



# Pavement Technology, Inc.

Real Science. Real Results.



**Zack Helm**





Pavement Technology, Inc.

Real Science. Real Results.

## Asphalt and Concrete Maintenance

- Started in 1972
- Based out of Westlake, OH
- Manufacturing Plant—  
Mansfield, OH
- Work in OH, MI, KY, WV, TN,  
GA, FL, SC, NC, PA.



Reclamite  
*\*Rejuvenator*



JointBond®  
*\*Joint Stabilizer*



Litho1,000  
*\*Concrete Sealer*



“You can’t address a network problem with a project based solution”

\*Steve Lander PE--Kercher Group

- There is a renewed focus on Pavement Preservation
- Studies validate a Pavement Preservation Program should be implemented in an agencies plan annually
- Diagnosing which tool to use is becoming very challenging
- Treatments are being placed on the wrong candidates
- The earlier you can preserve the road = More cost savings









2 year old Pavement











“I think we got them all”





# Reclamite Maltene Based Rejuvenator



Designed for Very Good to Excellent Pavements

*Generally placed on roads that have been re-surfaced within the last 3 years*



# What is it?

Pavement Preservation Tool designed to slow the aging process by improving durability of the binder in hot mix

- First step in a pavement preservation program
- 
- Asphalt Based
- Designed to penetrate the asphalt
- Low cost
- Low impact on residents
- Helps reduce raveling and minimizes surface cracking
- Provides a good seal to the pavement
- Can expect a 4-5 year life increase to the asphalt



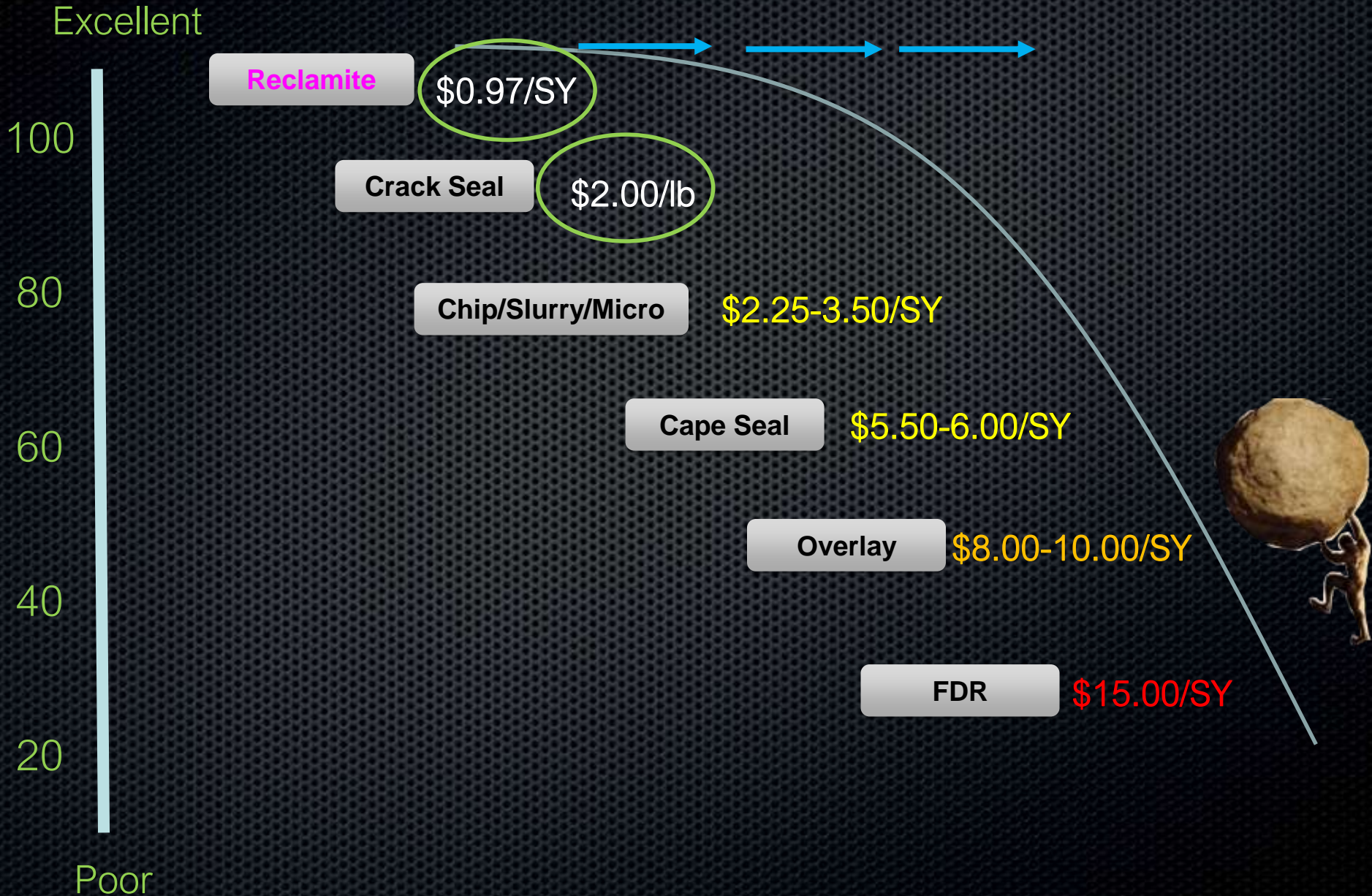
- City Local and Residential Streets
- Townships
- Rural County
- HOA's
- Parks
- DOT Shoulders
- Airports

Designed for?  
Where do you have Asphalt?





