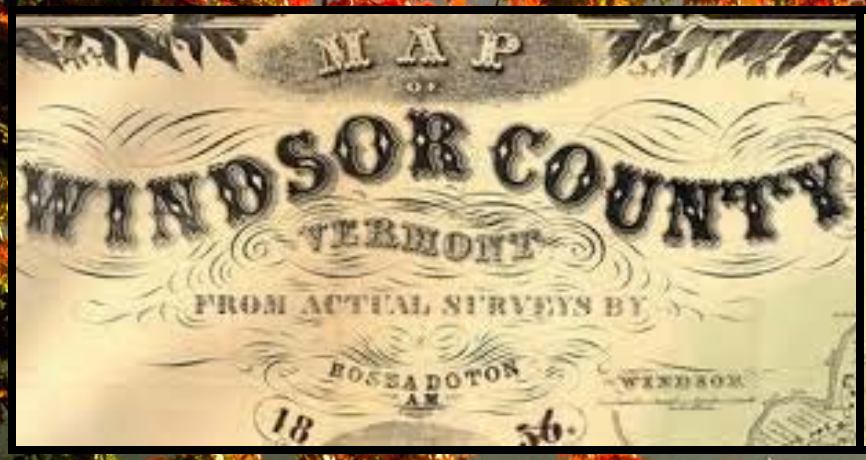

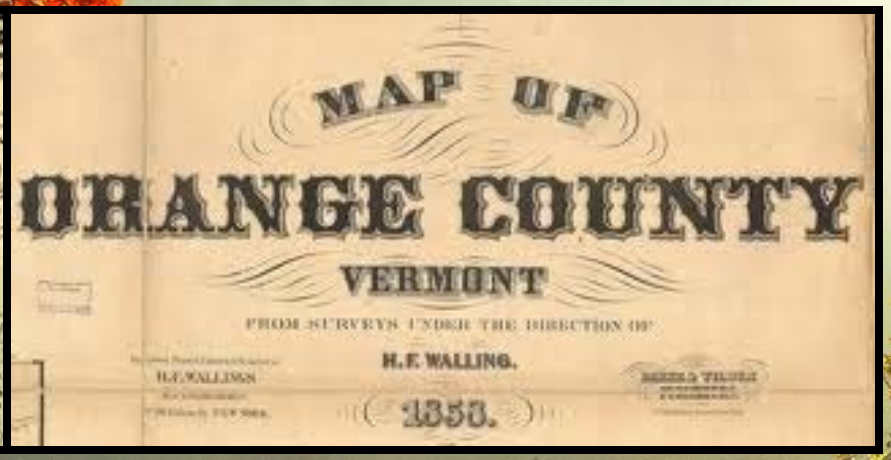

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Art Baker, Regional Manager

www.EgyptSons.com

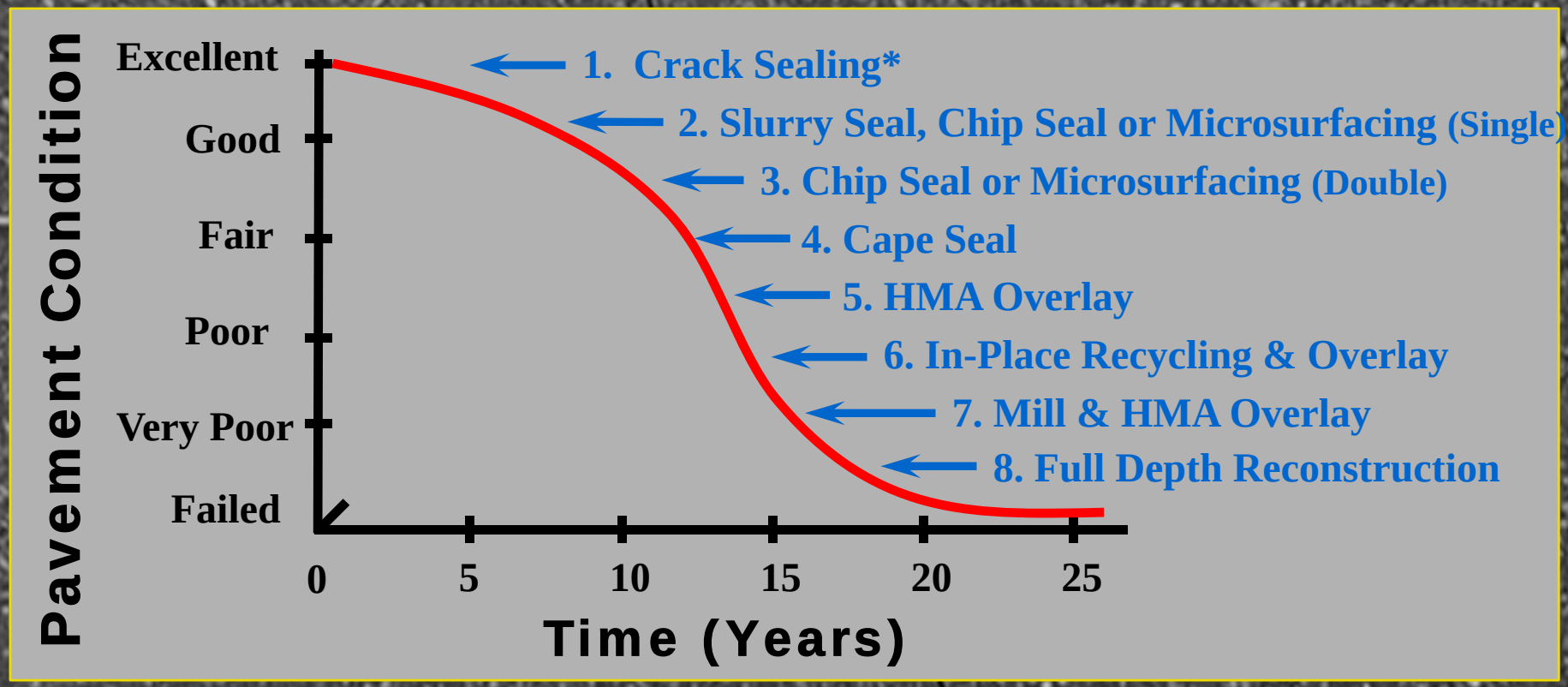
Crack Sealing Defined

Crack sealing is a rehabilitation **method** used to keep excess water or moisture from penetrating asphalt and to prevent further cracking and deterioration of roadway

Cover those cracks!

Asphalt Deterioration Curve
(An Unfortunate Fact of Life)

Applying the Right Treatment, to the Right Road, at the Right Time...



*** Crack Sealing to also be used in conjunction with other applications and as needed**

Types of Cracks

- Fatigue cracking /alligator cracking
- Low temperature cracking
- Block cracking
- Longitudinal cracking
- Slippage cracking
- Reflection cracking

Fatigue Cracking Causes

- Heavy traffic loading
- More loading repetitions than originally designed
- Repetitive overweight truck loads
