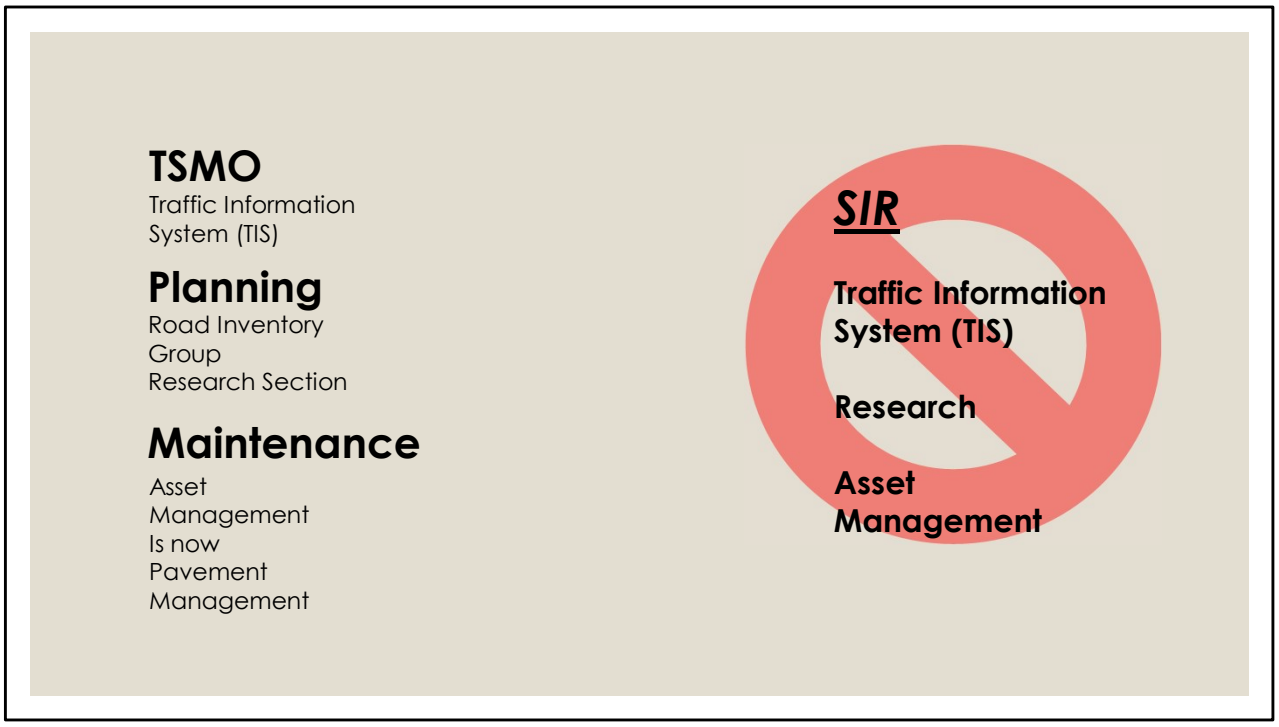
PAVEMENT PRESERVATION THE PAST, PRESENT AND FUTURE

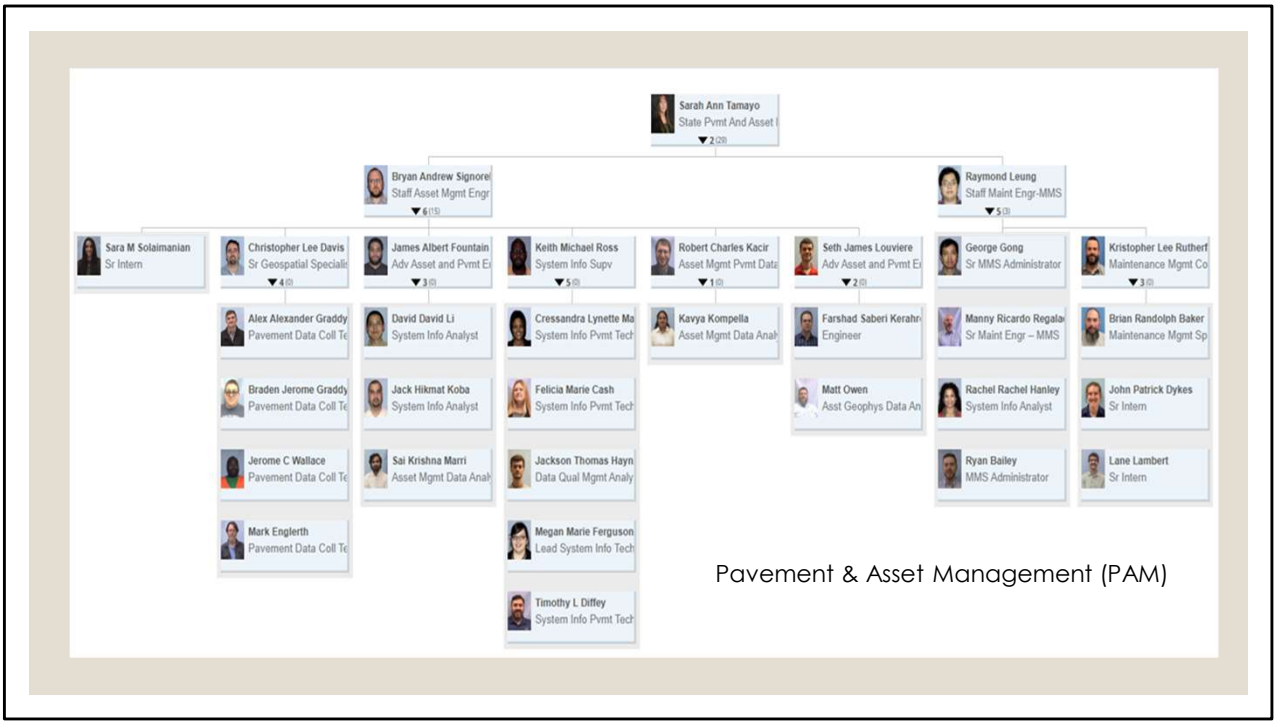
Sarah Tamayo
Arkansas Transportation Summit
10/27/2025 – 10/30/2025

What Happened to SIR

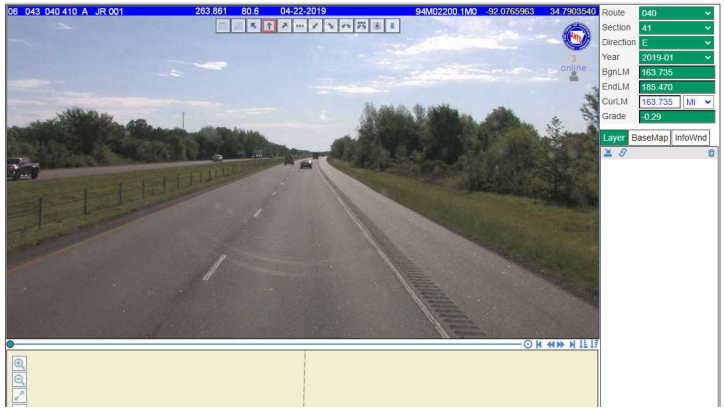


Most of the traffic information system when to TSMO, so if you need traffic counts reach out to Joe or Micheal
Research went back to Planning
And Asset Management went to Maintenance and changed its name back to Pavement Management.

