

# Starting a Preservation Program

A local agency engineer's perspective

September 2023

NATIONAL PAVEMENT PRESERVATION CONFERENCE



IMPACTS AND BENEFITS FROM PAVEMENT PRESERVATION



MICHIGAN STATE UNIVERSITY





# What the public wants



# What they don't want



# What the public wants



# What is Pavement Preservation

- The term *“Pavement Preservation Programs and Activities”* means programs and activities 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”.

*Source: Section 1507 of Public Law 112-141, “Moving Ahead for Progress in the 21st Century” Act (MAP-21).*

# A Few Definitions

- **Preservation** – The act of keeping something the same or of preventing it from being damaged. (Cambridge dictionary)
- **Sustainability** – The ability to continue at a particular level for a period of time. (Cambridge dictionary)

# A Few Definitions

- Key words are **KEEPING** and **CONTINUING**.
  - Many aspects or properties, including ride quality, pavement structure, drainage, safety features, skid resistance, signage, etc.



# A Few Definitions

- Maintenance – The act or activity of keeping something in an existing and usually satisfactory condition (Webster dictionary)
  - The work needed to keep a road, building, machine, etc. in good condition. (Cambridge dictionary)

*Maintenance is surface things, not getting into base or subbase*

# One Last Definition

- The term “***Asset Management***” means a strategic and systematic process of operating, maintaining, and improving physical assets, with a focus on both engineering and economic analysis based upon quality information, to identify a structured sequence of *maintenance, preservation*, repair, rehabilitation, and replacement actions that will achieve and *sustain* a desired state of good repair over the lifecycle of the assets at minimum practicable cost.

*Source: Section 1103 of Public Law 112-141, “Moving Ahead for Progress in the 21st Century” Act (MAP-21).*

# What the public wants



# What they don't want



# 2 Kinds of Maintenance

- ▶ Routine (reactionary) – plow the snow, cut up the downed tree, fix the washout, patch the hole, etc.
  - May actually may cause damage.
    - Deicing, pothole patch, etc.



- ▶ Preventative (planned) – Crack seal, chipseal (sealcoat), thin overlay, fog coat, scrub seal, etc.
  - Increase service life (extend the RSL)
  - Preventative Maintenance=Preservation



