



PCI SURVEY

Drawn from ASTM D6433 – 24 "Standard
Practice for Roads and Parking Lots Pavement
Condition Index Surveys"

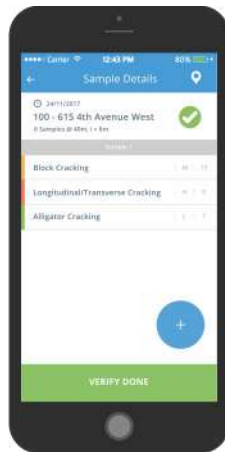
EQUIPMENT REQUIRED



SAFETY GEAR



SURVEY WHEEL



SMARTPHONE

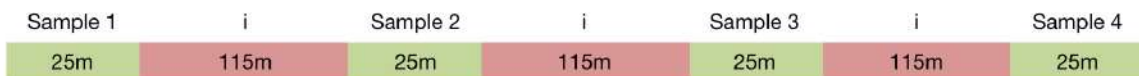
SURVEY STEPS

1. SELECT SECTION

- Press (+) button on main page of app
- Scroll map over section, press Select
- Enter Width / Surface Type if required

2. MARK SAMPLE

- Choose representative samples, they do not need to be spaced exactly @ i
- Walk along sample, measure length using survey wheel
- Mark Start / End of sample with spray paint (optional)
- See example below:



3. WALK SAMPLE, RECORD DISTRESSES

- Only record distresses that are present inside sample area
- Do not record distresses in the skipped interval



IDENTIFYING A DISTRESS

CLASSIFY THE DISTRESS

- Based on visual assessment
- Use pictures in the manual

RATE SEVERITY

- Usually based on physical measurement
- Sometimes based on characteristics of the distress

MEASURE EXTENT

- Generally the length or area of the distress
- Estimate based on surrounding features



IDENTIFYING A DISTRESS

CLASSIFY THE DISTRESS

- Based on visual assessment
- Use pictures in the manual



**EXTREMELY
IMPORTANT**

RATE SEVERITY

- Usually based on physical measurement
- Sometimes based on characteristics of the distress



**SOMEWHAT
IMPORTANT**

MEASURE EXTENT

- Generally the length or area of the distress
- Estimate based on surrounding features



**LEAST
IMPORTANT**

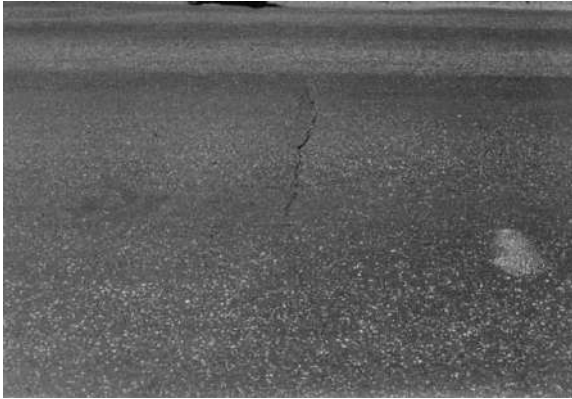
**WITHIN 10% FOR LINEAR
WITHIN 20% FOR AREA**



COMMON

Long/Trans Cracking (m/ft)

How to measure: If the crack does not have the same severity level along its entire length, each portion should be identified and recorded separately. For example, if a crack is 15m long, it may have 3m that is high severity and 12m that is low severity to be recorded separately.



LOW SEVERITY

- Non-filled cracks with widths less than 10mm (3/8in.) or;
- Filled cracks of any width (filler in satisfactory condition)



MEDIUM SEVERITY

- Non-filled cracks widths 10 to 75mm (3/8 to 3in.) or;
- Non-filled less 75mm (3in.) surrounded by light secondary cracking or;
- Filled crack of any width surrounded by light random cracking



HIGH SEVERITY

- Filled or nonfilled surrounded by medium or high-severity random cracking;
- Nonfilled greater than 75 mm (3 in.) or;
- Any width where approx. 100 mm (4 in.) of pavement around the crack are severely raveled or broken.

