



Distress Pavement Identification

An Online Continuing Education Course for Engineers

Course Number: T-3018

Credit: 3 Hours / 3 PDH / 3 CPD

Introduction

This course provides the information you need to perform accurate, consistent and repeatable distress evaluation surveys. Color photographs and drawings illustrate the distress found in three basic pavement types: asphalt concrete-surfaced; jointed (plain and reinforced) Portland cement concrete; and continuously reinforced concrete. Drawings of the distress types provide a reference to assess their severity. Methods for measuring the size of distresses and for assigning severity levels are given.

This course also discusses how to perform the distress survey, from obtaining traffic control to measuring the cracks in the pavement. Sample forms for recording and reporting the data are included. Information on how to calibrate and operate fault measurement equipment is also included.

Understanding "why" some pavements perform better than others is key to building and maintaining cost-effective highways. Much of the knowledge base in this course is the result of testing performed as part of the Long-Term Pavement Performance (LTPP) program. The LTPP is a comprehensive study of in-service pavements, which began in 1987 as a series of rigorous long-term field experiments monitoring more than 2,400 asphalt and portland cement concrete pavement test sections across the U.S. and Canada.

This section covers asphalt concrete-surfaced pavements (ACP), including ACP overlays on either asphalt concrete (AC) or portland cement concrete (PCC) pavements. Each of the distresses has been grouped into one of the following categories:

- A.** Cracking
- B.** Patching and Potholes
- C.** Surface Deformation
- D.** Surface Defects
- E.** Miscellaneous Distresses

Table 1 summarizes the various types of distress and unit of measurement. Some distresses also have defined severity levels.

TABLE 1. Asphalt Concrete-Surfaced Pavement Distress Types		
DISTRESS TYPE	UNIT OF MEASURE	DEFINED SEVERITY LEVELS?
A. Cracking / page 3		
1. Fatigue Cracking	Square Meters	Yes
2. Block Cracking	Square Meters	Yes
3. Edge Cracking	Meters	Yes
4a. Wheel Path Longitudinal Cracking	Meters	Yes
4b. Non-Wheel Path Longitudinal Cracking	Meters	Yes
5. Reflection Cracking at Joints		
Transverse Reflection Cracking	Not Measured	N/A
Longitudinal Reflection Cracking	Not Measured	N/A
6. Transverse Cracking	Number, Meters	Yes
B. Patching and Potholes / page 15		
7. Patch/Patch Deterioration	Number, Square Meters	Yes
8. Potholes	Number, Square Meters	Yes
C. Surface Deformation / page 21		
9. Rutting	Millimeters	No
10. Shoving	Number, Square Meters	No
D. Surface Defects / page 25		
11. Bleeding	Square Meters	No
12. Polished Aggregate	Square Meters	No
13. Raveling	Square Meters	No
E. Miscellaneous Distresses / page 29		
14. Lane-to-Shoulder Dropoff	Not Measured	N/A
15. Water Bleeding and Pumping	Number, Meters	No

This section includes the following distresses:

- 1. Fatigue Cracking
- 2. Block Cracking
- 3. Edge Cracking
- 4a. Longitudinal Cracking—Wheel Path
- 4b. Longitudinal Cracking—Non-Wheel Path
- 5. Reflection Cracking at Joints
- 6. Transverse Cracking

Measurement of crack width is illustrated in Figure 1. Figure 2 depicts the effect on severity level of a crack, in this case block cracking, due to associated random cracking.

