

ALDOT-392

PROJECT LEVEL PAVEMENT CONDITION DATA COLLECTION PROCEDURE

1 Scope

- This procedure outlines the process for conducting a distress survey to evaluate the pavement condition. The purpose of conducting a distress survey is to identify and quantify the amount and severity of surface distress in a given segment of pavement. The results of the distress survey will be used to prepare a pavement condition report for pavement rehabilitation projects.

2 Abbreviations and Acronyms

| | |
|--------|--|
| AASHTO | American Association of State Highway and Transportation Officials |
| ALDOT | Alabama Department of Transportation |
| CRCP | Continuously Reinforced Concrete Pavement |
| FHWA | Federal Highway Administration |
| ft | Foot |
| FWD | Falling Weight Deflectometer |
| HMA | Hot Mix Asphalt |
| in | Inch |
| JPCP | Jointed Plain Concrete Pavement |
| JRCP | Jointed Reinforced Concrete Pavement |
| km | kilometer |
| m | meter |
| mm | millimeter |
| MR | Minor Rehabilitation |
| MUTCD | Manual on Uniform Traffic Control Devices |
| PCC | Portland Cement Concrete |
| PM1 | Preventative Maintenance 1 |
| PM2 | Preventative Maintenance 2 |
| WMA | Warm Mix Asphalt |

3 Referenced Documents

- ALDOT Documents
 - ALDOT-391 Falling Weight Deflectometer (FWD) Testing Procedure
 - ALDOT Pavement Preservation Policy

- AASHTO Documents
AASHTO Guide for Design of Pavement Structures, 1993
- FHWA Documents
RD-03-031 Distress Identification Manual for the Long-Term Pavement Performance Program. This document can be found at the following web site: www.tfhr.gov/pavement/ltp/reports/03031/index.htm
MUTCD Manual on Uniform Traffic Control Devices

4 Survey Process

- The safety of the survey team shall be the paramount factor in conducting a pavement distress survey. Safety vests shall be worn by every member of the survey team. Vehicles shall be equipped with working hazard lights and external warning flashing lights. The lights shall be operated at all times during the survey.
- Distress surveys should be conducted at the same time as core extractions are conducted. If this is not possible, the distress survey shall be performed from the adjacent shoulder. If there is not enough room on the shoulder to drive a vehicle or to walk, the condition survey may be performed from inside a slow-moving vehicle traveling the travel way.
- If a distress survey is performed from inside a slow-moving vehicle, before the survey begins and during the survey, the raters shall make measurements of the observed distresses to “calibrate” their eyes to the severity level of the observed distresses.
- Distress surveys shall be conducted on segments for the length of the project. Each segment will be equal to 1 mile (1.6 km); ideally run from post marker to post marker.
- The distress survey shall include the following three parameters for each distress:
 - Type
 - Severity level
 - Amount
- A distress survey shall be conducted on all interchange ramps within the segment throughout the entire project.

5 Distress Types

5.1 Flexible Pavements (HMA and WMA) shall be evaluated for the following distress types:

- CRACKING
 - Fatigue Cracking
 - Block Cracking

- Edge Cracking
 - Longitudinal Cracking
 - Transverse Cracking
 - PATCHING AND POTHOLES
 - Patching Deterioration
 - Potholes
 - SURFACE DEFORMATIONS
 - Rutting
 - Shoving
 - SURFACE DEFECTS
 - Bleeding
 - Raveling
 - MISCELLANEOUS DISTRESSES
 - Water Bleeding and Pumping
- 5.2 Jointed Rigid Pavements (JPCP, JRCP) shall be evaluated for the following distress types:
- CRACKING
 - Corner Breaks
 - “D” Cracking
 - Longitudinal Cracking
 - Transverse Cracking
 - Crack Faulting
 - JOINT DEFICIENCIES
 - Joint Seal Damage
 - Joint Spalling
 - Joint Faulting
 - SURFACE DEFECTS
 - Map Cracking
 - Scaling
 - MISCELLANEOUS DISTRESSES
 - Lane-to-Shoulder Drop-off
 - Patch/Patch Deterioration
 - Water Bleeding and Pumping
- 5.3 Continuously Reinforced Rigid Pavement (CRCP) shall be evaluated for the following distress types:
- CRACKING
 - “D” Cracking
 - Longitudinal Cracking
 - Transverse Cracking
 - SURFACE DEFECTS
 - Map Cracking
 - Scaling
 - Popouts
 - MISCELLANEOUS DISTRESSES