I became the second assistant division head for Maintenance



So this is the new budget 530 or Pavement & Asset Management (PAM), which makes me the SPAME



OLD ATIS

If or your ATIS looks like THAT… I've got news for you. Both have been updated and are better than ever. This version of ATIS hasn't been updated since 2019 so you are missing five years of data at this point. MMHIS 2 is faster and more customizable than ever. Old ATIS will be going away soon and at the end of this presentation, I'll tell you how to install MMHIS 2 on your computer and how to access New ATIS from your browser.

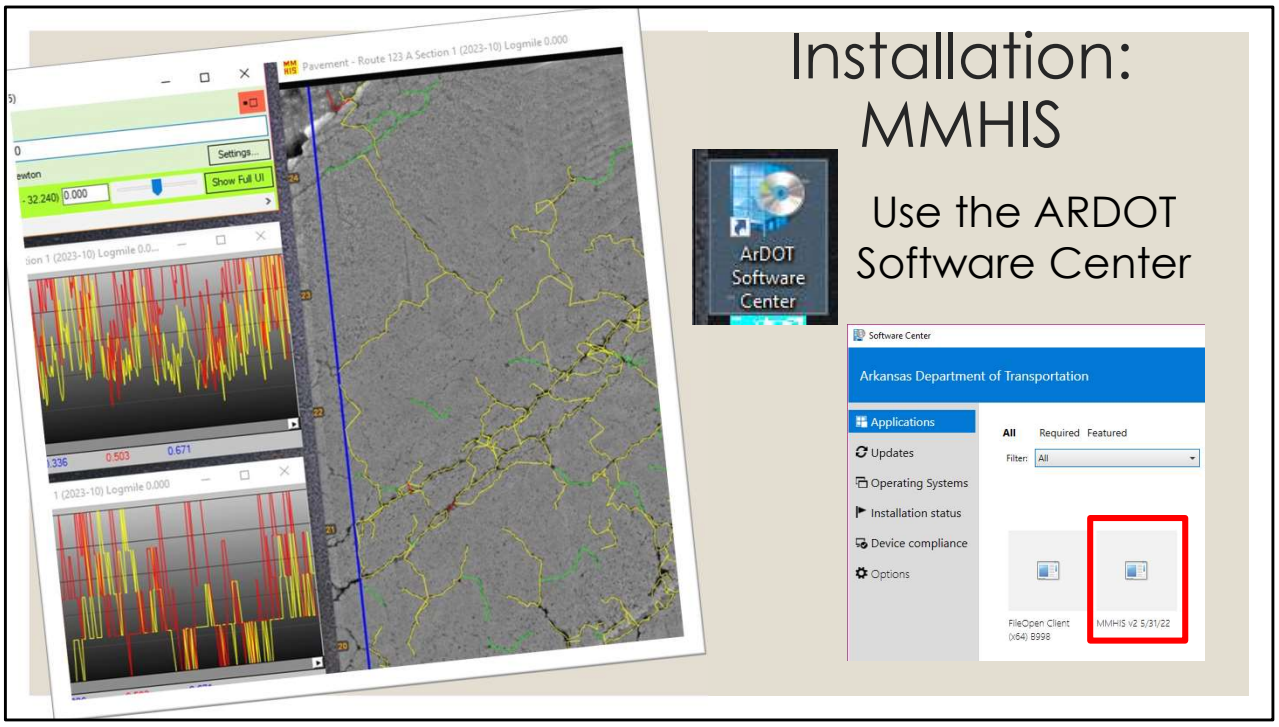
Installation: ATIS

https://atis.ardot.gov

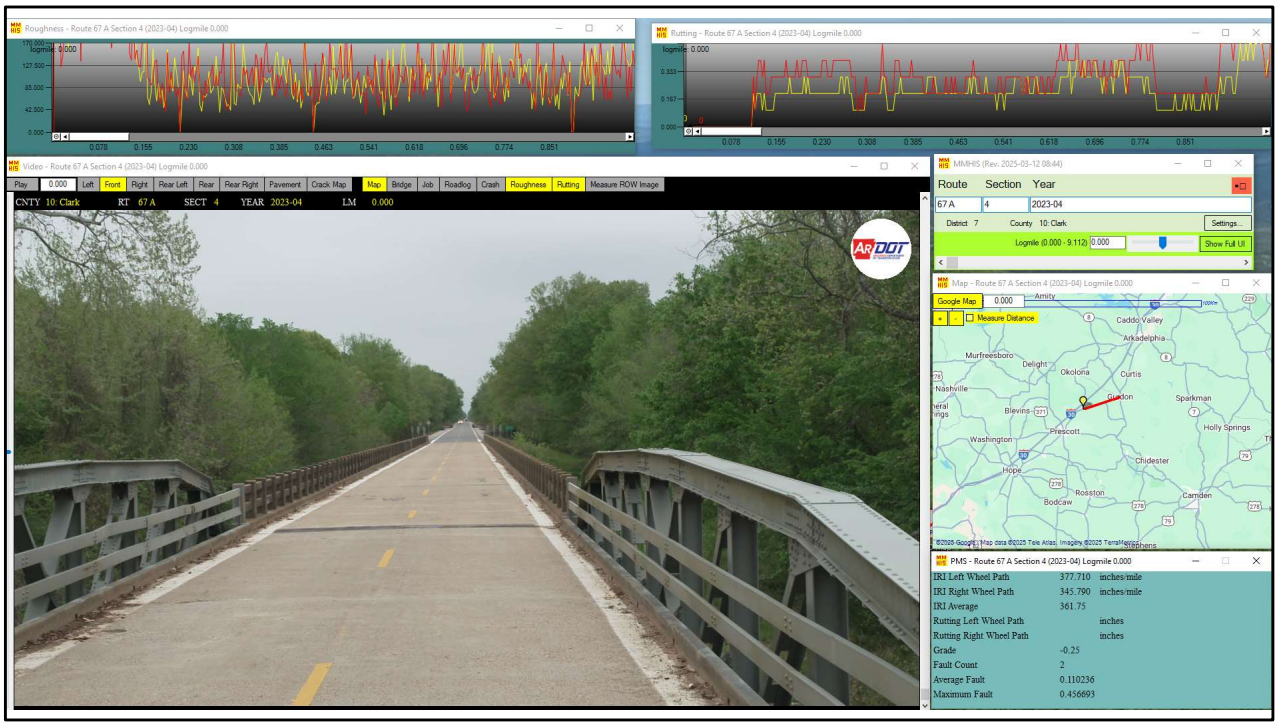
Note: Must be connected to the ARDOT

Some of you are wondering how you get access to these software while others are wondering when I'll stop talking. ATIS is super easy as long as you are connected to the ARDOT network. Just type in this website.

You should be getting automatically redirected to new ATIS but if your not here is the web address



To install MMHIS, use the ARDOT Software Center that should be installed on your desktop. Check the APPLICATIONS tab and choose “MMHIS v2”. If you don’t have a Software Center, or you have other installation issues, please contact IT for assistance.