# Preservation



PHOTO: Oceana County Road Commission



PHOTO: Dickinson County Road Commission



PHOTO: RoadResource.org



PHOTO: Dickinson County Road Commission

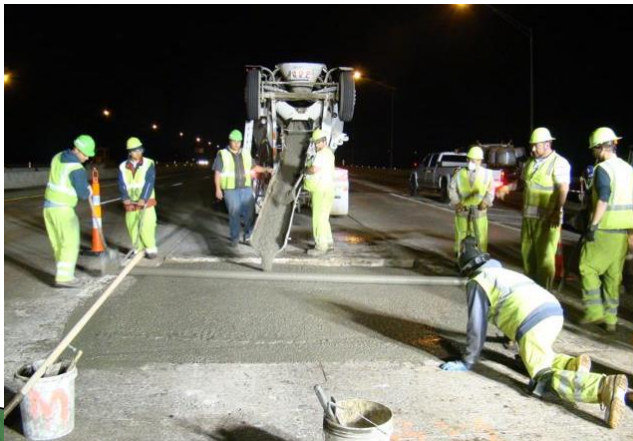


PHOTO: FP2

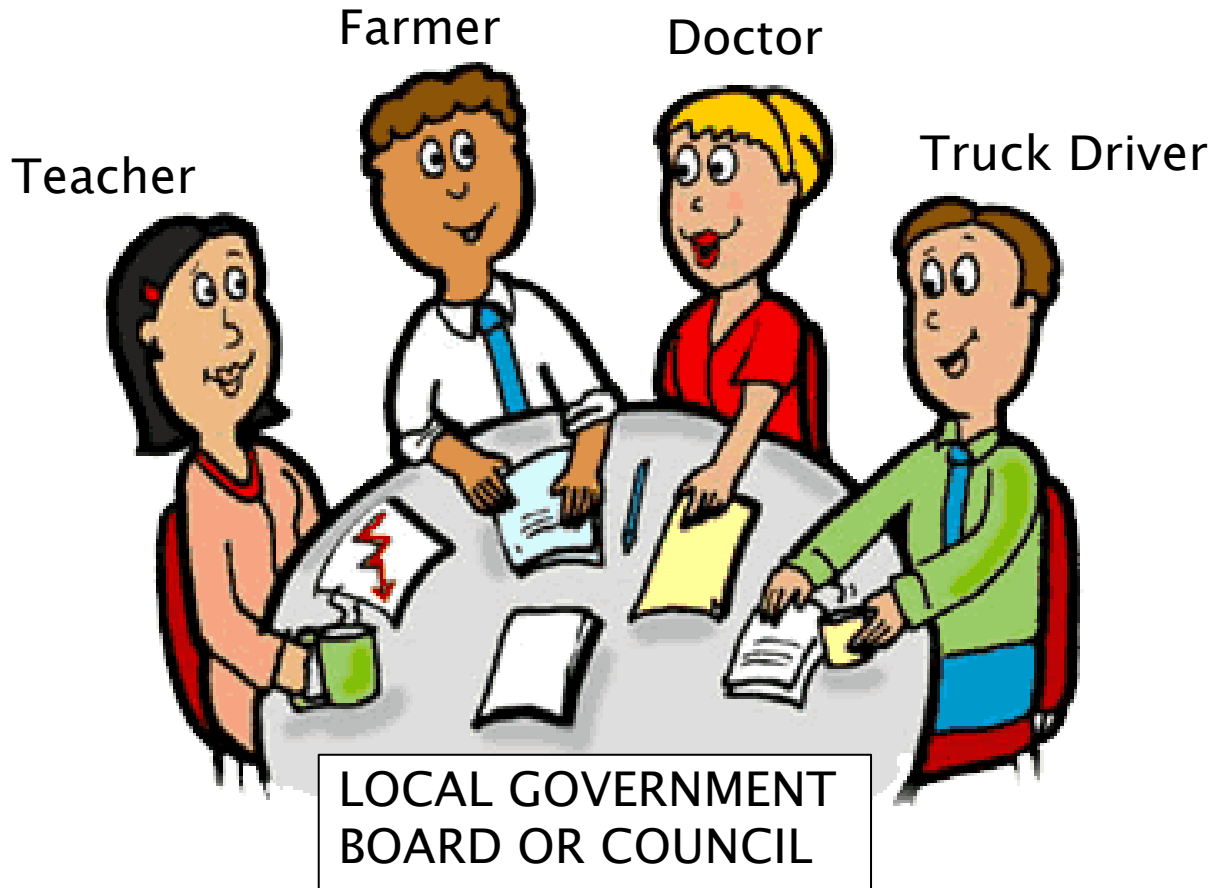


PHOTO: Dickinson County Road Commission



PHOTO: Dickinson County Road Commission

# What is the hinderance



- For most local agencies, the boards or councils are made of good people.
- They care about their communities.  
But.....  
*they are not Engineers.*

# What is the hinderance



"That's okay, I don't know what the chart means either."



# What is the hinderance

## CIVIL ENGINEERS



What my friends think I do.



What my mom thinks I do.



What society thinks I do.



What my boss thinks I do.



What construction contractors think I do.



What I think I do.



What I really do.

# What is the hinderance



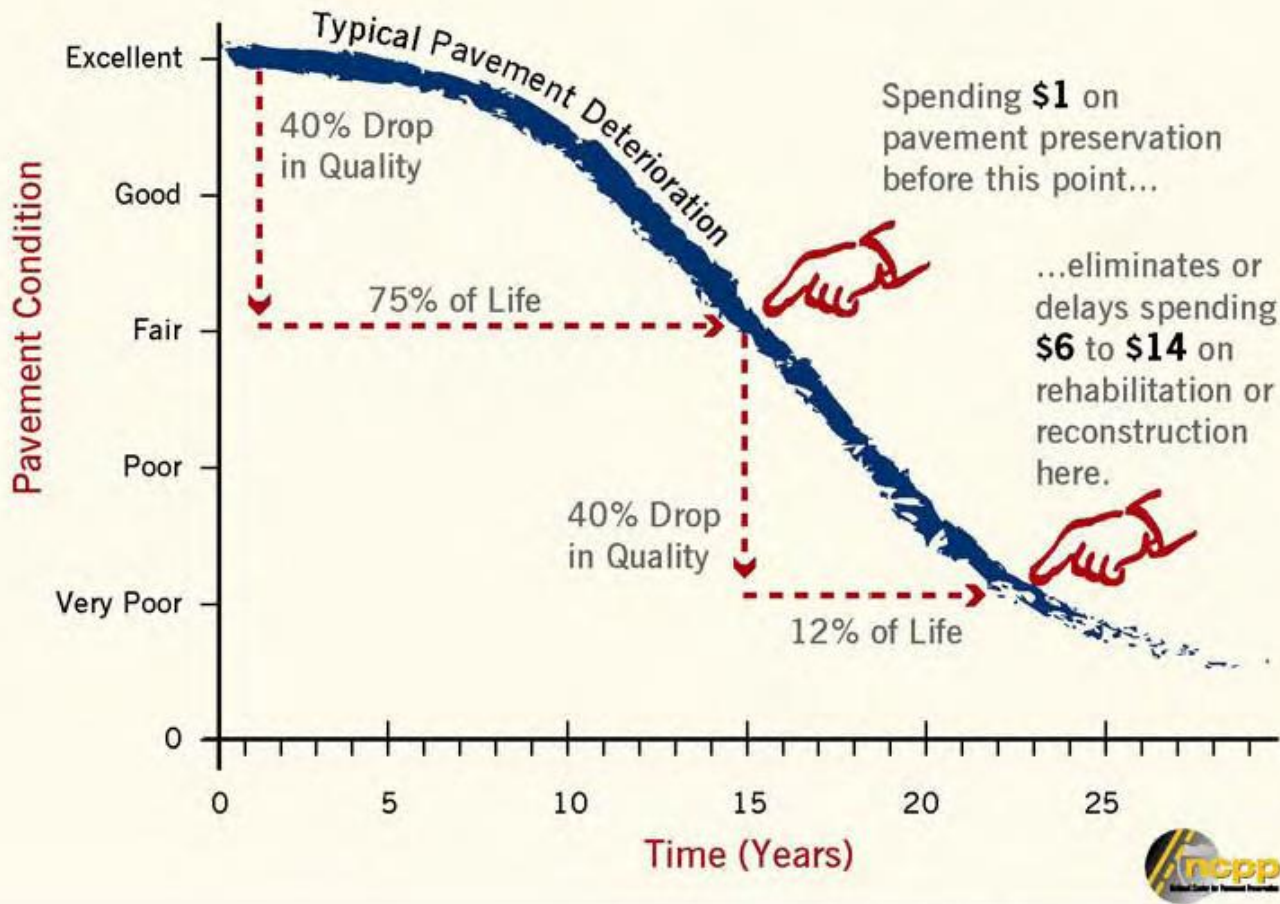
# Objections to Overcome

- ▶ That road isn't as bad as this one is?
  - *We are trying to keep it from getting that bad*
- ▶ We just paved that road a few years ago, now you want to go back?
  - *Yes. We are protecting our investment*
- ▶ We didn't budget it.
  - *Do you have maintenance and construction budgets? Preservation is maintaining the construction projects*
- ▶ Can we afford to preserve pavements?
  - *You can't afford not to*
- ▶ We never did it that way before?
  - *The definition of insanity is doing the same thing over and expecting different results – Albert Einstein*

# How do we make this Last a Long time (preservation)



# PAVEMENT PRESERVATION IS COST EFFECTIVE



Source: National Center for Pavement Preservation.