- Blowups
 - Transverse Construction Joint Deterioration
 - Lane-to-Shoulder Drop-off
 - Lane-to-Shoulder Separation
 - Patch/Patch Deterioration
 - Punchouts
 - Longitudinal Joint Spalling
 - Water Bleeding and Pumping
 - Longitudinal Joint Seal Damage
- 5.4 Composite Pavements (AC/PCC), in addition to being evaluated for the Flexible Pavement distress types, they shall also be evaluated for the following distress types:
- CRACKING
 - Unrepaired Deteriorated Reflection Cracking per Segment
 - JOINT DEFICIENCIES
 - Expansion Joints per Segment
 - Exceptionally Wide Joints [> 1 in (25 mm)] per Segment
 - PATCHING
 - Full Depth and Full Lane Width Patches per Segment
 - MISCELLANEOUS DISTRESSES
 - Punchouts per Segment
 - PCC Durability Problems

6 Severity Level of Distress

- 6.1 The severity level of each type of distress will be based on the guidelines found in the FHWA Publication RD-03-031, as amended by Appendix A of this procedure.
- 6.2 The additional distresses for composite pavement are required to calculate the effective pavement thickness in the overlay design module of DARWin[®]. Guidance on the collection of these distresses is given in the 1993 AASHTO Pavement Design Guide Section 5.7.

7 Amount of Distress

- 7.1 The amount of distress reported will be based on the guidelines found in the FHWA Publication RD-03-031, as amended by Appendix A of this procedure.
- 7.2 In addition to the amount of distress reported in 7.1, the overall quantity of fatigue cracking on flexible pavement shall be reported as a percentage of the wheel path area within the segment. Each segment shall be considered as having two wheel paths each 3 ft (1 m) wide. The area of the wheel path in a 1 mi (1.6 km) segment is 31,680 ft² (3,200 m²). The percentage of fatigue cracking shall be calculated as follows:

$$\% \text{ FATIGUE CRACKING} = \frac{\text{CRACKING AREA}}{\text{WHEEL PATH AREA}} (100)$$

7.3 In addition to the amount of distress reported in 7.1, the overall quantity of transverse cracking shall be reported as a percentage of the area. The percentage of transverse cracking shall be calculated as follows:

$$\% \text{ TRANSVERSE CRACKING} = \frac{\text{LENGTH OF CRACKING}}{\text{SEGMENT AREA}} (100)$$

- The segment area is the width of a travel lane times the length of a segment.

7.4 Rut depth measurements shall be taken in both the outer and inner wheel paths at the beginning, ¼ point, ½ point, and ¾ point of the segment. The rater should find the lowest point (maximum rut depth) in the rut within 10 ft (3 m) of either side at each location. Several rut depth measurements shall be made to determine the lowest point. The maximum rut depth measured will be reported at each location.

8 Core Extraction

8.1 Coring of the pavement shall be required to determine the in-place pavement thickness, the depth of crack, and stripping. Coring shall be performed as follows:

| Two-Lane Roadway Coring Frequency | | |
|-----------------------------------|------------------------------|-------------------------------|
| | Eastbound/Northbound | Westbound/Southbound |
| PM1 | 1 core per mile (1.6 km) | 1 core per 3 miles (4.8 km) |
| PM2 | 1 core per mile (1.6 km) | 1 core per 3 miles (4.8 km) |
| MR | 1 core per 0.5 mile (0.8 km) | 1 core per 1.5 miles (2.4 km) |

| Four-Lane Roadway or Greater Coring Frequency (State Routes) | | |
|--|--|-------------------------------|
| | One Lane in each direction selected by Area Materials Engineer | All other through Lanes |
| PM1 | 1 core per mile (1.6 km) | 1 core per 3 miles (4.8 km) |
| PM2 | 1 core per mile (1.6 km) | 1 core per 3 miles (4.8 km) |
| MR | 1 core per 0.5 mile (0.8 km) | 1 core per 1.5 miles (2.4 km) |

| Four-Lane Roadway or Greater Coring Frequency (Interstate Routes) | | |
|---|--|-------------------------------|
| | One Lane in each direction selected by Area Materials Engineer | All other through Lanes |
| PM1 | 1 core per mile (1.6 km) | 1 core per 3 miles (4.8 km) |
| PM2 | 1 core per 0.5 mile (0.8 km) | 1 core per 1.5 miles (2.4 km) |
| MR | 1 core per 0.5 mile (0.8 km) | 1 core per 1.5 miles (2.4 km) |

