	Do nothing
	Corner Brk, 10% slabs, Med severity	Full-depth repair (local)	Full-depth repair (local)
	Corner Brk, 10% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
	Corner Brk, 30% slabs, Low severity	Crack/joint seal	Do nothing
	Corner Brk, 30% slabs, Med severity	Crack/joint seal	Full-depth repair (local)
	Corner Brk, 30% slabs, High severity	Full-depth repair (local)	Rehab/reconstruct
	10% Shattered, Low severity	Crack/joint seal	Do nothing
	10% Shattered, Med severity	Crack/joint seal	Do nothing
	10% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)
	30% Shattered, Low severity	Crack/joint seal	Do nothing
	30% Shattered, Med severity	Concrete/Asphalt overlay	Full-depth repair (local)
	30% Shattered, High severity	Full-depth repair (local)	Rehab/reconstruct

	Dry – Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Local	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Do nothing	Partial depth repair
	30% slabs, Patches High severity	Full-depth repair (local)	Rehab/reconstruct
	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Full-depth repair (local)	Concrete/Asphalt overlay
	50% slabs, Patches High severity	Full-depth repair (local)	Rehab/reconstruct
Concrete	10% slabs, Fault Low severity	Crack/joint seal	Do nothing
	10% slabs, Fault Med severity	Grinding/grooving	Partial depth repair
	10% slabs, Fault High severity	Concrete/Asphalt overlay	Partial depth repair
	30% slabs, Fault Low severity	Full-depth repair (local)	Do nothing
	30% slabs, Fault Med severity	Concrete/Asphalt overlay or Slab stabilization/jacking/underseal	Grinding/grooving
	30% slabs, Fault High severity	Concrete/Asphalt overlay or Slab stabilization/jacking/underseal or Grind/Groove	Rehab/reconstruct

Local

Concrete

Dry – No Freeze: Joint Problems		
Distress	**Acceptable**	**Recommended**
Joint seal, still good	Do nothing	Do nothing
Joint Seal Low severity	Do nothing	Crack/joint seal
Joint Seal Med severity	Do nothing	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Partial depth repair or do nothing	Crack/joint seal
Joint/Corner Spall Med severity	Crack/joint seal or do nothing	Partial depth repair
Joint/Corner Spall High severity	Crack/joint seal	Partial depth repair

	Dry – No Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Local	Mid-Panel Crack, 20% slabs, Low severity	Do nothing	Crack/joint seal
	Mid-Panel Crack, 20% slabs, Med severity	Do nothing	Crack/joint seal
	Mid-Panel Crack, 20% slabs, High severity	Crack/joint seal	Partial depth repair
	Mid-Panel Crack, 40% slabs, Low severity	Do nothing	Crack/joint seal
	Mid-Panel Crack, 40% slabs, Med severity	Do nothing	Crack/joint seal
Concrete	Mid-Panel Crack, 40% slabs, High severity	Crack/joint seal	Rehab/reconstruct
	Corner Brk, 10% slabs, Low severity	Do nothing	Crack/joint seal
	Corner Brk, 10% slabs, Med severity	Full-depth repair (local)	Crack/joint seal
	Corner Brk, 10% slabs, High severity	Crack/joint seal	Full-depth repair (local)
	Corner Brk, 30% slabs, Low severity	Do nothing	Crack/joint seal
	Corner Brk, 30% slabs, Med severity	Full-depth repair or do nothing	Crack/joint seal
	Corner Brk, 30% slabs, High severity	Full-depth repair (local)	Rehab/reconstruct
	10% Shattered, Low severity	Do nothing	Crack/joint seal
	10% Shattered, Med severity	Crack/joint seal	Full-depth repair (local)
	10% Shattered, High severity	Concrete/Asphalt overlay	Full-depth repair (local)
	30% Shattered, Low severity	Do nothing	Crack/joint seal
	30% Shattered, Med severity	Full-depth repair or rehab/reconstruct	Concrete/asphalt overlay
	30% Shattered, High severity	Concrete/asphalt overlay	Rehab/reconstruct