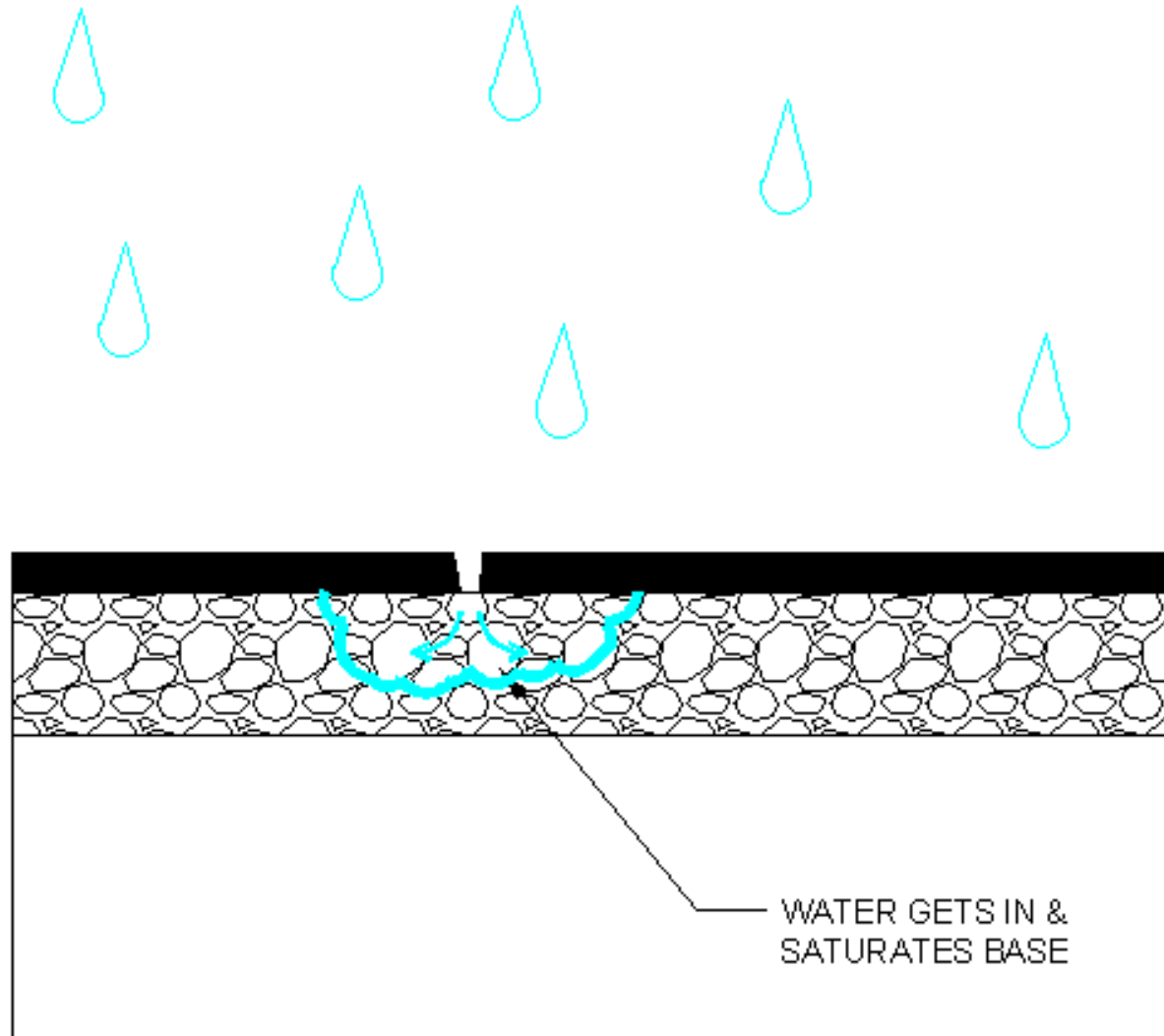
# Top 10 reasons a road goes bad

1. Freeze thaw.
2. Water
3. Heavy loads.
4. Traffic.
5. Low bidder system.
6. Non uniform materials.
7. Weathering.
8. Not designed to last forever. (Life design is 20 years ->total failure, so bad is somewhere around 8 -12 years.
9. Roads designed to be built as cheaply as possible.
10. Age.

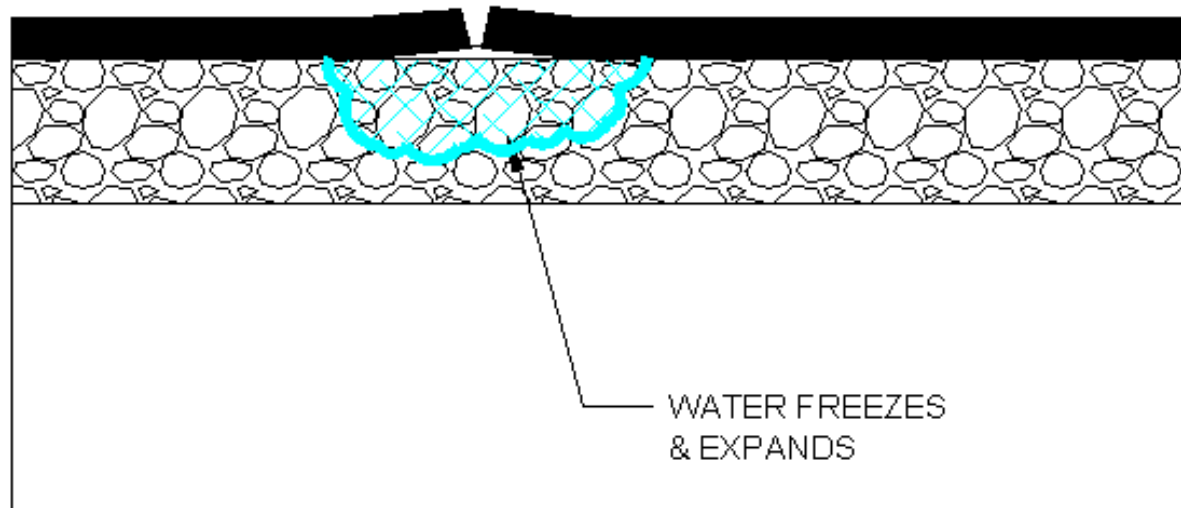


David Letterman in April, announcing his retirement from the "Late Show." Jeffrey R. Staab/CBS