# When to Apply?





# Reclamite has been used throughout the country since the 80's - below are just some of the Major Agencies who have an Annual Program

- City of Delaware
- Delaware County
- City of Dublin
- City of Hilliard
- Franklin County
- City of Columbus
- City of Westerville
- City of Sylvania
- City of Worthington
- City of Upper Arlington
- City of Cincinnati
- City of Mason
- City of Dayton
- Lucas County
- Wood County
- City of Bowling Green
- City of Perrysburg
- City of Avon
- City of Westlake
- City of Lancaster
- Fayette County
- Logan County
- Warren County
- Perkins Township
- City of Ashland
- City of Bucyrus
- Huron Township
- Summit County
- City of Green
- City of Macedonia
- Ottawa County
- Twinsburg Twp
- City of Gahanna
- City of Marysville
- City of Bay Village
- City of Wooster
- City of Independence
- City of Wycliffe
- City of Berea
- Moreland Hills
- Orange Village
- Village of Ottawa Hills
- New Albany
- City of Chardon
- City of Akron
- City of North Ridgeville
- City of Gahanna
- Mayfield Village
- Willoughby Hills
- City of North Olmstead
- Fairfield County
- City of Lyndhurst

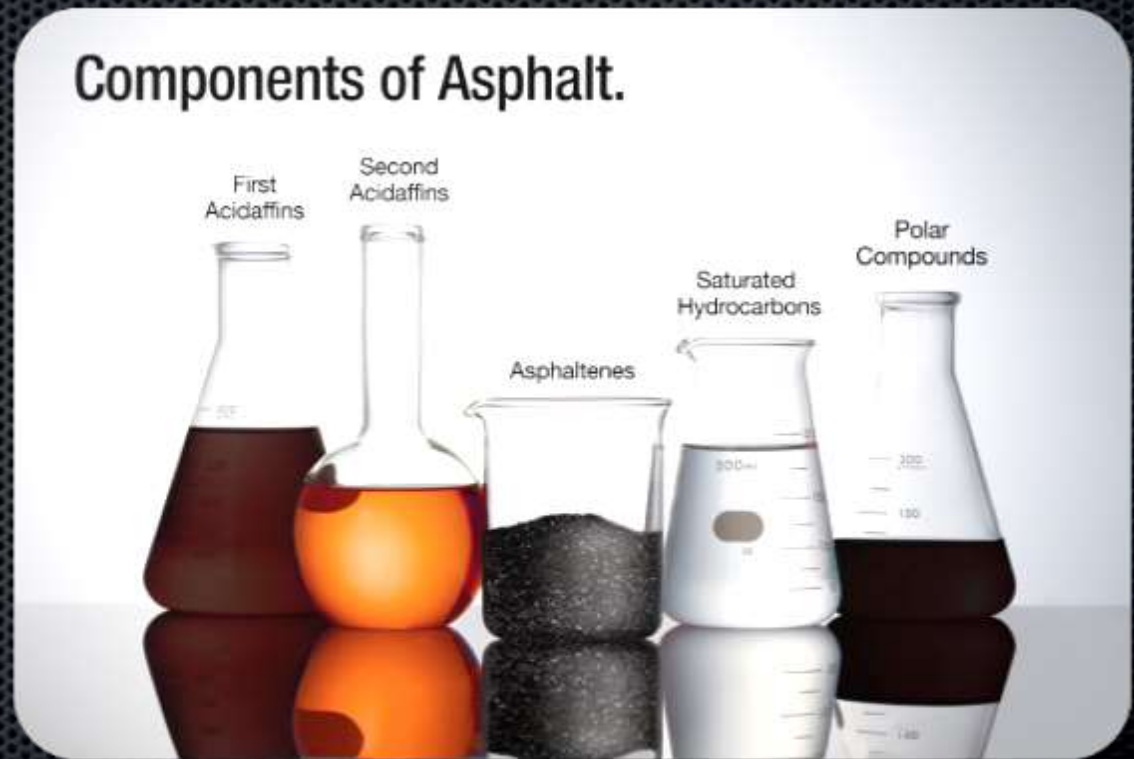


# Components of Asphalt Cement

Asphalt cement consists of two main groups, Asphaltenes and Maltenes

**Asphaltenes:** provide body and color. They are brittle like pencil lead, not effected by oxidation.

**Maltenes:** provide the stickiness and adhesive properties, are highly susceptible to oxidation.



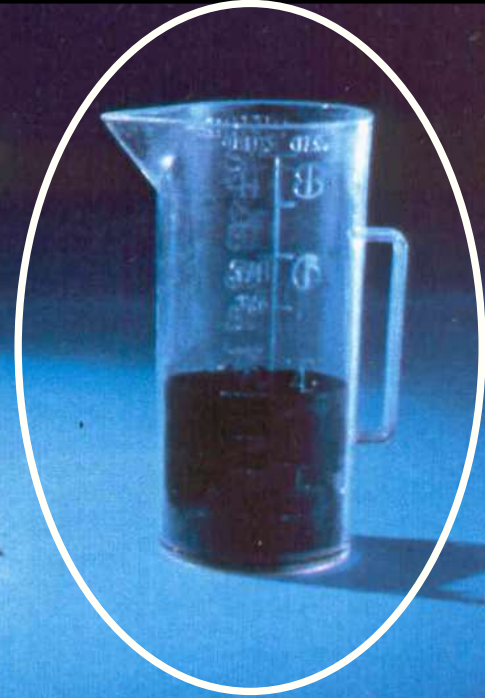


# Which component changed?

## ASPHALT PAVEMENT



**94%**  
**Sand & Stone**



**6%**  
**Asphalt Cement**  
**(liquid)**



# The Glue is Gone

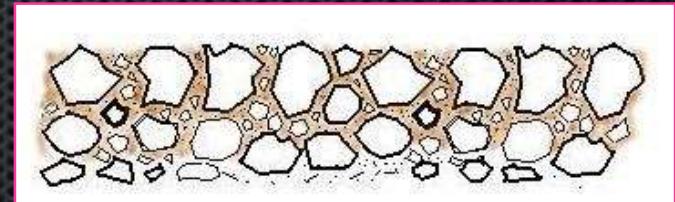
The reactive components oxidize causing an imbalance that increases asphaltenes







Penetrates 1/4" into the asphalt





Prior to Treatment

2 Days After





Untreated

7 Years After Results

Untreated





1 year Later



Treated

Untreated



# Picture Taken in May of 2019



Treated

Untreated



# Spring of 2021

## Photo from opposite Direction





# What does the Data Say



## 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.



## A DATA-DRIVEN CONDITION ASSESSMENT

FOR ASPHALT REJUVENATION USING  
MALTENE REPLACEMENT  
TECHNOLOGY

SEPTEMBER 2021  
PREPARED BY JAMES GOLDEN





# 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 Total Area: 8,000 SqFt

Inspection [Click here to minimize](#)

9/24/2021     PCI: 777

Sample [Click here to minimize](#)

UNTREATED 2,000.00 SqFt     PCI: 75

Distress selection

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |   |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |   |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1 |

Quantity

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

Distresses

| Distress | Description | Severity | Quantity | Units | Density | Deduct |
|----------|-------------|----------|----------|-------|---------|--------|
| 10       | L & T CRACK | Low      | 200.00   | Lt    |         | 20.00  |