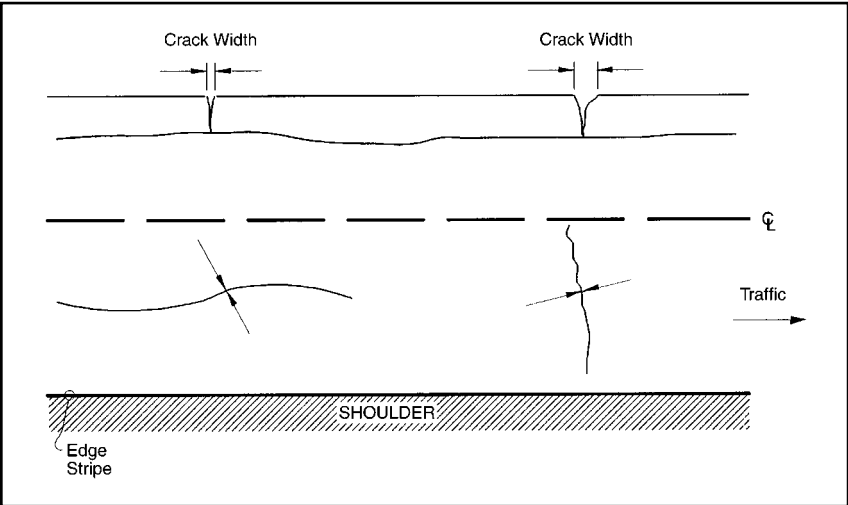


FIGURE 1
Measuring Crack Width in Asphalt Concrete-Surfaced Pavements

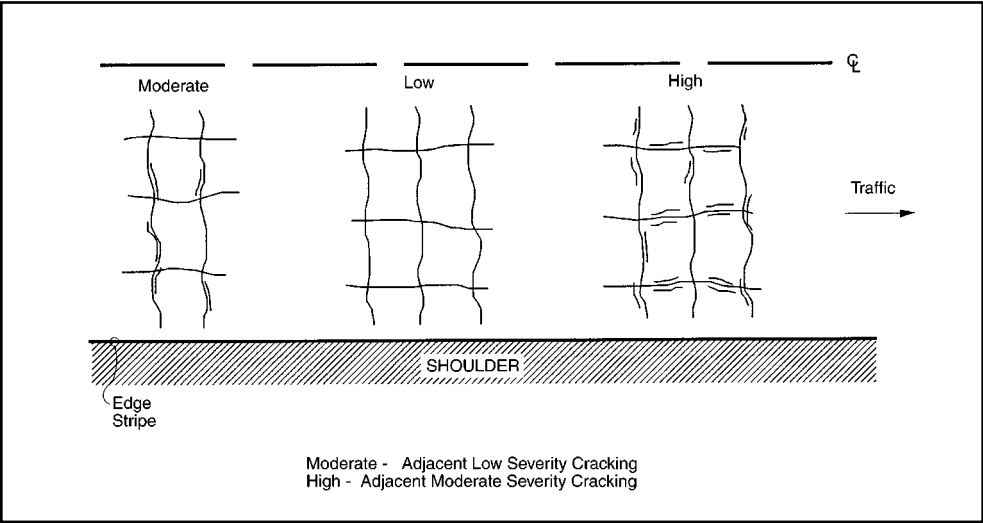


FIGURE 2
Effect on Severity Level of Block Cracking due to Associated Random Cracking

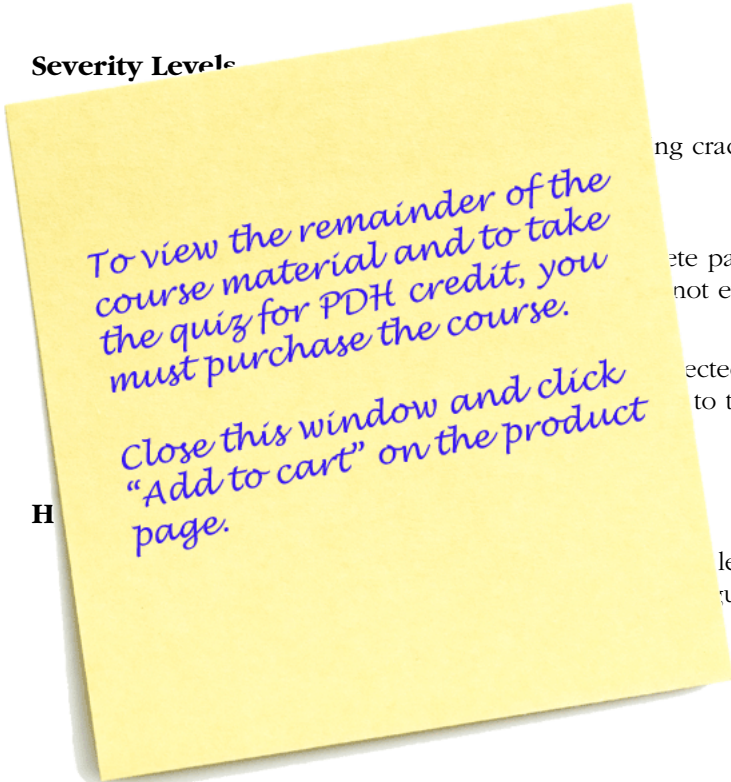
FATIGUE CRACKING

Description

Occurs in areas subjected to repeated traffic loadings (wheel paths). Can be a series of interconnected cracks in early stages of development. Develops into many-sided, sharp-angled pieces, usually less than 0.3 meters (m) on the longest side, characteristically with a chicken wire/alligator pattern, in later stages.

Must have a quantifiable area.

Severity Levels



H

ng cracks; cracks are not

ete pattern; cracks may be not evident.

ected cracks forming a to traffic; cracks may be

level. If different quished, rate the entire

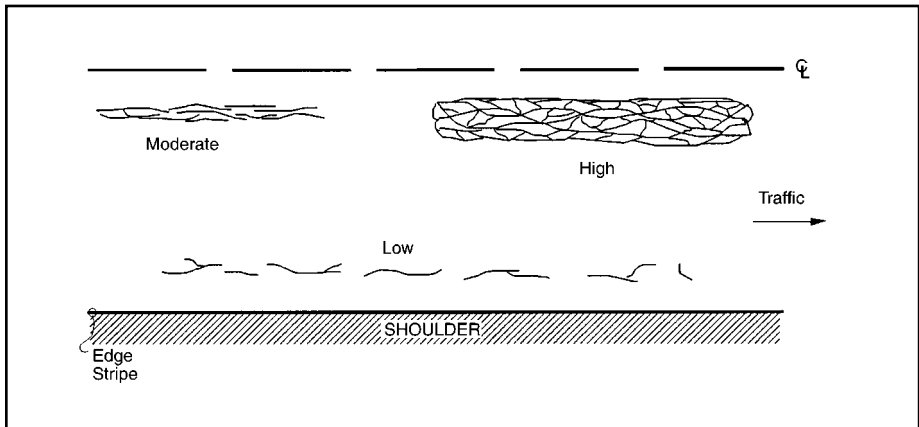


FIGURE 3
Distress Type ACP 1—Fatigue Cracking