	Dry – No Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Local	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Do nothing	Partial depth repair
	30% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
	50% slabs, Patches Low severity	Concrete/Asphalt overlay	Do nothing
	50% slabs, Patches Med severity	Concrete/Asphalt overlay or partial depth repair	Full-depth repair (local)
	50% slabs, Patches High severity	Rehab/reconstruct	Concrete/asphalt overlay
Concrete	10% slabs, Fault Low severity	Crack/joint seal	Do nothing
	10% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Do nothing
	10% slabs, Fault High severity	Slab stabilization/jacking/underseal	Cross-stitching/dowelbar retrofit
	30% slabs, Fault Low severity	Full-depth repair (local)	Do nothing
	30% slabs, Fault Med severity	Grinding/grooving	Concrete/asphalt overlay
	30% slabs, Fault High severity	Concrete/asphalt overlay	Rehab/reconstruct

	Wet – Freeze: Joint Problems		
	Distress	**Acceptable**	**Recommended**
Regional	Joint seal, still good	Do nothing	Do nothing
	Joint Seal Low severity	Do nothing	Crack/joint seal
	Joint Seal Med severity	Do nothing	Crack/joint seal
	Joint Seal High severity	Crack/joint seal	Crack/joint seal
Concrete	Joint/Corner Spall Low severity	Do nothing or partial depth repair	Crack/joint seal
	Joint/Corner Spall Med severity	Crack/joint seal	Partial depth repair
	Joint/Corner Spall High severity	Partial depth repair	Partial depth repair

Regional

Concrete

Wet – Freeze: Cracking

Distress	Acceptable	Recommended
Mid-Panel Crack, 20% slabs, Low severity	Do nothing	Crack/joint seal
Mid-Panel Crack, 20% slabs, Med severity	Partial depth repair	Crack/joint seal
Mid-Panel Crack, 20% slabs, High severity	Full-depth repair (local)	Partial depth repair
Mid-Panel Crack, 40% slabs, Low severity	Do nothing	Crack/joint seal
Mid-Panel Crack, 40% slabs, Med severity	Full-depth repair (local)	Crack/joint seal
Mid-Panel Crack, 40% slabs, High severity	Partial depth repair	Full-depth repair (local)
Corner Brk, 10% slabs, Low severity	Do nothing	Crack/joint seal
Corner Brk, 10% slabs, Med severity	Full-depth repair (local)	Crack/joint seal
Corner Brk, 10% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
Corner Brk, 30% slabs, Low severity	Do nothing	Crack/joint seal
Corner Brk, 30% slabs, Med severity	Full-depth repair (local)	Crack/joint seal
Corner Brk, 30% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
10% Shattered, Low severity	Do nothing	Crack/joint seal
10% Shattered, Med severity	Crack/joint seal	Full-depth repair (local)
10% Shattered, High severity	Concrete/asphalt overlay	Full-depth repair (local)
30% Shattered, Low severity	Full-depth repair (local)	Crack/joint seal
30% Shattered, Med severity	Rehab/reconstruct	Full-depth repair (local)
30% Shattered, High severity	Rehab/reconstruct	Full-depth repair (local)

	Wet – Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Regional	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Do nothing	Partial depth repair
	30% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Full-depth repair (local)	Partial depth repair
	50% slabs, Patches High severity	Full-depth repair (local)	Rehab/reconstruct
Concrete	10% slabs, Fault Low severity	Do nothing	Crack/joint seal
	10% slabs, Fault Med severity	Crack/joint seal	Grinding/grooving
	10% slabs, Fault High severity	Slab stabilization/jacking/underseal	Grinding/grooving
	30% slabs, Fault Low severity	Slab stabilization/jacking/underseal	Grinding/grooving
	30% slabs, Fault Med severity	Cross-stitching/dowelbar retrofit	Grinding/grooving
	30% slabs, Fault High severity	Slab stabilization/jacking/underseal	Rehab/reconstruct