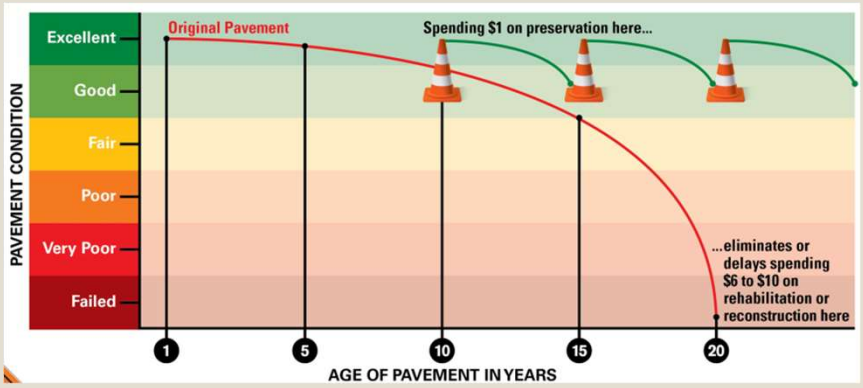
New MMHIS(V2) is very customizable and if you have any problems getting it set up please give us a call. It can do some pretty cool things.

WHAT IS PAVEMENT PRESERVATION

Hopefully, the next few slides are ingrained in your memory, but just incase they aren't I'll go back over them.

Ok so what exactly is pavement preservation? According to FHWA a pavement preservation program is defined as " program employing a network level long-term strategy that enhances pavement performance by using an integrated, cost-effective set of practices that extend pavement life, improve safety, and meet road user expectations"

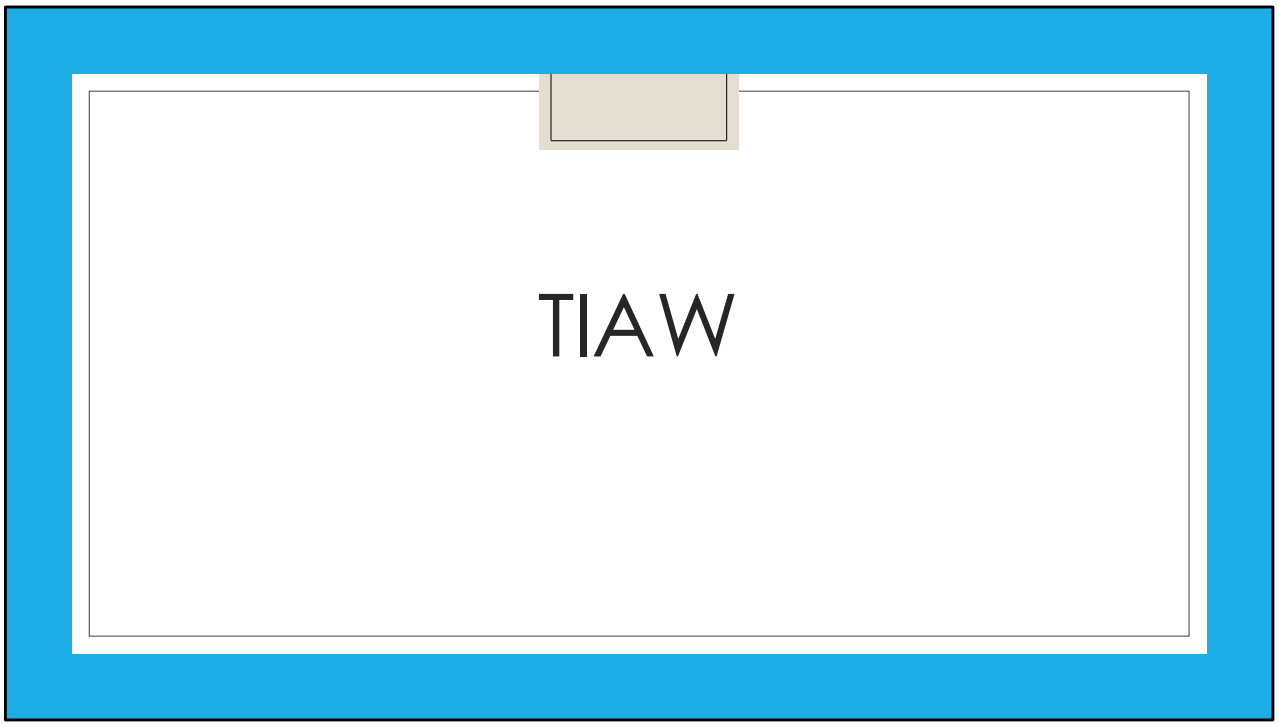
What is Pavement Preservation



This is a standard pavement deterioration curve showing the “do nothing” strategy in red vs the pavement preservation strategy in green. For every dollar spent on pavement preservation, it will delay/eliminate spending $6-$10 on rehabilitation or reconstruction.

I think this picture really sums up the difference between worst first and pavement preservation. I'm assuming this road is like state line road in Texarkana. The whole road was milled and filled in 2004. 6 years later the Fairfield side was crack sealed and microsurfaced. 12 years after the initial rehabilitation the Bridgeport side is in poor condition and the Fairfield said is in fair condition and I would venture to guess that the Fairfield side would be in good condition if it wasn't for the Bridgeport cracks propagating over

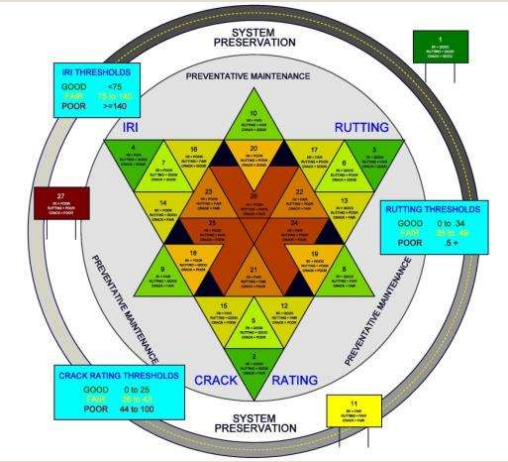
Where We Started

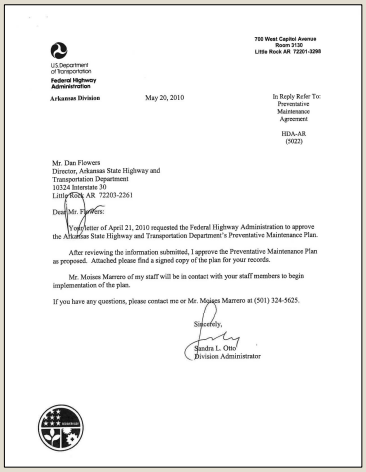


Two inches always works

When I stated we had the overlay program that was state-funded and for the most part that was the only treatment that was used.

Preventive Maintenance Agreement





U.S.Department of Transportation
Federal Highway Administration
Arkansas Division

700 West Capitol Avenue
Room 3130
Little Rock AR 72201-3298

May 20, 2010

In Reply Refer To:
Preventative Maintenance Agreement
HDA-AR
(5022)

Mr. Dan Flowers
Director, Arkansas State Highway and Transportation Department
10324 Interstate 30
Little Rock AR 72203-2261

Dear Mr. Flowers:

Your letter of April 21, 2010 requested the Federal Highway Administration to approve the Arkansas State Highway and Transportation Department's Preventative Maintenance Plan.