- 8.1.1. PM1, PM2 and MR as defined by the current Pavement Preservation Policy.
- 8.1.2. The lane typically selected by the Area Materials Engineer is the outside lane or the most distressed lane in each travel direction. Normally, this will be the lane that carries the highest volume of truck traffic.
- 8.1.3. Cores shall be taken in the outer wheel path of the appropriate lane. If there is a crack in the outer wheel path, extract the core on the crack within the segment at one of the FWD test locations defined in Article 8.4.
- 8.2 If there is not a crack in the outer wheel path, extract the core at randomly selected point in the outer wheel path within the length of the segment.
- 8.3 It is the intent of the Department to take cores at locations corresponding to the FWD test locations. Test locations for FWD are spaced at intervals of 0.1 mile (0.16 km). The FWD testing shall be performed in accordance with ALDOT-391.
- 8.4 The Department may request that additional cores be taken at high deflection locations determined by FWD testing.
- 8.5 The thickness and type of granular layers within the pavement structure may be determined from the core hole borings.
- 8.6 The location and frequency of coring on rigid pavements will be determined by the Area Materials Engineer.
- 8.7 All core holes shall be filled with a bituminous mix.

9 Traffic Control

- 9.1 Traffic control shall be set following the guidelines in the current MUTCD, Part 6, "*Temporary Traffic Control*".

10 Report Submittal

- 10.1 Four copies of the condition survey report shall be submitted to the Area Materials Engineer.
- 10.2 The distress survey report shall include the following as a minimum:
 - Route designation
 - County
 - Beginning and ending marker posts
 - Core photo log
 - Pavement shoulder width
 - Pavement layer information
 - Shoulder condition
 - Amount and severity level of each distress
- 10.3 The type, amount, and severity level of each of the observed distresses shall be reported for each individual project segment and each individual interchange ramp within the project limits.
- 10.4 A Size A4 paper format photo log of all cores taken on the project shall be

compiled. The photo log shall include the following minimum information for each core taken:

- Direction of travel lane
 - Distance from post marker
 - Distance from edge of pavement
 - Length of core
 - Depth of cracks in the core
 - Depth of stripping if present
- 10.5 Pavement layer information shall include each layer type and its thickness to the nearest 0.25 in (5 mm). The layer type shall be described as open graded friction courses, wearing surface layer, bituminous binder, bituminous base, surface treatment, granular, concrete etc.
- 10.6 The shoulder condition shall be described as good, fair, or poor. The location of any localized failures in the shoulder shall be reported along with the shoulder type (paved with surface treatment, plant mix surface, with scoring, grassed, etc.).
- 10.7 The amount of drop-off or elevation difference between the mainline roadway and shoulder shall be measured and reported for each segment. Any separation (lane-shoulder gap) shall also be measured and reported for each surveyed segment.
- 10.8 The following guidelines shall be followed to report the amount of pavement distress in the corresponding measured units:
- Area measurements to the nearest 5 ft² (0.5 m²)
 - Length measurements to the nearest 1 ft (0.3 m)
- 10.9 After all evaluations are completed, the extracted cores and the photo log shall be made available for display and/or further evaluation.

11 Appendix A

11.1 This appendix references the US Customary Units used by ALDOT when applying the Distress Identification Manual for the Long-Term Pavement Performance Program. The following three Sections of this appendix cover three types of pavement: Hot Mix Asphalt, Jointed Portland Cement Concrete, and Continuously Reinforced Portland Cement Concrete.

11.2 HMA

Page 4

Fatigue Cracking

Description

1st Paragraph, Last sentence ...usually less than 1 ft. (0.3 m) on the...

How to Measure

1st sentence Record square feet (square meters)...

Page 6

Block Cracking

Description

2nd sentence ...1 ft² (0.1 m²) to 110 ft² (10 m²).

Severity Levels

Low Cracks with a mean width > 1/25 in. and ≤ 1/8 in. (> 1 mm and ≤ 3 mm).

Moderate Cracks with a mean width > 1/8 in. and ≤ 1/4 in. (> 3 mm and ≤ 6 mm).

High Cracks with a mean width > 1/4 in. (> 6 mm).

How to Measure

1st sentence Record square feet (square meters)...