- Inadequate pavement thickness

Potholes develop quickly in fatigue cracking

Low Temperature Cracking Causes

- Transverse / block cracks
- Large temp drops cause shrinkage
- Top down normally

Longitudinal Cracking Causes

- Parallel with road
- Heavy loads
- High tire pressures
- Joint separation

Will quickly lead to raveling and require much more extensive repair!

Critical!
CrackSeal
Immediately

Slippage Cracking Causes

- Poor bond between HMA and underlying layer
- At areas where vehicles brake, turn or accelerate

Only Option for repair is removal & replacement of damaged area

Reflection Cracking Causes

- Cracks or joints in underlying concrete pavement
- Low temperature cracks in the old HMA surface

Crack Seal PRIOR TO overlay to SLOW Reflective Cracking

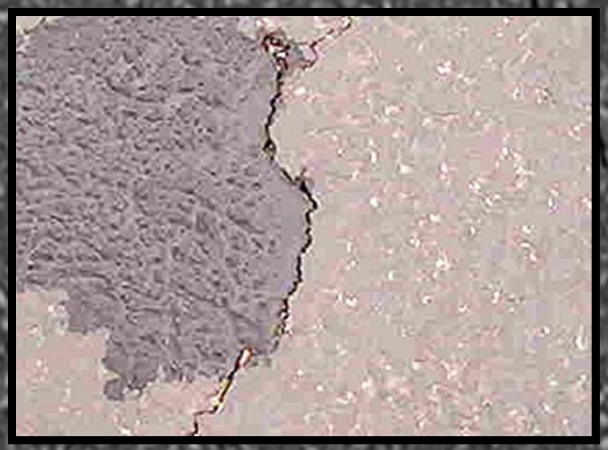
Why Treat Cracks?

" Cracks are inevitable, and neglect leads to accelerated cracking and potholing, further reducing pavement serviceability."