Regional

Concrete

Wet – No Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint seal, still good	Crack/joint seal	Do nothing
Joint Seal Low severity	Crack/joint seal	Do nothing
Joint Seal Med severity	Crack/joint seal	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Crack/joint seal	Do nothing
Joint/Corner Spall Med severity	Crack/joint seal	Partial depth repair
Joint/Corner Spall High severity	Partial depth repair	Partial depth repair

Regional

Concrete

Wet – No Freeze: Cracking

Distress	Acceptable	Recommended
Mid-Panel Crack, 20% slabs, Low severity	Do nothing	Crack/joint seal
Mid-Panel Crack, 20% slabs, Med severity	Do nothing	Full-depth repair (local)
Mid-Panel Crack, 20% slabs, High severity	Partial depth repair	Full-depth repair (local)
Mid-Panel Crack, 40% slabs, Low severity	Partial depth repair	Full-depth repair (local)
Mid-Panel Crack, 40% slabs, Med severity	Partial depth repair	Full-depth repair (local)
Mid-Panel Crack, 40% slabs, High severity	Full-depth repair (local)	Concrete/Asphalt overlay
Corner Brk, 10% slabs, Low severity	Crack/joint seal	Do nothing
Corner Brk, 10% slabs, Med severity	Crack/joint seal	Full-depth repair (local)
Corner Brk, 10% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
Corner Brk, 30% slabs, Low severity	Do nothing	Crack/joint seal
Corner Brk, 30% slabs, Med severity	Crack/joint seal	Full-depth repair (local)
Corner Brk, 30% slabs, High severity	Full-depth repair (local)	Full-depth repair (local) or rehab/reconstruct
10% Shattered, Low severity	Crack/joint seal	Full-depth repair (local)
10% Shattered, Med severity	Full-depth repair (local)	Full-depth repair (local)
10% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)
30% Shattered, Low severity	Crack/joint seal	Full-depth repair (local)
30% Shattered, Med severity	Full-depth repair (local)	Rehab/reconstruct
30% Shattered, High severity	Full-depth repair (local)	Rehab/reconstruct

	Wet – No Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Regional	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Crack/joint seal	Do nothing or partial depth repair
	30% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Concrete/asphalt overlay	Full-depth repair (local)
Concrete	50% slabs, Patches High severity	Concrete/asphalt overlay	Full-depth repair (local)
	10% slabs, Fault Low severity	Crack/joint seal	Do nothing
	10% slabs, Fault Med severity	Crack/joint seal	Slab stabilization/jacking/underseal
	10% slabs, Fault High severity	Grinding/grooving	Slab stabilization/jacking/underseal
	30% slabs, Fault Low severity	Slab stabilization/jacking/underseal	Do nothing
	30% slabs, Fault Med severity	Grinding/grooving	Slab stabilization/jacking/underseal
	30% slabs, Fault High severity	Slab stabilization/jacking/underseal	Rehab/reconstruct

Regional

Concrete

Dry – Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint seal, still good	Do nothing	Crack/joint seal
Joint Seal Low severity	Do nothing	Crack/joint seal
Joint Seal Med severity	Do nothing	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Do nothing	Crack/joint seal
Joint/Corner Spall Med severity	Crack/joint seal	Partial depth repair
Joint/Corner Spall High severity	Crack/joint seal	Partial depth repair