| 19       | RAVELING    | Medium   | 200.00   | SqFt  |         | 18.00  |
| 20       | WEATHERING  | Low      | 4,000.00 | SqFt  |         | 5.14   |

2,000.00 SqFt



**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**



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

Inspection: 5/24/2021

Sample: TREATED 2,500.00 SqFt

Distress selection

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

Quantity

|   |   |   |
|---|---|---|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| C | 0 | - |

Distresses

| Distress | Description | Severity | Quantity | Units | Density | Deduct |
|----------|-------------|----------|----------|-------|---------|--------|
| 10       | L & T CR    | Low      | 200.00   | R     | 7.50    | 13.50  |
| 20       | WEATHERING  | Low      | 400.00   | SqFt  | 20.00   | 2.40   |

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




**UNTREATED**



**TREATED**



A photograph of a road with two sections: 'Treated' and 'Untreated'. A worker in a yellow vest is on the right side of the road.

Treated

Untreated



# 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 Width: 24 Ft Total Area: 8,400 SqFt

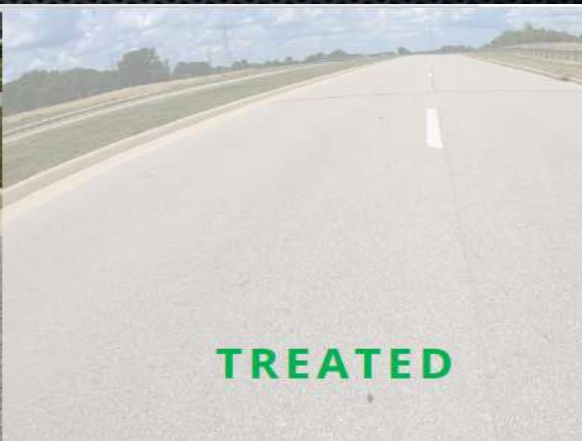
Inspection: 9/24/2021 PCI: 85

Sample: UNTREATED 2,400 SqFt PCI: 85

| Distress selection |   | Quantity      |   | Distresses     |             |          |          |       |         |        |
|--------------------|---|---------------|---|----------------|-------------|----------|----------|-------|---------|--------|
| 1                  | 0 | 1             | 3 | Distress       | Description | Severity | Quantity | Units | Density | Deduct |
| 2                  | 0 | 4             | 5 | 10' LAFCR      | Low         |          | 40.00    | R     | 2.50    | 5.91   |
| 3                  | 0 | 7             | 8 | 10' LAFCR      | Medium      |          | 35.00    | R     | 1.46    | 11.10  |
| 4                  | 0 | C             | 0 | 20' WEATHERING | Low         |          | 2,400.00 | SqFt  | 100.00  | 3.18   |
| 5                  | 0 | 2,400.00 SqFt |   |                |             |          |          |       |         |        |



**UNTREATED**



**TREATED**



# 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](#)

Search 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     PCI: 777

Sample [Click here to minimize](#)

TREATED 2,400 SqFt     PCI: 95  This distress found in previous

Distress selection

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

Quantity

|   |   |   |
|---|---|---|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| C | 0 | - |

Distresses

| Distress | Description | Severity | Quantity | Units | Density | Docket |
|----------|-------------|----------|----------|-------|---------|--------|
| 10       | L & F CR    | Low      | 10.00    | R     | 0.42    | 0.37   |
| 20       | WEATHERING  | Low      | 1,200.00 | SqFt  | 30.00   | 4.46   |

1,200.00 SqFt

Tablet distress entry

Right click distress or left click the image for Camera Help





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.