# Lets look at freeze-thaw

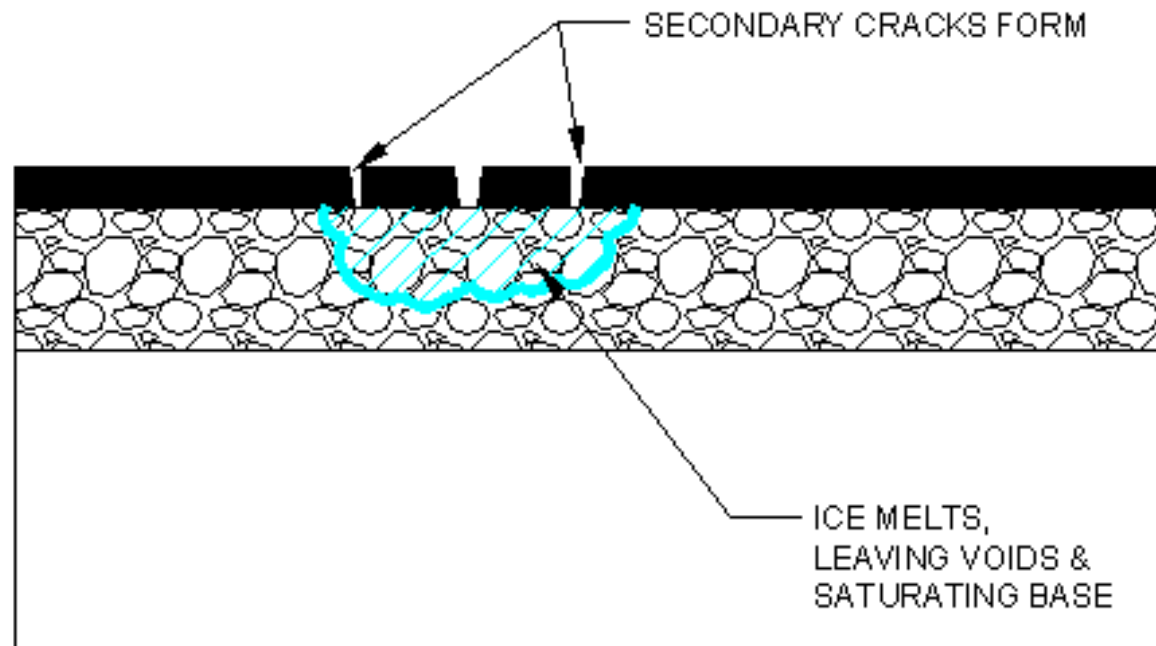


# Lets look at freeze-thaw





# Lets look at freeze-thaw



# Familiar Example - Automobile



What do you regularly do to keep driving a good, reliable, safe, car?

Gas    Replace Tires    Replace Brake Shoes    Replace Air Filter    Radiator Flush  
Oil Change    Wash    Change Wipers    Wax    Engine Tune-Up    Repaint

When do you perform these things?

What would you do if you had limited money?

# Familiar Example - Automobile



What do you regularly do to keep driving a good, reliable, safe, car?

Gas    Replace Tires    Replace Brake Shoes    Replace Air Filter    Radiator Flush  
Oil Change    Wash    Change Wipers    Wax    Engine Tune-Up    Repaint    New Radio