	Dry – Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
Regional	Mid-Panel Crack, 20% slabs, Low severity	Do nothing	Crack/joint seal
	Mid-Panel Crack, 20% slabs, Med severity	Partial depth repair	Crack/joint seal
	Mid-Panel Crack, 20% slabs, High severity	Partial depth repair	Full-depth repair (local)
	Mid-Panel Crack, 40% slabs, Low severity	Do nothing	Crack/joint seal
	Mid-Panel Crack, 40% slabs, Med severity	Partial depth repair or full-depth repair (local)	Rehab/reconstruct
	Mid-Panel Crack, 40% slabs, High severity	Full-depth repair (local)	Rehab/reconstruct
Concrete	Corner Brk, 10% slabs, Low severity	Do nothing	Crack/joint seal
	Corner Brk, 10% slabs, Med severity	Full-depth repair (local)	Crack/joint seal
	Corner Brk, 10% slabs, High severity	Crack/joint seal	Full-depth repair (local)
	Corner Brk, 30% slabs, Low severity	Do nothing	Crack/joint seal
	Corner Brk, 30% slabs, Med severity	Full-depth repair (local)	Crack/joint seal
	Corner Brk, 30% slabs, High severity	Crack/joint seal	Full-depth repair (local)
	10% Shattered, Low severity	Do nothing	Crack/joint seal
	10% Shattered, Med severity	Crack/joint seal	Full-depth repair (local)
	10% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)
	30% Shattered, Low severity	Do nothing	Full-depth repair (local)
	30% Shattered, Med severity	Full-depth repair (local)	Rehab/reconstruct
	30% Shattered, High severity	Full-depth repair (local)	Rehab/reconstruct

	Dry – Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Regional	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Full-depth repair (local)	Do nothing
	30% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Full-depth repair (local)	Partial depth repair
	50% slabs, Patches High severity	Concrete/asphalt overlay	Full-depth repair (local)
Concrete	10% slabs, Fault Low severity	Crack/joint seal	Do nothing
	10% slabs, Fault Med severity	Crack/joint seal	Grinding/grooving
	10% slabs, Fault High severity	Cross-stitching/dowelbar retrofit	Slab stabilization/jacking/underseal
	30% slabs, Fault Low severity	Grinding/grooving	Do nothing
	30% slabs, Fault Med severity	Grinding/grooving	Do nothing
	30% slabs, Fault High severity	Cross-stitching/dowelbar retrofit	Slab stabilization/jacking/underseal

Dry – No Freeze: Joint Problems

	Distress	Acceptable	Recommended
Regional	Joint seal, still good	Do nothing	Do nothing
	Joint Seal Low severity	Do nothing	Crack/joint seal
	Joint Seal Med severity	Do nothing	Crack/joint seal
	Joint Seal High severity	Crack/joint seal	Crack/joint seal
Concrete	Joint/Corner Spall Low severity	Crack/joint seal	Do nothing
	Joint/Corner Spall Med severity	Partial depth repair	Crack/joint seal
	Joint/Corner Spall High severity	Crack/joint seal	Partial depth repair

Regional

Concrete

Dry – No Freeze: Cracking		
Distress	**Acceptable**	**Recommended**
Mid-Panel Crack, 20% slabs, Low severity	Crack/joint seal	Do nothing
Mid-Panel Crack, 20% slabs, Med severity	Partial depth repair	Crack/joint seal
Mid-Panel Crack, 20% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
Mid-Panel Crack, 40% slabs, Low severity	Crack/joint seal	Do nothing
Mid-Panel Crack, 40% slabs, Med severity	Partial depth repair or full-depth repair (local)	Crack/joint seal
Mid-Panel Crack, 40% slabs, High severity	Full-depth repair (local)	Rehab/reconstruct
Corner Brk, 10% slabs, Low severity	Crack/joint seal	Do nothing
Corner Brk, 10% slabs, Med severity	Full-depth repair (local)	Crack/joint seal
Corner Brk, 10% slabs, High severity	Full-depth repair (local)	Full-depth repair (local)
Corner Brk, 30% slabs, Low severity	Crack/joint seal	Do nothing
Corner Brk, 30% slabs, Med severity	Full-depth repair (local)	Crack/joint seal
Corner Brk, 30% slabs, High severity	Crack/joint seal	Full-depth repair (local)
10% Shattered, Low severity	Do nothing	Crack/joint seal
10% Shattered, Med severity	Full-depth repair (local)	Full-depth repair (local)
10% Shattered, High severity	Full-depth repair (local)	Full-depth repair (local)
30% Shattered, Low severity	Do nothing	Crack/joint seal
30% Shattered, Med severity	Full-depth repair (local)	Rehab/reconstruct
30% Shattered, High severity	Full-depth repair (local)	Rehab/reconstruct