After reviewing the information submitted, I approve the Preventative Maintenance Plan as proposed. Attached please find a signed copy of the plan for your records.

Mr. Moises Marrero of my staff will be in contact with your staff members to begin implementation of the plan.

If you have any questions, please contact me or Mr. Moises Marrero at (501) 324-5625.

Sincerely,

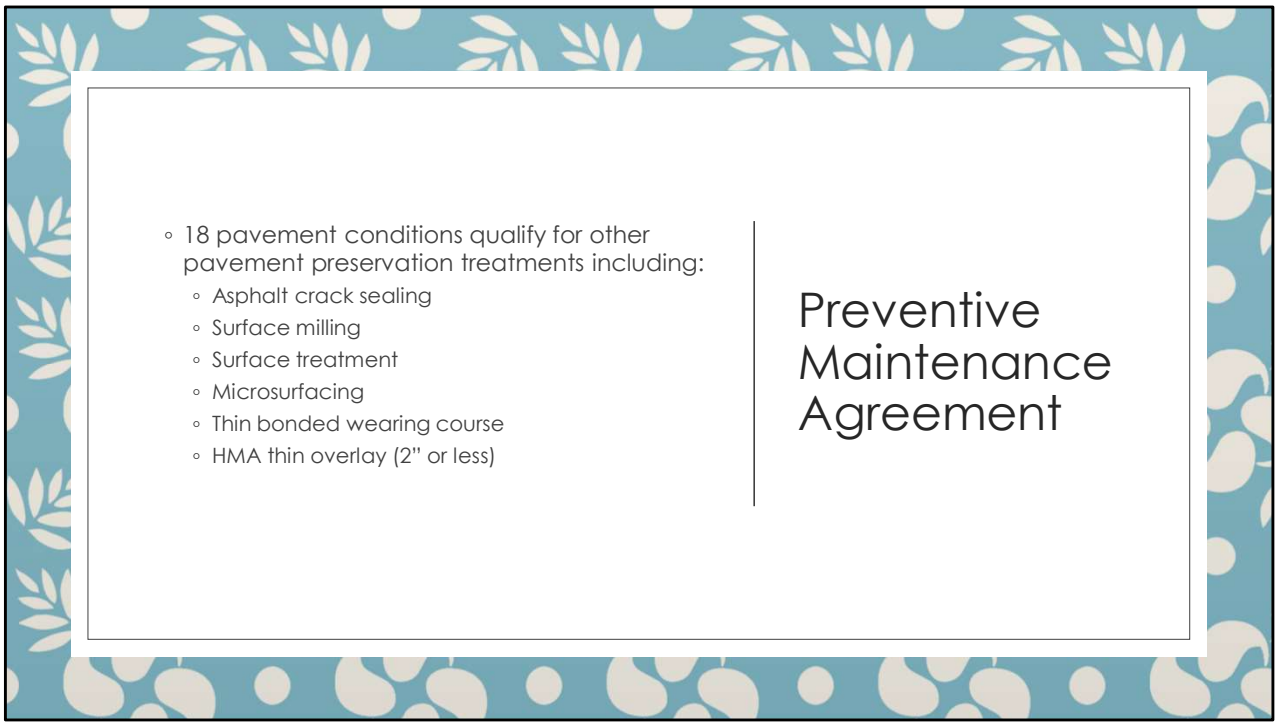
Sandra L. Otto
Division Administrator

The was the first pavement preservation agreement it was put into place in May 2010 but was not utilized till a few years ago. This agreement is what allows ARDOT to use federal funding for pavement treatments that were once considered more of maintenance work

Preventive Maintenance Agreement

- Focuses on
  - Low volume roads (ADT < 2000)
  - HMA overlays (2" or less)
- Pavement condition criteria
  - Traffic
  - Pavement Rating / Cracking Index
  - IRI
  - Rutting
- 25 pavement conditions qualify for 2" overlay

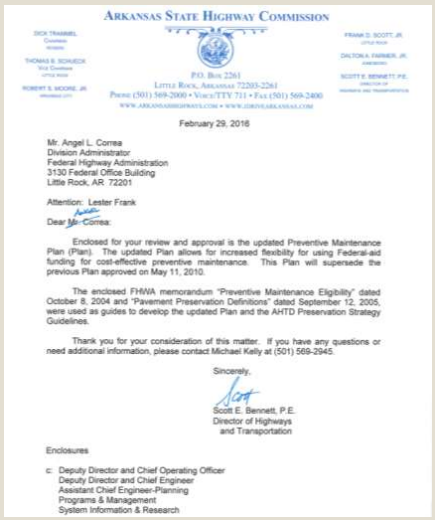
The agreement focused on low volume roads and 2” overlays. It used an average condition for the pavement to determine what treatment if any the pavement qualified for. Only 25 pavement conditions (meaning pavement condition with traffic) that qualified for 2” overlays



18 different pavement conditions qualified for 6 different treatments

Where We are At

New agreement



ARKANSAS STATE HIGHWAY COMMISSION

P.O. Box 2261
Little Rock, Arkansas 72203-2261
Phone (501) 569-2000 • Voice/TTY 711 • Fax (501) 569-2400

February 29, 2016

Mr. Angel L. Correa
Division Administrator
Federal Highway Administration
3130 Federal Office Building
Little Rock, AR 72201

Attention: Lester Frank

Dear Mr. Correa:

Enclosed for your review and approval is the updated Preventive Maintenance Plan (Plan). The updated Plan allows for increased flexibility for using Federal-aid funding for cost-effective preventive maintenance. This Plan will supersede the previous Plan approved on May 11, 2010.

The enclosed FHWA memorandum "Preventive Maintenance Eligibility" dated October 8, 2004 and "Pavement Preservation Definitions" dated September 12, 2005, were used as guides to develop the updated Plan and the AHTD Preservation Strategy Guidelines.

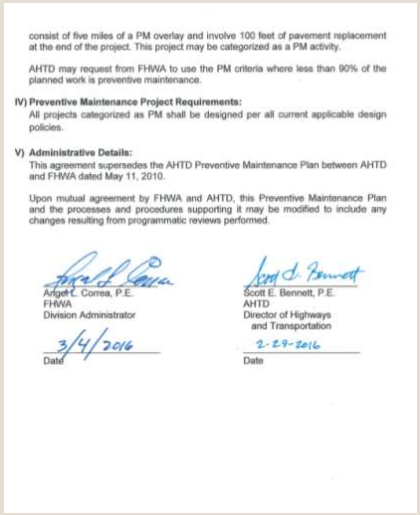
Thank you for your consideration of this matter. If you have any questions or need additional information, please contact Michael Kelly at (501) 569-2945.

Sincerely,

Scott E. Bennett, P.E.
Director of Highways
and Transportation

Enclosures

c: Deputy Director and Chief Operating Officer
Deputy Director and Chief Engineer
Assistant Chief Engineer-Planning
Programs & Management
System Information & Research



consist of five miles of a PM overlay and involve 100 feet of pavement replacement at the end of the project. This project may be categorized as a PM activity.

