



# Alternate Methods for Preserving Asphalt Pavements

Jeff Beeler  
City of Warsaw

The City of Warsaw had for many years only performed a worst first approach to roadway maintenance. In 2014 Warsaw's average road grade was a 4 out of 10. In 2014 Warsaw decided to go in headfirst with a new way of pavement management. It first initiated the use of PASER ratings to give a good valuation of its roadways. Once this was completed it gave a good "roadmap" of where in the lifecycle of our roadways we were. With the Warsaw's old way of pavement maintenance being only a mill and fill, it was time to add more tools to the box. Pavement preservation applications were then utilized where and when appropriate. We began by keeping our good roads good and working from there.

# Topics to be covered

Micro Surfacing

Seal Coating

Textile Pavement  
interlayer

Alligator Cracking  
Repair with CRF

Rejuvenating Fog  
Seal

Chip Seal/Total  
Patching

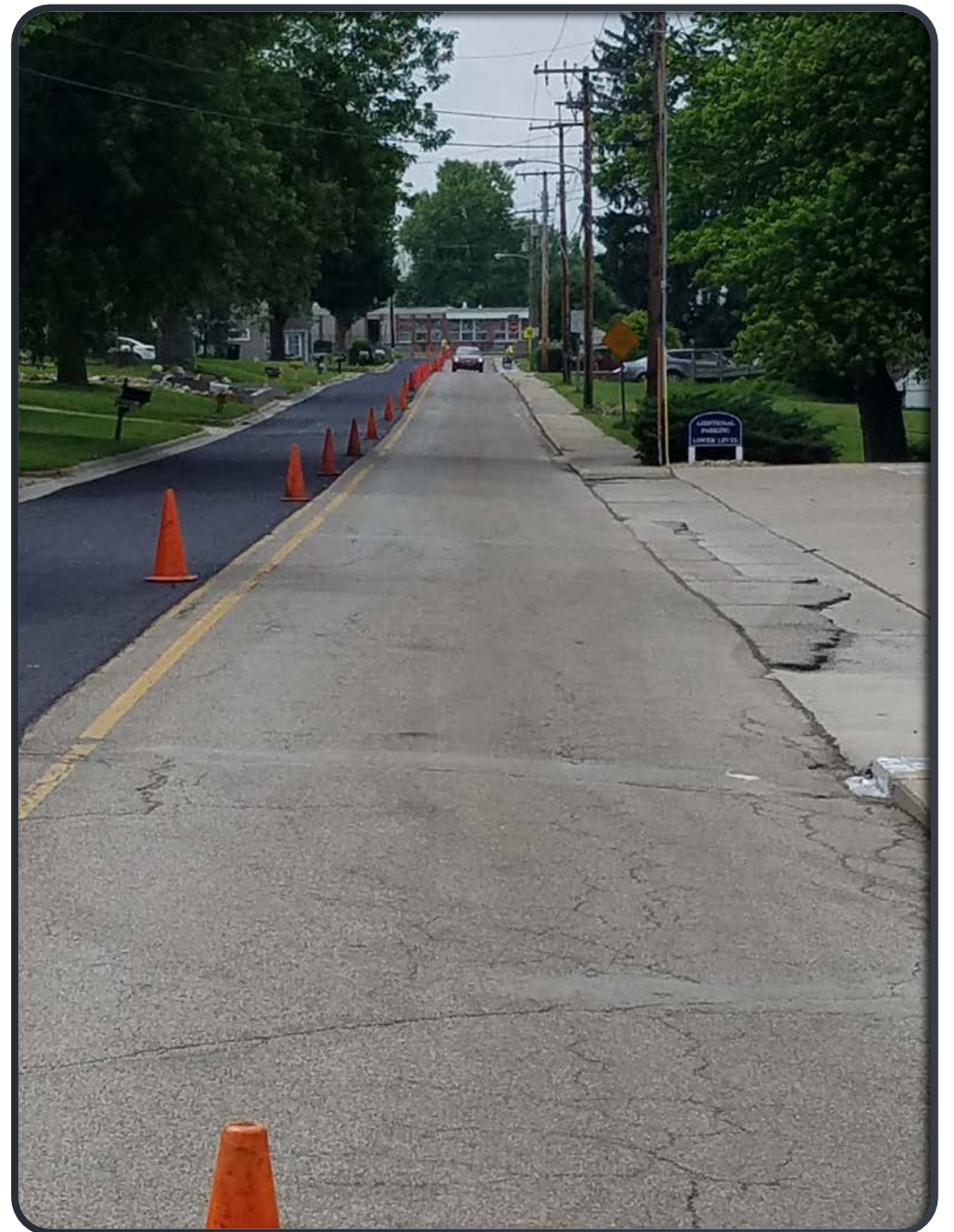
Cape Seal

Crack Seal

- AE 90, AE 90 S,  
Rubber, Mastic,  
Fiberized Asphalt, CRF

# Micro Surfacing

- PASER rating between 4-7
- Best if crack sealed first
- Have been most happy with a double micro
- Can fix some imperfections with a steel strike off on micro box
- Use on main roads and in subdivisions
- Extends service life 6-8 years
- Return to traffic in around an hour depending on conditions





This street has been maintained with crack seal and was ready for a surface treatment in 2019. A double course micro surface was selected as the treatment application