(FHWA-RD-99-147)

U.S. Department of Transportation
Federal Highway Administration

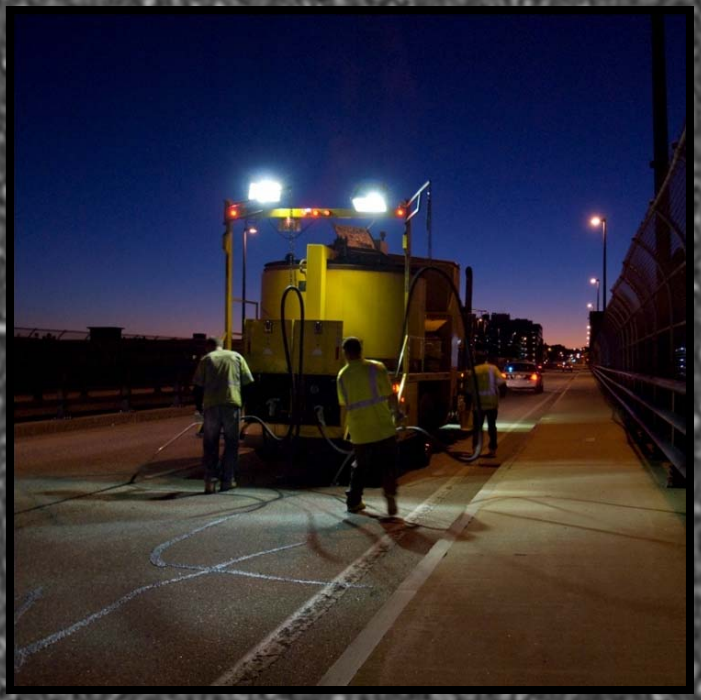
Why treat cracks?



Prevents water intrusion into the sub-base

Prevents incompressible intrusion
- improves ride quality smoothness

Why Treat Cracks?



"With proper and timely application, crack sealing and filling can extend pavement life, past the point where the cost-benefit of added pavement life exceeds the cost of conducting the operation."

(FHWA-RD-99-147)

U.S. Department of Transportation
Federal Highway Administration

What Cracks to Treat?

All Cracks! And, Soon!

Materials

- Emulsion
- Rubberized asphalt cement
  - ASTM D6690 (previously D3405)
- Asphalt cement with fibers
  - PG 64-22 with 5% fiber content
  - Modified PG 70-34 CMCR with 8% fiber content
- Mastic asphalt materials

Crack Sealing Methods

- Routed reservoirs
- Blow and seal application
- Saw and seal application (new pavements)
- Mastic repairs

Routing

- Rout at least 1/8” from each crack face
- Keep cutter centered over crack
- Carbide tip cutters

Routed & Flush-Filled with Squeegee

Proper Equipment – Routing

New Cutter

Worn Cutter

Worn Cutters will not provide a good reservoir

Blow and Seal

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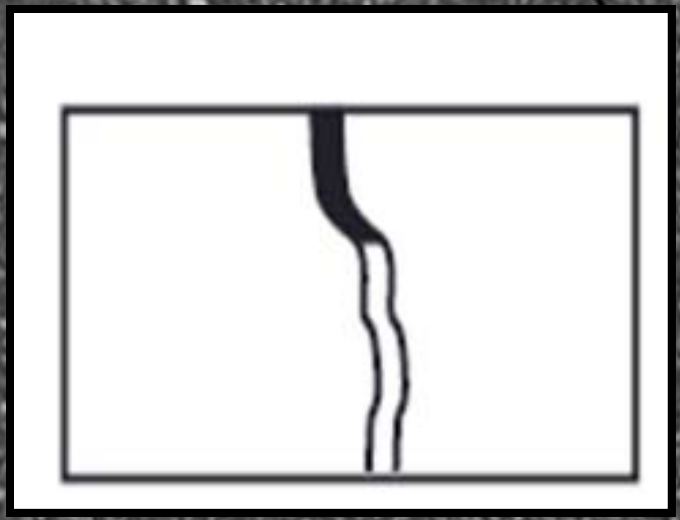
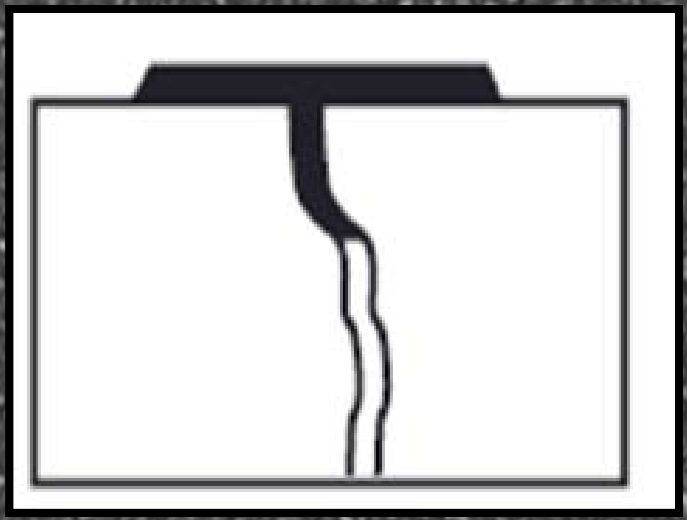
Two Basic Applications