Reactionary

Get gas  
Replace tires  
Replace brakes  
Change wipers

Preventative \*\*

Replace air filter  
Radiator Flush  
Oil Change  
Wash  
Engine Tune-up

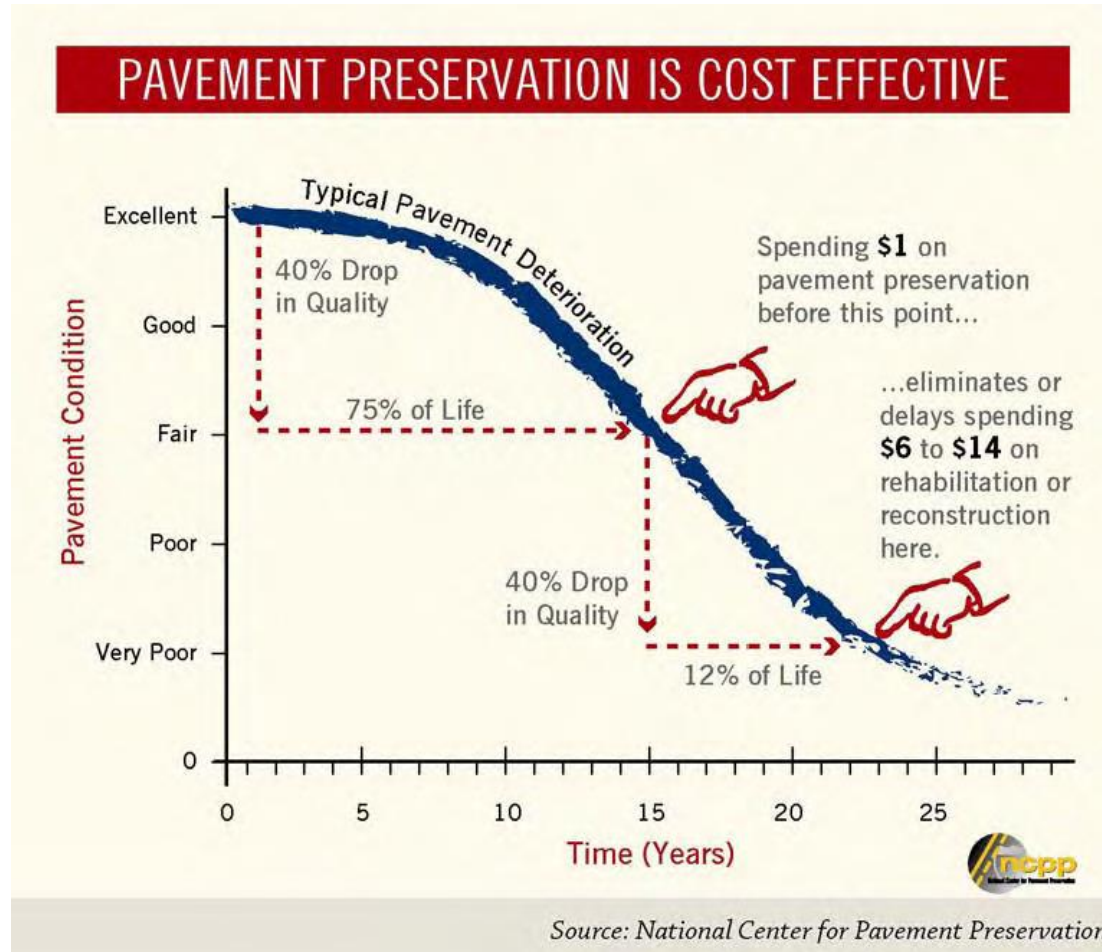
If I had time / money

Wax  
Repaint  
New radio

\*\*What would happen if you did not do these?\*

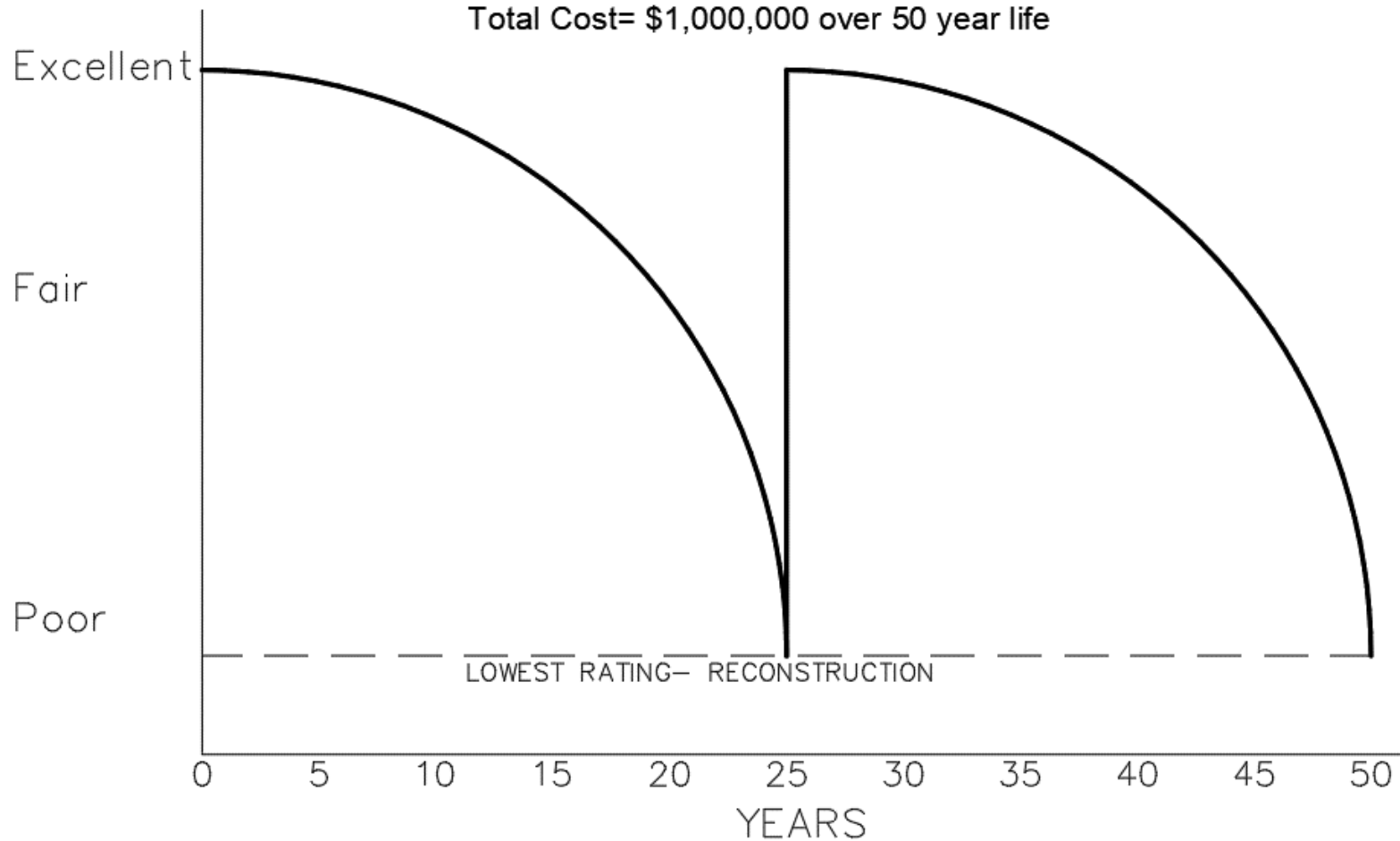
***If we don't fix the little problems,  
they become big costly problems***

