

PRESERVE THE INFRASTRUCTURE
& SUSTAIN YOUR BUDGET

***Bring back our runways!
Addressing pavement weathering***

***New Changes to FAA
“P” Specifications***



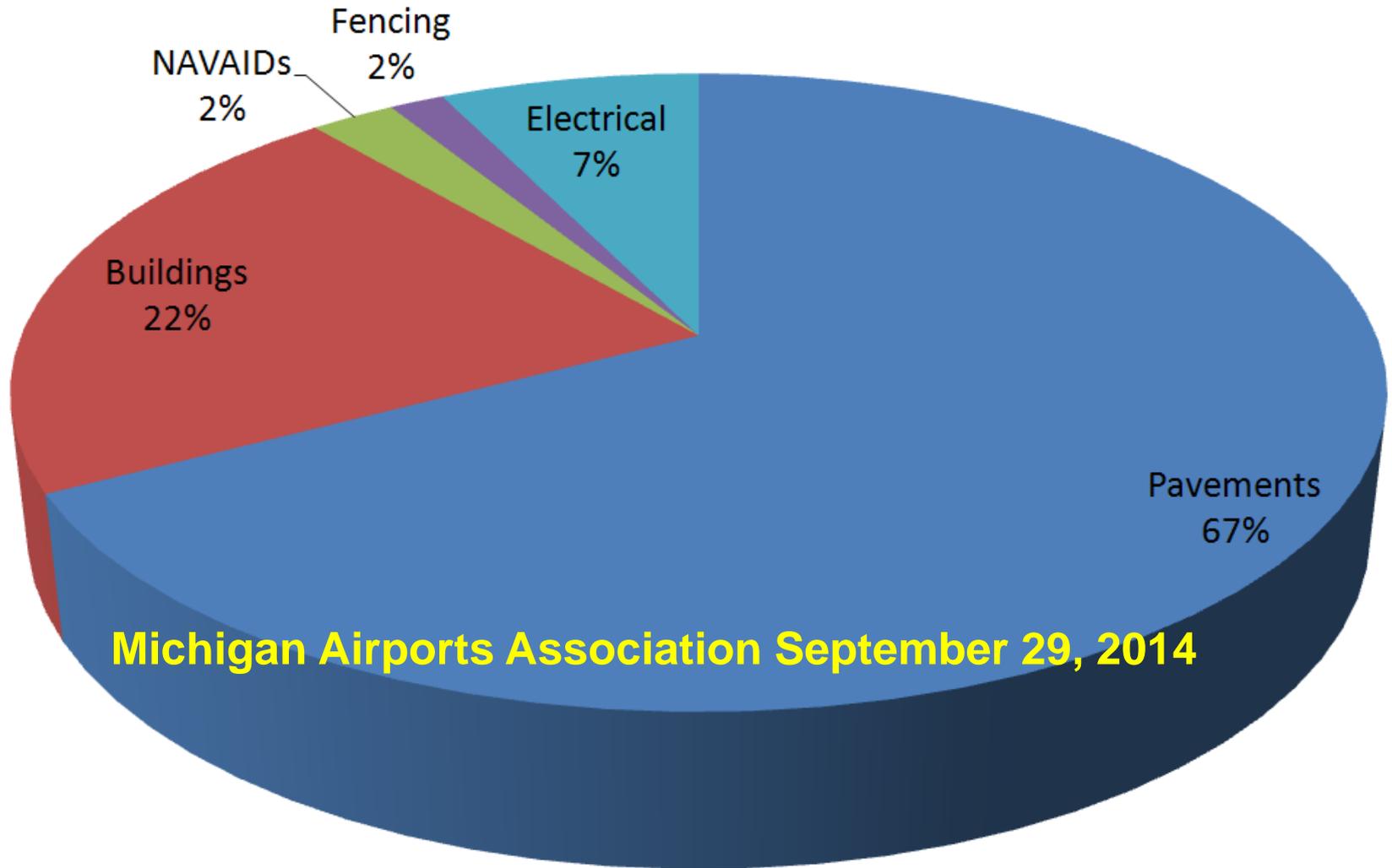


How???

Pavement Preservation!

SD Airports Conference March 19, 2015

Airfield Construction Cost Example



■ Pavements ■ Buildings ■ NAVAIDs ■ Fencing ■ Electrical

A yellow street sweeper truck is shown from a low angle, positioned on a paved runway or taxiway. The truck is facing left, and its large rotating brush is visible. The background consists of a clear blue sky and a flat, open landscape with some distant buildings and trees. The overall scene is brightly lit, suggesting a clear day.

In the face of:

Rising deficits

Declining tax revenues

Economic uncertainty

Public Mistrust

We must do more with less!