Weathering (m²/ft²)

How to measure: Also called surface wear, the wearing away of the asphalt binder and fine aggregate matrix. Not recorded where medium or high severity raveling is recorded.



LOW SEVERITY

- Asphalt beginning to show signs of aging
- Loss of fine aggregate noticeable
- Edges of coarse aggregate beginning to be exposed (less than 1mm or 0.05in)



MEDIUM SEVERITY

- Edges of coarse aggregate have been exposed up to ¼ their width due to loss of fine aggregate



HIGH SEVERITY

- Edges of coarse aggregate have been exposed over ¼ their width due to loss of fine aggregate
- Considerable loss of fine aggregate, potential loss of coarse aggregate

Edge Cracking (m/ft)

How to measure: Parallel to and usually within 0.3 to 0.5m (1 to 1.5ft) of the outer edge of pavement. Classify the area between the edge and the crack as raveled if it is broken up.



LOW SEVERITY

- Low or medium cracking
- No breakup or raveling



MEDIUM SEVERITY

- Medium cracks
- Some breakup or raveling

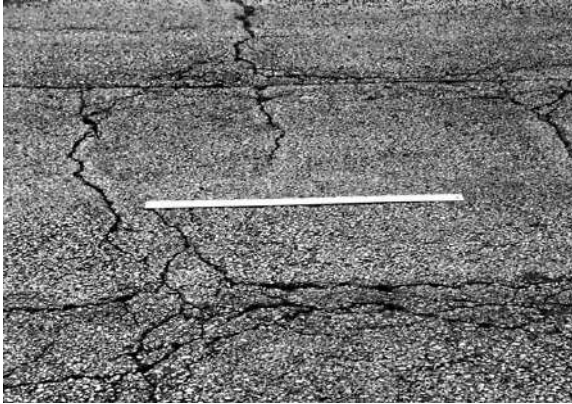


HIGH SEVERITY

- Considerable breakup or raveling along the edge

Block Cracking (m^2/ft^2)

How to measure: Interconnected cracks that divide the pavement into approximately rectangular pieces. The blocks may range in size from approximately 0.3 by 0.3 m (1 by 1 ft) to 3 by 3 m (10 by 10 ft). Usually occurs at one severity level; however, if areas of different severity can be distinguished easily, they should be measured and recorded separately.



LOW SEVERITY

- Blocks defined by low severity cracks



MEDIUM SEVERITY

- Blocks defined by medium severity cracks



HIGH SEVERITY

- Blocks defined by high severity cracks

Alligator Cracking (m^2/ft^2)

How to measure: If two or three levels of severity exist within a distressed area, measure and record them separately. If they cannot be divided easily, the entire area should be rated at the highest severity present. Alligator cracking and rutting occurring in the same area should be recorded separately.



LOW SEVERITY

- Hairline cracks running parallel to each other
- Little or no interconnecting cracks
- Cracks are not spalled



MEDIUM SEVERITY

- Further development of light alligator cracks
- Cracks are interconnected
- Cracks may be lightly spalled



HIGH SEVERITY

- Pattern of cracking has progressed so that pieces are well defined
- Heavy spalling
- Pieces may rock under traffic

Patching and Utility Cuts (m²/ft²)

How to measure: If a single patch has areas of differing severity, they should be recorded separately. No other distresses are recorded within the patch. If a large area is replaced it should not be recorded as a patch but considered new pavement, for example replacement of an intersection.



LOW SEVERITY

- Patch is in good condition and satisfactory
- Ride quality is rated as low severity or better



MEDIUM SEVERITY

- Patch is moderately deteriorated
- Ride quality is rated as medium severity



HIGH SEVERITY

- Patch is badly deteriorated
- Patch is badly deteriorated, or ride quality is rated as high severity, or both. Patch needs replacement soon.



ONCE IN A WHILE

Lane/Shoulder Drop-Off (m/ft)

How to measure: Difference in elevation between pavement edge and shoulder.