Note: ...be at least 50 ft. (15 m) in length of roadway...

Page 7

Edge Cracking

Description

2nd sentence ...are located within 2 ft. (0.6 m)....

3rd sentence ...and within 2 ft. (0.6 m)...

How to Measure

1st sentence Record length in feet (meters)...

Page 8 & 9

Longitudinal Cracking

Severity Levels

Low A crack with a mean width > 1/25 in. and ≤ 1/8 in. (> 1 mm and ≤ 3 mm)...

Moderate Any crack with a mean width > 1/8 in. and ≤ 1/4 in. (> 3 mm and ≤ 6 mm).

High Any crack with a mean width > 1/4 in. (> 6 mm).

How to Measure

4A. Wheel Path Longitudinal Cracking

1st sentence Record length in feet (meters)...

4B. Non-Wheel Path Longitudinal Cracking

1st sentence Record length in feet (meters)...

Page 10 Reflection Cracking at Joints (only on Composite Pavement)

Severity Levels

Low A crack with a mean width > 1/25 in. and ≤ 1/8 in. (> 1 mm and ≤ 3 mm)...

Moderate Any crack with a mean width > 1/8 in. and ≤ 1/4 in. (> 3 mm and ≤ 6 mm).

| | |
|---|---|
| High | Any crack with a mean width > 1/4 in. (> 6 mm). |
| Page 12 & 13 | Transverse Cracking |
| | <u>Severity Levels</u> |
| Low | Cracks with a mean width > 1/25 in. and ≤ 1/8 in. (> 1 mm and ≤ 3 mm)... |
| Moderate | Cracks with a mean width > 1/8 in. and ≤ 1/4 in. (> 3 mm and ≤ 6 mm). |
| High | Cracks with a mean width > 1/4 in. (> 6 mm). |
| | <u>How to Measure</u> |
| 1 st paragraph, 3 rd sentence | Length recorded, in feet (meters)... |
| 2 nd paragraph | Also record length in feet (meters)... |
| Last sentence | Cracks less than 6 ft. (1.8 m) are not recorded. A crack shall project within 30° of perpendicular to the pavement centerline. Transverse cracks shall be rated prior to other types of cracking. |
| Page 16 | Patch/Patch Deterioration |
| | <u>Description</u> |
| 1st sentence | ...1 ft ² (0.1 m ²)... |
| | <u>Severity Levels</u> |
| Low | ...rutting < 1/8 in. (3 mm)... |
| Moderate | ...rutting from 1/8 in. to 1/2 in. (3 mm to 13 mm)... |
| High | ...rutting > 1/2 in. (> 13 mm)... |
| | <u>How to Measure</u> |
| 1st sentence | ...number of patches and square feet (square meters)... |
| Page 18 | Potholes |
| | <u>Description</u> |
| 2nd sentence | Minimum plan dimension is 6 in. (150 mm). |
| | <u>Severity Levels</u> |
| Low | < 1 in. (25 mm) deep. |
| Moderate | 1 in. to 2 in. (25 mm to 50 mm) deep. |
| High | > 2 in. (> 50 mm) deep. |
| | <u>How to Measure</u> |
| 1st sentence | ...number of potholes and square feet (square meters)... |
| Page 22 | Rutting |
| | <u>How to Measure</u> |

Page 37 **"D" Cracking**

How to Measure

1st sentence ..."D" cracking and square feet (square meters)...

Severity Levels

High Displaced pieces, up to 1 ft² (0.1 m²), may have been patched.

Page 38 & 39 **Longitudinal Cracking**

Severity Levels

The severity of the longitudinal crack, whether sealed or not, is determined in terms of crack width, spalling and faulting.

Low Crack widths < 1/8 in. (< 3 mm)...

Moderate Crack widths ≥ 1/8 in. and < 1/2 in. (> 3 mm and < 13 mm); or with spalling < 3 in (75 mm); or faulting up to 1/2 in (13 mm).

High Crack widths ≥ 1/2 in (13 mm); or with spalling ≥ 3 in (75 mm); or faulting ≥ 1/2 in (13 mm).

How to Measure

Record length in feet (meters) of longitudinal cracking at each severity level. Sealed cracks are to be rated as if they are not sealed. If sealed, a comment as to the quality of the seal (good, bad) should be made.

Page 40 & 41 **Transverse Cracking**

Severity Levels

The severity of the transverse crack, whether sealed or not, is determined in terms of crack width, spalling and faulting. The crack will be rated at the highest severity level that occurs along the crack.