AHTD may request from FHWA to use the PM criteria where less than 90% of the planned work is preventive maintenance.

IV) Preventive Maintenance Project Requirements:
All projects categorized as PM shall be designed per all current applicable design policies.

V) Administrative Details:
This agreement supersedes the AHTD Preventive Maintenance Plan between AHTD and FHWA dated May 11, 2010.

Upon mutual agreement by FHWA and AHTD, this Preventive Maintenance Plan and the processes and procedures supporting it may be modified to include any changes resulting from programmatic reviews performed.

Angel L. Correa, P.E.
FHWA
Division Administrator

3/4/2016
Date

Scott E. Bennett, P.E.
AHTD
Director of Highways
and Transportation

2-29-2016
Date

Which we did in February 2016

What Treatments are in our toolbox?

Asphalt Pavement

- Crack Filling
- Crack Sealing
- Partial Depth Patching
- Full Depth Patching
- Milling
- Leveling
- Rejuvenation
- Fog Seal
- Rejuvenating Fog Seal
- High-Performance Fog Seal
- Chip Seal
- Scrub Seal
- Slurry Seal

Asphalt Pavement Cont.

- Sand Seal
- Sandwich Seal
- Double/Triple Chip Seal
- Cape Seal
- UTBWC
- OGFC
- Microsurfacing
- Thinlay
- Overlay up to2"
- Cold In-Place Recycling
- Hot In-Place Recycling

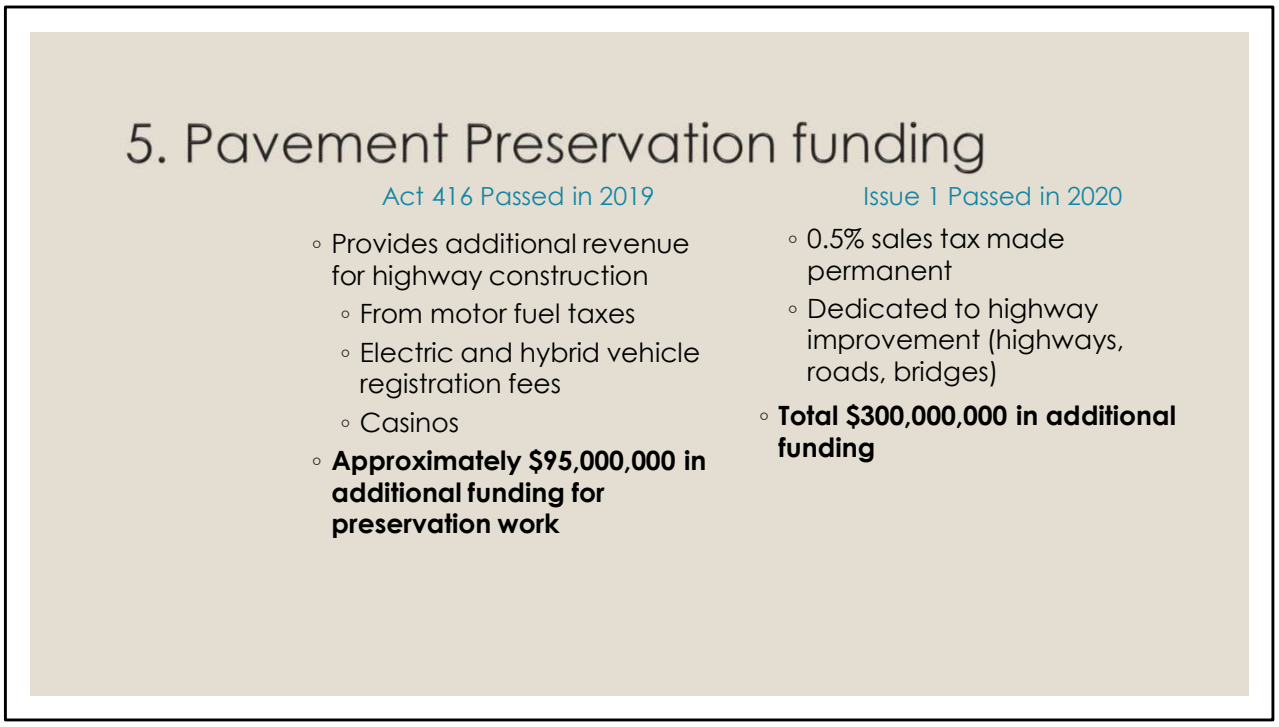
Concrete Pavement

- Crack Sealing
- Joint Resealing
- ASR Pavement Sealing
- Diamond Grinding
- Diamond Grooving
- Shot Blasting
- Undersealing
- Dowel Bar Retrofit
- Full Depth Repair
- Partial Depth Repair
- Cross-Stitching
- Slot Stitching
- Slab Jacking

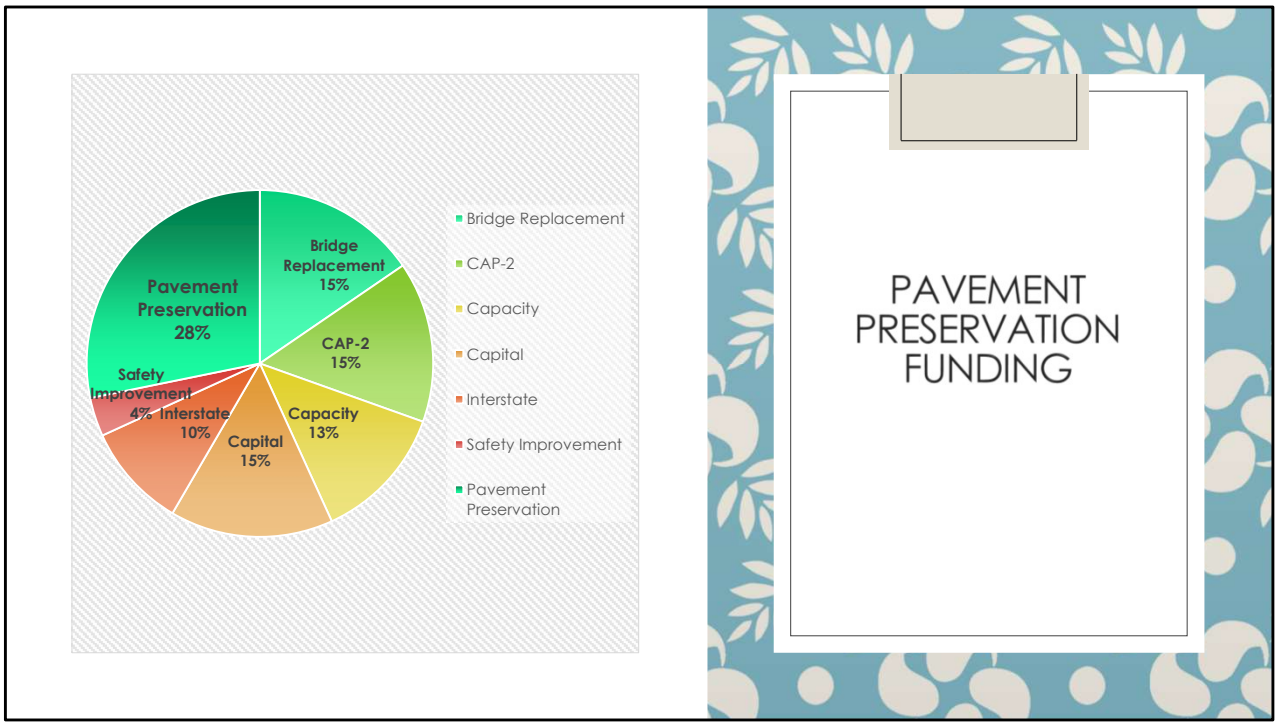
Other Preventive Maintenance Projects

- Slop Stabilization
- Shoulder Repair
- Barrier Wall Repair
- Restoration of Drainage Systems
- Cleaning of Underdrain Systems
- Clearing of Trees and Shrubs