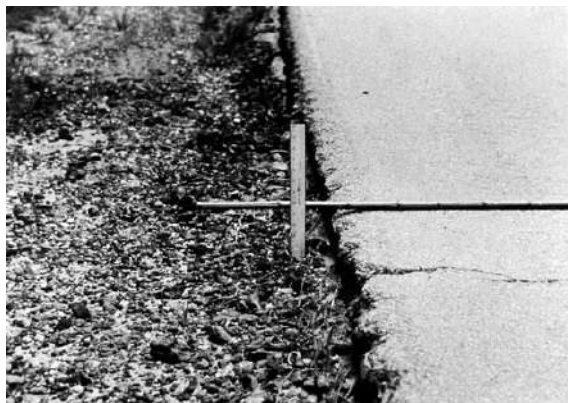
LOW SEVERITY

- The difference in elevation between the pavement edge and shoulder is > 25 mm (1 in.) and < 50 mm (2 in.)



MEDIUM SEVERITY

- The difference in elevation is > 50 mm (2 in.) and < 100 mm (4 in.)



HIGH SEVERITY

- The difference in elevation is > 100 mm (4 in.)

Potholes (count)

How to measure: The number of low, medium, and high severity potholes are counted and recorded separately. Severity is determined based on the chart below.



LOW SEVERITY



MEDIUM SEVERITY

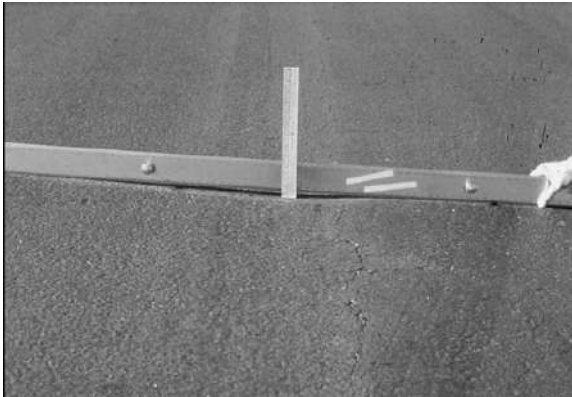


HIGH SEVERITY

Maximum Depth of Pothole	Average Diameter (mm) (in.)		
	100 to 200 mm (4 to 8 in.)	200 to 450 mm (8 to 18 in.)	450 to 750 mm (18 to 30 in.)
13 to ≤25 mm (½ to 1 in.)	L	L	M
>25 and ≤50 mm (1 to 2 in.)	L	M	H
>50 mm (2 in.)	M	M	H

Rutting (m²/ft²)

How to measure: Rutting is measured in square meters/feet of surface area, and its severity is determined by the mean depth of the rut



LOW SEVERITY

- 6 to 13 mm (1/4 to 1/2 in.) average rut depth



MEDIUM SEVERITY

- > 13 to 25 mm (> 1/2 to 1 in.) average rut depth



HIGH SEVERITY

- > 25 mm (> 1 in.) average rut depth

Bleeding (m²/ft²)

How to measure: Bleeding is a film of bituminous material on the pavement surface that creates a shiny, glasslike, reflecting surface that usually becomes quite sticky. If bleeding is counted, polished aggregate should not be counted.



LOW SEVERITY

- Bleeding only has occurred to a very slight degree
- Noticeable only a few days per year
- Asphalt does not stick to shoes/vehicles



