



A DATA-DRIVEN CONDITION ASSESSMENT

**FOR ASPHALT REJUVENATION USING
MALTENE REPLACEMENT
TECHNOLOGY**

**SEPTEMBER 2021
PREPARED BY JAMES GOLDEN**

PMG
PAVEMENT MANAGEMENT GROUP

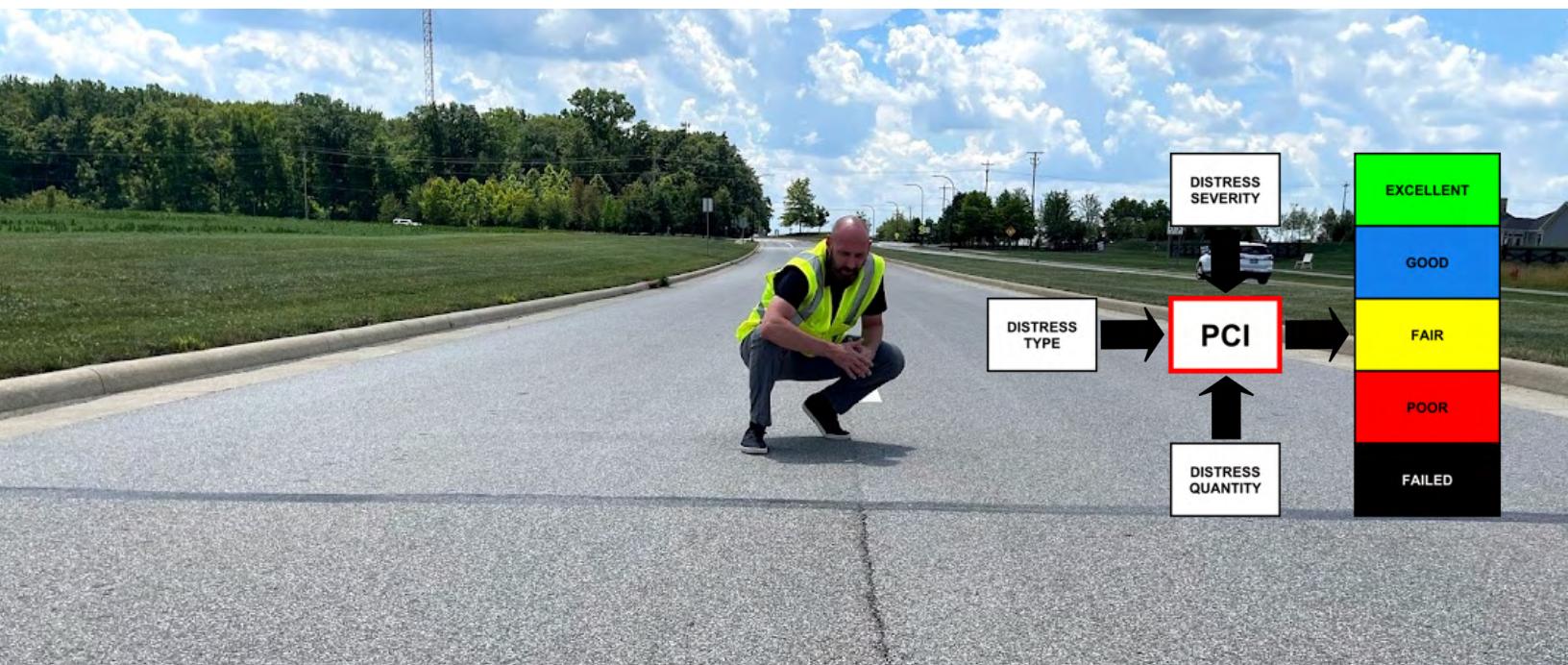
INTRODUCTION

The following report aims to provide an objective, data-driven condition assessment of the maltene-based asphalt rejuvenation product, Reclamite® leveraging the ASTM D6433 inspection methodology and process for determining the surface condition of a roadway.

Pavement Management Group's (PMG) Founder and CEO, James Golden performed the ASTM condition assessment, leveraging the PAVER® pavement management system to calculate the Pavement Condition Index (PCI) for each project test section, both treated and untreated.

The PCI (1) provides a numerical measure of the present condition of the pavement based on the distress observed on the surface, which also indicates the structural integrity and surface operational condition. It is not a measure of structural capacity, nor does it provide a direct measurement of skid resistance or roughness, rather provides an objective and rational basis for determining maintenance and repair needs and priorities. The PCI provides feedback on pavement performance serves as the basis for the analysis, review, and metrics outlined within this report.

1. Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys
<https://tinyurl.com/astmd6433andpci>



BACKGROUND

Reclamite® (1) asphalt rejuvenator is the original Maltene Replacement Technology (MRT) for restoring and preserving the durability of asphalt. It restores the reactive maltene components that asphalt pavements lose due to hot-plant operations and the subsequent field aging process, penetrating the surface deeply to protect against air and water intrusion.

Unlike topical sealing products, MRT reintroduces the maltene components to asphalt binder which adjusts the binder's rheology.

Reclamite® is an ideal solution for municipal agencies and private communities looking for life-cycle returns on their road preservation investment, and has a fifty-year use history here within the United States.

The following report outlines the PCI results of two (2) pavement sections, each of different use and age, that had the maltene-based asphalt rejuvenation penetrant applied to the surface for preservation efforts.

1. Reclamite® is a registered trademark of Ergon, Inc.
<https://www.pavetechinc.com/reclamite-asphalt-rejuvenator/>



UNTREATED

TREATED

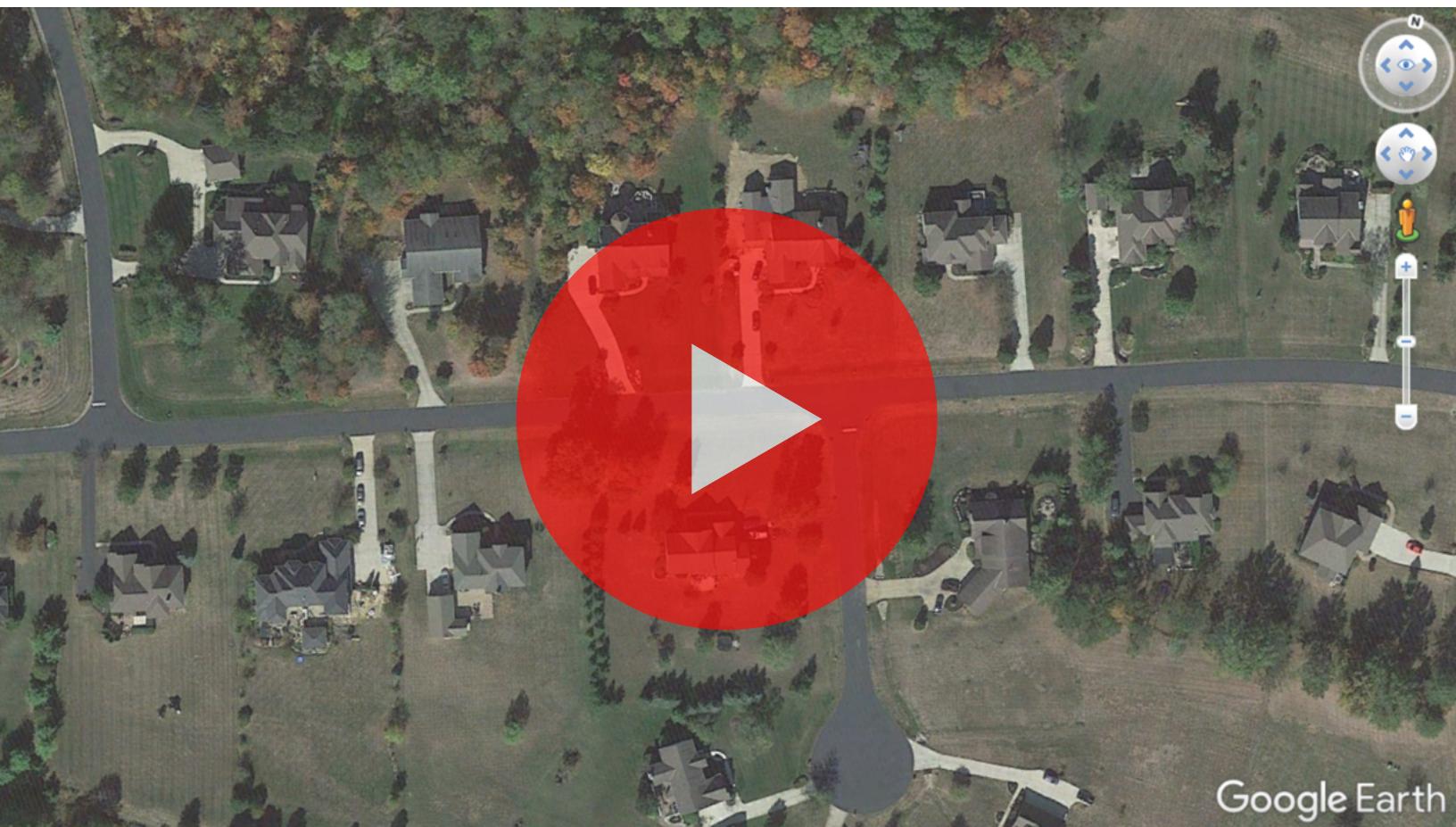
THE TEST SITES

STREAMSIDE DRIVE, BERLIN TOWNSHIP

PAVEMENT HISTORY AND LOCATION



Surface Mix Design: Standard PG Grade 64-22
Paved Surface Date: 2013
Reclamite Application Date: 2015
Black Mastic Seal Application: 2015 and 2019
Reclamite Surface Age: 6 Years
Application Coverage: 4,000 SQ FT
Application Location: Eastbound Lane
<https://tinyurl.com/reclamitestreamside>



ASSESSMENT RESULTS

STREAMSIDE DRIVE, UNTREATED

The untreated lane shows noticeable longitudinal and transverse cracking that has been treated with a crack seal since being paved in 2013. Furthermore, you can see signs of raveling throughout 10% of the surface, and weathering throughout 100% of the surface.

After documenting these distresses within the PAVER® pavement management system, the PCI of the untreated lane is a 70.

70 PCI



Summary at time of inspection [Click here to minimize](#)