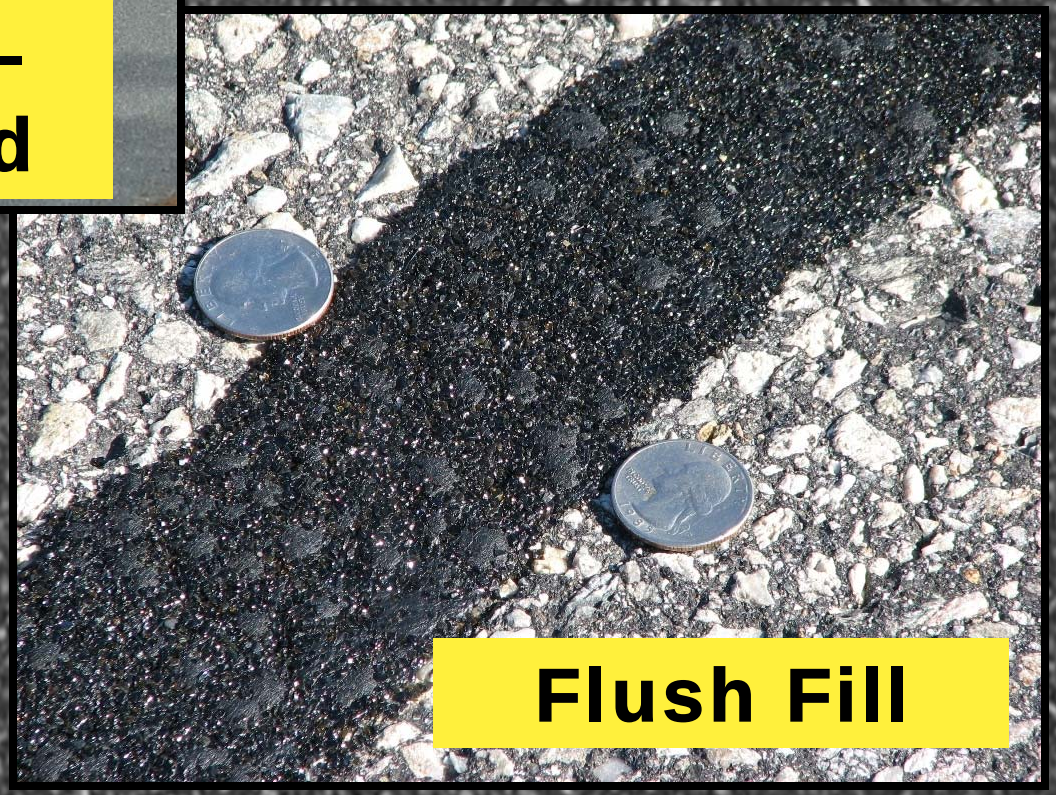
Flush Fill



Overband

- Disc applied
- Squeegee (rubber only)

Overband – disc applied



Flush Fill

Basic Requirements - *All Applications*

- Clean
- Dry
- Intact pavement
- Proper temperature
  - Pavement > 40°F
- Removal of all vegetation