MEDIUM SEVERITY

- Asphalt sticks to shoes/vehicles
- Occurs only a few weeks of the year

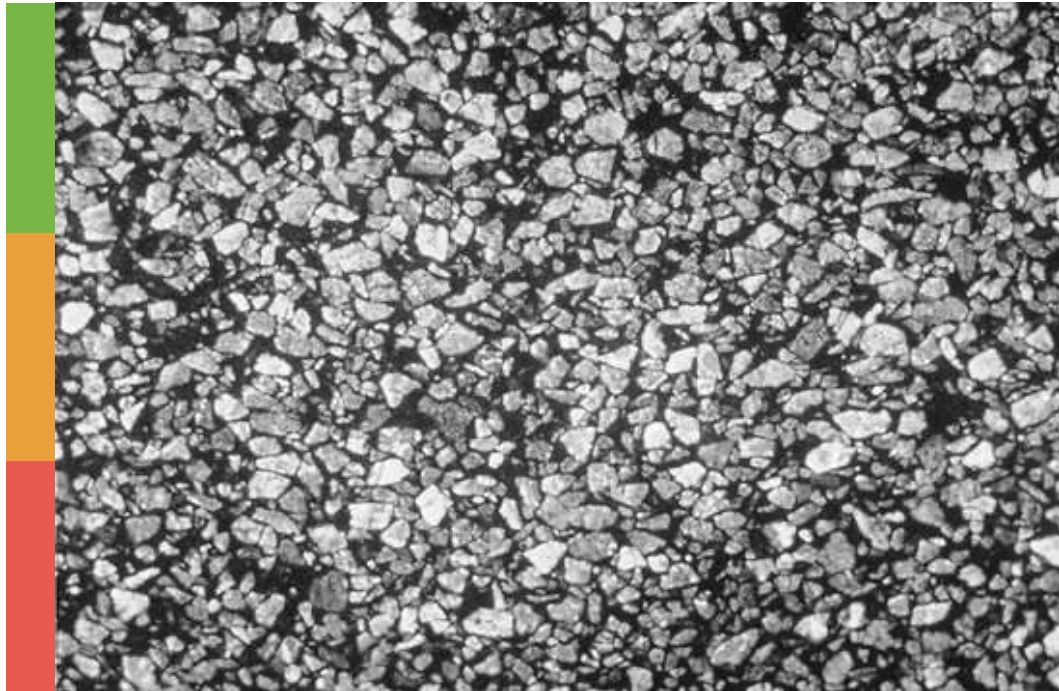


HIGH SEVERITY

- Considerable asphalt sticks to shoes and vehicles
- Occurs several weeks per year.

Polished Aggregate (m²/ft²)

How to measure: Aggregate at the surface has become smooth to the touch due to repeated traffic loading. If bleeding is counted, polished aggregate should not be counted.



SINGLE SEVERITY

- Polished aggregate is not rated by severity
- Degree of polishing should be clearly evident in the sample
- Surface aggregate should be smooth to the touch

Raveling (m²/ft²)

How to measure: Raveling is the dislodging of coarse aggregate particles. Mechanical damage caused by such things as hook drags, tire rims, or snowplows is counted as raveling.



MEDIUM SEVERITY

- Considerable loss of coarse aggregate
- Clusters of missing coarse aggregate



HIGH SEVERITY

- Surface very rough and pitted, could be completely removed in some places

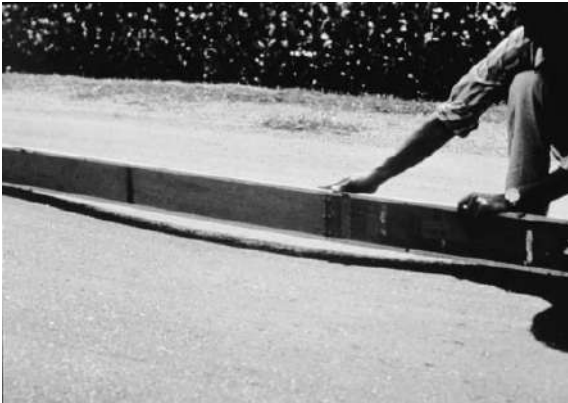
Depression (m²/ft²)

How to measure: Localized area where elevation is slightly lower than surrounding pavement.



LOW SEVERITY

- Maximum depth of 13 to 25mm (1/2 to 1 in.)



MEDIUM SEVERITY

- Maximum depth of 25 to 50mm (1 to 2 in.)



HIGH SEVERITY

- Maximum depth more than 50mm (2in.)