	Dry – No Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
Regional	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Partial depth repair	Do nothing
	30% slabs, Patches High severity	Partial depth repair	Full-depth repair (local)
	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Full-depth repair (local)	Partial depth repair
	50% slabs, Patches High severity	Concrete/Asphalt overlay	Rehab/reconstruct
Concrete	10% slabs, Fault Low severity	Crack/joint seal	Do nothing
	10% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
	10% slabs, Fault High severity	Grinding/grooving	Slab stabilization/jacking/underseal
	30% slabs, Fault Low severity	Crack/joint seal	Do nothing
	30% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
	30% slabs, Fault High severity	Rehab/reconstruct	Slab stabilization/jacking/underseal

National

Concrete

Wet – Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint seal, still good	Do nothing	Do nothing
Joint Seal Low severity	Crack/joint seal	Do nothing
Joint Seal Med severity	Crack/joint seal	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Crack/joint seal or Do nothing	Partial depth repair
Joint/Corner Spall Med severity	Crack/joint seal or Partial depth repair	Partial depth repair
Joint/Corner Spall High severity	Partial depth repair	Partial depth repair

National

Concrete

Wet – Freeze: Cracking

Distress	Acceptable	Recommended
Mid-Panel Crack, 20% slabs, Low severity	Crack/joint seal	Do nothing
Mid-Panel Crack, 20% slabs, Med severity	Partial depth repair or full-depth repair	Crack/joint seal
Mid-Panel Crack, 20% slabs, High severity	Crack/joint seal or partial depth repair	Full-depth repair
Mid-Panel Crack, 40% slabs, Low severity	Do nothing	Concrete/asphalt overlay
Mid-Panel Crack, 40% slabs, Med severity	Rehab/reconstruct	Concrete/asphalt overlay
Mid-Panel Crack, 40% slabs, High severity	Concrete/asphalt overlay	Rehab/reconstruct
Corner Brk, 10% slabs, Low severity	Crack/joint seal or full-depth repair	Do nothing
Corner Brk, 10% slabs, Med severity	Full-depth repair	Crack/joint seal
Corner Brk, 10% slabs, High severity	Full-depth repair	Full-depth repair
Corner Brk, 30% slabs, Low severity	Crack/joint seal	Do nothing or full-depth repair
Corner Brk, 30% slabs, Med severity	Full-depth repair	Full-depth repair or concrete/asphalt overlay
Corner Brk, 30% slabs, High severity	Full-depth repair	Rehab/reconstruct
10% Shattered, Low severity	Do nothing	Full-depth repair
10% Shattered, Med severity	Crack/joint seal	Full-depth repair
10% Shattered, High severity	Concrete/asphalt overlay	Full-depth repair
30% Shattered, Low severity	Rehab/reconstruct	Concrete/asphalt overlay
30% Shattered, Med severity	Full-depth repair	Rehab/reconstruct
30% Shattered, High severity	Full-depth repair	Rehab/reconstruct

	Wet – Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
National	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Partial depth repair	Full-depth repair
	30% slabs, Patches High severity	Partial depth repair	Full-depth repair
	50% slabs, Patches Low severity	Concrete/asphalt overlay	Do nothing
	50% slabs, Patches Med severity	Full-depth repair	Concrete/asphalt overlay
	50% slabs, Patches High severity	Concrete/asphalt overlay	Rehab/reconstruct
Concrete	10% slabs, Fault Low severity	Grinding/grooving	Do nothing
	10% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
	10% slabs, Fault High severity	Slab stabilization/jacking/underseal	Grinding/grooving
	30% slabs, Fault Low severity	Do nothing	Grinding/grooving
	30% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
	30% slabs, Fault High severity	Slab stabilization/jacking/underseal	Rehab/reconstruct

National

Concrete

Wet – No Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint seal, still good	Do nothing	Do nothing
Joint Seal Low severity	Do nothing	Crack/joint seal
Joint Seal Med severity	Crack/joint seal	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Crack/joint seal	Partial depth repair
Joint/Corner Spall Med severity	Crack/joint seal	Partial depth repair
Joint/Corner Spall High severity	Partial depth repair	Partial depth repair

