

The NYSDOT Pavement Condition Index (PCI)

WORKING DRAFT

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Pavement Management Unit
Office of Technical Services
Engineering Division
New York State Department of Transportation

Executive Summary

The Department's measure of pavement condition has been the Surface Score and Dominant Distress as identified by an annual windshield survey. This measure describes the surface distress on a pavement, but in itself describes only one component of the total pavement condition. Other factors, such as ride quality, structural capacity and friction, as well as Rutting, a key pavement distress, are not addressed. The desire for a more comprehensive assessment of pavement performance, reinforced by the national emphasis on ride quality, has led to the development of the Pavement Condition Index, or PCI.

The PCI was developed by a committee of Department personnel having various roles in the pavement management decision-making process. The Committee decided that PCI should include surface distress, ride quality, Rutting, Faulting and Dominant Distresses since these factors each describe a particular facet of pavement performance and the data is readily available through existing data collection activities. The PCI is calculated by starting with a perfect score of 100 and subtracting deduction points for each distress based on the distress type and severity.

PCI has many advantages and uses. It allows pavement distress and ride quality to be considered together in condition assessments and decision making. Charts of PCI provide managers a quick and more complete overview of network condition and the distress types that are contributing to lower scores. And PCI charts at the project level allow users to see the distresses present in a pavement section and to track the development of those distresses over time.