Branch Use ROADWAY Surface Type AC Rank E Length 400 Ft Width 20 Ft True Area 8,000 SqFt

Inspection [Click here to minimize](#)

9/24/2021 [List](#) [New](#) [Edit](#) [Del](#) PCI [???](#) [Needs recalc](#) [Calc Conditions](#) [Extrapolated Distress](#) [Cmt](#) 0

Sample [Click here to minimize](#)

UNTREATED 2,000.00 SqFt [List](#) [New](#) [Edit](#) [Del](#) PCI 70 [Fair](#) No distresses found on sample Remaining samples have no distress [Cmt](#) 0

Distress selection

1	L	M	H
2	L	M	H
3	L	M	H
4	L	M	H
5	L	M	H
6	L	M	H
7	L	M	H
8	L	M	H
9	L	M	H
10	L	M	H
11	L	M	H
12	L	M	H
13	L	M	H
14	L	M	H
15	L	M	H
16	L	M	H
17	L	M	H
18	L	M	H
19	M	H	
20	L	M	H

Quantity [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [C](#) [0](#) [.](#) [% quantity select](#)

Distresses

Distress	Description	Severity	Quantity	Units	Density	Deduct	
10	L & TCR	Low	300.00	ft		15.00	20.72
19	RAVELING	Medium	200.00	SqFt		10.00	18.48
20	WEATHERING	Low	2,000.00	SqFt		100.00	5.18

2,000.00 SqFt [+](#) [-](#) [X](#)

Tablet distress entry [Key shortcuts](#) [Sum Distress](#)



UNTREATED



TREATED

ASSESSMENT RESULTS

STREAMSIDE DRIVE, TREATED

The treated lane shows that while longitudinal and transverse cracking is visible, it has just started to form and take shape. Furthermore, there are no signs of raveling within the treated surface, with light severity weathering only present within 20% of the surface.

After documenting these distresses within the PAVER® pavement management system, the PCI of the treated lane is 84.

84 PCI



Branch Use ROADWAY Surface Type AC Rank E Length 400 Ft Width 20 Ft True Area 8,000 SqFt

Inspection [Click here to minimize](#)

9/24/2021 [List](#) [New](#) [Edit](#) [Del](#) PCI [???](#) [Needs recalc](#) [Calc Conditions](#) [Extrapolated Distress](#) [Cmt](#) 0

Sample [Click here to minimize](#)

TREATED [prv](#) [List](#) [New](#) [Edit](#) [Del](#) PCI 84 [Satisfactory](#) No distresses found on sample Remaining samples have no distress [Cmt](#) 0

Distress selection

1	L	M	H
2	L	M	H
3	L	M	H
4	L	M	H
5	L	M	H
6	L	M	H
7	L	M	H
8	L	M	H
9	L	M	H
10	L	M	H
11	L	M	H
12	H		
13	L	M	H
14	L	M	H
15	L	M	H
16	L	M	H
17	L	M	H
18	L	M	H
19	M	H	
20	L	M	H