RARE

Joint Reflection Cracking (m/ft)

How to measure: Only occurs on asphalt that has been laid over PCC slabs. The length and severity level of each crack should be identified and recorded separately. For example, if a crack is 15m long, it may have 3m that is high severity and 12m that is low severity to be recorded separately.



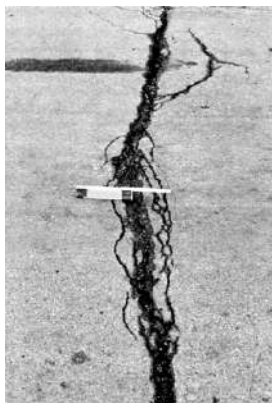
LOW SEVERITY

- Non-filled cracks with widths less than 10mm (3/8in.) or;
- Filled cracks of any width (filler in satisfactory condition)



MEDIUM SEVERITY

- Non-filled cracks widths 10 to 75mm (3/8 to 3in.) or;
- Non-filled less 75mm (3in.) surrounded by light secondary cracking or;
- Filled crack of any width surrounded by light random cracking



HIGH SEVERITY

- Filled or nonfilled surrounded by medium or high-severity random cracking;
- Nonfilled greater than 75 mm (3 in.) or;
- Any width where approx. 100 mm (4 in.) of pavement around the crack are severely raveled or broken.

Slippage Cracking (m²/ft²)

How to measure: The area associated with a given slippage crack is measured in square meters and rated according to the highest level of severity in the area. Produced when braking or turning wheels cause the pavement surface to slide or deform.



LOW SEVERITY

- Average crack width is < 10 mm (3/8 in.)



MEDIUM SEVERITY

- Average crack width is ≥ 10 and < 40 mm ($\geq 3/8$ and < 1 1/2 in.); or
- The area around the crack is moderately spalled, or surrounded with secondary cracks



HIGH SEVERITY

- The average crack width is > 40 mm (1 1/2 in.); or
- The area around the crack is broken into easily removed pieces.

Shoving (m²/ft²)

How to measure: Shoving is a permanent, longitudinal displacement of a localized area of the pavement surface caused by traffic loading.



LOW SEVERITY

- Shove causes low-severity ride quality



MEDIUM SEVERITY

- Shove causes medium-severity ride quality



HIGH SEVERITY

- Shove causes high-severity ride quality



RIDEABILITY

Railroad Crossing (m²/ft²)

How to measure: Railroad crossing defects are depressions or bumps around, or between tracks, or both. If the crossing does not affect ride quality it should not be counted.



LOW SEVERITY

- Railroad crossing causes low-severity ride quality



MEDIUM SEVERITY

- Railroad crossing causes medium-severity ride quality



HIGH SEVERITY

- Railroad crossing causes high-severity ride quality

Corrugation (m^2/ft^2)

How to measure: Also known as “washboarding”. Series of closely spaced ridges occurring at regular intervals usually less than 3m perpendicular to the direction of traffic.