Preservation - Definition

- To keep...
 - alive, in existence;
 - lasting,
 - protect,
 - spare,
 - maintain,
 - keep possession of,
 - retain,
 - to prepare so as to resist decomposition;
 - to maintain and reserve for continued use;



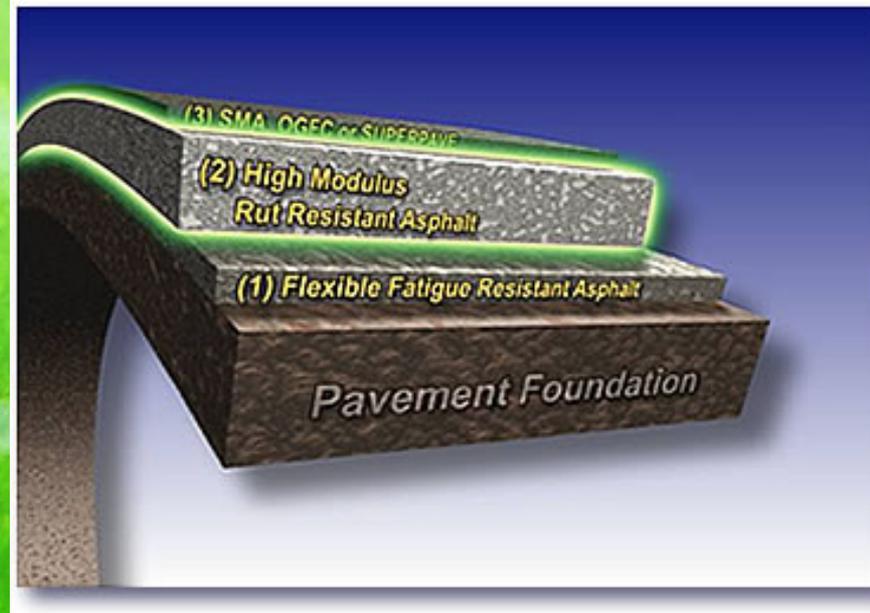
(Webster's)

Timely preservation ...

- **Prevent or delay** more costly activities until years later.
- **Keeping air travel safe for the public.**
- **Keeping Runways in their BEST CONDITION** for the longest period of time.
- ***Reducing the cost of investment.***

PRESERVE THE INFRASTRUCTURE
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What is the most important trait Of Asphalt Pavement?



FLEXIBILITY

PRESERVE THE INFRASTRUCTURE
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What have you got without it?

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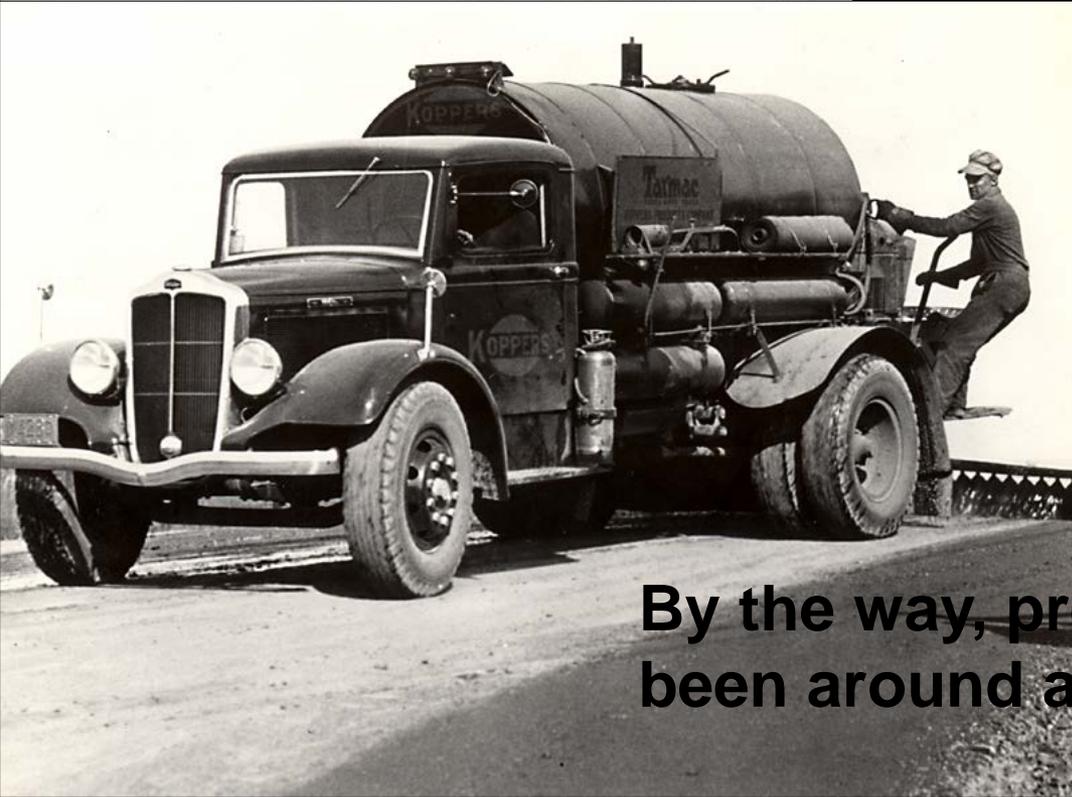
To do that....



■ **WE MUST START
SOONER!**

Binder Aging process

Loss of volatiles
Drying out - loss of oils
Hardening – less flexible
Becoming more brittle
Inflexible!



