

# Best First

A Strategy for Extending the Service Life of Roadways  
(or are you a chicken?)



# Premise for this presentation

You don't have enough scratch to do it all

(or do you...more on this later)



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# What is Best First?

- A maintenance strategy that people use everyday for decision making when funds are limited, because it's just common sense
- **You own two hen houses and want to keep them. One good, one bad. Both need a new roof. You can only afford one roof. Which house should you choose?**



# What is Best First?

- A maintenance strategy that recognizes that sometimes you just have to let some things go...
  - **You didn't put the roof on the bad house**

Or do you really have to let some things go?  
But more on this later!



# What is Best First?

- A maintenance strategy that protects your most valuable assets.
- **The structure and contents of your good house are maintained**

# What is Best First?

- A maintenance strategy that recognizes if you try to save everything... you could lose everything (and this not good)
- **The structure and contents of your good house are maintained for the long term**
- instead of eventually having two bad houses... but one with a damn good roof

# What is Best First?

The house example may seem like too simple of an illustration to relate to roads...but I don't think they are. Do other maintenance strategies really cause you to lose everything? Or at least lose too much?



# What is Best First?

- A maintenance strategy that recognizes that by trying to save everything... you could lose everything
  - **85% of Michigan's county road agencies have more than 30% of their Primary Network in poor condition**
  - **47% have more than 50% poor primary roads**
  - **11% have more than 70% poor primary roads**

# Do Other Strategies Work Well?

**To have this much of the primary network (the most important 30-35% of a county system) in poor condition clearly shows the results of trying to save too many miles for way too long.**



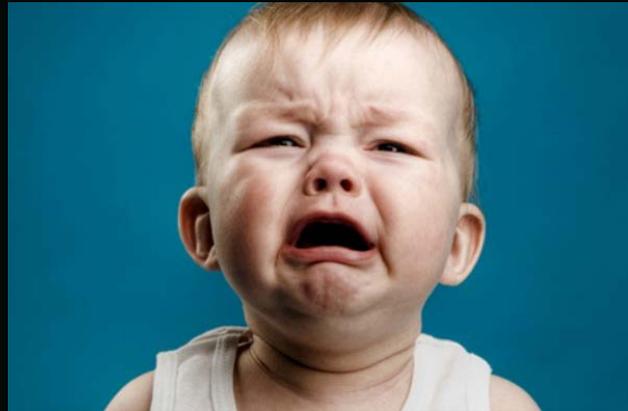
# Do Other Strategies Work Well?

- I believe they don't
- I contend with "best first" there is no way to end up with the statewide system that we currently have
- If an agency is NOT using "best first", then funds clearly went toward other strategies such as "worst first", "best last", "best later"... I.e. trying to save them all or at least trying to save too many

(perhaps waiting for that ever looming funding increase from 1997-2017)

But it's my job to save them all!

Waaah, waaah , waaah.....cry me a river



But more on this later too!

# Enough for vague references

- **The Barry County Road Commission**
  - **sealcoats all HMA surfaces, including fed aid projects, reconstructions and overlays (no matter the thickness or number of lifts) the same year it is laid.**
  - **has been doing this consistently for over twenty years, but has some older sections as research**
  - **has an excellent paved road system both primary and local roads. We believe the best in Michigan!**



# The Science

- **Flexibility & Elasticity** (the lifeblood of an asphalt pavement)
  - **Flexibility is the ability to bend without breaking**
  - **Elasticity is the ability to return to original form**
  - **Without enough your pavement will fail**
- **Oxidation** (Hardening)
  - **Caused by exposure to the sun and air**
  - **Results in loss of flexibility and elasticity**
  - **Eventually leads to brittle, failed pavements by penetrating downward through the asphalt matrix**
- **Chip seals within one year** (of initial asphalt laying)
  - **Exposes aggregates (chips) directly to the sun and air**
  - **Severely slows the oxidation of the underlying asphalt**
  - **Preserve the flexibility & elasticity of a **very expensive investment****