# Apply this to Roads



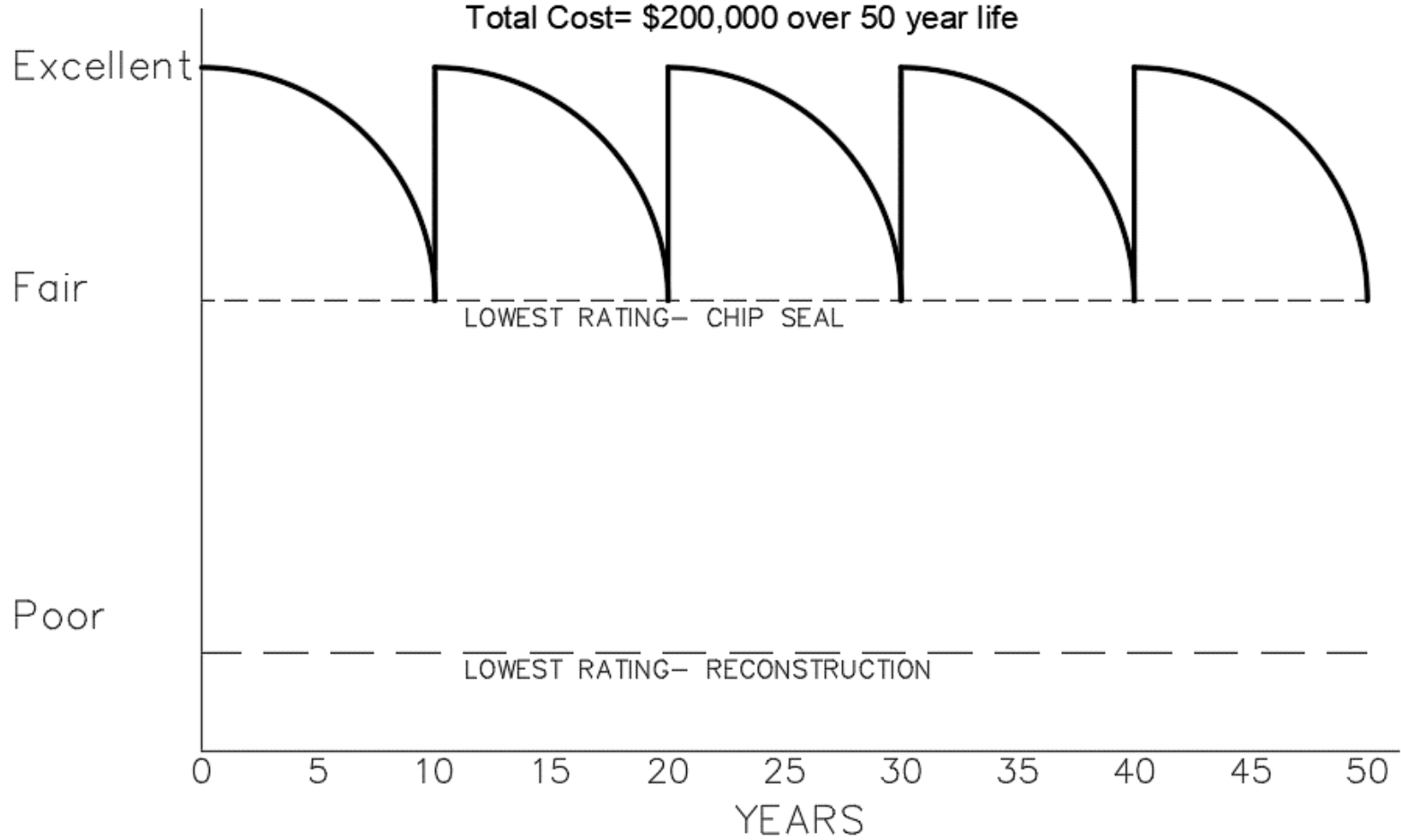
# Life & Cost of a Road

Reconstruction= \$500,000 per mile every 25 years  
Total Cost= \$1,000,000 over 50 year life