National

Concrete

Wet – No Freeze: Cracking

Distress	Acceptable	Recommended
Mid-Panel Crack, 20% slabs, Low severity	Crack/joint seal	Do nothing
Mid-Panel Crack, 20% slabs, Med severity	Partial depth repair	Crack/joint seal
Mid-Panel Crack, 20% slabs, High severity	Crack/joint seal	Partial depth repair
Mid-Panel Crack, 40% slabs, Low severity	Crack/joint seal	Concrete/asphalt overlay
Mid-Panel Crack, 40% slabs, Med severity	Partial depth repair	Concrete/asphalt overlay
Mid-Panel Crack, 40% slabs, High severity	Concrete/asphalt overlay	Rehab/reconstruct
Corner Brk, 10% slabs, Low severity	Crack/joint seal	Do nothing
Corner Brk, 10% slabs, Med severity	Full-depth repair	Crack/joint seal
Corner Brk, 10% slabs, High severity	Full-depth repair	Full-depth repair
Corner Brk, 30% slabs, Low severity	Crack/joint seal	Do nothing
Corner Brk, 30% slabs, Med severity	Crack/joint seal	Full-depth repair
Corner Brk, 30% slabs, High severity	Full-depth repair	Rehab/reconstruct
10% Shattered, Low severity	Crack/joint seal	Full-depth repair
10% Shattered, Med severity	Crack/joint seal	Full-depth repair
10% Shattered, High severity	Concrete/asphalt overlay	Full-depth repair
30% Shattered, Low severity	Full-depth repair	Crack/joint seal
30% Shattered, Med severity	Rehab/reconstruct	Full-depth repair
30% Shattered, High severity	Full-depth repair	Rehab/reconstruct

National

Concrete

Wet – No Freeze: Surface Distress

Distress	Acceptable	Recommended
30% slabs, Patches Low severity	Do nothing	Do nothing
30% slabs, Patches Med severity	Full-depth repair	Partial depth repair
30% slabs, Patches High severity	Partial depth repair	Rehab/reconstruct
50% slabs, Patches Low severity	Do nothing	Do nothing
50% slabs, Patches Med severity	Concrete/asphalt overlay	Full-depth repair
50% slabs, Patches High severity	Concrete/asphalt overlay	Rehab/reconstruct
10% slabs, Fault Low severity	Crack/joint seal	Do nothing
10% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
10% slabs, Fault High severity	Grinding/grooving	Slab stabilization/jacking/underseal
30% slabs, Fault Low severity	Crack/joint seal	Do nothing
30% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
30% slabs, Fault High severity	Grinding/grooving	Slab stabilization/jacking/underseal

National

Concrete

Dry – Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint seal, still good	Do nothing	Do nothing
Joint Seal Low severity	Do nothing	Crack/joint seal
Joint Seal Med severity	Crack/joint seal	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Crack/joint seal	Do nothing
Joint/Corner Spall Med severity	Crack/joint seal	Partial depth repair
Joint/Corner Spall High severity	Partial depth repair	Partial depth repair