Cleaning Methods

Unclean Crack

Clean Crack

Compressed air
sufficient pressure
and velocity

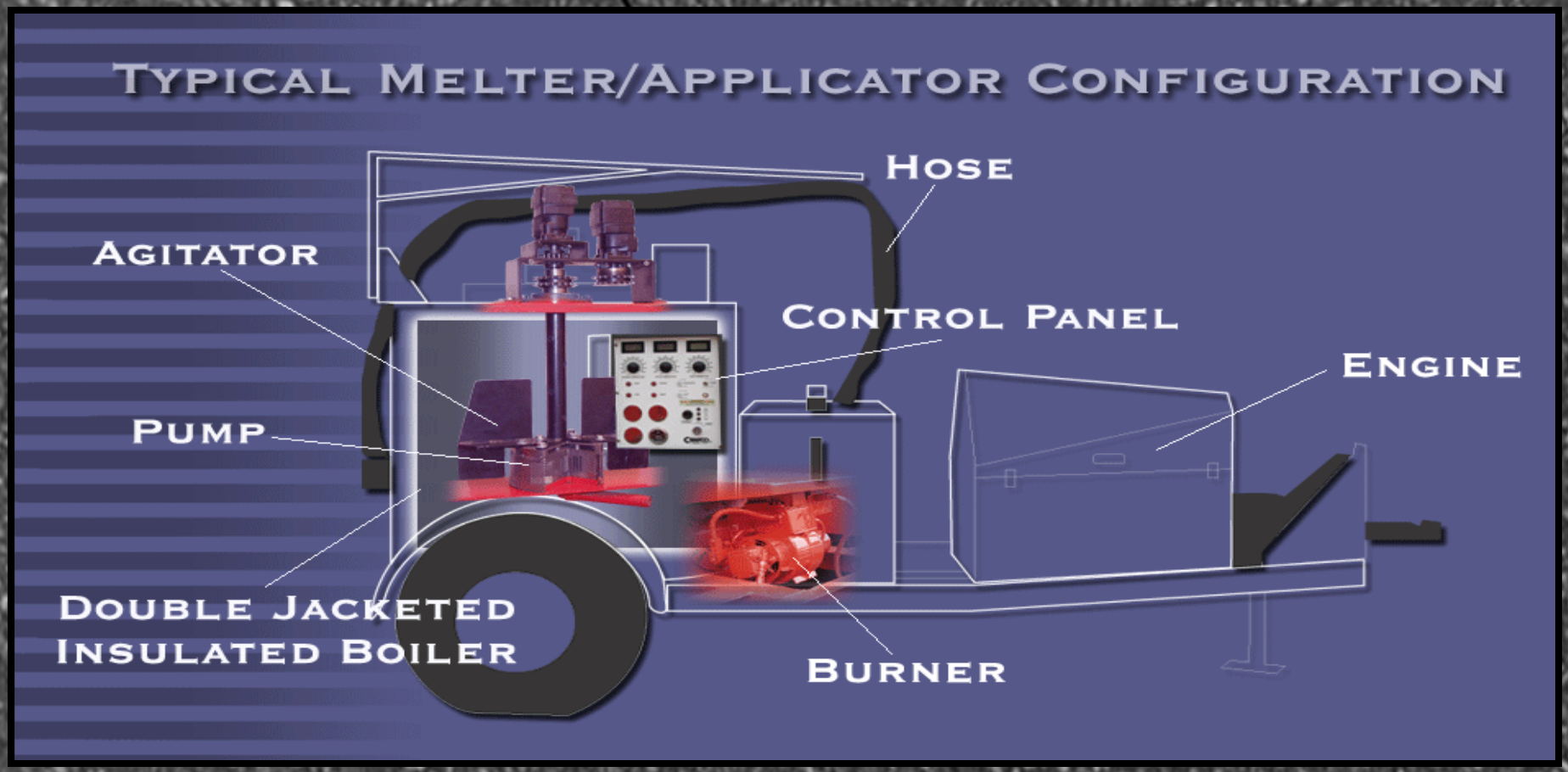
Mechanical
in combination with
compressed air

Heat lance
used to warm pavement
when needed

Proper Equipment - Melter Applicator

- Oil-jacketed
- Thermostatic heat controls
- Continuous agitation
- Continuous recirculation
- Over-heating safety controls
- Many manufacturing variations

Proper Equipment - Melter Applicator



Proper Equipment

Sloppy!
NEAT
CRACK
SEALING
is the
KEY!

Why Crack Seal? - *Summary*

- Crack Sealing is the most cost effective of all Pavement Preservation treatments
- Prevents water intrusion
- Prevents incompressible intrusion
- Improves ride quality smoothness
- Slows pavement deterioration

Thank you for your attention!

Sealcoating, Inc.
Innovative Pavement Preservation Solutions

Art Baker
Regional Manager
825 Granite Street
Braintree, MA 02184
413.262.7829 (cell)