By the way, preservation has been around a long time...

Pavement Treatments

Two Basic Approaches (FAA)

- Coating - Lays on top
- Rejuvenator - Penetrates into matrix - becoming more common



FAA Advisory Circulars

On vs In



FAA "P-Specifications" for Sealcoating Airfield Pavements

FAA Funded Processes

P-630 Coal Tar (Coating - On)

P-632 Rejuvenator (Penetrates - In)

P- 626 Slurry (Coating - On)

P-608 Emulsified Seal Coat (Emulsified Asphalt Sealcoat - In)



Recent AC Changes

FAA "P-Specifications" for Sealcoating Airfield Pavements

More information can be found at:

http://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.current/documentNumber/150_5370-10

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P-608 – Emulsified Asphalt Seal Coat

- Penetrates into surface
- Eliminates aggregate FOD
- Works on PFC - OGFC
- Works on Grooved Runways
- Fast Cure
- No Tracking
- Friction Preserved

Coles County Airport 2nd Treatment₁₆



P-608 – Emulsified Asphalt Seal Coat

P-608 Emulsified Asphalt Seal Coat

- This specification covers the requirements for emulsified asphalt surface treatments (not coal tars products) *for taxiways and runways with the application of a suitable aggregate to maintain adequate surface friction; airfield secondary and tertiary pavements including low speed taxiways, shoulders, overruns, roads, parking areas, and other general applications with or without aggregate applied.*
- *The emulsified asphalt seal coat and sealer binder may be applied to new asphalt pavement and pavements in fair or better condition as defined in ASTM D5340 or advisory circular (AC) 150/5320-17, Airfield Pavement Surface Evaluation and Rating (PASER) Manuals. An emulsified asphalt seal coat and sealer binder without aggregate, more commonly called a “fog seal,” can be considered for use on pavements with low to moderate weathered surfaces as defined by ASTM D5340.*

Coles County Airport 2nd Treatment

<<<P-608 RUNWAYS>>>

- Emulsified Asphalt Seal Coat
- Go over existing markings
- Crack Sealing Done Prior
- Fast Cure – can open in just hours

Coles County Airport 2nd Treatment



P-626 Emulsified Asphalt Slurry Seal



- Asphalt Emulsion with aggregate
- Peel or de-laminate
- Issues with tire wear
- Severe FOD can occur



Changes to P-626 Emulsified Asphalt Slurry Seal

Item P-626 Emulsified Asphalt Slurry Seal Surface Treatment

- *This type of surface treatment is approved for use on general aviation airports serving small airplanes 12,500lbs (5670 kg) or less.*
- The Engineer, with FAA approval, may specify this item for airports serving airplanes 60,000lbs (27216 kg) or less.



P-630 Coal Tar

- **Fuel Spill Protection**
- **Environmental Issues**
- **Being phased out – banned in some areas of country**



Changes to P-630 Coal Tar

Item P-630 Refined Coal Tar Emulsion Without Additives, Slurry Seal Surface Treatment

- This type of surface treatment is ***approved for use on general aviation airports serving small airplanes 12,500lbs (5670 kg) or less.***
- The Engineer, with FAA approval, may specify this item for airports serving airplanes 60,000lbs (27216 kg) or less. With growing environmental/safety regulations, more states and local authorities are prohibiting the use of coal tar products.
- The Engineer must verify the selected materials comply with local authority requirements.



P-629 Thermoplastic Coal Tar

- **Fuel Spill Protection**
- **Checking, cracking**
- **Peeling - delamination**
- **Blacker longer**
- **More expensive**
- **Environmental Issues**



Changes to P-629 Thermoplastic Coal Tar

Item P-629 Thermoplastic Coal Tar Emulsion Surface Treatments

- ***This type of surface treatment is approved for use on general aviation airports serving small airplanes 12,500lbs (5670 kg) or less.***
- The Engineer, with FAA approval, may specify this item for airports serving airplanes 60,000lbs (27216 kg) or less. With growing environmental/safety regulations, more states and local authorities are prohibiting the use of coal tar products.
- The Engineer must verify the selected materials comply with local authority requirements.



P-630 Refined Coal Tar Emulsion

- Fuel Spill Protection
- Checking, Cracking
- Peeling - delaminating
- Environmental Issues



Changes to P-630 Refined Coal Tar Emulsion

Item P-630 Refined Coal Tar Emulsion Without Additives, Slurry Seal Surface Treatment

- This type of surface treatment is ***approved for use on general aviation airports serving small airplanes 12,500lbs (5670 kg) or less.***
- The Engineer, with FAA approval, may specify this item for airports serving airplanes 60,000lbs (27216 kg) or less.
- With growing environmental/safety regulations, more states and local authorities are prohibiting the use of coal tar products.
- The Engineer must verify the selected materials comply with local authority requirements.