	Dry – Freeze: Cracking		
	Distress	**Acceptable**	**Recommended**
National	Mid-Panel Crack, 20% slabs, Low severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 20% slabs, Med severity	Partial depth repair	Crack/joint seal
	Mid-Panel Crack, 20% slabs, High severity	Crack/joint seal	Partial depth repair
	Mid-Panel Crack, 40% slabs, Low severity	Crack/joint seal	Do nothing
	Mid-Panel Crack, 40% slabs, Med severity	Partial depth repair	Crack/joint seal
	Mid-Panel Crack, 40% slabs, High severity	Concrete/asphalt overlay	Rehab/reconstruct
Concrete	Corner Brk, 10% slabs, Low severity	Crack/joint seal	Do nothing
	Corner Brk, 10% slabs, Med severity	Full-depth repair	Crack/joint seal
	Corner Brk, 10% slabs, High severity	Full-depth repair	Full-depth repair
	Corner Brk, 30% slabs, Low severity	Crack/joint seal	Do nothing
	Corner Brk, 30% slabs, Med severity	Crack/joint seal	Full-depth repair
	Corner Brk, 30% slabs, High severity	Full-depth repair	Rehab/reconstruct
	10% Shattered, Low severity	Crack/joint seal	Full-depth repair
	10% Shattered, Med severity	Crack/joint seal	Full-depth repair
	10% Shattered, High severity	Concrete/asphalt overlay	Full-depth repair
	30% Shattered, Low severity	Full-depth repair	Crack/joint seal
	30% Shattered, Med severity	Rehab/reconstruct	Full-depth repair
	30% Shattered, High severity	Full-depth repair	Rehab/reconstruct

	Dry – Freeze: Surface Distress		
	Distress	**Acceptable**	**Recommended**
National	30% slabs, Patches Low severity	Do nothing	Do nothing
	30% slabs, Patches Med severity	Full-depth repair	Partial depth repair
	30% slabs, Patches High severity	Partial depth repair	Rehab/reconstruct
	50% slabs, Patches Low severity	Do nothing	Do nothing
	50% slabs, Patches Med severity	Concrete/asphalt overlay	Full-depth repair
	50% slabs, Patches High severity	Concrete/asphalt overlay	Rehab/reconstruct
Concrete	10% slabs, Fault Low severity	Crack/joint seal	Do nothing
	10% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
	10% slabs, Fault High severity	Grinding/grooving	Slab stabilization/jacking/underseal
	30% slabs, Fault Low severity	Crack/joint seal	Do nothing
	30% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
	30% slabs, Fault High severity	Grinding/grooving	Slab stabilization/jacking/underseal

National

Concrete

Dry – No Freeze: Joint Problems

Distress	Acceptable	Recommended
Joint seal, still good	Do nothing	Do nothing
Joint Seal Low severity	Do nothing	Crack/joint seal
Joint Seal Med severity	Crack/joint seal	Crack/joint seal
Joint Seal High severity	Crack/joint seal	Crack/joint seal
Joint/Corner Spall Low severity	Crack/joint seal	Do nothing
Joint/Corner Spall Med severity	Crack/joint seal	Partial depth repair
Joint/Corner Spall High severity	Partial depth repair	Partial depth repair

National

Concrete

Dry – No Freeze: Cracking		
Distress	**Acceptable**	**Recommended**
Mid-Panel Crack, 20% slabs, Low severity	Crack/joint seal	Do nothing
Mid-Panel Crack, 20% slabs, Med severity	Partial depth repair	Crack/joint seal
Mid-Panel Crack, 20% slabs, High severity	Crack/joint seal	Partial depth repair
Mid-Panel Crack, 40% slabs, Low severity	Crack/joint seal	Do nothing
Mid-Panel Crack, 40% slabs, Med severity	Partial depth repair	Crack/joint seal
Mid-Panel Crack, 40% slabs, High severity	Concrete/asphalt overlay	Rehab/reconstruct
Corner Brk, 10% slabs, Low severity	Crack/joint seal	Do nothing
Corner Brk, 10% slabs, Med severity	Full-depth repair	Crack/joint seal
Corner Brk, 10% slabs, High severity	Full-depth repair	Full-depth repair
Corner Brk, 30% slabs, Low severity	Crack/joint seal	Do nothing
Corner Brk, 30% slabs, Med severity	Crack/joint seal	Full-depth repair
Corner Brk, 30% slabs, High severity	Full-depth repair	Rehab/reconstruct
10% Shattered, Low severity	Crack/joint seal	Full-depth repair
10% Shattered, Med severity	Crack/joint seal	Full-depth repair
10% Shattered, High severity	Concrete/asphalt overlay	Full-depth repair
30% Shattered, Low severity	Full-depth repair	Crack/joint seal
30% Shattered, Med severity	Rehab/reconstruct	Full-depth repair
30% Shattered, High severity	Full-depth repair	Rehab/reconstruct