We now have 43 treatments available and the pavement condition is not as limiting as it was



When we say pavement preservation program its really more of a system preservation program, we are working towards a more true preservation



Currently, our preservation funds run through the STIP. We are working towards trying to get more of the funding out of individual jobs and into a line time where we can pick a project a year out and have true preservation work. Due to the reorganization and retirements, we have a lot of new people in the rolls who could be in the ones making that transition if the Department decided to move in that direction. It probably going to take some time to get there.

Chip Seal and Leveling Program

- Chip Seal Program and Leveling Program average $15,000,000 per year
  - On average
    - 50% on Chip Seals
    - 50% on Leveling
  - Will be increasing the Sealing Program to $20,000,000 per year
  - Non-APHN
    - Approximately half the system, which carries less than 10% of the traffic

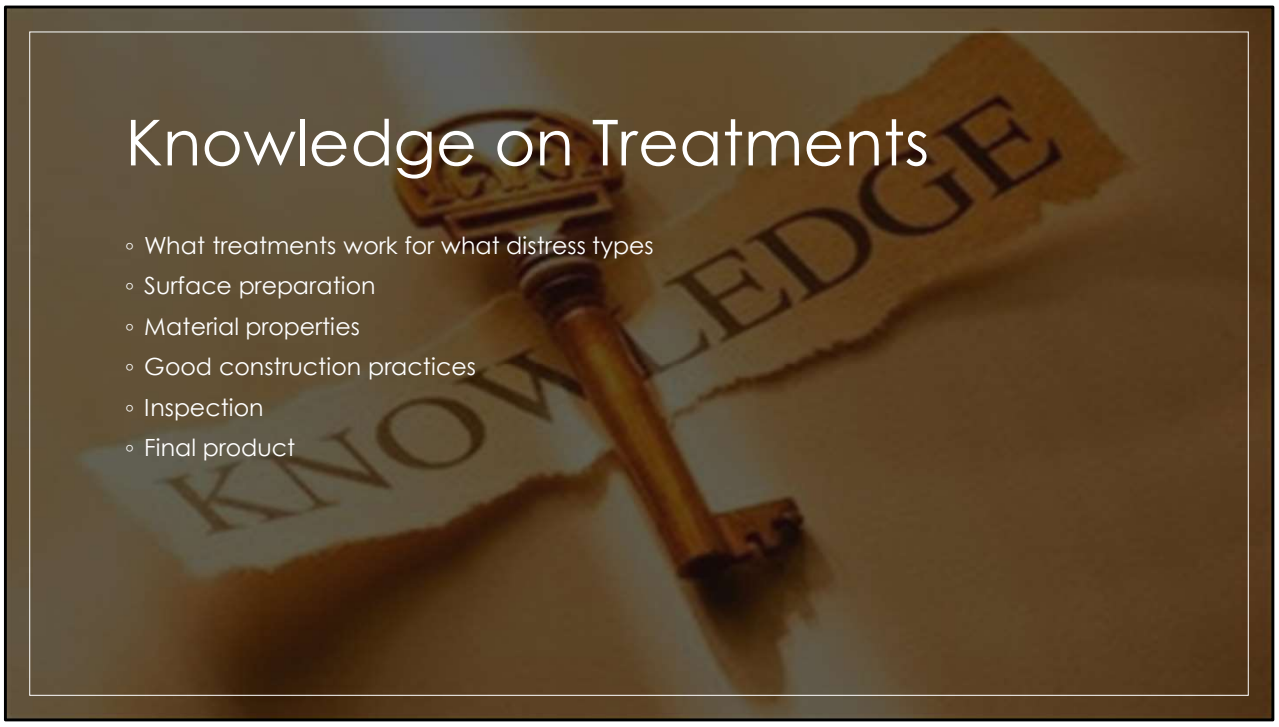
We are working with the districts to move this program more towards preservation and less from band-aiding the roads also more chip seals less leveling

CURRENT STRUGGLES

Timing

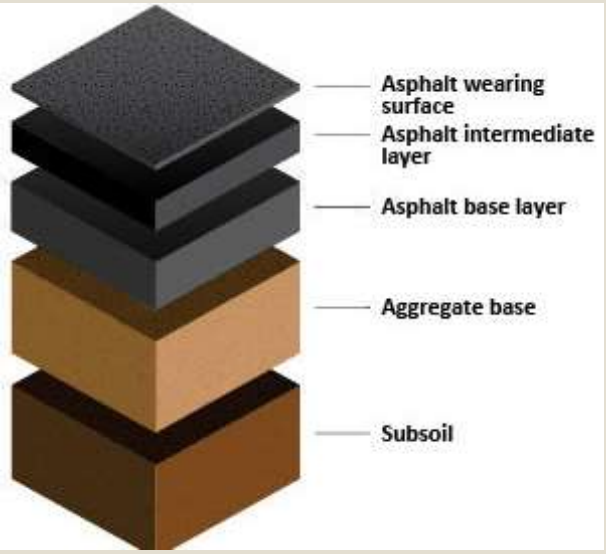
Early Failures

Knowledge on Treatments



- What treatments work for what distress types
- Surface preparation
- Material properties
- Good construction practices
- Inspection
- Final product

PAVEMENT STRUCTURE



This is a standard pavement structure. You have the “WEARING” surface, asphalt base layer, aggregate base, and subgrade

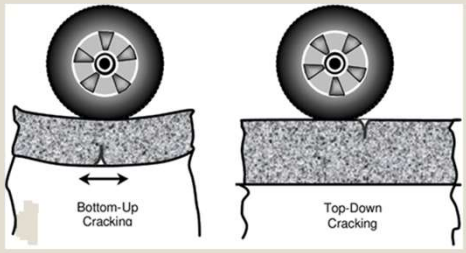
Names for the Top Layer of Pavement

- Surface Layer
- Wearing Course
- The Roof of the Pavement
- Sacrificial Layer

There are several names for the top layer of pavement, a few are surface layer, wearing course, the roof, and the best (at least to me) Sacrificial Layer.