P-632 Rejuvenator

- Add oils into matrix
- Sand added to blot excess oil (Pink???)
- Skid/friction concerns
- Tracking issues
- FOD (sand)



Changes to P-632 Pavement Rejuvenation

- *This type of surface treatment is approved for use on general aviation airports serving small airplanes 12,500lbs (5670 kg) or less;*
- *however, it is only recommended for use on pavements other than airfield pavements.*

GSB-88 Complies with P-608

***GSB-88 Adds binder to, &
becomes part of existing
pavement binder***

Traps heavy & medium oils inside

<<<Taxiways>>>

- Applied 55 degrees and rising
- Cure time 2 – 4 hours depending on weather
- Anti-Skid agent added
- Reduced Down - closure time
- Friction testing to assure safe operations
- Approved for use on ALL airfield Pavements

Coles County Airport 2nd Treatment

<<<Aprons & ...>>>

- **Tie Down Areas**
- **Hanger Areas**
- **Parking Lots**
- **Shoulders**
- **Run- Off areas**
- **FAA Approved for use on ALL airfield Pavements**

PFC & OGFC



Grooved



PRESERVE THE INFRASTRUCTURE
& SUSTAIN YOUR BUDGET

Aged 4 years

TECHNICAL REPORT
TR-2363-SHR

**EVALUATION OF A CORROSION CONTROL
MATERIAL FOR ASPHALT PRESERVATION
OF DOD AIRFIELD PAVEMENTS**

Prepared by
G.D. Cline

- ***Five Years***
- ***10 processes examined***
- ***200 locations***
- ***2,000 core samples***

May 2011

Annualized Cost

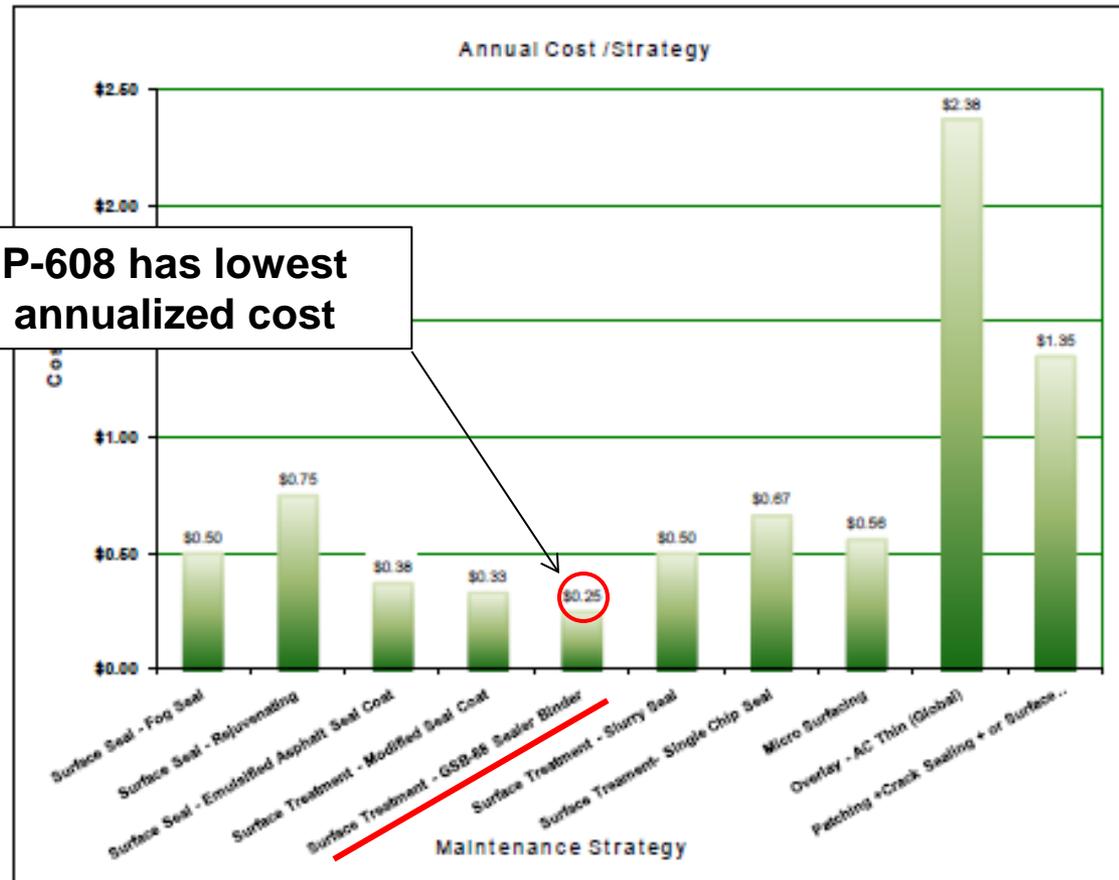


Figure 62. Annual Cost per Maintenance Strategy.

