Pavement Maintenance

- Repairing pavements for Roadways and Airports

- By: Greg Sharp

Over View

- Short Crack Sealing Discussion

- 3 Different Approaches to Fixing Pavement Distresses:

  - Hot Applied Mastics
  - Spray Patching
  - Cold Mix

Why Crack Treatment?

"Cracks are inevitable, and neglect leads to accelerated cracking and potholing, further reducing pavement serviceability."
(FHWA-RD-99-147)

WADOT Chip Seal Survey

(one year performance - hot-pour sealant)

- Unsealed cracks 98% reflective cracking
- Sealed cracks only 2% reflective cracking

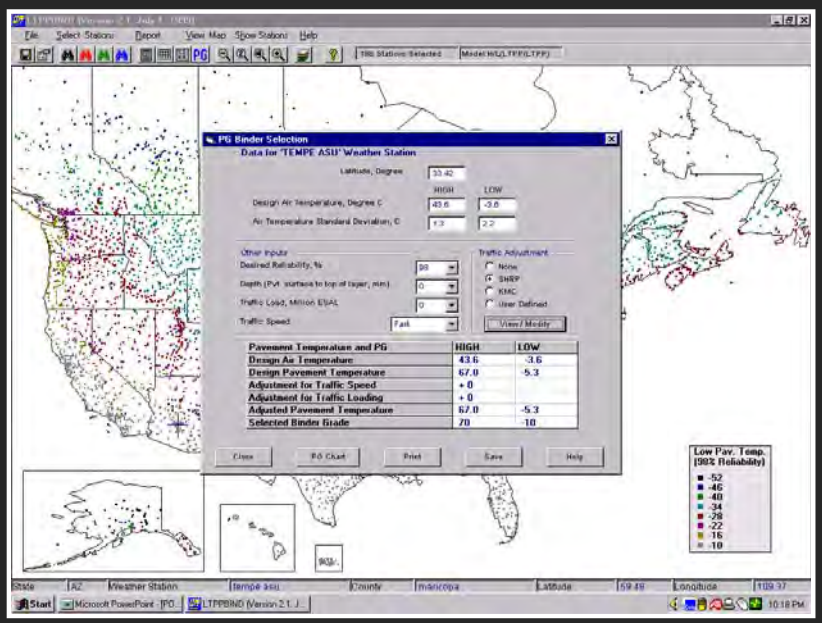
Crack type- fatigue

Same street- slurry seal treatment two years later

Crack Sealing
Things to Know

- Pavement must be clean and dry.
- Pavement must sound.
- Pavement temperature needs to be 40 degrees and rising.
- If not than a hot air lance should be used.
- Choose the right sealant.
- Crack sealant is effective when the crack is at least 1/8” but no more than 1 ½” wide.
- What kind of treatment are we doing, using a squeegee, a disk, a joint tip?
- Are we going to rout the cracks?

Proper Sealant Selection
LTPPBIND

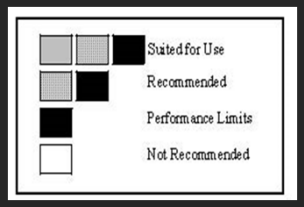


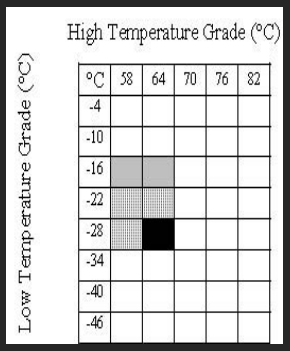
Choosing the Correct Sealant

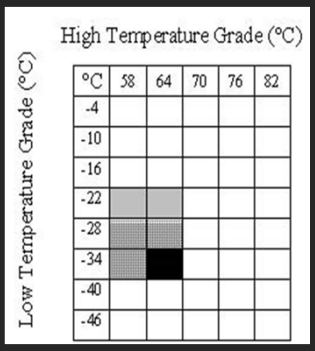
Temperature

Performance

Limits

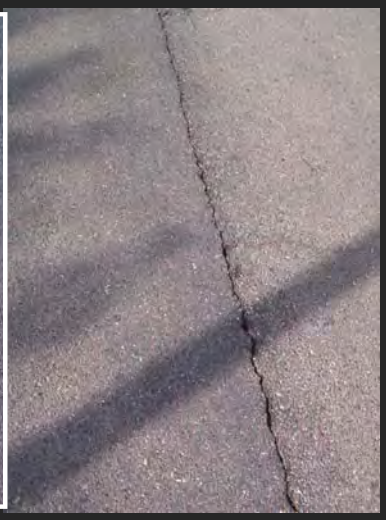






Correctly Applying Crack Sealant

Routing



Routing

- Rout at least 1/8” from each edge of the crack.
- Keep router centered over the crack.
- Reduce spalling by using as many cutters as possible .
- Keep cut clean by not using worn cutters.