Quantity [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [C](#) [0](#) [.](#) [% quantity select](#)

Distresses

Distress	Description	Severity	Quantity	Units	Density	Deduct
10	L&TCR	Low	150.00	ft	7.50	13.90
20	WEATHERING	Low	400.00	SqFt	20.00	2.46

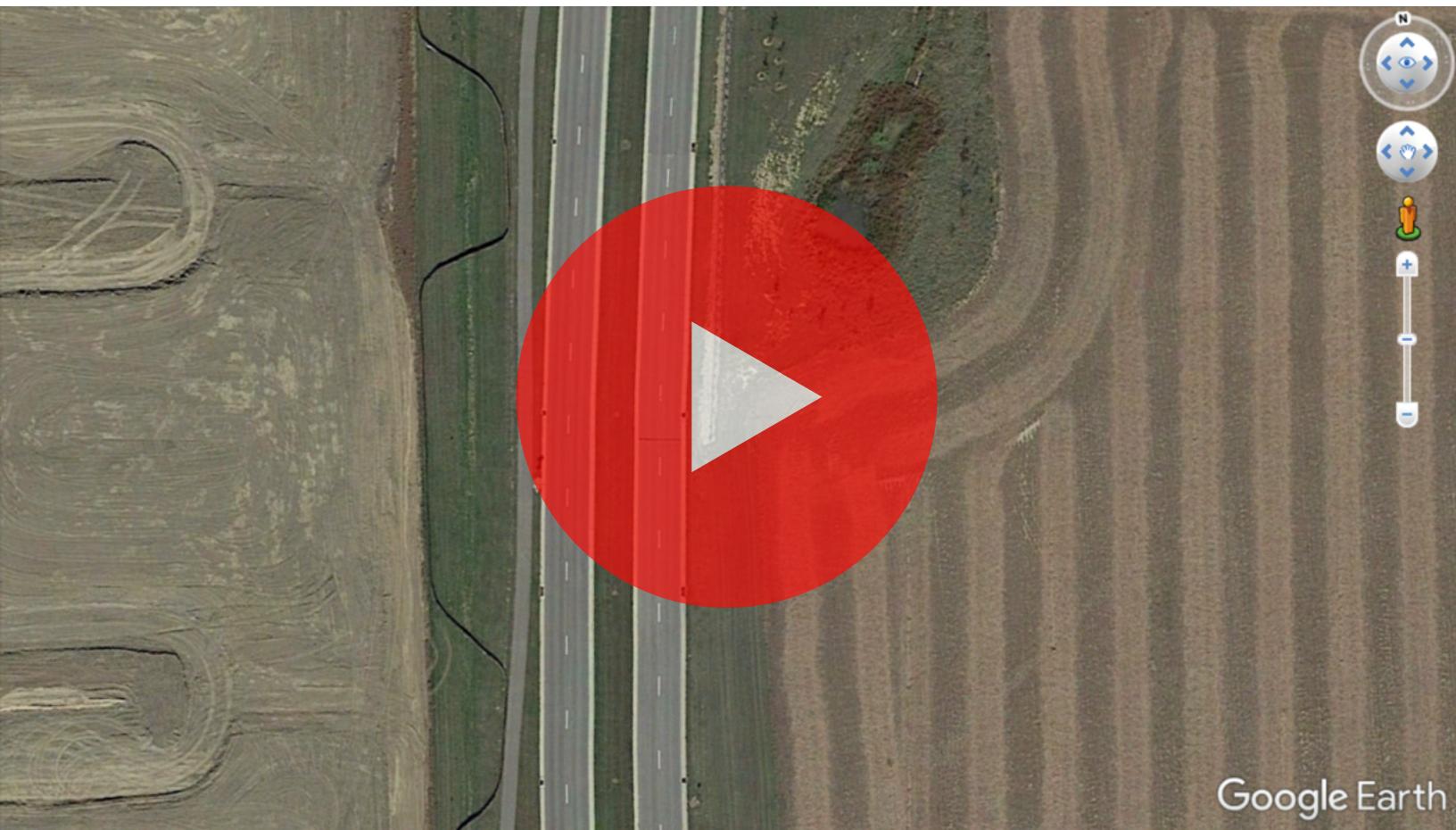
Right click distress or left click the image for Distress Help.

Tablet distress entry Key shortcuts [Sum Distress](#)



THE TEST SITES

SAWMILL PARKWAY, DELAWARE COUNTY PAVEMENT HISTORY AND LOCATION



ASSESSMENT RESULTS

SAWMILL PARKWAY, UNTREATED

The untreated segment shows noticeable light and medium severity longitudinal cracking along the paving joint with light severity weathering present throughout 100% of the surface.