National

Concrete

Dry – No Freeze: Surface Distress

Distress	Acceptable	Recommended
30% slabs, Patches Low severity	Do nothing	Do nothing
30% slabs, Patches Med severity	Full-depth repair	Partial depth repair
30% slabs, Patches High severity	Partial depth repair	Rehab/reconstruct
50% slabs, Patches Low severity	Do nothing	Do nothing
50% slabs, Patches Med severity	Concrete/asphalt overlay	Full-depth repair
50% slabs, Patches High severity	Concrete/asphalt overlay	Rehab/reconstruct
10% slabs, Fault Low severity	Crack/joint seal	Do nothing
10% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
10% slabs, Fault High severity	Grinding/grooving	Slab stabilization/jacking/underseal
30% slabs, Fault Low severity	Crack/joint seal	Do nothing
30% slabs, Fault Med severity	Slab stabilization/jacking/underseal	Grinding/grooving
30% slabs, Fault High severity	Grinding/grooving	Slab stabilization/jacking/underseal

Concrete Maintenance Treatment Hierarchy

First Treatment	Second Treatment		
Treatment	**Do Nothing**	**Crack/Joint Seal**	**Partial Depth Repair**
Do nothing	Do nothing	Crack/joint seal	Partial depth repair
Crack/joint seal	Crack/joint seal	Crack/joint seal	Both
Partial depth repair	Partial depth repair	Both	Partial depth repair
Full-depth repair (local)	Full-depth repair (local)	Both	Full-depth repair (local)
Cross-stitching/dowelbar retrofit	Cross-stitching/dowelbar retrofit	Both	Cross-stitching/dowelbar retrofit
Slab stabilization/ jacking/underseal	Slab stabilization/ jacking/underseal	Both	Slab stabilization/ jacking/underseal
PCC/AC overlay	PCC/AC overlay	Both	Both
Grinding/grooving	Grinding/grooving	Both	Both
Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct

Concrete Maintenance Treatment Hierarchy

First Treatment	Second Treatment		
Treatment	**Full-Depth Repair (Local)**	**Cross-stitching/ Dowelbar Retrofit**	**Slab Stabilization/ Jacking/Underseal**
Do nothing	Full-depth repair (local)	Cross-stitching/dowelbar retrofit	Slab stabilization/ jacking/underseal
Crack/joint seal	Both	Both	Both
Partial depth repair	Full-depth repair (local)	Cross-stitching/dowelbar retrofit	Slab stabilization/ jacking/underseal
Full-depth repair (local)	Full-depth repair (local)	Cross-stitching/dowelbar retrofit	Both
Cross-stitching/ dowelbar retrofit	Cross-stitching/ dowelbar retrofit	Cross-stitching/dowelbar retrofit	Slab stabilization/ jacking/underseal
Slab stabilization/ jacking/underseal	Both	Slab stabilization/ jacking/underseal	Slab stabilization/ jacking/underseal
PCC/AC overlay	Both	Both	Both
Grinding/grooving	Both	Both	Both
Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct

Concrete Maintenance Treatment Hierarchy

First Treatment	Second Treatment		
Treatment	**PCC/AC Overlay**	**Grinding/Grooving**	**Rehab/Reconstruct**
Do nothing	PCC/AC overlay	Grinding/grooving	Rehab/reconstruct
Crack/joint seal	Both	Both	Rehab/reconstruct
Partial depth repair	Both	Both	Rehab/reconstruct
Full-depth repair (local)	Both	Both	Rehab/reconstruct
Cross-stitching/dowelbar retrofit	Both	Both	Rehab/reconstruct
Slab stabilization/ jacking/underseal	Both	Both	Rehab/reconstruct
PCC/AC overlay	PCC/AC overlay	PCC/AC overlay	Rehab/reconstruct
Grinding/grooving	PCC/AC overlay	Grinding/grooving	Rehab/reconstruct
Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct	Rehab/reconstruct