Per the Oxford dictionary it is “relating to or constituting a sacrifice” (Not helpful) but the Technical definition is

“Designed to be used or destroyed in fulfilling a purpose or function”



Top-Down vs Bottom-Up

- Where the crack starts determines, what treatment is used to rehabilitate/preserve the pavement.
  - Bottom-up cracking
    - Pavement structure, base, or subgrade has failed
      - More structure is needed
        - Base failure or
        - Asphalt is not thick enough or
      - Or reflective cracking
  - Top-down cracking
    - Surface layer has reached the end of its service life

Bottom-up cracking is an indication of structural failure. This failure can be in the asphalt, base, or subgrade. Structural repairs need to be made to fix bottom-up cracking.

Top-Down cracking indicates that the surface layer of asphalt has reached the end of its service life and needs to be removed and replaced.

The majority of cracking we have is top-down cracking

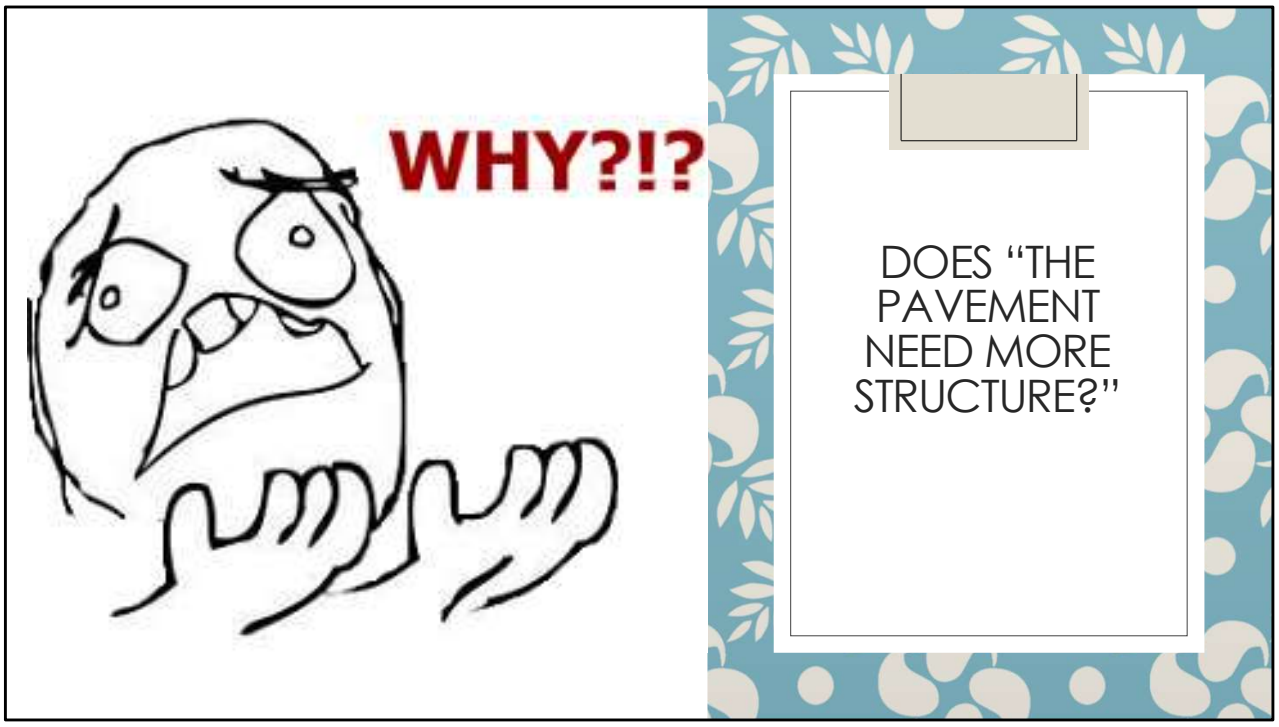
Defines Perpetual Pavement:

A *perpetual pavement* is defined as an asphalt pavement designed and built to last longer than 50 years without requiring major structural rehabilitation or reconstruction and needing only periodic surface renewal in response to distresses confined to the top of the pavement. The basic premise is that an adequately thick asphalt pavement placed on a stable foundation will **resist distress that forms at the bottom of a pavement structure** and is costly to correct. By limiting distress formation to the pavement **surface layer**, the pavement life can be extended in perpetuity by **rejuvenating the pavement surface** materials and ***remove and replace*** type of maintenance operation.

Read Definition

I'm not saying all our pavements are going to last 50+ year but with proper preservation strategies they will last much longer.

So… sacrificial surfaces is a term that we need to keep in the back of our mind. Preservation treatments aren't meant to last for ever and just like the top surface layer of asphalt they will need to be removed and replaced once their purpose has been for filled.



Why do we say "the pavement needs more structure"

I do want to make one point clear we are talking about highways that have been designed we are not talking about highways that were game trails that became foot paths that became wagon trails that became dirt roads that became gravel roads that got a surface layer put on them.

Our pavement needs more structure is hands down one of the most common comments we get back when we recommend mill & overlays, thin overlays, and UTBWC for preservations treatments.

Easy question…. Does the Roadway Design division design structurally sound pavements? (show of hands)

I hope everyone agrees or we have a big problem.

I have complete confidence that Roadway can and does design structurally sound pavements.

EXAMPLE: YOUR FAVORITE DRESS SHOES

Lets look at this in a different way – you have your favorite pair of dress shoes you wear them 24/7. You wear them so much that