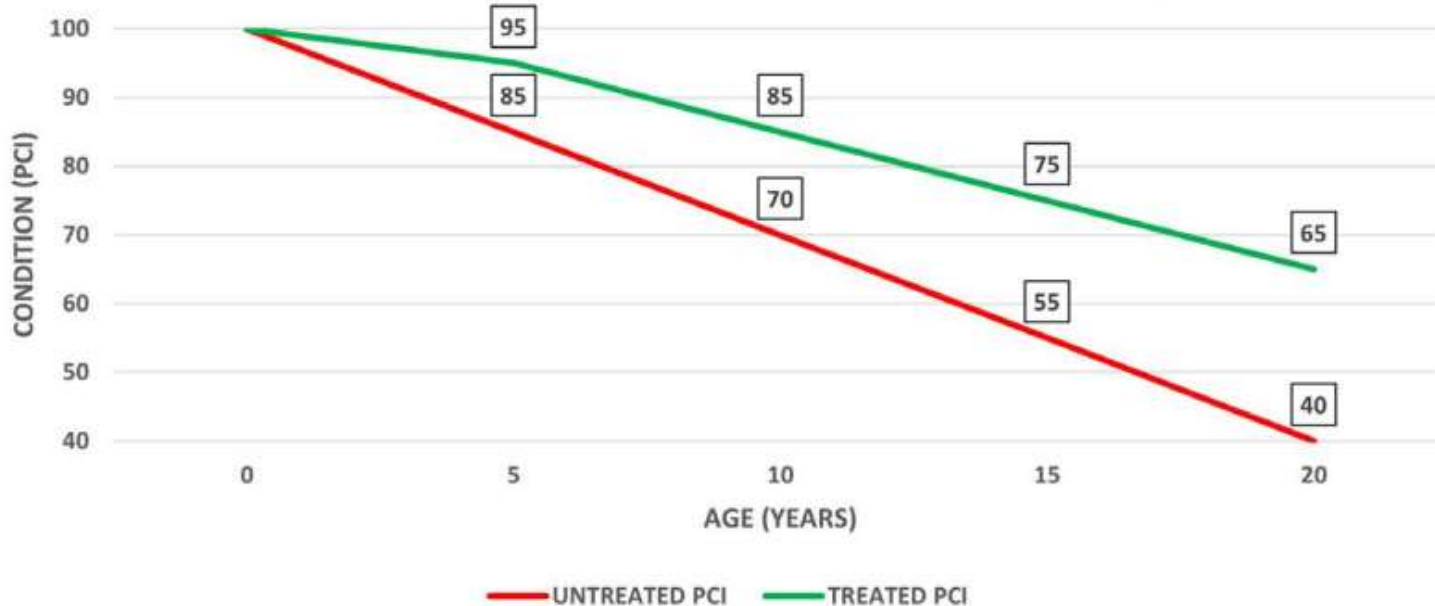
**James Golden**

*Founder and CEO*

[James@PavementManagement.com](mailto:James@PavementManagement.com)