Low Crack widths < 1/8 in. (< 3 mm)...

Moderate Crack widths ≥ 1/8 in. and < 1/2 in. (> 3 mm and < 13 mm); or with spalling < 3 in (75 mm); or faulting up to 1/2 in (13 mm).

High Crack widths ≥ 1/2 in (13 mm); or with spalling ≥ 3 in (75 mm); or faulting ≥ 1/2 in (13 mm).

How to Measure

The extent of transverse cracking will be measured as the number of cracks of each severity level in the sample section. Sealed cracks are to be rated as if they are not sealed. If sealed, a comment as to the quality of the seal (good, bad) should be made. Hairline cracks shorter than 6 ft (1.8 m) are not rated.

Page 44 **Joint Seal Damage**

5b. Longitudinal Joint Seal Damage

How to Measure

Last sentence ...when at least 3 ft (1 m) in length.

Page 45 **Longitudinal Joint Spalling**

Description

Cracking, breaking, chipping, or fraying of slab edges within 1 ft (0.3 m) from the face of the joint.

Severity Levels

| | |
|----------|--|
| Low | Joints with spalls \leq 1 in. (25 mm) wide... |
| Moderate | Joints with spalls $>$ 1 in (25 mm) to \leq 3 in (75 mm) wide... |
| High | Joints with spalls $>$ 3 in (75 mm) wide... |

How to Measure

The extent of spalling will be measured in terms of the number of joints at each severity level. If more than one level of severity exists along a joint, it will be recorded as having the highest severity level present.
faulting \geq 1/2 in (13 mm).

Page 46 **Transverse Joint Spalling**

Description

Cracking, breaking, chipping, or fraying of slab edges within 1 ft (0.3 m) from the face of the joint.

Severity Levels

| | |
|----------|--|
| Low | Joints with spalls \leq 1 in. (25 mm) wide... |
| Moderate | Joints with spalls $>$ 1 in (25 mm) to \leq 3 in (75 mm) wide... |
| High | Joints with spalls $>$ 3 in (75 mm) wide... |

How to Measure

The extent of spalling will be measured in terms of the number of joints at each severity level. If more than one level of severity exists along a joint, it will be recorded as having the highest severity level present.

Page 48 **Map Cracking and Scaling**

8a. Map Cracking

How to Measure

Report number of slabs with map cracking.

8b. Scaling

Description

Scaling is the deterioration of the upper concrete slab surface, normally 1/8 in. to 1/2 in (3 mm to 13 mm)...

How to Measure

Report number of slabs with scaling.

Page 49 **Polished Aggregate**

Do not report.

Page 50 **Popouts**

Description

Small pieces of pavement broken loose from the surface, normally ranging in diameter from 1 in to 4 in (25 mm to 100 mm), and depth from 1/2 in to 2 in (13 mm to 50 mm).

How to Measure

Report number of slabs with popout.

Page 53 **Joint and Crack Faulting**

How to Measure

1st paragraph Record in inches (millimeters), to the nearest 0.1 in (2.5 mm). Take measurements in the outside wheel path which begins approximately 1 ft (0.3 m) from the outside slab edge and is 3 ft (1.0 m) wide. For a widened lane, the wheel path location will be 1 ft (0.3 m) from the outside lane edge stripe. Take three measurements and report the average of the three.

2nd paragraph Faulting on PCC pavements is to be measured using an ALDOT approved rut/fault gauge.

3rd paragraph ...The maximum offset is 1 ft (0.3 m)...
Disregard the 4th and 5th paragraphs.

Page 54 & 55 Lane-to-Shoulder Drop-Off and Separation

How to Measure

Record to the nearest 0.1 in (2.5 mm) at 50 ft (15 m) intervals along the lane-to-shoulder joint.

Page 56 & 57 **Patch/Patch Deterioration**

Description

A portion, greater than 1 ft² (0.1 m²), or all...

Severity Levels

Moderate ... settlement up to 1/4 in (6 mm)...

High ... settlement \geq 1/4 in (6 mm)

How to Measure

Report number of patches and square feet (square meters) of affected surface area at each severity level.

Page 58 **Water Bleeding and Pumping**

How to Measure

Report the existence of water bleeding/pumping.

11.4 CRCP

Page 62 **"D" Cracking**

Severity Levels

High Displaced pieces, up to 1 ft² (0.1 m²), may have been patched.