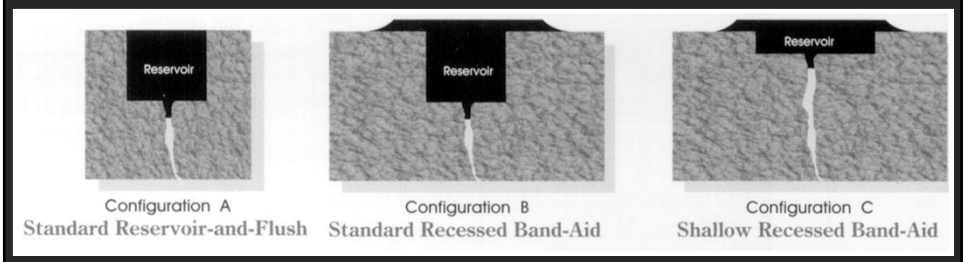
Advantages of Routing

- Cut away oxidized asphalt to get to good solid pavement for a better bond.
- Creates reservoir (pocket) to get more sealant in the crack for better expansion and contraction.
- More sealant in the crack and out of the wheel paths, protecting it from wear.

Advantages of Routing

- Maximizes Sealant Life:
- 2-4 Years service life with a band aid configuration.
- 5-8 Years service life in a routed crack
- We have seen more than 10 years of service with crack sealing in a routed crack.

ROUT SIZE RECCOMENDATIONS



POLYPATCH

PolyPatch: What is it?

- Hot-applied, pourable, self-adhesive patching material
  - has no voids
  - requires no compaction.
- Specially designed to fulfill demand for a cost-effective, high performance pavement repair product
- Used to remediate distressed areas between those areas that are typically crack sealed and those that require permanent patching procedures.

PolyPatch

... asphalt binder for crack sealing

Many types of distresses need to be repaired.

Standard Crack treatments will not address all the defects.

Remove and replace is costly and time consuming

Polymer Binder / Aggregate Blends

Advantages

- No Voids
- No Compaction
- 100% Seal the Surface
- Thin lift up to several inches
- Fast Set Time
- Good Skid Properties

Distressed Area Repairs

- Badly cracked pavement is a problem for thin surface treatments.
- The defects will quickly reflect through.
- Polymer Binder / Aggregate Blends mend the cracks, seal and bond the pavement together.

Repair Using Polymer Binder Aggregate Blends

Prep the surface

- Clean
- DRY

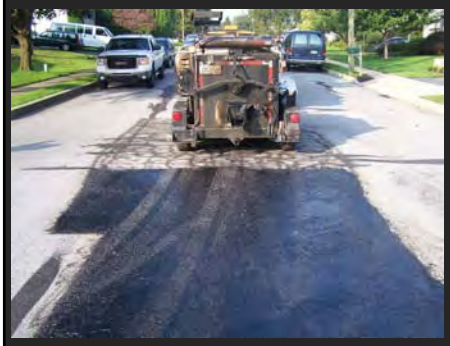
Repair Using Polymer Binder Aggregate Blends

- Pour the material
  - Can not pump this material.
- Spread with a lute
- Cover the complete area of the defect.

Repair Using Polymer Binder Aggregate Blends

- Use a torch and an ironing tool to seal the edges tight and correct any mistakes.

Repair Using Polymer Binder Aggregate Blends



Conventional Repair vs Remove & Replace Repairs

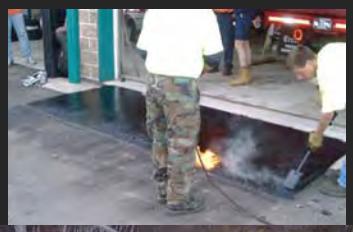
R&R Repair	Poly Patch Repair
3" Base + 1.5" Wear Course	1/2" Surface Wear Course
5 Labor	2 Labor
Saw	Patcher Melter
Backhoe	1 Small Truck
2 Dump Trucks	
Roller	
65 Sq Yds/ Day	***165 Sq Yds/ Day***
$48.00 /Yd	***$31.00 / YD***

Versatile Uses – Large Cracks

Cracks that are too large for standard sealants can be repaired.

Too Big for Traditional Crack Seal

Versatile Uses – Elevation Corrections



- With the ability to feather these materials you can correct elevations to create a smooth ride.

Versatile Uses – BIRD BATHS

Versatile Uses – Large Cracks

- Sunken Utility cuts can be leveled and sealed in one quick repair.

Advantages of Repairing Using Polymer Binder Aggregate Blends

- Less traffic disruption
  - Reduces preparation work required
  - No large equipment required like remove & replace repairs.
    - *Backhoe, Roller, Paver, Trucks…*
  - Less Labor Required
  - Opens to traffic in minutes.
- 100% sealed repair
  - Water is what make the base soft. Seal out the water and the base will stay firm.
- Thin applications can be used without desalination issues.
- Wide and Deep repairs can be made with the same material and equipment.
- Good skid resistance
- Improves the performance of the thin surface treatment

Thank you

Questions?