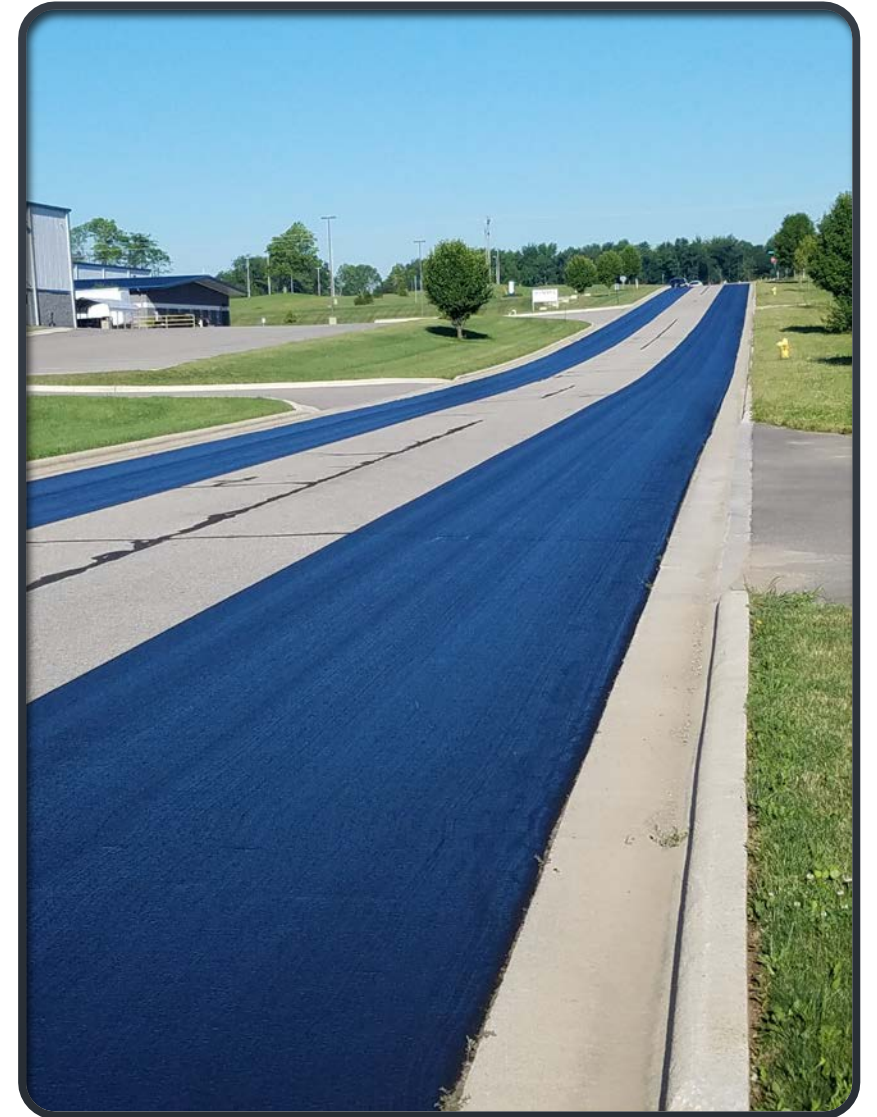


Google

Finished Summer of 2019  
This road services a Walmart, Lowes and a  
housing subdivision AADT **11,264**

# Seal Coating with Liquid road

- PASER Rating between 7-10
- Crack Seal First
- Rich black look for 4 - 8 years
- Does not fix imperfections
- Have used in industrial and subdivision applications
- Great for roads that are beginning to ravel
- Road is closed for travel for most of the day and is applied in two coats