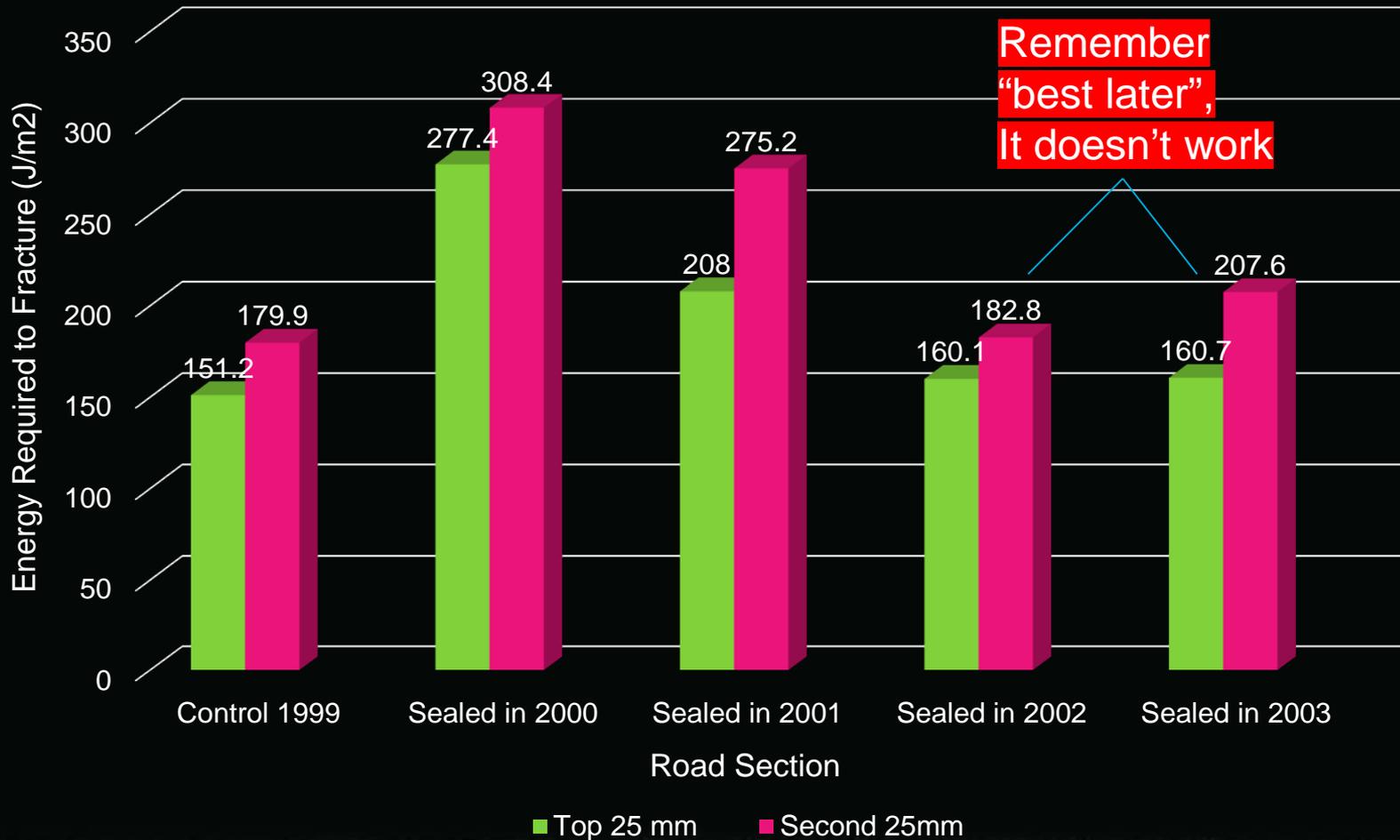


# The Data

- Minnesota DOT did a fifteen year study on a newly paved section of state highway.
  - In 1999 - 5 miles of state highway were paved.
  - A control section mile was left without any preventative maintenance
  - Each year, 2000 through 2003, one of the remaining miles was chip sealed
  - Cores were taken in year fifteen for each segment of road
  - Fracture tests results are shown on the following chart

# The Data

## TH56: Disk Shaped Compact Tension Test Results



# MNDOT Chip Seal New HMA Study



# The Data

- The Barry CRC has numerous segments of primary and local roads that were overlaid 20+ years ago and are still Paser 7 or 8
- A new seal will still keep most of these segments at 7+ for 7 to 9 years.
- At least one heavily used primary that is 34 years old and still an 8 (with long lasting seals)
- Two federal aid projects that extended into villages in which the village didn't seal show dramatic contrasts in pavement conditions.