Cost - Benefit

Cost weighed against performance

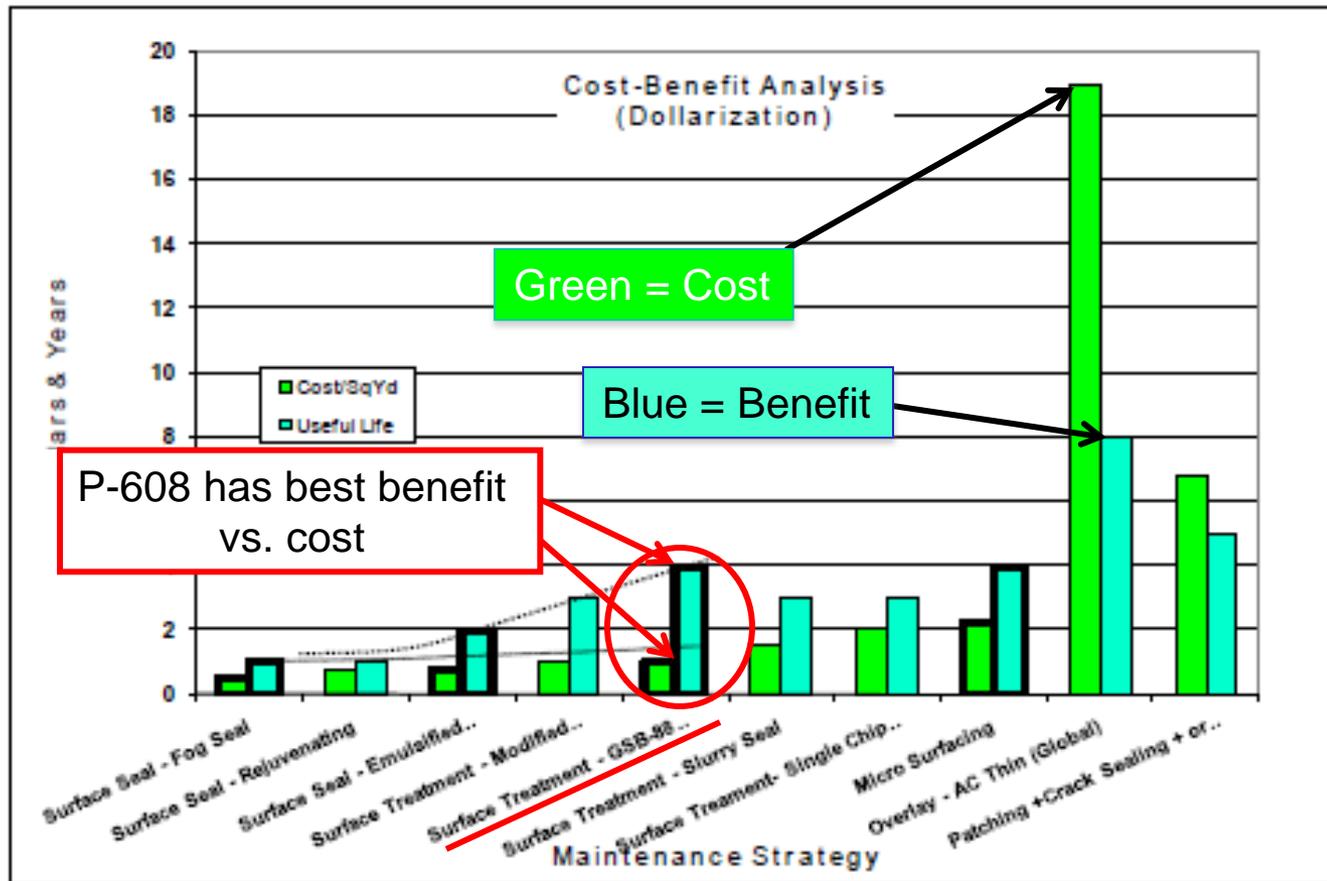
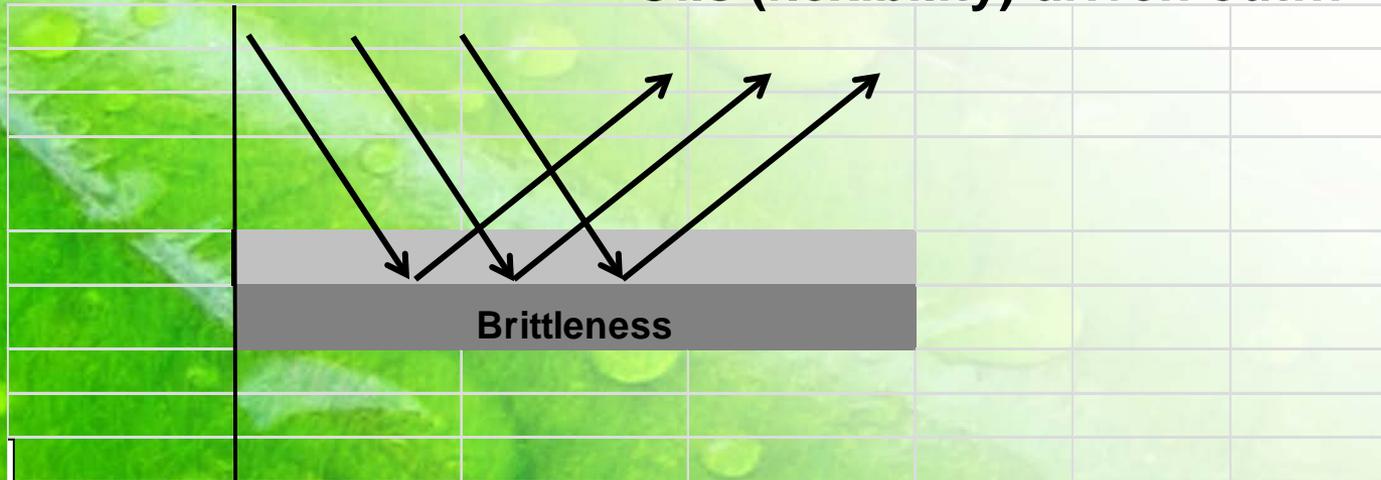