After documenting these distresses within the PAVER® pavement management system, the PCI of the untreated segment is 85.

85 PCI



Branch Use ROADWAY Surface Type AC Rank A Length 350 Ft With 24 Ft True Area 8,400 SqFt

Inspection Click here to minimize

9/24/2021 List New Edit Del PCI ??? Needs recalc Calc Conditions Extrapolated Distress Cmt 0

Sample Click here to minimize

UNTREATED 2,400 SqFt prv nxt List New Edit Del PCI 85 Satisfactory No distresses found on sample Remaining samples have no distress Cmt 0

Distress selection

1	L	M	H
2	L	M	H
3	L	M	H
4	L	M	H
5	L	M	H
6	L	M	H
7	L	M	H
8	L	M	H
9	L	M	H
10	L	M	H
11	L	M	H
12	L		
13	L	M	H
14	L	M	H
15	L	M	H
16	L	M	H
17	L	M	H
18	L	M	H
19	M	H	
20	L	M	H

Quantity

1	2	3
4	5	6
7	8	9
C	0	.

% quantity select

2,400.00 SqFt

+ \$ -

Distresses

Distress	Description	Severity	Quantity	Units	Density	Deduct
10	L & TCR	Low	60.00	ft	2.50	5.91
10	L & TCR	Medium	35.00	ft	1.46	11.18
20	WEATHERING	Low	2,400.00	SqFt	100.00	5.18

Right click distress or left click the image for Distress Help.

☐ Tablet distress entry ☐ Key shortcuts ☐ Sum Distress



ASSESSMENT RESULTS

SAWMILL PARKWAY, TREATED

The treated segment shows minimal, light severity longitudinal cracking along the paving joint, with light severity weathering present throughout just 50% of the surface.

After documenting these distresses within the PAVER® pavement management system, the PCI of the treated segment is 95.

95 PCI



Summary at time of inspection [Click here to minimize](#)

Branch Use ROADWAY Surface Type AC Rank A Length 350 Ft Width 24 Ft True Area 8,400 SqFt

Inspection [Click here to minimize](#)

9/24/2021 [List](#) [New](#) [Edit](#) [Del](#) PCI ??? [Needs recalc](#)

[Calc Conditions](#) [Extrapolated Distress](#) [Cmt](#) 0

Sample [Click here to minimize](#)

TREATED 2,400 SqFt [prv](#) [nxt](#) [List](#) [New](#) [Edit](#) [Del](#) PCI 95 Good No distresses found on sample Remaining samples have no distress [Cmt](#) 0

Distress selection

1	L	M	H
2	L	M	H
3	L	M	H
4	L	M	H
5	L	M	H
6	L	M	H
7	L	M	H
8	L	M	H
9	L	M	H
10	L	M	H
11	L	M	H
12	L	M	H
13	L	M	H
14	L	M	H
15	L	M	H
16	L	M	H
17	L	M	H
18	L	M	H
19	M	H	
20	L	M	H

Quantity

1	2	3
4	5	6
7	8	9
C	0	.

Distresses

Distress	Description	Severity	Quantity	Units	Density	Deduct
10	L & TCR	Low	10.00	ft	0.42	0.37
20	WEATHERING	Low	1,200.00	SqFt	50.00	4.46

1,200.00 SqFt [+](#) [\\$](#) [-](#)

Tablet distress entry [Key shortcuts](#) [Sum Distress](#)

Right click distress or left click the image for Distress Help.



ASSESSMENT SUMMARY

The results of this study clearly show the value of applying an MRT application such as Reclamite® within the first three (3) years of an asphalt installation. This preservation practice seals the pavement surface to shed water and prevent intrusion. It also penetrates to delay the inevitable climate-based cracking that occurs early on within a pavement's life cycle.

Based upon the age of each pavement and PCI calculated from the ASTM D6433 condition assessment, the untreated locations lost an average of 3.5 PCI points per year, while the treated locations lost an average of just 1.5 points per year; resulting in a 2 point PCI gain.

It is within my professional opinion that an MRT application within the first three (3) years of an asphalt pavement's life will extend the life by up to an additional five (5) years, as shown in the below performance curves created directly from the aggregated data documented within this report.

James Golden

Founder and CEO

James@PavementManagement.com



PAVEMENT LIFECYCLE UNTREATED VS TREATED