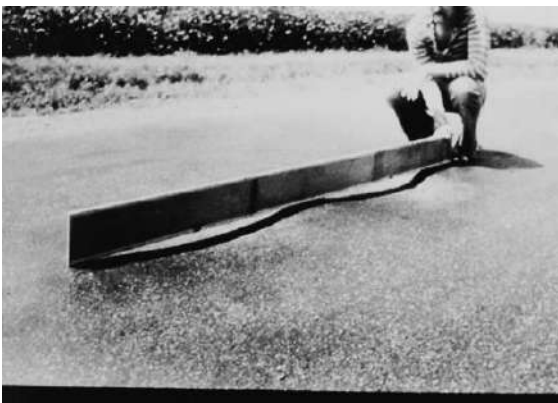
LOW SEVERITY

- Corrugation causes low-severity ride quality



MEDIUM SEVERITY

- Corrugation causes medium-severity ride quality

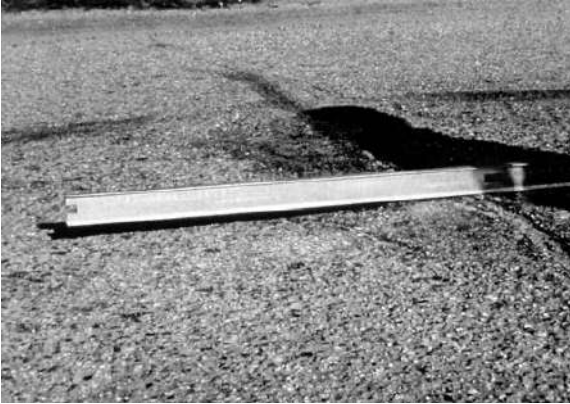


HIGH SEVERITY

- Corrugation causes high-severity ride quality

Bumps and Sags (m/ft)

How to measure: Small, abrupt, downward or upward displacement of pavement surface. Note if pattern of bumps spaced less than 3m occurs in direction of traffic flow, classify as Corrugation. Distortion occurring over a large area causing large/long dips should be recorded as swelling. If the bump occurs in combination with a crack, the crack is also recorded.



LOW SEVERITY

- Bump or sag causes low-severity ride quality



MEDIUM SEVERITY

- Bump or sag causes medium-severity ride quality

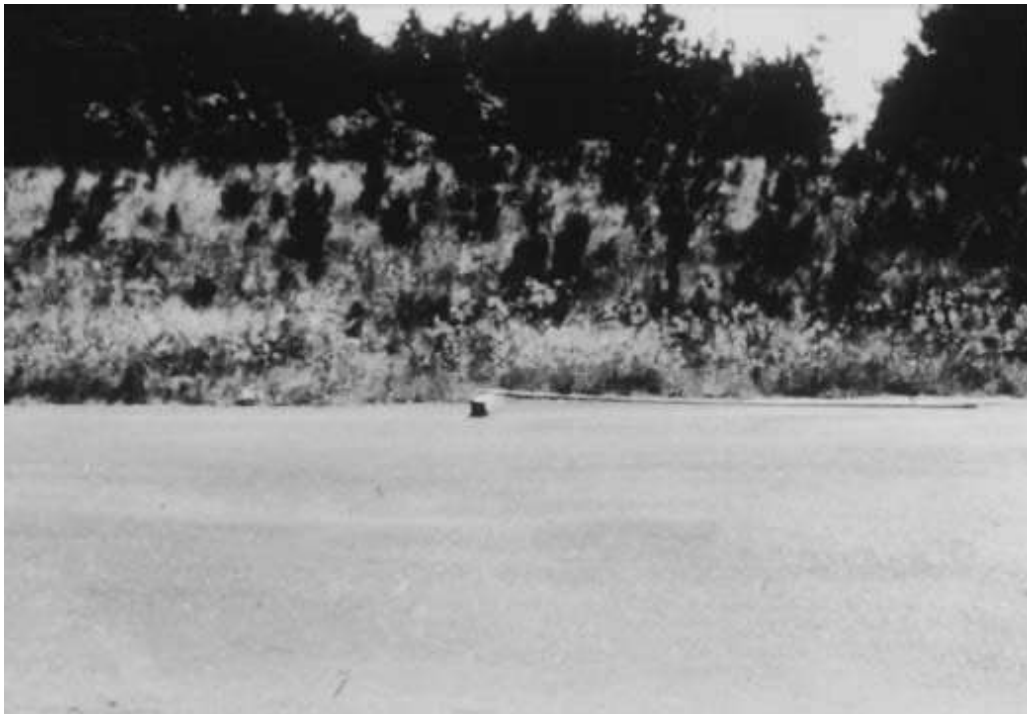


HIGH SEVERITY

- Bump or sag causes high-severity ride quality

Swell (m²/ft²)

How to measure: Swell is characterized by an upward bulge in the pavement's surface, a long, gradual wave more than 3m (10 ft) long. Swelling can be accompanied by surface cracking.



LOW SEVERITY

- Swell causes low-severity ride quality
- Hard to see but can be detected by driving the section

MEDIUM SEVERITY

- Swell causes medium-severity ride quality

HIGH SEVERITY

- Swell causes high-severity ride quality