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10
Excellent

New
Pavement

No
Distress



9
Excellent

No
Distress





8
Good

Infrequent

Slight



8
Good

Infrequent

Minor

8

Good

Infrequent

Moderate



8

Good

Infrequent
to
Occasional

Slight





7
Good

Infrequent
to
Occasional

Minor



7
Good

Occasional
to
Frequent

Slight

7

Good

Infrequent

Moderate
to
Severe



7

Good

Infrequent

Severe





7
Good

Infrequent
to
Occasional

Moderate



7
Good

Infrequent
to
Occasional

Moderate
to
Severe

7

Good

Occasional
to
Frequent

Minor

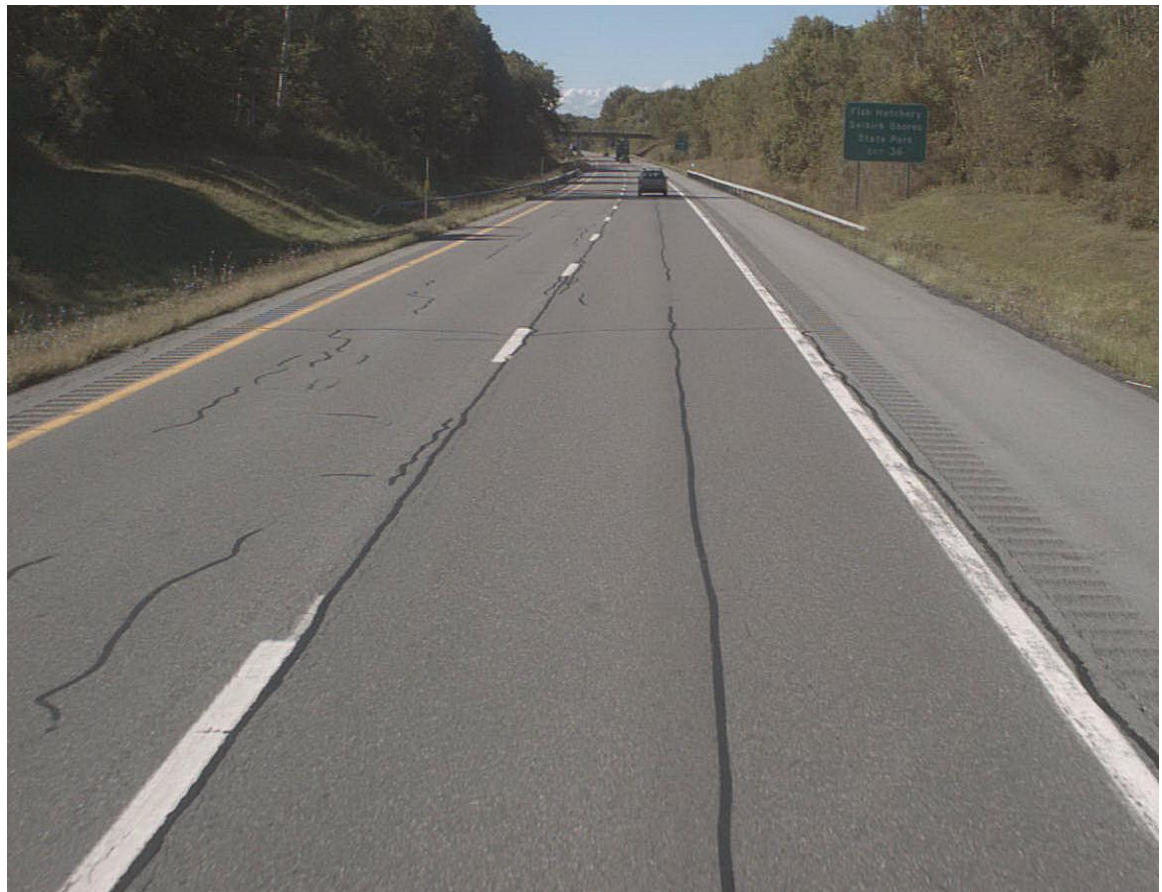


7

Good

Occasional
to
Frequent

Minor





6
Fair

Frequent

Minor



6
Fair

Frequent

Minor

6

Fair

Frequent

Minor



6

Fair

Very
Frequent

Slight





6
Fair

Very
Frequent

Minor



6
Fair

Occasional
to
Frequent

Moderate

6

Fair

Occasional
to
Frequent

Moderate
to
Severe



6

Fair

Infrequent
to
Occasional

Severe





6

Fair

Frequent

Moderate



6

Fair

Frequent

Moderate

6

Fair

Frequent

Moderate



6

Fair

Frequent

Moderate





5
Poor

Frequent

Moderate
to
Severe



5
Poor

Frequent

Moderate
to
Severe

5

Poor

Occasional
to
Frequent

Severe



5

Poor

Very
Frequent

Moderate





5
Poor

Very
Frequent

Moderate
to
Severe



4
Poor

Frequent

Severe

4
Poor

Very
Frequent

Severe



3
Very Poor

Very
Frequent

Very
Severe





2
Very Poor

Very
Frequent

Impaired
Travel



1
Very Poor

Risk of
Damage
to Vehicle

10

Excellent

New
Pavement

No
Distress



9

Excellent

No
Distress





8
Good

Infrequent

Slight



8
Good

Infrequent

Slight

8

Good

Infrequent

Minor



8

Good

Infrequent

Moderate





7
Good

Infrequent

Severe



7
Good

Infrequent
to
Occasional

Minor

7

Good

Infrequent
to
Occasional

Minor



7

Good

Occasional
to
Frequent

Minor





7
Good

Infrequent
to
Occasional

Moderate



7
Good

Infrequent
to
Occasional

Moderate

7

Good

Infrequent
to
Occasional

Moderate



7

Good

Infrequent
to
Occasional

Moderate
to
Severe





6
Fair

Occasional
to
Frequent

Moderate



6
Fair

Occasional
to
Frequent

Moderate

6

Fair

Occasional
to
Frequent

Moderate
to
Severe



6

Fair

Occasional
to
Frequent

Moderate
to
Severe





6
Fair

Occasional
to
Frequent

Moderate
to
Severe



6
Fair

Very
Frequent

Minor

6

Fair

Frequent

Moderate



6

Fair

Frequent

Moderate





5
Poor

Frequent

Moderate
to
Severe



5
Poor

Frequent

Moderate
to
Severe

5
Poor

Frequent

Moderate
to
Severe



5
Poor

Very
Frequent

Moderate





5
Poor

Occasional
to
Frequent

Severe



5
Poor

Occasional
to
Frequent

Severe

4
Poor

Very
Frequent

Severe



3
Very Poor

Frequent

Very
Severe





2
Very Poor

Very
Frequent

Impaired
Travel



1
Very Poor

Risk of
Damage
to Vehicle

Appendix G: Photographs of Dominant Distresses and Other Special Cases

The following photographs display the various Dominant Distresses identified in the pavement Surface Rating survey.

Also included for reference are other distress types not included in the formal NYSDOT survey process, and guidance on how to account for these distresses and other special conditions when observed during the survey.

Alligator Cracking

Typical alligator cracking is composed of frequent inter-connected cracks. The distress is load-related, so it is identified only when present in the wheelpath of a full-depth asphalt pavement.

Alligator cracking is identified as “isolated” when it occurs over less than 20% of the length of the segment, and “general” when it occurs over more than 20% of the segment.



The longitudinal crack in this photo qualifies as alligator cracking even though it lacks the interconnected cracking. The crack is in the early stages of development, but still represents a load-related distress because it occurs in the wheelpath.



Spalling

Two types of spalling can occur on concrete pavement: mid-slab when the mesh reinforcement is close to the surface and corrosion causes popouts; and at the joints, when incompressible material prevents the joint from moving and the compressive stresses in the slab fracture the concrete.

Spalling is identified as “isolated” when it occurs on less than 20% of the slabs, and “general” when it occurs on more than 20% of the slabs.



Delamination

Delamination occurs when an overlaid pavement loses the bond to the underlying layers and becomes dislodged. This distress is not identified directly in the NYSDOT survey, so when it is observed, the delaminated areas should be considered the same as cracking distress.



Widening Dropoff

Widening dropoff occurs when an old concrete pavement is widened with an asphalt overlay. The dissimilar base materials settle relative to each other, causing a dropoff at the edge of the underlying slab.

The widening dropoff dominant distress is identified as “low” severity (photo at right) when the cracking at the drop becomes well developed.



The distress is identified as “high” severity (photo at right) when the effect of the height difference can be detected when driving across the drop, or has the potential to influence the track of a vehicle.



Permanent Patching

Patches with straight, saw-cut edges are assumed to be permanent repairs to the pavement and are expected to perform as original pavement. These areas are not counted as distress until the patch itself begins to show signs of distress.



Temporary Patching

Temporary patching, such as “throw and go” patches, do not repair the structural damage in the pavement and therefore are counted as distress. These patches can be identified by their rounded, random shapes.



Crack Seal

Crack seal is an effective preventive maintenance activity that helps keep water out of the pavement structure. When a pavement is crack sealed, the sealant tends to highlight the cracks, which could make the pavement look worse and cause a decrease in the rating. Roads that are crack sealed should be given the same rating as the prior year until the continued development of the cracking extends beyond the sealed areas.



Flushing

Flushing occurs when excess liquid asphalt material rises to the surface of the pavement. This distress is not identified directly in the NYSDOT survey, but should be reported separately to the Resident Engineer and/or the Regional Materials Engineer, as it may present an urgent safety condition.