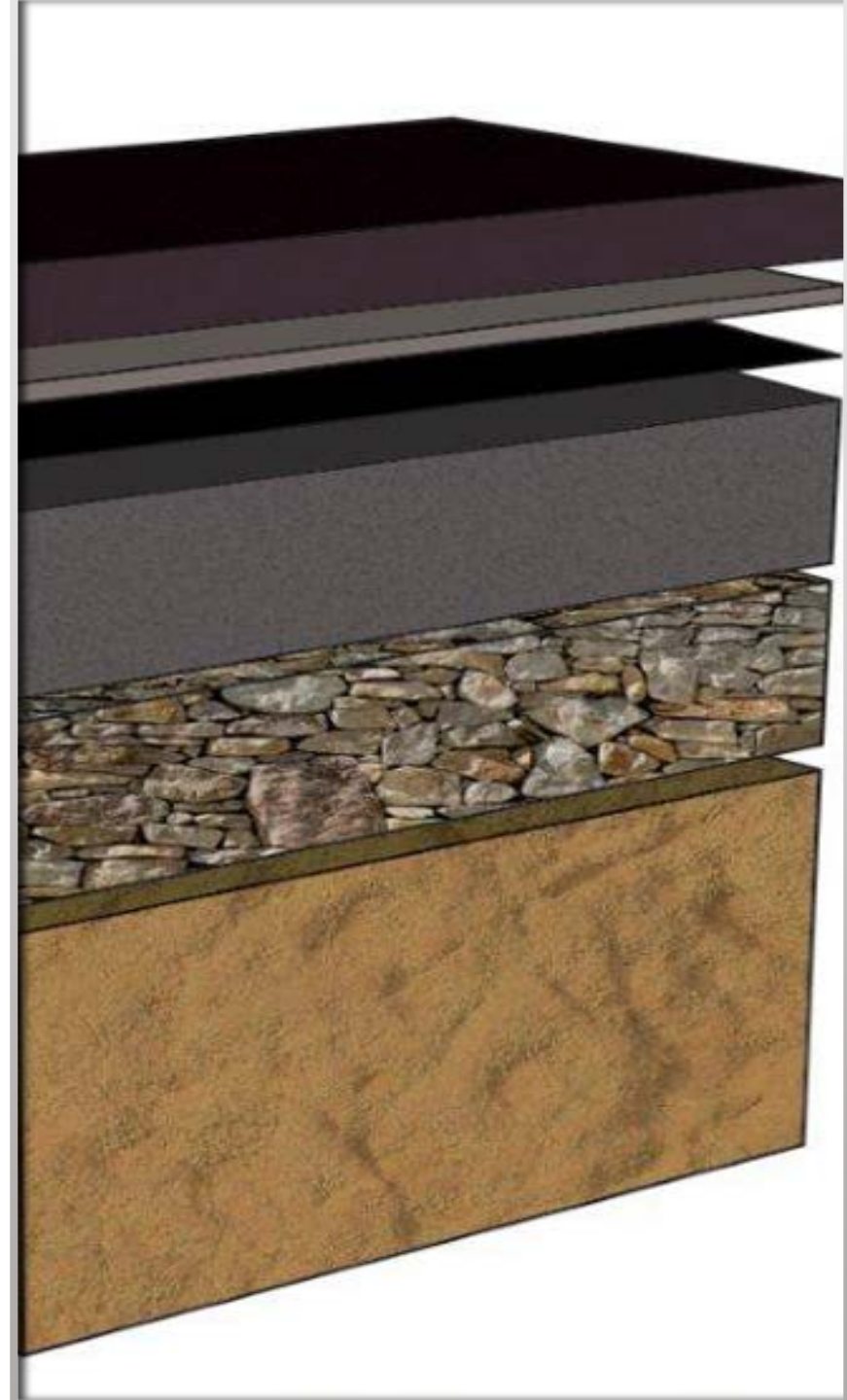




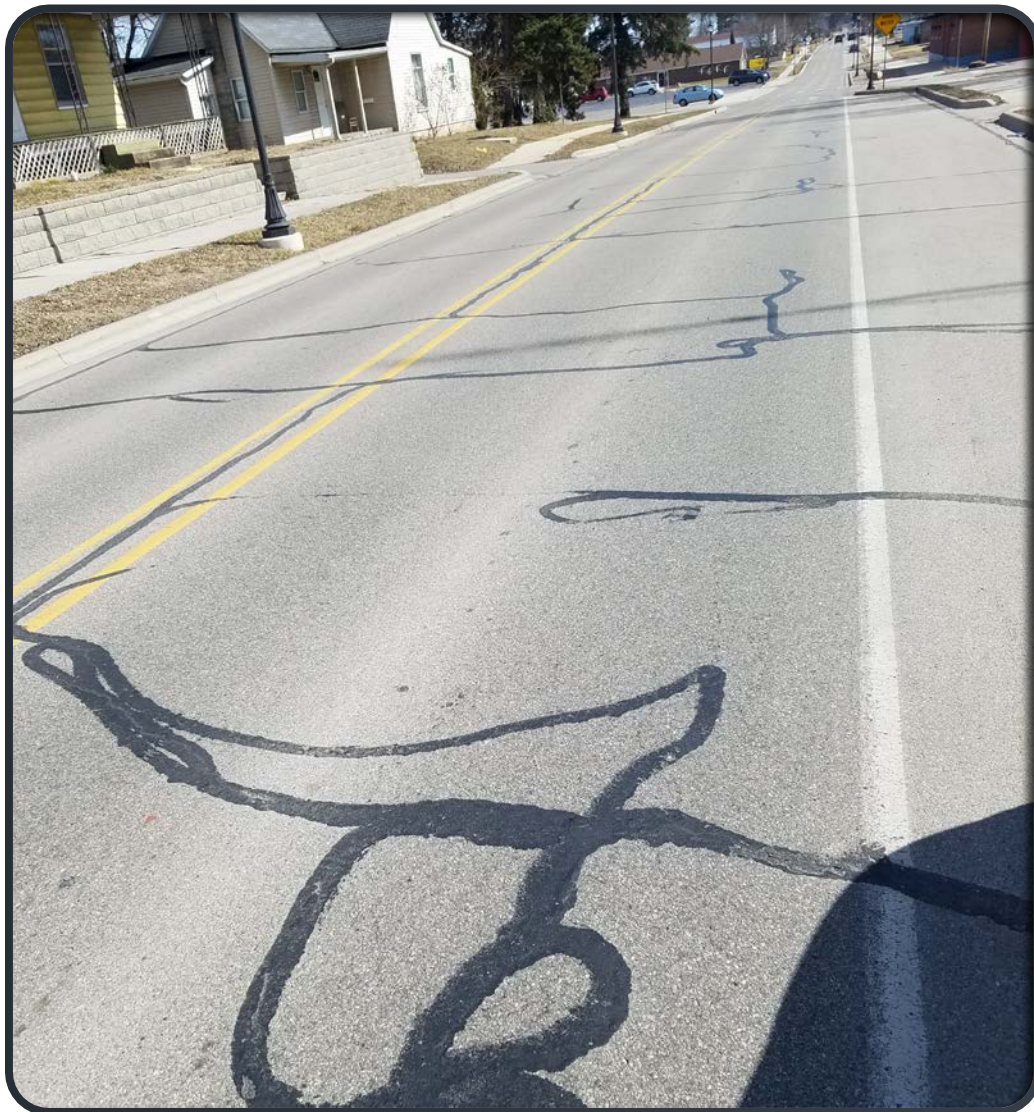


# Textile pavement interlayer

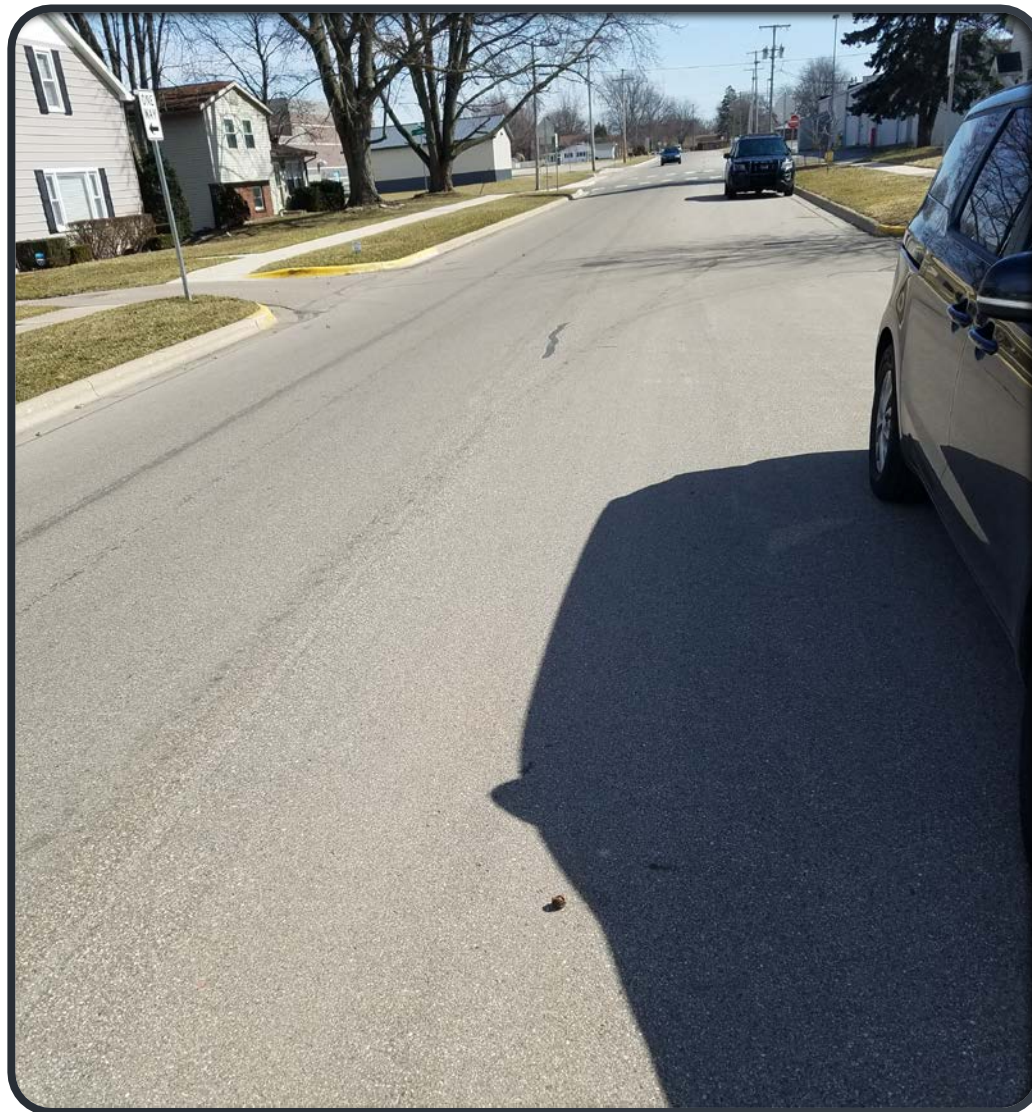
- Have used on roadways with underlying concrete, brick
- Use **3"** deep and keep your investment for years
- Different fabrics for different types of distress
- Road needs to be clean
- Traffic needs to be kept to a minimum until paving begins
- Smooth fabric application very important (Minimum # of small wrinkles)
- Have someone with truck drivers to make sure they do not tear fabric in front of paver