**PAVEMENT LIFECYCLE  
UNTREATED VS TREATED**





# City of North Ridgeville 2019



treated

untreated



# Continued



untreated

treated



November 2020



Lane not Treated with Reclamite

Lane Treated with Reclamite



Jan 2021



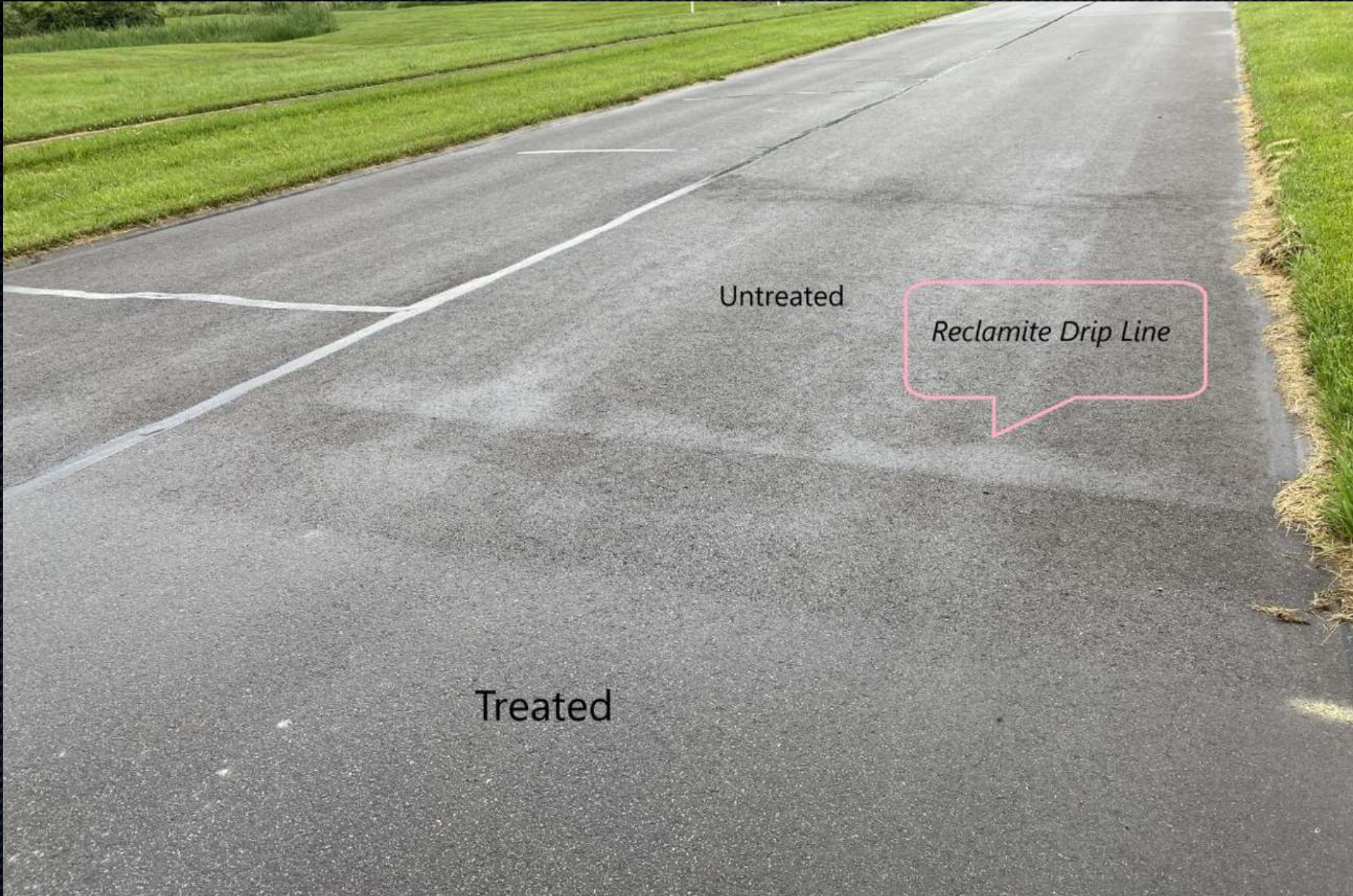
Untreated

Untreated

Treated



# 2021 after a Rain



Untreated

*Reclamite Drip Line*

Treated



# Protect against Canopy







Reclamite is providing a visible seal on Rogers rd. Picture 1 is during a dry day and picture 2 is about 30 minutes after rain.



Water collects in just the untreated area due to voids in the surface. Treated portion of rd. is tighter and sheds moisture. This is a great example of how Reclamite can help fight against tree canopy as well.





Closer look reveals slight surface cracking in untreated area vs treated section. Pitting is also more evident.