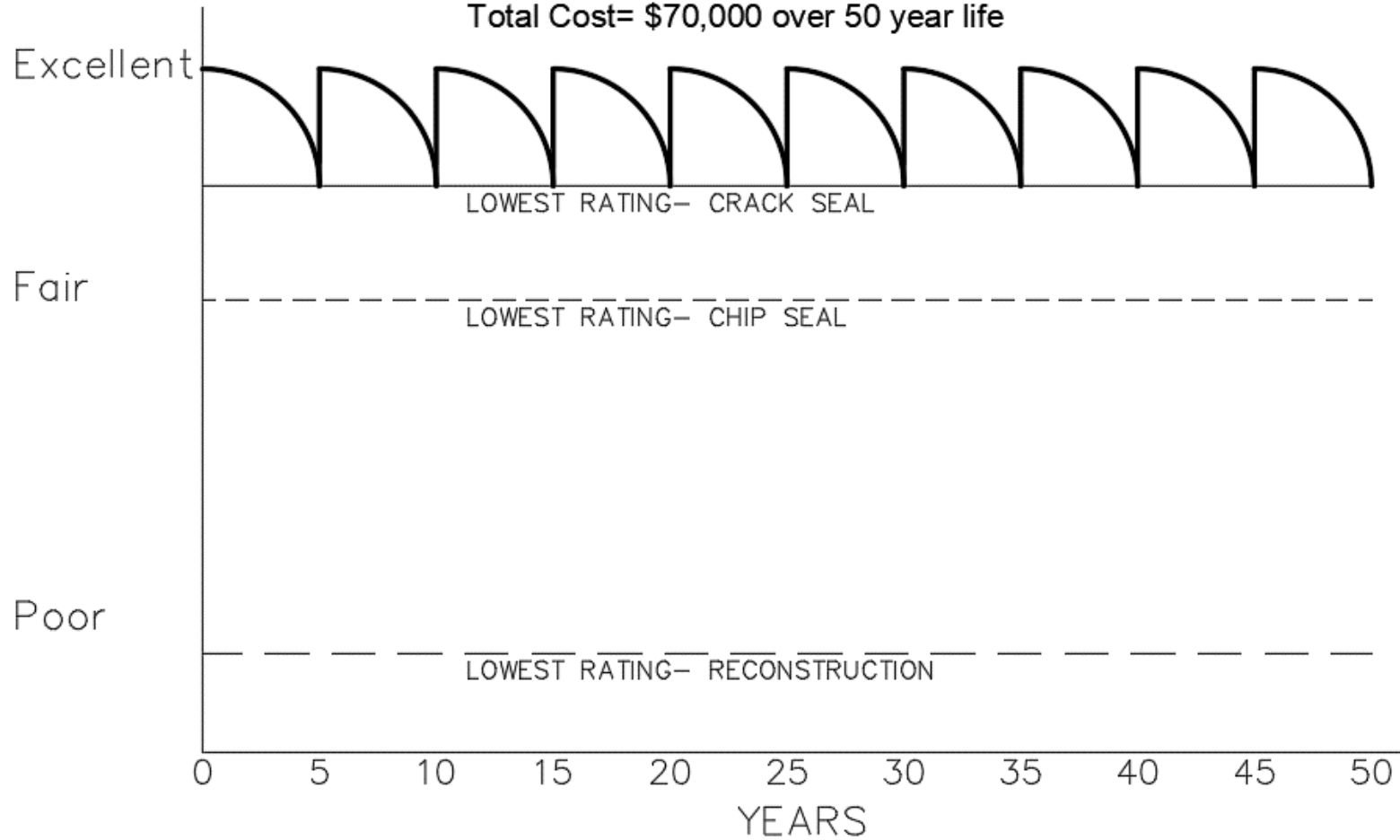
# Life & Cost of a Road

Chip Seal = \$40,000 per mile every 10 years  
Total Cost= \$200,000 over 50 year life



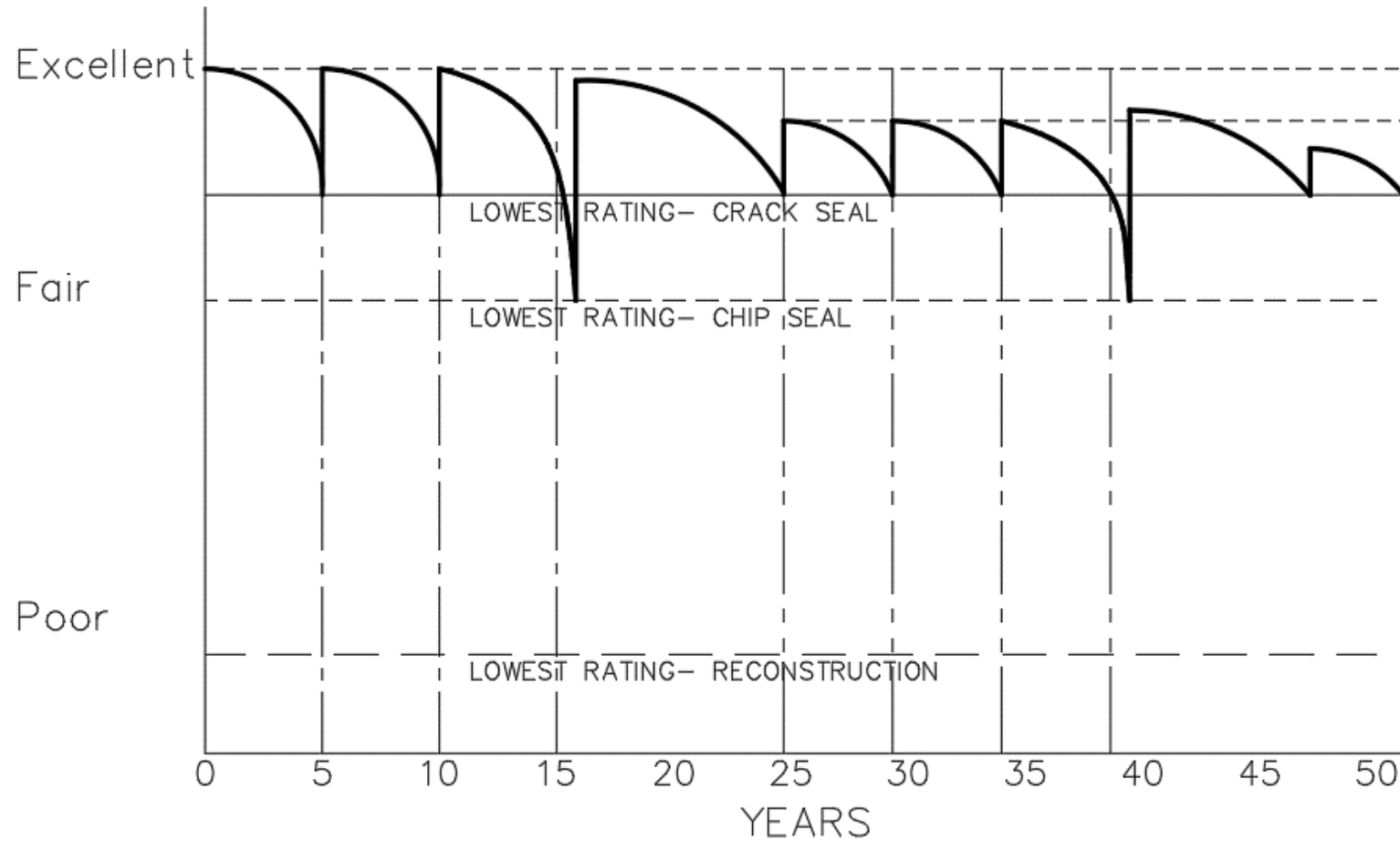
# Life & Cost of a Road

Crack Seal = \$7,000 per mile every 5 years  
Total Cost= \$70,000 over 50 year life