We would be happy to take anyone on a tour with our road segment repair histories in hand to give you visual representation of our system.



# The Data

- Decreased Maintenance
  - **NO (negligible) patching costs on roads over 20 years old...patching almost eliminated**
  - We do patch, but not much, and it's almost all on our roads we haven't got to with this procedure yet



# The Data

- Safety Improvement
  - **Particularly in wet, snowy and icy conditions**
  - Pine Lake Road primary curved section of road with numerous runoffs while HMA surfaced. Runoffs almost eliminated with chip seal.

Donated by Action Traffic Maintenance



# The Proof

- Barry CRC paved road conditions
  - **Average Paser Rating county wide of 6.92**
    - Primary roads at 7.4
    - Local roads at 6.24
  - **Federal Aid Eligible roads only 6.5% poor**  
(last TAMC data)
  - **Entire paved road system 7.4% poor**  
( most current data)
  - **Non sub paved road system only 3.9% poor**  
(most current data)

# The Pitfalls

- Higher initial cost
- Further initial neglect of other roads
- The big hurdle...Public Complaining
  - **Still present but not bad** (but it was initially brutal)



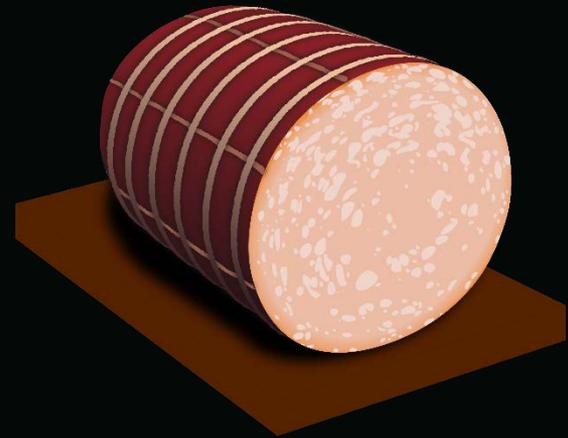
So... are you a chicken?



# More on that Later (as previously promised)

- You don't have enough scratch to do it all
- Sometimes you just got to let some things go
- But it's my job to save them all

All a bunch of bull\_\_\_\_!



# More on that Later

- With only 6.5% poor. Have we proved:
  - You do have enough money to save more of your system than with other strategies
  - You actually don't have to let much go, at least not the bulk of your primary system that seems to be the norm around the state... due to whatever other strategy (if there even was one)
  - It is indeed your job to save as many as possible and you will with a best first maintenance philosophy!

**(Even though it won't initially feel like it)**

# The End Results

- An agency that can properly maintain a high percentage of roadways in good and fair condition freeing up funds to go further elsewhere
- A great system, one with which employees can be proud to be associated! Our productivity & morale has increased steadily along with our system quality.
- A public with overwhelming support for the Barry CRC! In spite of a tough several years educating the public.
  - **Ed Sarpolus of Target Insyght did a study in late 2014 for the Barry CRC before this last funding increase researching a county road millage. 80% of residents believed the Barry CRC was doing at least a fair or good job with their current funds. Of several hundred clients over the years this “trust factor” had only been reached one other time by a tax funded agency, a school district.**

# The Takeaway (if you remember only one thing)

**BEST FIRST** is first best, superior to worst first, best last & best later, but not necessarily synonymous with worst last. Best first frees up funds through decreased maintenance, decreasing time to get to the worst. Making the worst, last but not least and essentially almost first.

Thank you!

The bottom of the slide features a decorative graphic consisting of three horizontal stripes. The top stripe is yellow, the middle stripe is black, and the bottom stripe is yellow. The stripes have a slightly textured, brush-stroke appearance.