# City of Bay Village





# City of Bay Village











**Treated 15 Years After**

**Untreated**

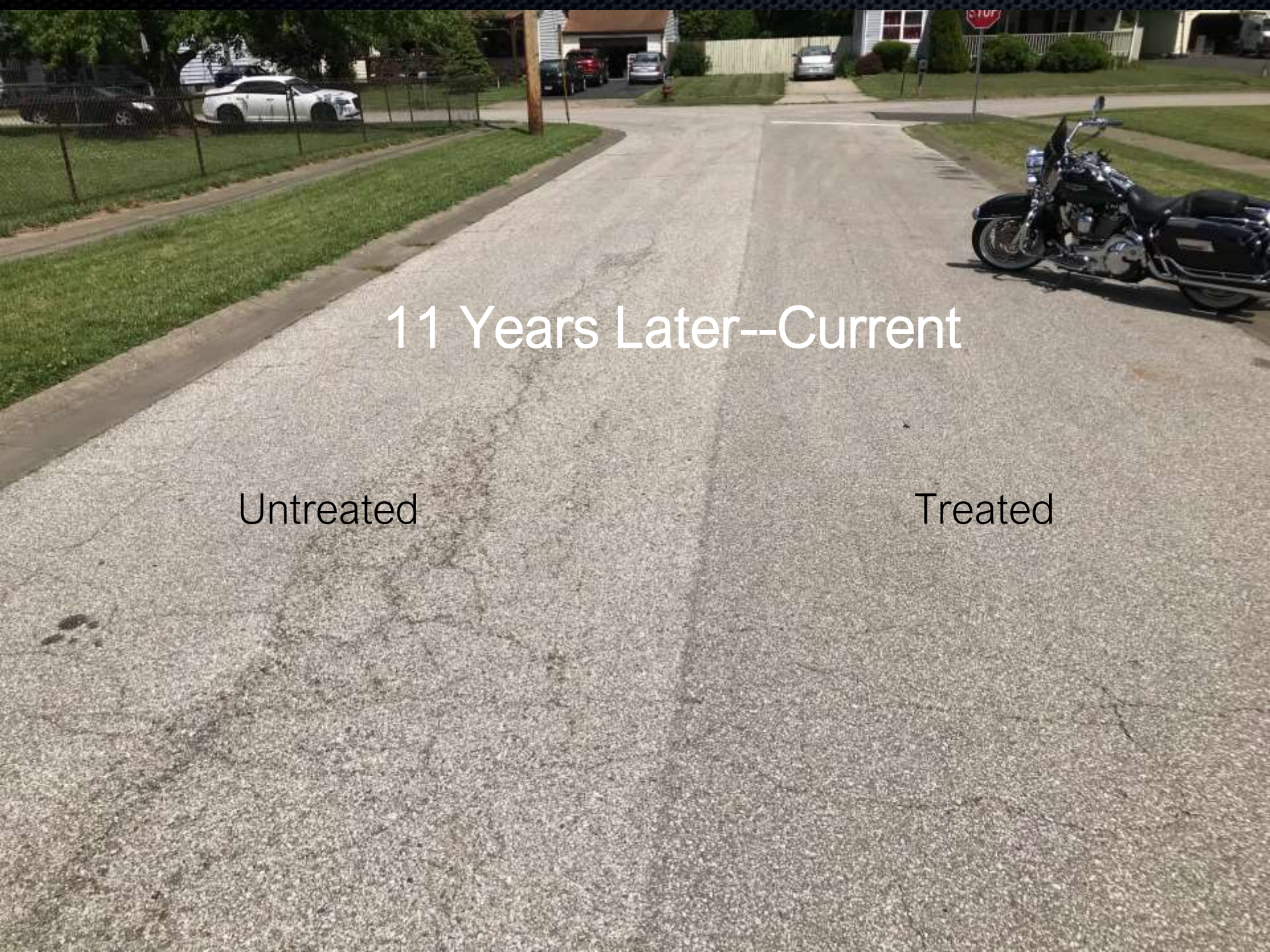
**Untreated**



Treated in 2009 Picture Taken in 2012

3 Year Old Result





# 11 Years Later--Current

Untreated

Treated



# Candidate Selection (0-3 years)



New Construction



# Continued



New Construction





3 year old Pavement



Early Pitting of asphalt



# Continued





# Weathered asphalt



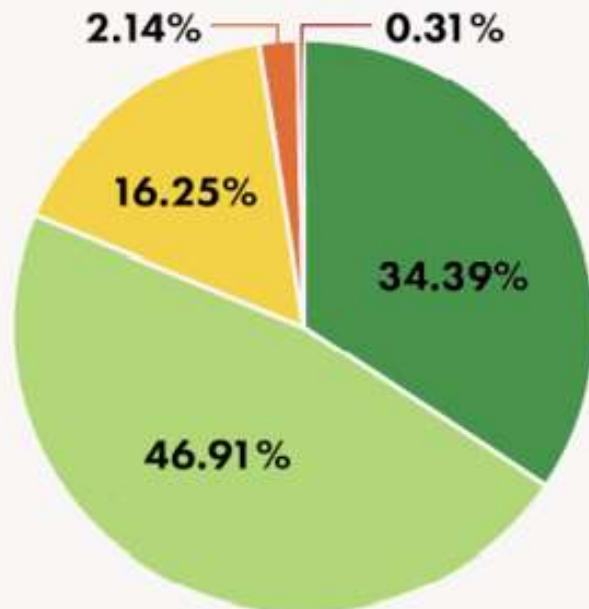
2 & 3 year old surfaces



# Peters Township PA Case Study---Written By RoadBotics

- Manage 116 miles of roadway
- Township of 21,000 residents
- Virtual 0% of roads are failing

## Network Ratings Breakdown



### Additional Advantage:

RoadWay allowed Peters Township to objectively track other maintenance efforts, like their use of Reclaimite®, a Maltene Replacement Treatment. They have been utilizing this technology routinely for over 20 years.

## Conclusion

Through the imagery on RoadWay, they were able to see the positive impact their maintenance efforts have had on their road network.



Empowering cities to assess roads objectively using artificial intelligence



# 1.87 Road Cumulative Road Rating

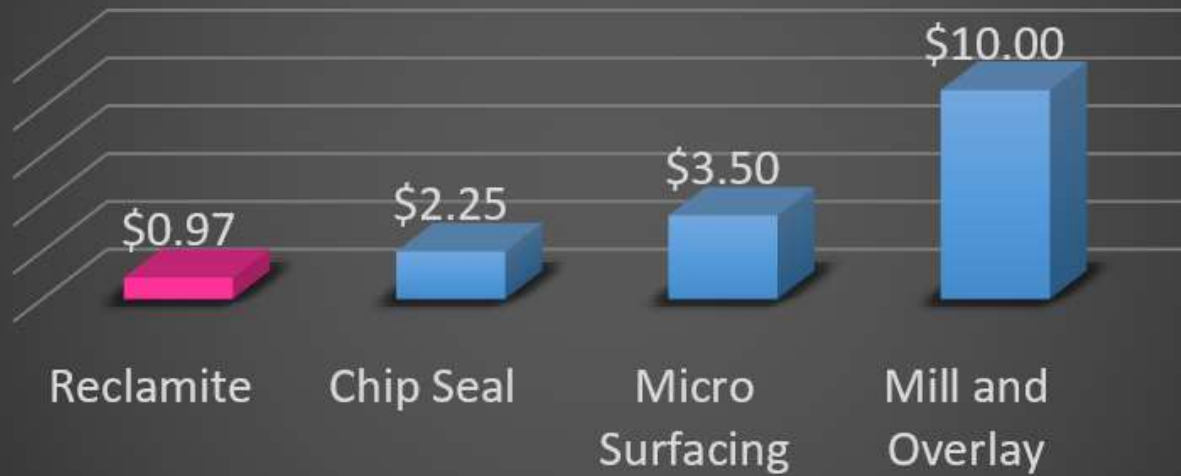
1 through 5 ranking with 1 being the best and 5 being the worst