Figure 63. Dollarization Cost-Benefit Analysis.

Environmental impact on pavement

Sun, Rain, Snow, Heat, Cold, UV, IR

Oils (flexibility) driven out...

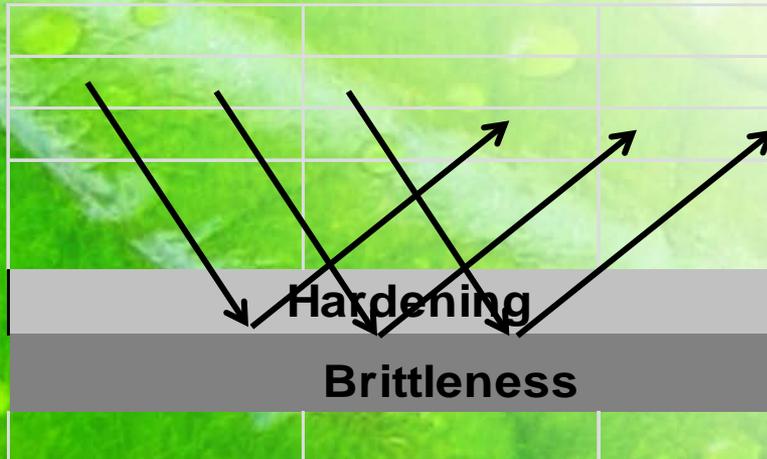


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Environmental impact when preserved

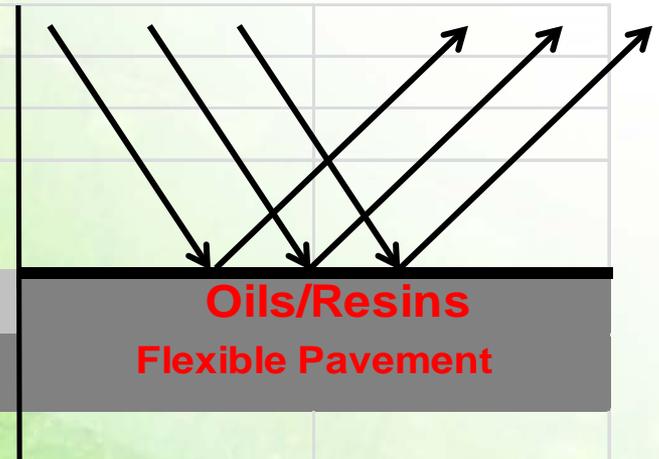
Sun, Rain, Snow, Heat, Cold, UV, IR

Un-Preserved



**Flexibility
Driven Out**

Preserved



**Resilience is
Preserved**

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Economics 101



Anti-Strip Agents \$\$\$
(asphalt)



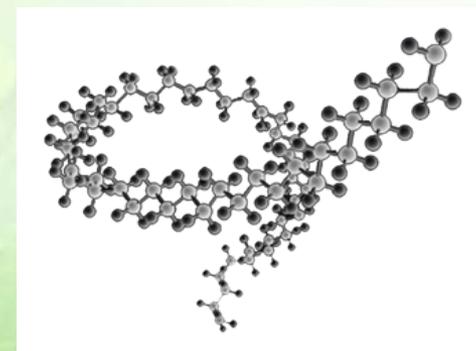
Epoxies \$\$\$ (powerful
bonding agents)



UV Inhibitors \$\$\$



•Anti-Oxidants \$\$\$
•Preservatives \$\$\$
(BHT, BHA)



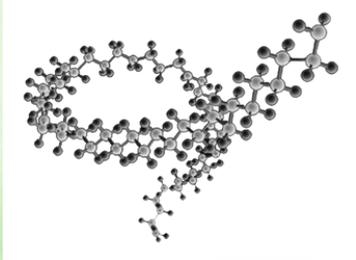
Polymers \$\$\$
(450+ plastics)