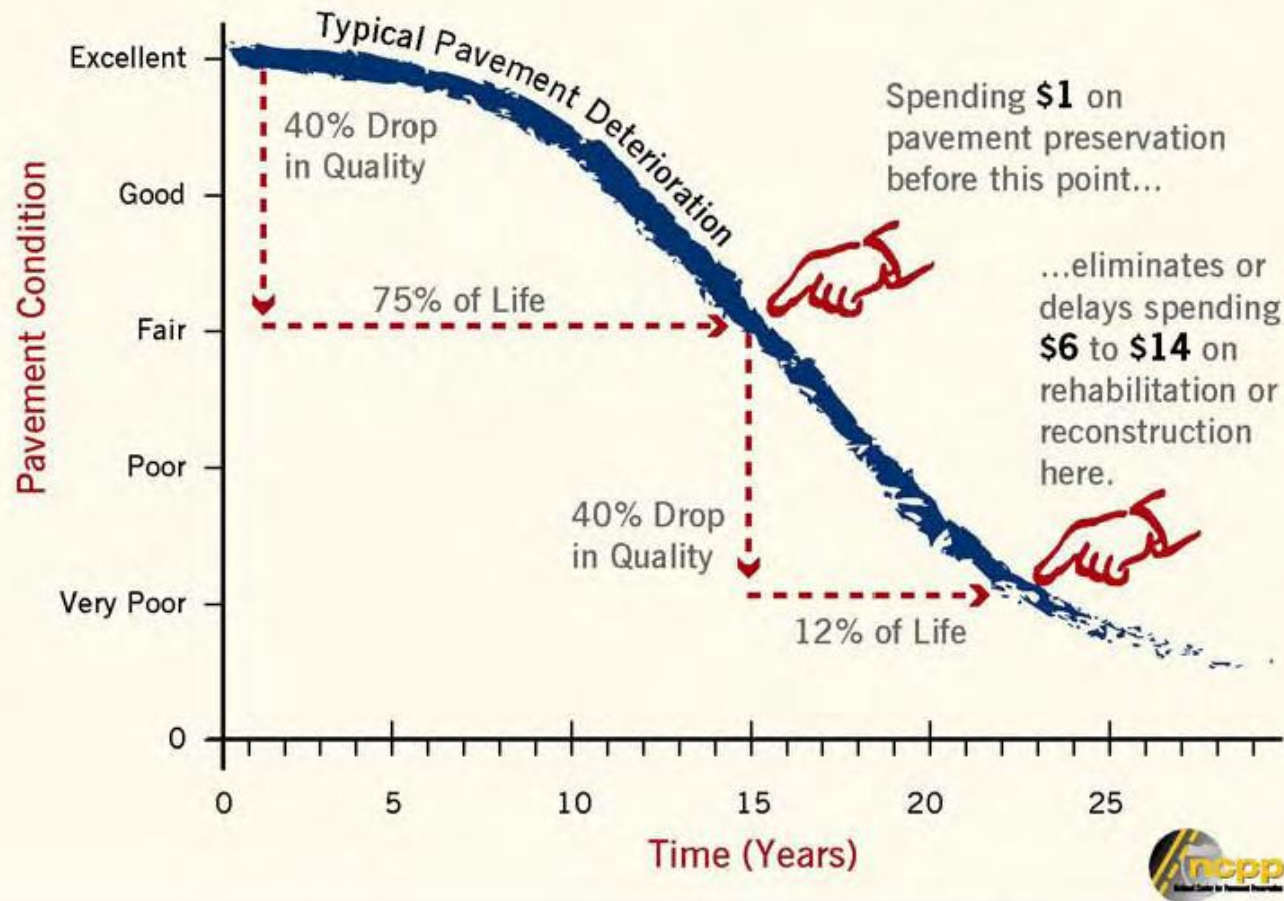
# Life & Cost of a Road

How it really works





# PAVEMENT PRESERVATION IS COST EFFECTIVE



Source: National Center for Pavement Preservation.

# Is this the right Fix?



# It's right fix at right time

- There is not one fix for every problem.
- **ASSET MANAGEMENT** is the **RIGHT FIX** in the **RIGHT PLACE** at the **RIGHT TIME**.
- **SOME GOOD LINKS**
  - Pavement Preservation Resource Alliance <https://roadresource.org/>
  - For Pavement Preservation (FP2) <https://fp2.org/>
  - National Center for pavement Preservation (NCP) <https://www.pavementpreservation.org/>
  - Transportation System Preservation Technical Services Program (TSP-2) <https://www.tsp2.org/>
  - ?National LTAP & TTAP? <http://www.nltapa.org/> - not for the national site as not much of interest there, but the links internal to each states LTAP & TTAP

# Familiar Example - Automobile

- There is not one fix for every problem.
- Not every fix is applicable for the situation.
- Asset management for a car is deciding when to do which fix to prolong the life of the car, and when to get a different car.
- **ASSET MANAGEMENT** is the **RIGHT FIX** in the **RIGHT PLACE** at the **RIGHT TIME**.

*THE SAME IS TRUE FOR ROADS.*

# Practical Applications?

- Routine maintenance (reactionary) – to help preservation
  - Use good quality materials, with proper installation.
  - Don't just fix an issue but solve a problem.
  - Watch your budget – Know when enough is enough and plan a preventative maintenance project.

# Too much patch?



# Practical Applications?

- Preventative maintenance (planned) – to help preservation
  - Do preventative maintenance
  - Use good quality materials, with proper installation.
  - Know your road conditions- this means inspect & document (data collection).
  - Give the road what it needs. (if unsure use a toolbox)

*A band-aid won't fix a broken arm, but it might make you feel better and buy some time.*

# Closing thoughts

- Over-build if you can
- Use good quality materials, with proper installation.
- In routine maintenance fix the cause so not chasing the effects
- Do preventative maintenance. Budget it.
- Be an educator of the board, the public, and whoever will listen.



# Closing thoughts



Posted in r/specializedtools by u/WeeklyBake



# Questions?



Lance Malburg, P.E.  
Engineer

E-Mail: [Lance@Dicknsoncrc.com](mailto:Lance@Dicknsoncrc.com)  
Dickinson County Road Commission  
Main: (906) 774-1588  
Engineering: (906) 774-1162