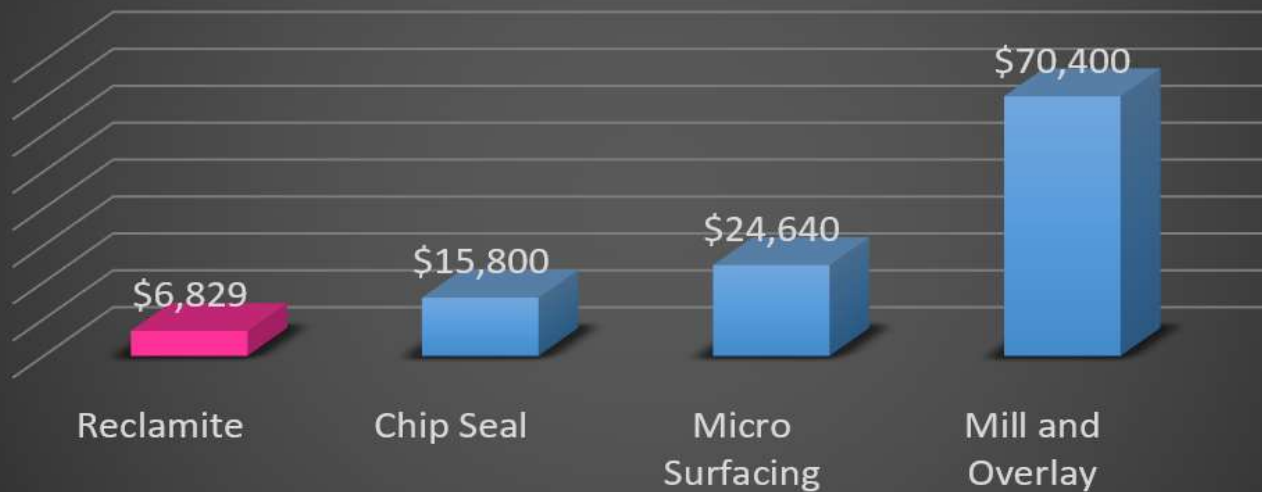
- RoadBotics report re-enforced to Peters the importance of their maintenance program with Reclamite and crack sealing
- Reclamite is applied after year 1 and again after year 4 of a roadway paved