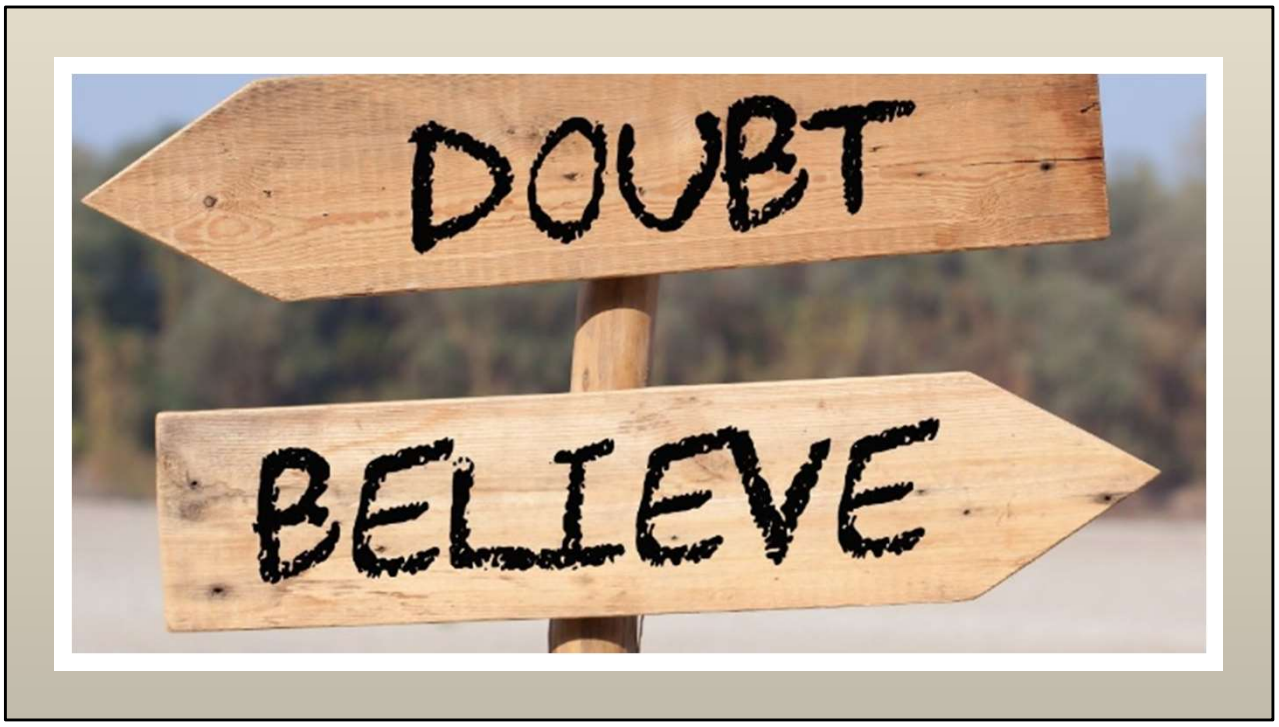
You wear holes in the soles

What do you do
1. Go out and by new shoes $$$$$
2. Go get them resoled make them good as new or

Do you slap some bondo in the holes and put another sole over the old one?

Personally I would get them resoled, that additional layer isn't adding anything, its warn out it has taken all the force from the steps it could take and has nothing is left. Leaving that old warn out nonflexible layer in may cause your new sole to wear out faster. The only thing leaving the old layer in does is add height.

Where Do We Go From Here



Pavement Preservation works if you put the right treatment on the right road at the right time. If you don't believe that pavement preservation actually works, please come talk with me or anyone in pavement management. We can give you stacks of research showing that pavement preservation works. We cant wait until we have enough money to do preservation, we will never have enough money if we don't start doing pavement preservation.

Work with the District on Treatments

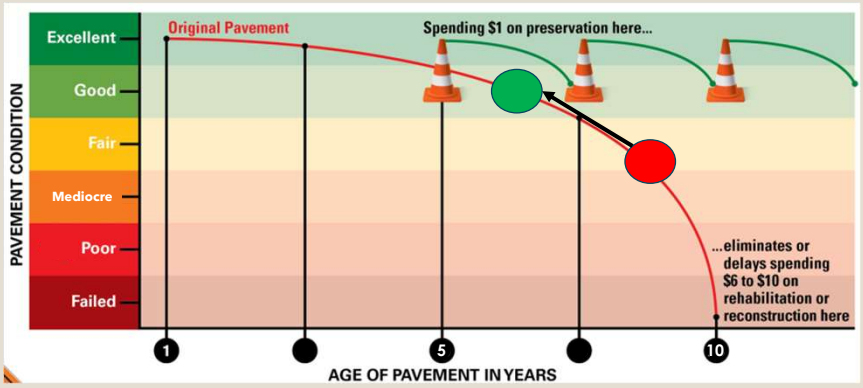
- Better communication on the current pavement condition vs the scope of work
- What is working for them and what is not, and why.
- Put together training for treatment types for construction inspection.

So, how do we get there?

Like with everything, better communication.

Read slide

Putting Down Treatments Sooner

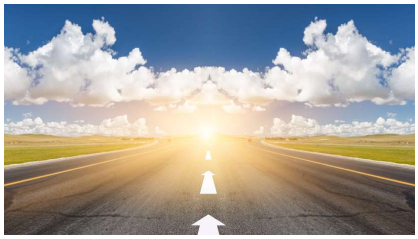


Move our lighter treatments higher up on the curve so we are truly keeping good roads in good condition

More Flexibility

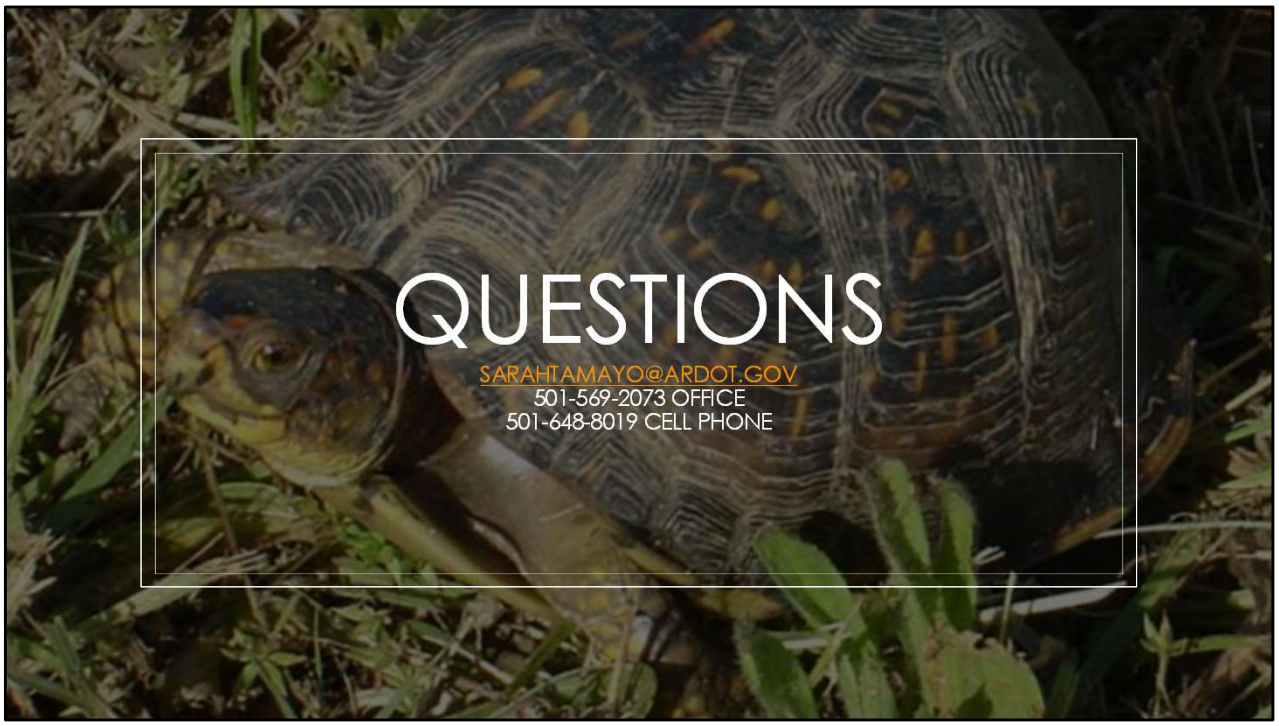
- Years from Treatment Selection to Construction
  - 5+ years Mill and Overlay
  - 4 – 5 years overlays (may need interlayer)
  - 3 – 4 years UTBWC, Thin Overlay, Combination Treatments
  - 1 – 2 years Chip Seals, Microsurfacing

The lighter the treatment, the closer to the construction data the treatment selection needs to be.



THE FUTURE IS BRIGHT

We have come a long way in the last 15 years and with the current direction the Department is heading we will continue to make progress with implementing preservation and maintaining our highways system in good condition.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