No fabric

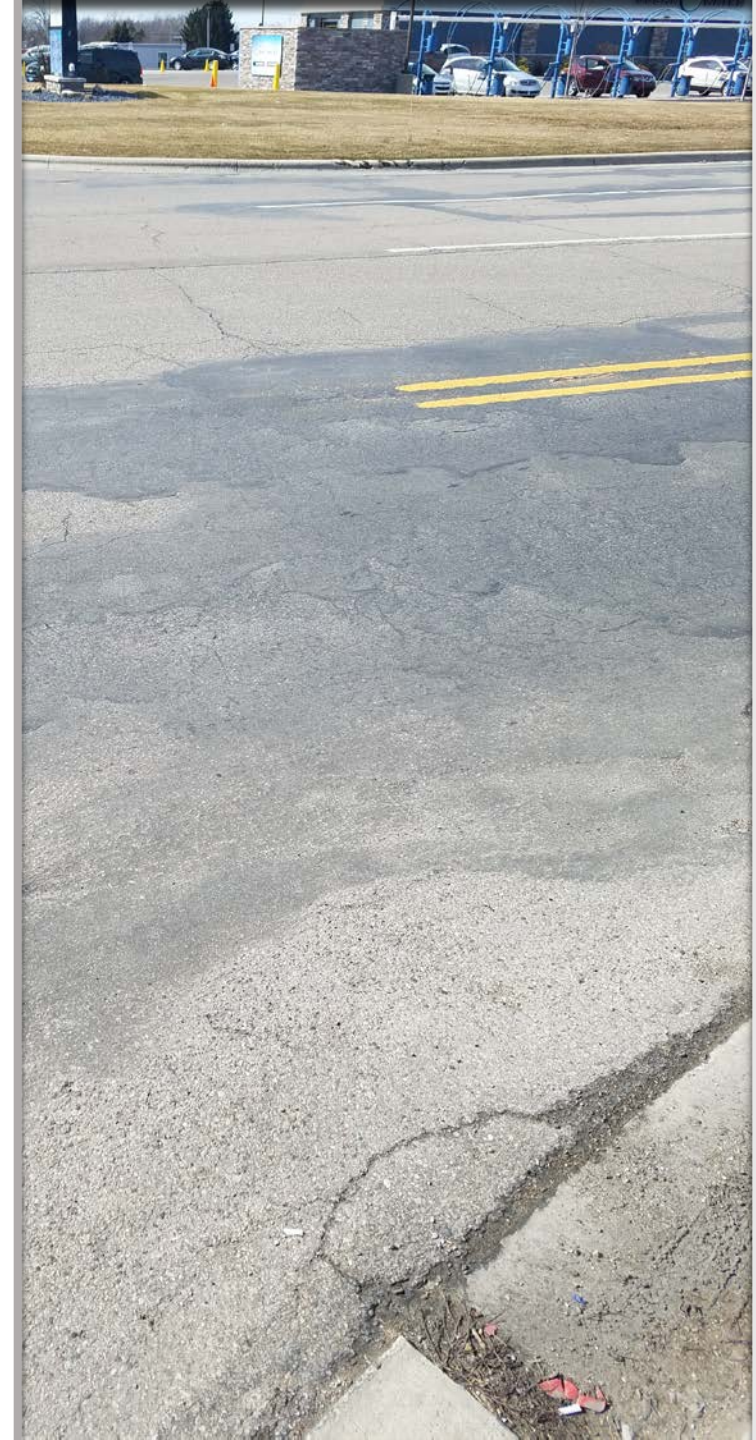


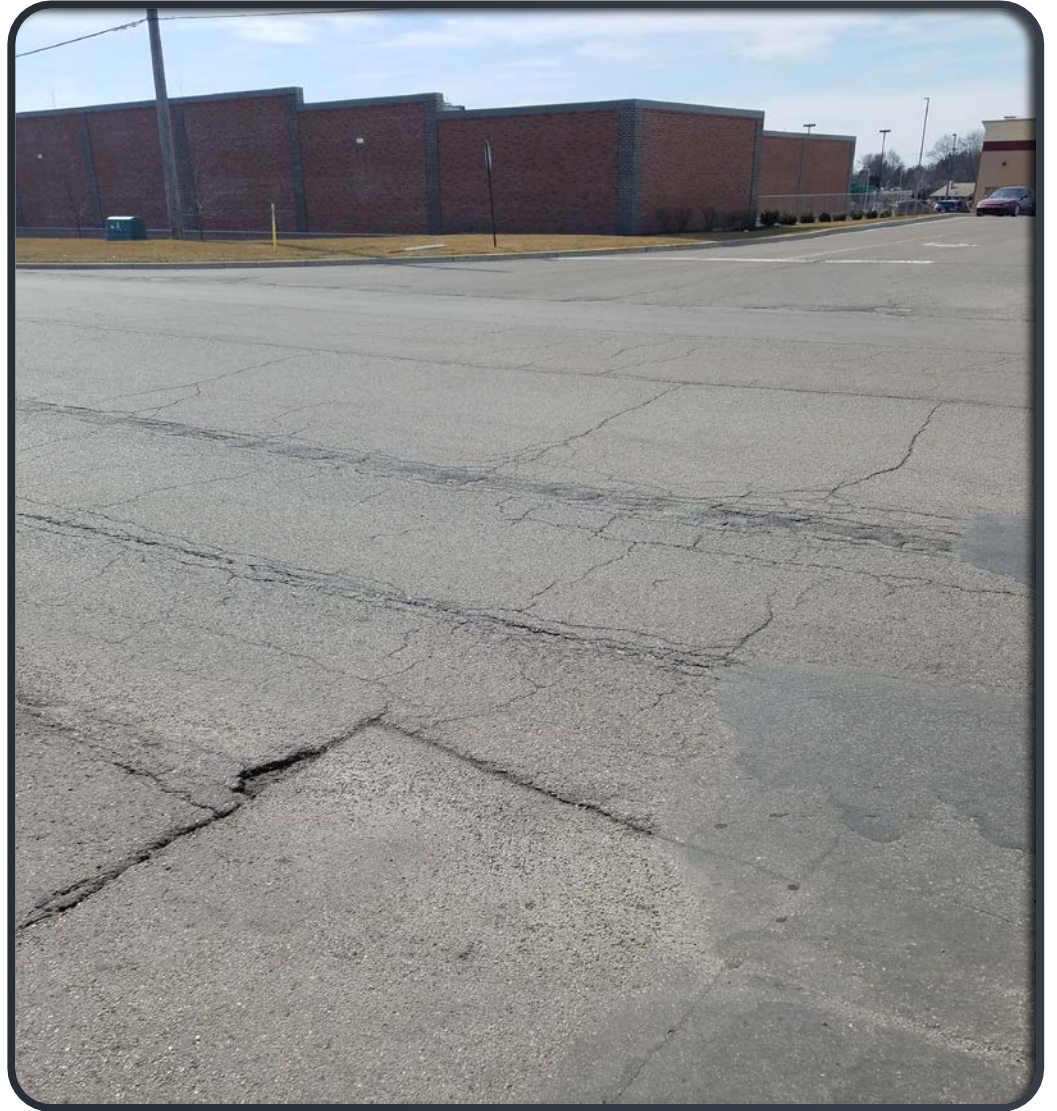
Fabric



# Alligator Crack repair with CRF

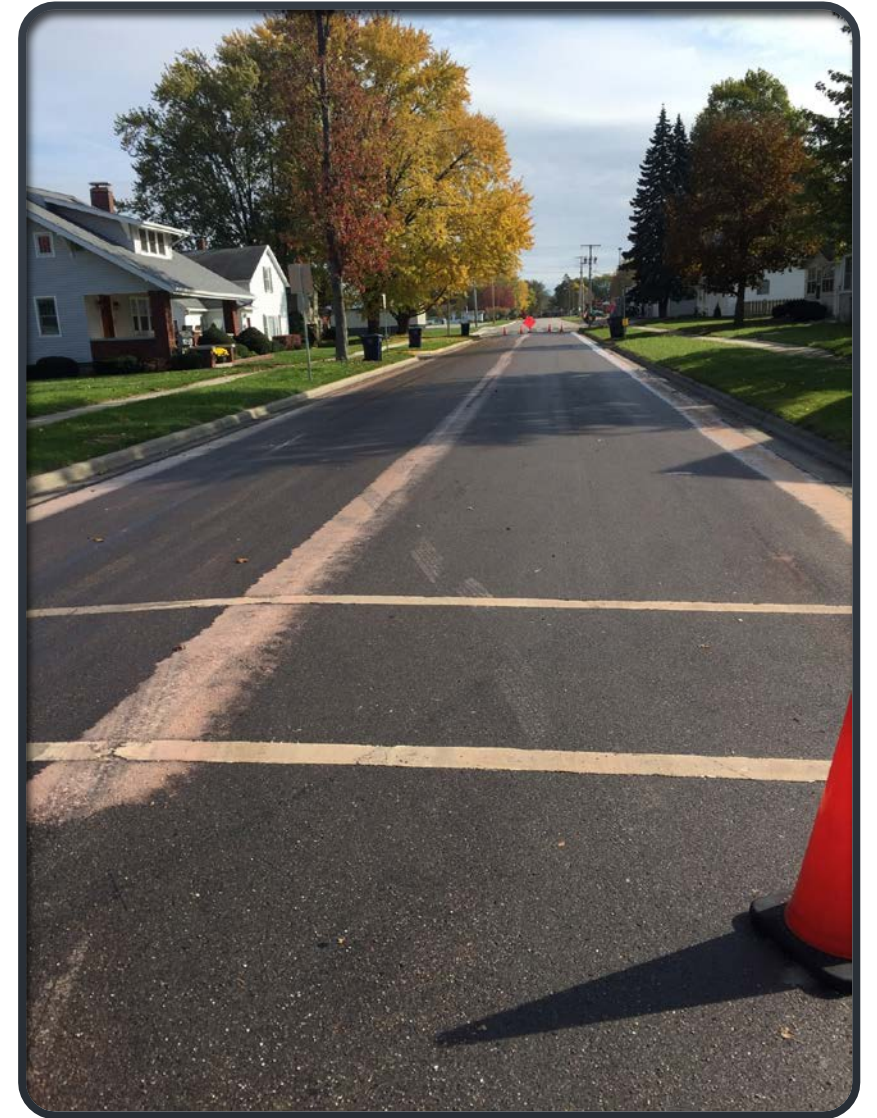
- Blow out cracks best possible without blowing away the roadway
- Do not use if mud is coming up through road (you have bigger issues)
- Seal with a limestone slag mix spread with salt box or by hand if small area
- 3-4 years in now on our first fixes and they still are holding together buying us more time
- Can use in high and low traffic areas
- Can become tacky if too much oil or not enough sand used (use lime or concrete powder if needed)





# Rejuvenating fog seal

- PASER rating of 7-10
- Helps with raveling and cracking by keeping pavements flexible
- Roads will be closed up to 2 hours
- Needs to be a warm sunny day with no rain
- Some materials will have some tracking on heavy traveled roadways
- Some materials will be sanded after application