Modern Refineries

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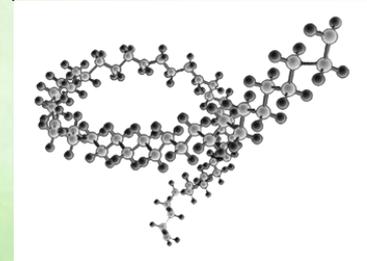
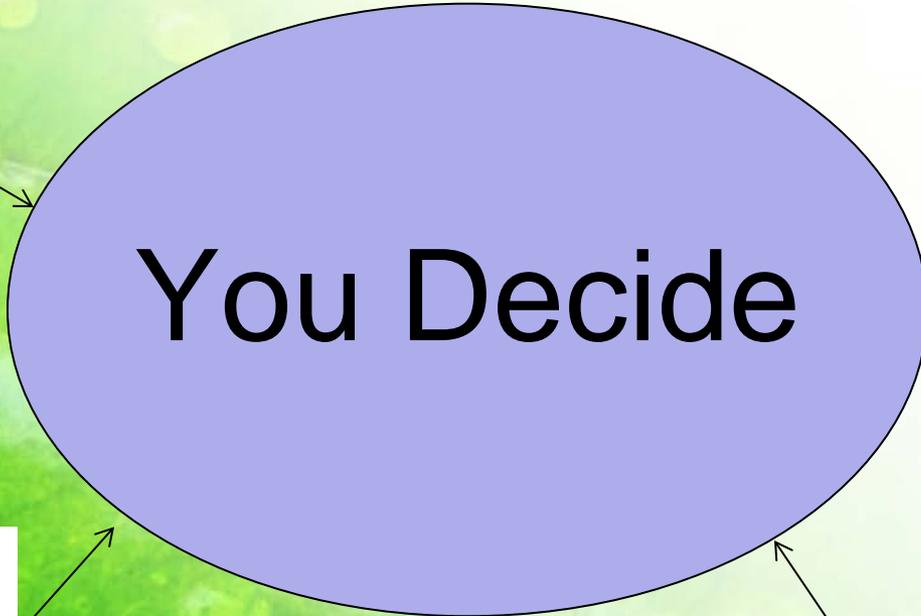


Sophisticated Technology...\$\$\$\$
Subtract over 1000 Chemicals
From Crude:
(Pavement Goodies are sold to the highest bidders for more \$\$\$ than AC!)





Is asphalt quality better today???



PRESERVE THE INFRASTRUCTURE
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Super-Refined Asphalt Binders?

Have they changed or are they the same?

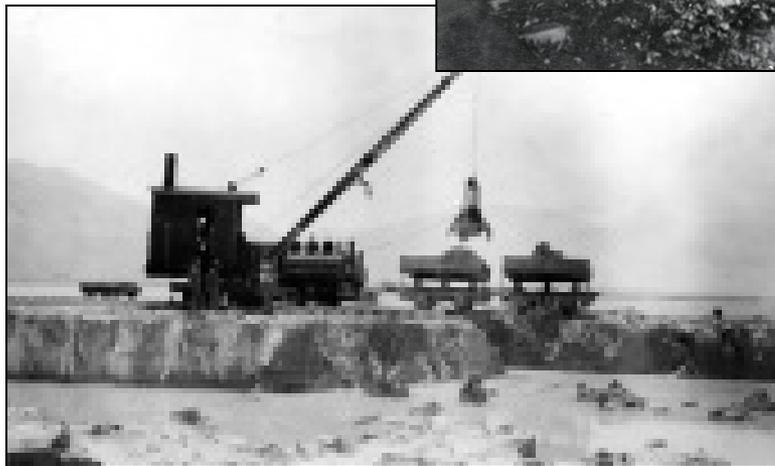
*Asphalt emulsions,
Fog seals,
PG grade binders,
Slurry seal
Chip seal (armor coat)
Crack sealants,
Crf, Crs-2P
Rejuvenators*



*What if you could by-pass this
process, leaving the good stuff intact?*

What's So Great About GSB-88?

In effect - GSB-88 has by-passes the refining process!



Binder like the good old days?

*What if you could by-pass the refining
Process and leave just the good stuff in?*



By utilizing Gilsonite Resin...

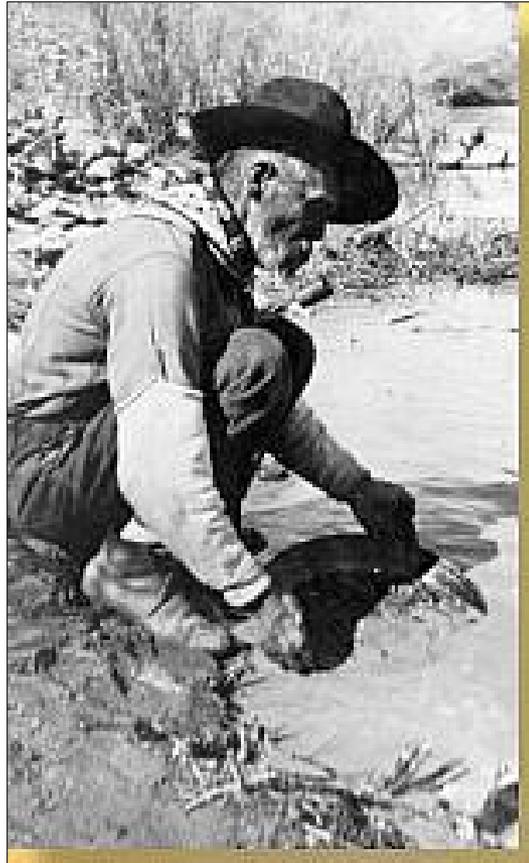
*a mineral asphalt ore
(petrified asphalt)*

- **99.85% pure asphalt cement**
- **High density molecular structure**
- **High in Nitrogen**
- **Balanced Asphaltenes & Maltene's**
- *(how did it get it's name?)*



Samuel Gilson - Prospector

Discovered glossy black “rocks” in 1885 in Vernal Utah while searching for gold, used today in over 1000 products



Later named after Him, “Gilsonite”



Gilsonite Resin...