## Cost/SY

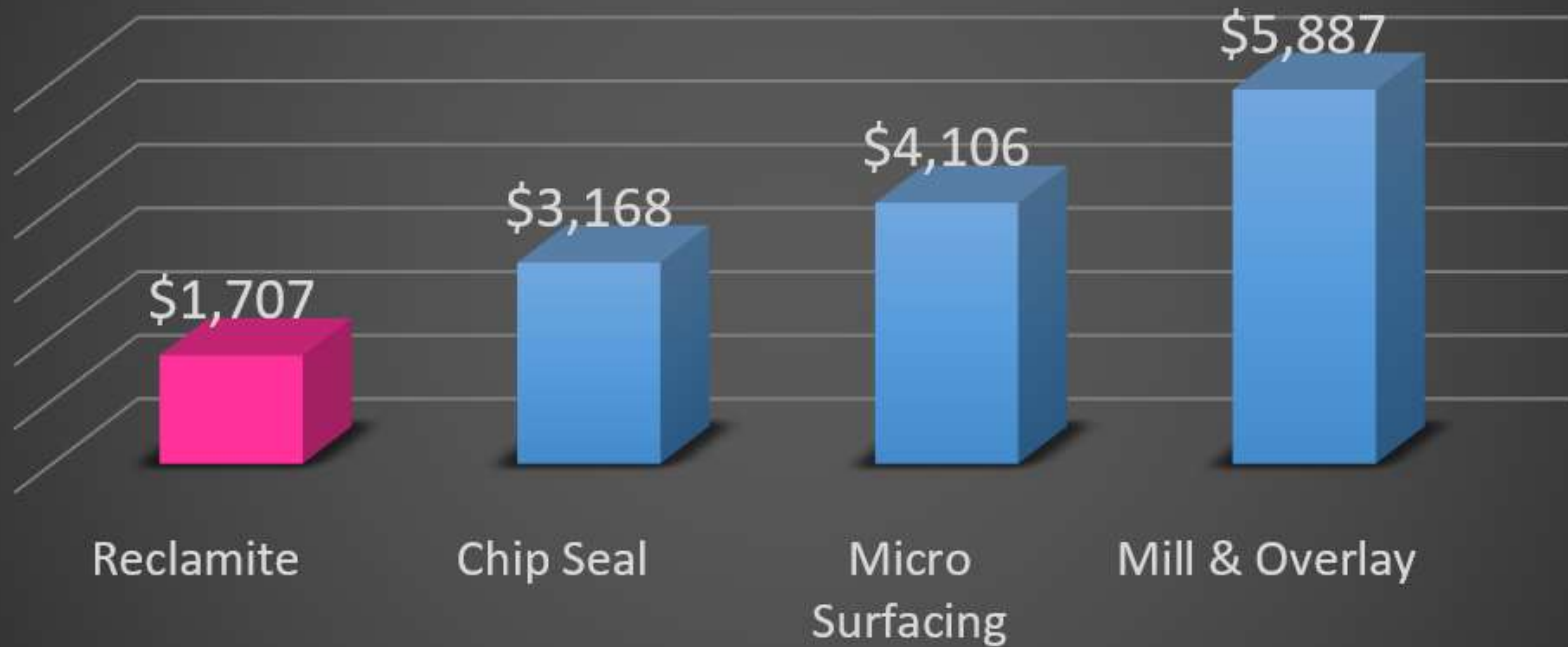


## Per Lane Mile





## Cost/Lane Mile/Year



- Reclamite gives the agency the best return on investment



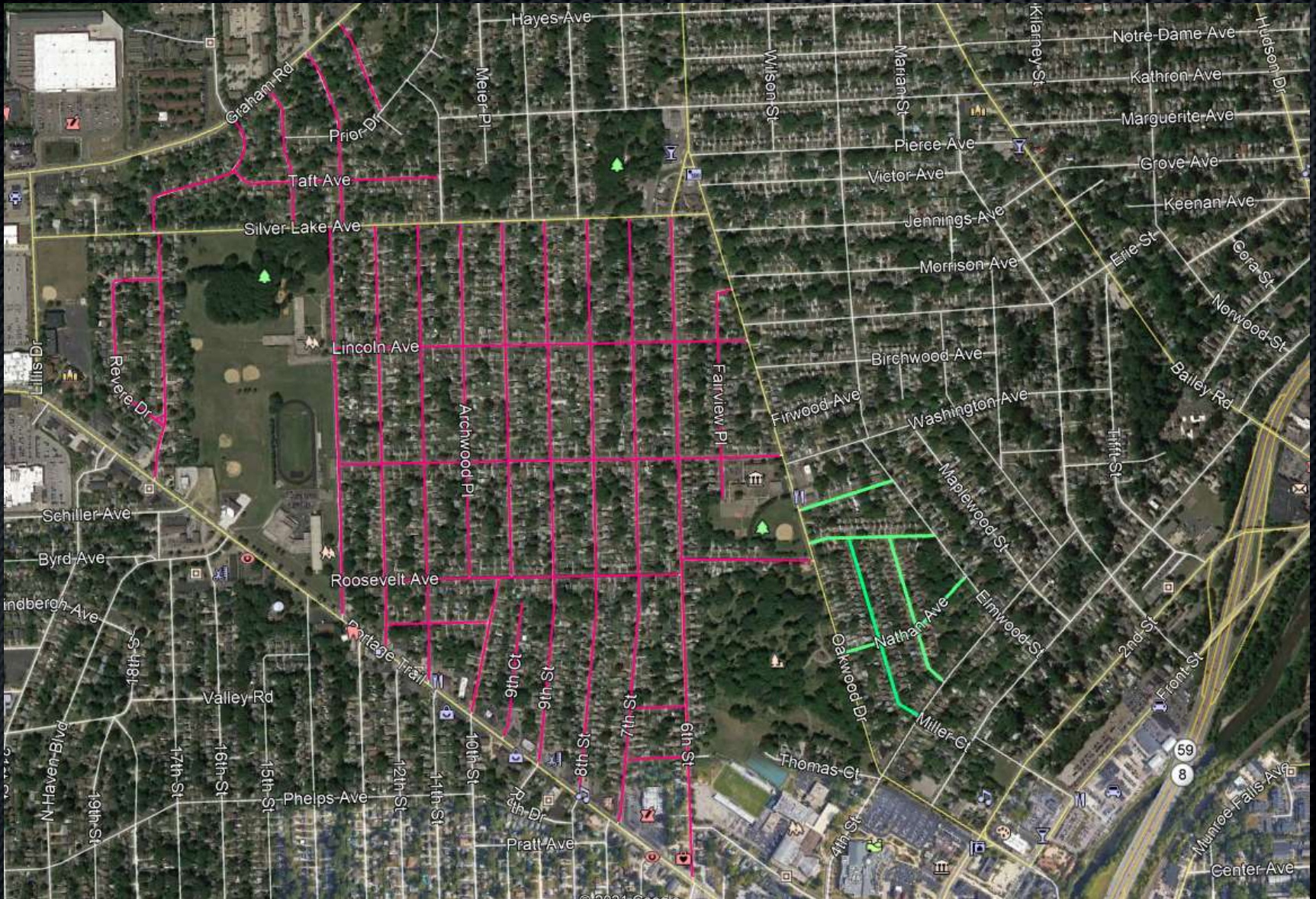
You can easily program Reclamite without deferring much Paving \$'s



Can cover ten miles of roadway with **Reclamite** at the cost of paving 1.



# What does that look like in a city?





# What You Get

- Extend Road Life (30-40%) by only adding 10%
- Maintain Smooth Pavement
- Avoid Costly Repairs

Reclamite® is a low cost first line of defense in any pavement preservation program. The cost is less than **\$0.90** per square yard applied.



# City Policy

- 85% of arterials need to be rated as good or better
- 60% of remaining roads need to have a rating of good or better
- City of Westerville cannot maintain these levels without scheduled maintenance
- Reclamite is their first scheduled treatment





# In Review

- ✓ Protects your asphalt from Moisture, UV and Salt
- ✓ Extends Pavement life by 4-5 years
- ✓ Open to traffic in minutes (Minimum disruption to public)
- ✓ Requires no line removal or restriping
- ✓ Minimizes Carbon Foot Print
- ✓ Cost to implement
- ✓ Easy to Purchase (On the state bid)



# Cooperative Purchasing Contract (101L-22)



## OHIO DEPARTMENT OF TRANSPORTATION

CENTRAL OFFICE - 1980 WEST BROAD STREET - COLUMBUS, OH 43223

MIKE DEWINE, GOVERNOR - JACK MARCHBANKS, PH.D., DIRECTOR

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April 16, 2021

Pavement Technology  
24144 Detroit Road  
Westlake, OH 44145

Re: 101L-22  
Liquid Asphalt

Dear Vendor:

Your bid proposal as submitted has been accepted by the Ohio Department of Transportation.

This Invitation permits multiple awarded vendors to provide Liquid Asphalt. The contract will be in effect from April 17, 2021 to March 31, 2022.

A purchase shall only take place upon the issuance of an official purchase order or the use of a payment card. There is no guarantee that purchase orders will be issued or that products will be ordered against issued purchase orders.

Thank you for bidding on our invitation. Todd VanKirk is available for any assistance necessary to ensure that a quality partnership exists between your company and our Department. If you have any questions, please call (614) 466-3209.

Respectfully,

Jack Marchbanks, Ph.D.  
Director  
Ohio Department of Transportation



Thank you



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937-657-9527