# Chip and seal / Total patching

- PASER rating 4 - 7
- Last 4 – 7 years depending on application
- Road section will only be closed for a couple of hours depending on how the application will be completed
- Was not well accepted in our subdivisions without doing a coating on top (slurry, Micro)
- Total patching in a spot version of a chip and seal
- Great process to seal the pavement and provide a good wearing surface.
- Will not fix road rutting
- Good with alligator cracking



# Cape seal with slurry

- PASER 3 – 5
- Last 4 – 7 years depending on application
- Two-part process about 2 or more weeks apart with the first being the chip and seal followed by the slurry or micro
- The road will need to be swept soon after the chip and seal and then about two weeks after the slurry or micro
- Has trouble properly adhering to concrete and will have a shorter life span if overlaid
- Main concern with the roadway is loosing for subbase failures and rutting
- Has been 5 winters now



Scrub Seal application being applied on LaVista Ct. as the first process of a Cape Seal utilizing Slurry Seal as the final surface.

As you can see by the photos; pavement condition was poor. This street has (still has) a stable base; the last time HMA was applied it was laid into/on top of the concrete gutter pan, hindering proper drainage. That asphalt began chunking off the concrete after several years. Prior to the preservation treatments, City crews removed all remaining asphalt from the gutter with skid steers and elbow grease.



The City crews then went along the failed edges of the pavement and placed HMA patching on the exposed subgrade.

Once the patching was completed the Cape Seal application began.

This was October 2014





Above photo shows day 1st  
of Slurry Seal Surface.

To the left shows  
intersection 2 months after  
project completed  
December 2014

2014/12/23



LaVista Court, Cape Seal street: November 2019      5 Winters later no potholes

The HMA overlay at 2" for this street was \$120,000 with a life estimate of 7 years. The Cape Seal with a Slurry cost \$38,000, which was 70% less cost and had the same life expectancy.

# Crack Seal

- PASER 5 – 10
- Types of crack seal: Rubber, Mastic, AE 90, AE 90S, Fiberized asphalt, CRF,
- Know how and where the product you choose should be used
- Educate crew members what your expectations are (your own and contractor)
- Crack seal early and often as needed for the roadway
- We started sealing our gutter pans and have had a large reduction in edge cracking. Very flowing sealers did not look nice due to asphalt being higher than concrete.
- We have not been sealing our gutters that have under tile for drainage



## AE 90 / AE 90 S

- Great for hairline cracks
- 90 S does a better job against bleeding
- 90 S is difficult to get in the winter and early spring depending on temperature
- Need to cover with sand to help with tracking
- Crack sealing curb lines is difficult with this material due to how well it flows



# Rubber / mastic crack seal

- Good in high foot traffic areas
- Crack must be completely dry from the surface to bottom of crack or it will have a high rate of failure
- Crack sealing curb lines is difficult with this material due to how well it flows
- Extremely hot (380 – 410 degrees) use caution
- Mastic has aggregate in it and is made for filling deep and wide cracks.
- Both of these sealers work great on concrete



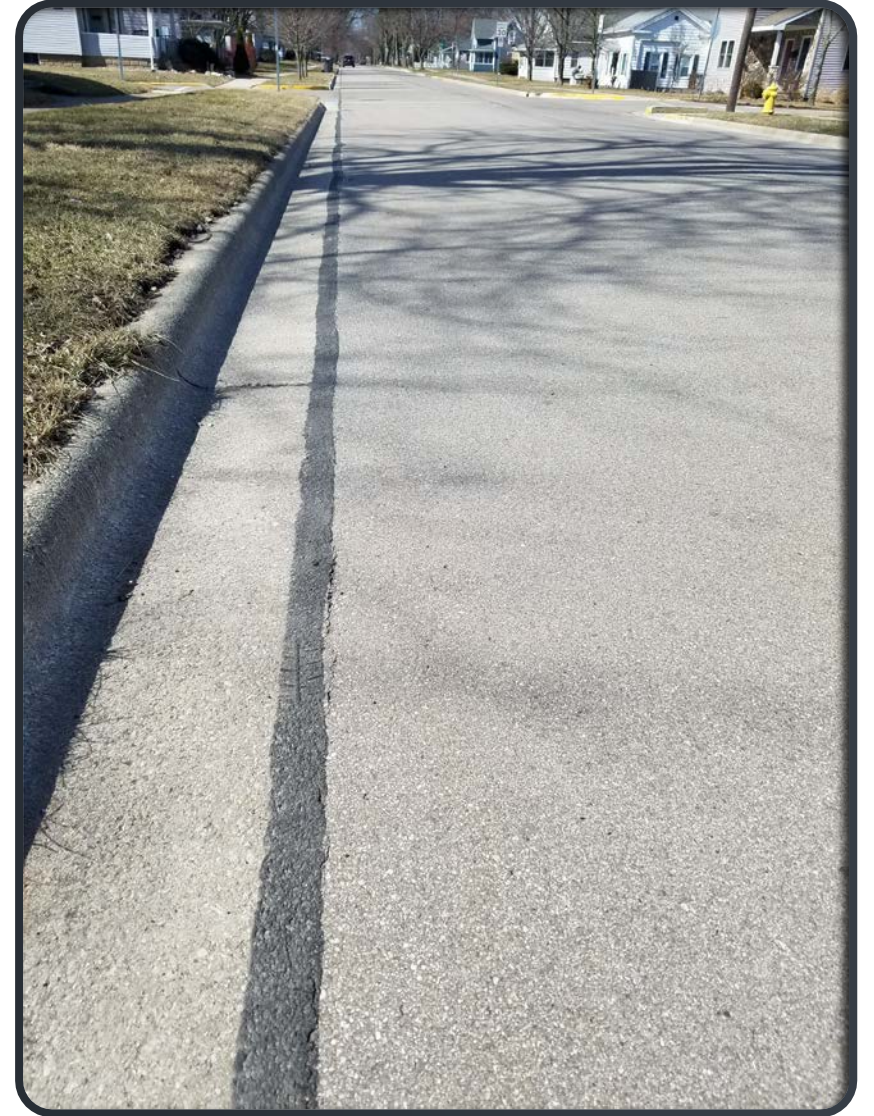
# Fiberized Asphalt

- Can be applied when the crack is still a little damp
- Self healing when the temperatures warm up with traffic
- After a fresh application in hot temperatures it can become tacky