- Pulverized
- Melted *into* a liquid with heat and solvent to make:



- GSB-78 (cutback)
- GSB-88 (Emulsion)



About GSB-88...

- **Complex cationic emulsion (9 components)**
- **Rapid cure process**
- **Rejuvenating properties**
- **Balance of Binders *and* Oils**
- **Friction materials bonded on top...**

Documented

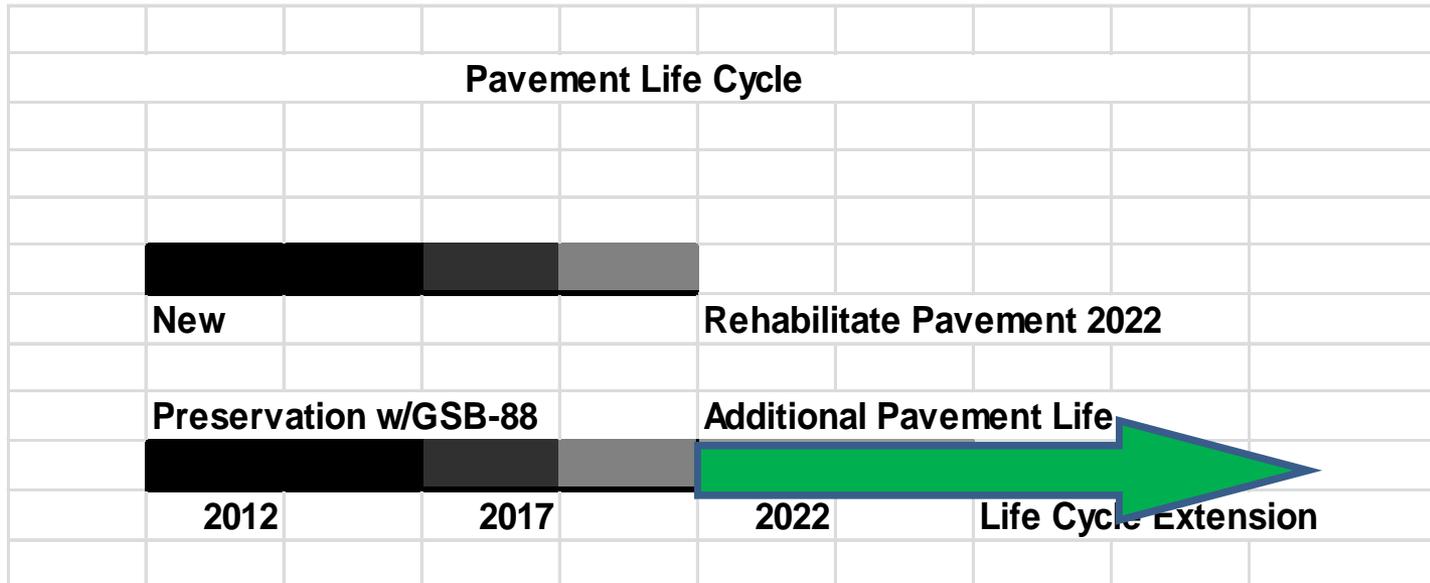
**GSB-88 has been applied to more than 400
FAA/Commercial & DoD Airfields**

- ***Applied Pavement Technologies, Inc.***, review of data indicates ***GSB-88 significantly reduced (some cases 1/2) rate of pavement deterioration extending service life to well beyond the design expectations.***
- This data supports overall pavement philosophy, “***early intervention of proven pavement preservation technologies produces the greatest long term benefits***”.



Life Cycle Extension

DOD DATA GSB-88 Doubles Pavement Life



MOST EFFECTIVE TIMELINE

(any asphalt pavement)

- At time of construction or...
- As soon thereafter as possible
- Any time pavement is structurally sound

Footnote - Preservation Will Not...

- Resurrect “Dead” Pavements
- Solve Structural Problems
- “Renew” Old Pavements
- Seal All Cracks

**It *IS* another tool for
your Tool belt that works!**



About Gee Asphalt...

- Experienced in airfield pavements.
- In business since 1950.
- Only utilize environmentally friendly products.
- Installed the equivalent of 100 – 5000 foot runways last season.
- Installed 120 million square yards (equivalent of 2100 runways) since 1973.

Our Cedar Rapids Facility

Preserve & Sustain our Infrastructure Pavements with P-608



www.geeasphalt.com

QUESTIONS???