How to Measure

Record the number of affected transverse cracks at each severity level.

Page 63 **Longitudinal Cracking**

Severity Levels

Low Crack widths < 1/8 in. (< 3 mm)...

Moderate Crack widths ≥ 1/8 in. and < 1/2 in. (> 3 mm and < 13 mm); or with spalling < 3 in (75 mm); or faulting up to 1/2 in (13 mm).

High Crack widths ≥ 1/2 in (13 mm); or with spalling ≥ 3 in (75 mm); or faulting ≥ 1/2 in (13 mm).

How to Measure

Record length in feet (meters) of longitudinal cracking at each severity level. Sealed cracks are to be rated as if they are not sealed. If sealed, a comment as to the quality of the seal (good, bad) should be made.

Page 65 **Transverse Cracking (Continuation)**

How to Measure

Record number of transverse cracks at each severity level. Sealed cracks are to be rated as if they are not sealed. If sealed, a comment as to the quality of the seal (good, bad) should be made. Cracks shorter than 6 ft (1.8 m) are not rated.

Page 68 **Map Cracking and Scaling**

8a. Map Cracking

How to Measure

Report occurrences as localized or entire lane width.

4b. Scaling

Description

Scaling is the deterioration of the upper concrete slab surface, normally 1/8 in.

to 1/2 in (3 mm to 13 mm)...

How to Measure

Report occurrences as localized or entire lane width.

Page 69 **Polished Aggregate**

Do not report.

Page 70 **Popouts**

Description

Small pieces of pavement broken loose from the surface, normally ranging in diameter from 1 in to 4 in (25 mm to 100 mm), and depth from 1/2 in to 2 in (13 mm to 50 mm).

How to Measure

Report existence of popouts.

Page 73 **Transverse Construction Joint Deterioration**

Severity Levels

| | |
|----------|--|
| Low | No spalling or faulting within 2 ft (0.6 m) of joint. |
| Moderate | Spalling < 3 in (75 mm) exists within 2 ft (0.6 m) of joint. |
| High | Spalling ≥ 3 in (75 mm) and breakup exists within 2 ft (0.6 m) of joint. |

Page 74 & 75 **Lane-to-Shoulder Drop-Off and Separation**

How to Measure

Record to the nearest 1/4 in (5 mm) at 50 ft (15 m) intervals along the lane-to-shoulder joint.

Page 76 **Patch/Patch Deterioration**

Description

A portion, greater than 1 ft² (0.1 m²), or all...

Severity Levels

| | |
|----------|---------------------------------------|
| Moderate | ... settlement up to 1/4 in (6 mm)... |
| High | ... settlement ≥ 1/4 in (6 mm) |

Page 77 **Patch/Patch Deterioration (Continuation)**

How to Measure

Report number of patches and square feet (square meters) of affected surface area at each severity level.

Page 78 & 79 **Punchouts**

Description

The area enclosed by two closely spaced (usually < 2 ft (0.6 m)) transverse...

Severity Levels

| | |
|----------|--|
| Low | ...spalling < 3 in. (75 mm) or faulting < 1/4 in (6 mm)... |
| Moderate | Spalling \geq 3 in (75 mm) and < 6 in (150 mm) or faulting \geq 1/4 in (6 mm) and < 1/2 in (13 mm) exists. |
| High | Spalling > 6 in (150 mm), or concrete within the punchout is punched down by \geq 1/2 in (13 mm)... |

How to Measure

Note: ...cracks spaced greater than 2 ft (0.6 m) but less than or equal to 3 ft (1.0 m)...

Page 80 & 81 Longitudinal Joint Spalling

Description

Cracking, breaking, chipping, or fraying of slab edges within 1 ft (0.3 m) from the face of the joint.

Severity Levels

| | |
|----------|---|
| Low | Spalls \leq 1 in. (25 mm) wide... |
| Moderate | Spalls > 1 in (25 mm) to 3 in (75 mm) wide... |
| High | Spalls > 3 in (75 mm) wide... |

How to Measure

Record the existence of longitudinal joint spalling as isolated or extensive. If more than one level of severity exists along a joint, it will be recorded as having the highest severity level present.

Page 82 Water Bleeding and Pumping

How to Measure

Report occurrence of pumping.

Page 83 Longitudinal Joint Seal Damage

How to Measure

Last sentence ... when at least 3 ft (1 m) in length.