# Crack sealing Curb lines

- Started sealing curb lines 4 years ago
- Have seen a large reduction in the swirl cracking along the asphalt next to the curb







# Warsaw Streets Overview

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220 lane miles in Warsaw in 2019

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2015 average road grade was a 4

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2019 average road grade is a 6

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50% of roads have been crack sealed since 2015

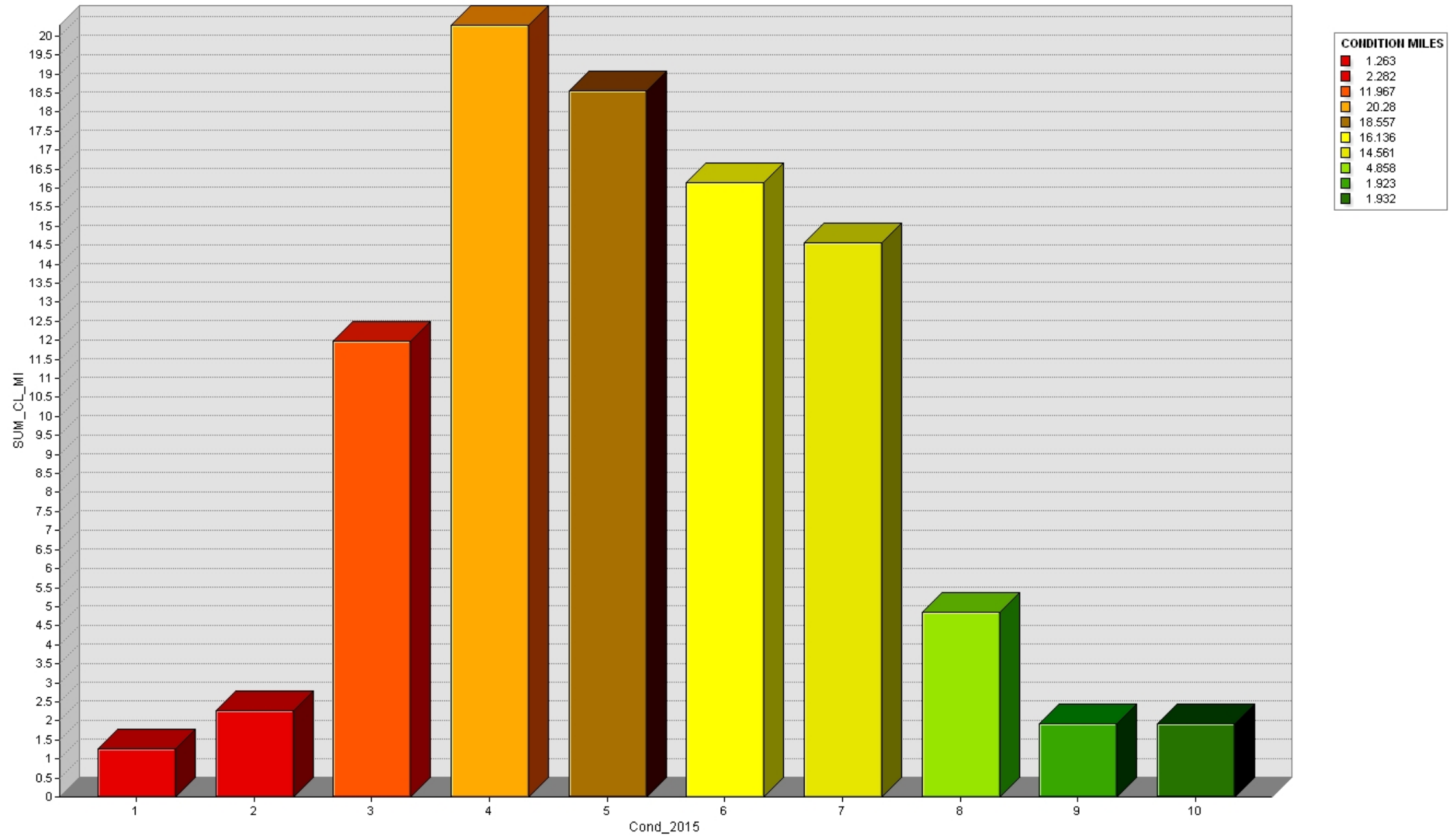
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30% of roads have been micro surfaced since 2015

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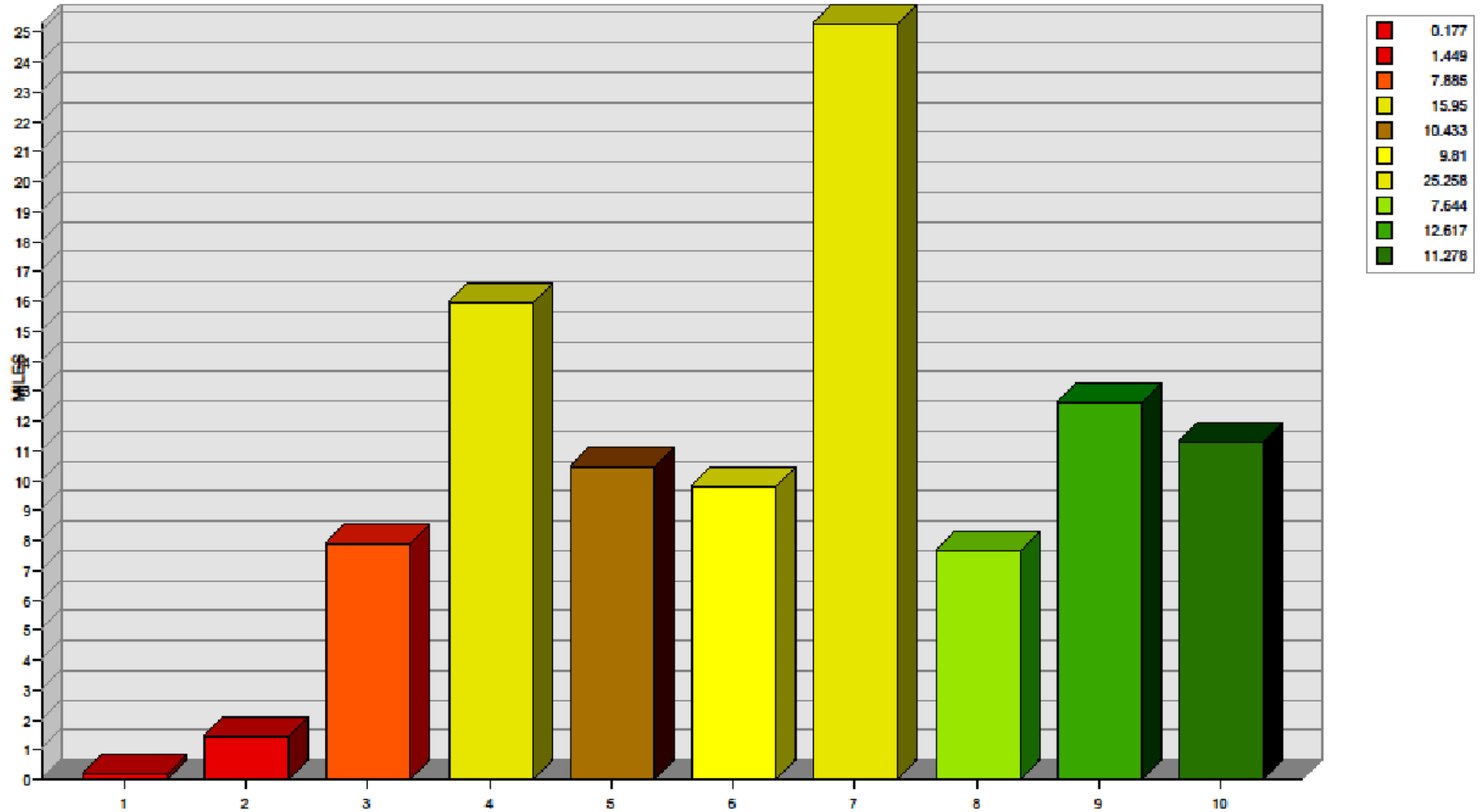
In 5 years Warsaw's road grade average has improved  
2 points