Magnum Model
P/N 91000

Materials

- Local Chip Seal Aggregate
- Local Emulsified Asphalt

Benefits

- Traffic Compaction
- No mechanical compaction required, rolling optional
- Up to 7 tons per hour application
- Less than one minute to repair pothole for traffic
- Can be used in damp conditions
- Forgiving process to environmental conditions

Solution For:

- Low, medium and high severity asphalt repairs of all nature

Usage:

Medium-High Severity Alligator Cracking

Potholes

Shoulder Repairs

Manholes

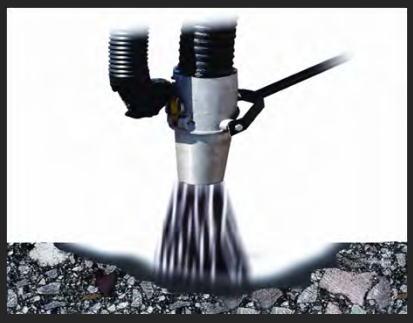
Application:

Step 1 Blow Out

High Velocity Air Removes Dirt, Loose Pavement, Water

Application: Step 2

Tack



Adhesion

Application:

Step 3 Fill and

Coated mix is applied under force from bottom up creating compaction

COLD PATCH

What Is Cold Patch?

- A plant produced cold mix which is a blend of quality construction aggregate and liquid cutback asphalt cement that is used for patching both asphalt and concrete pavements
- Cold patch, also known as cold mix, was first recognized as a way to make road repairs quickly because it can be applied right from the container without heating

Basic Components

- Performance Grade Liquid cutback AC
- High Performance Anti-Strip
- Top Quality Aggregate

Washed Aggregate

- Aggregate- most important!!!
- Must be fractured or crushed
- 5/16's minus
- Tested and approved by quality control lab before mixing.

Why?

- Cold mix does not require any special heavy rolling machines or special applicators as it can be shoveled or poured into a pothole or utility cut and tamped down with a hand tool.
- It can be used for emergency repairs or for temporary repairs.
- Opens to traffic immediately
- Convenient and easy!!!

What Types of Cold Mix?

CTemporary repairs
3/8” aggregate/ fines

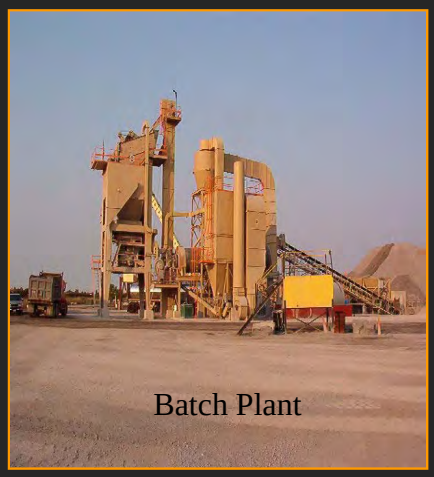
- Packaging
  Bags 45lb or 60lb
  Bulk / Ton
- Uses:
  Trench Plates
  Utility cuts
  Curb build up
- old Patch(SC800)

Permanent Patch

- Permanent repairs
- Aggregate 5/16” crushed washed no fines

- Packaging
  - 50 lb bag, Bulk / Ton

Manufacturing



Supervised

- Trained personnel provide “on-site” supervision of each production run

Work well in a variety of climates.

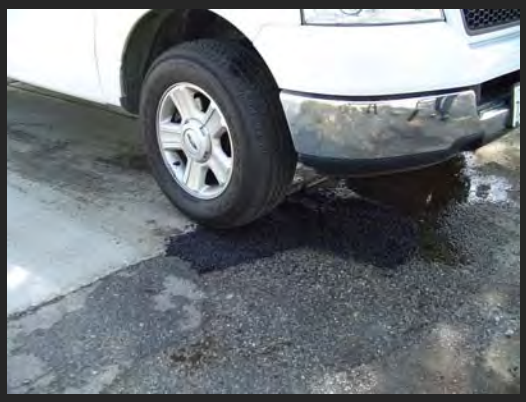
What makes Cold Mix Work?

- Air
- Compaction, (Traffic)

Pot Hole can be Wet or Dry

Fill Pot Hole and Level
Apply in 2” lifts

Hand Tamp or Wheel Roll



Open to Traffic

Permanent Repair!

Unique Characteristics of High Performance Cold Mix

- They can be installed in a wet pot hole- will displace the water.
- They require minimal preparation
- They requires no tack coat
- They are guaranteed to perform as long as the surrounding pavement is sound.

LIMITATIONS

- Need confined vertical edges. They don't perform well in a bowl shaped pothole.
- Surrounding pavement must be in good condition.
- Constant water underneath will strip away additives.

Questions?