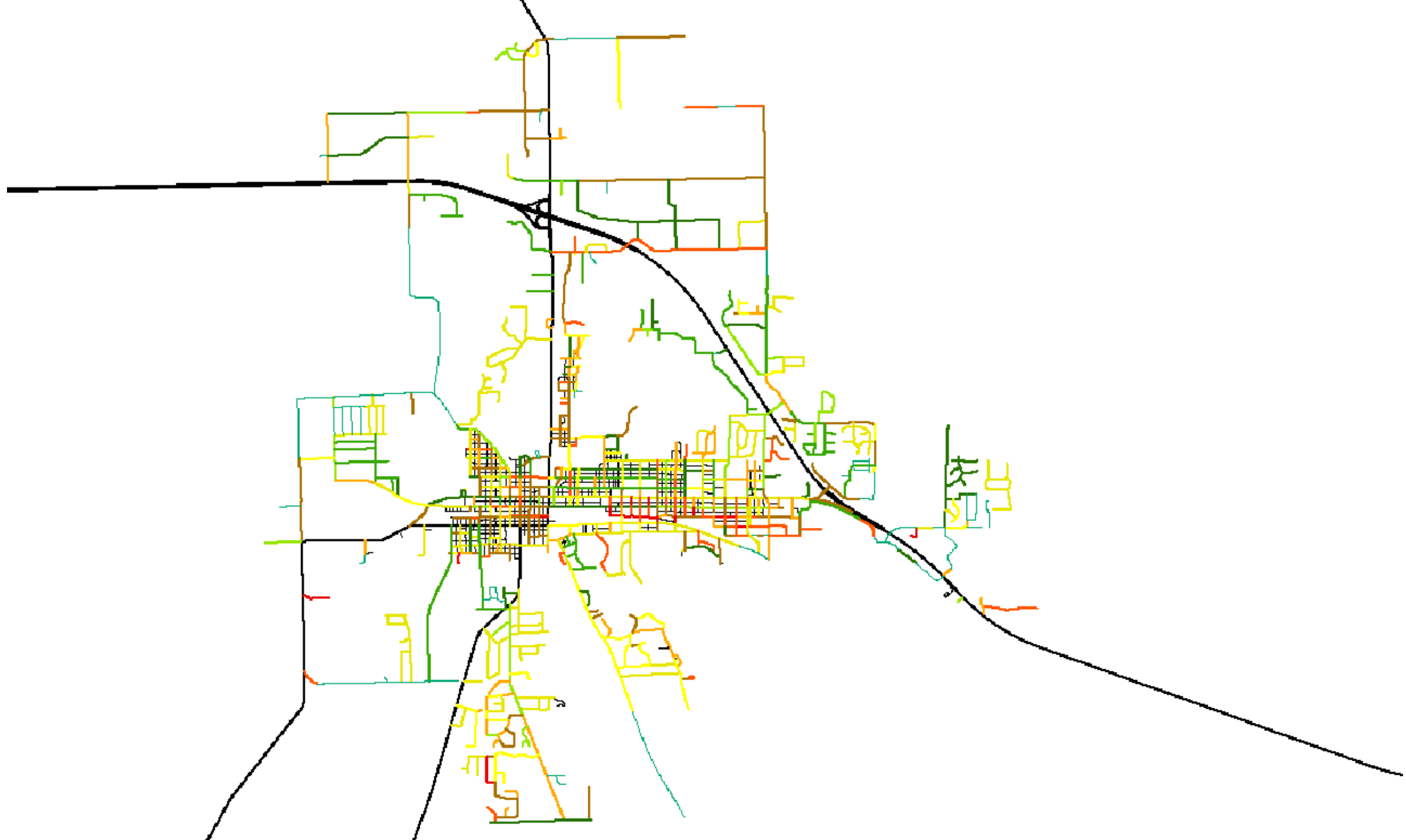
WARSAW ROAD GRADES 2015





### WARSAW ROAD GRADES 2019





## In Summary:

Pavement preservation is not necessarily a project here or there. It is a change in an organization's methodology for maintaining its roadway network. With money always a constraint, communities are not able to "pave" their way to good roads. For Warsaw adding these pavement preservation tools to our box has led to an overall better roadway network that would not have been achievable otherwise. Since 2015 Warsaw's streets have gone from an average PASER rating of a 4 to an average rating of 6 in 2019. This is attributed to the "keeping your good roads good" approach using preservation methods.

JUST DO IT.

