

# ASPHALT SPECIALISTS





**WELCOME**

**Inspecting &  
Troubleshooting  
Slurry & Micro Systems**


**Mike Heath**

NWPMA

Thursday, October 17, 2013

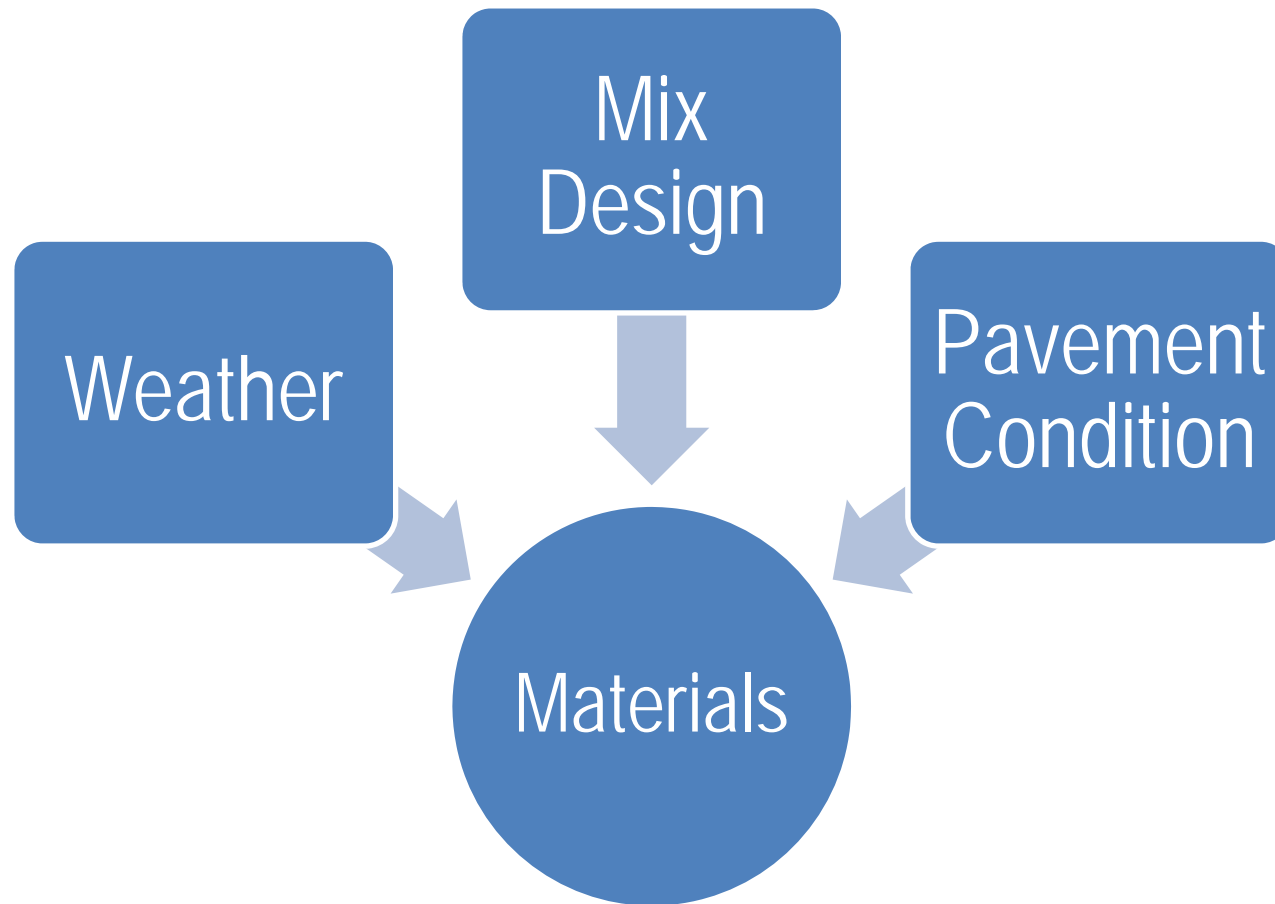
1:30 P.M.

# Troubleshooting Slurry & Micro Surfacing

- Problems
  - Causes 
  - Solutions
- Inputs
  - Mixing & Laydown
  - Breaking & Curing



# Inputs



# Weather

## Specification

- 8C (46F) & rising (CA)
- No rain imminent
- Ambient to be >2C (36F) for next 24 hrs
- Less than 50% humidity

## Practical

- Upper temperature limits
- Work through humidity, up until point of rain



# Mix Design

## Specification

- 25C (77F) lab environment
- No wind
- Tap water
- Ambient emulsion

## Job Conditions

- Rarely close to lab environment

Mix Design is a starting point, and illustrates that the system can work. It may have to be changed to address job conditions.



# Pavement Condition

## Specification

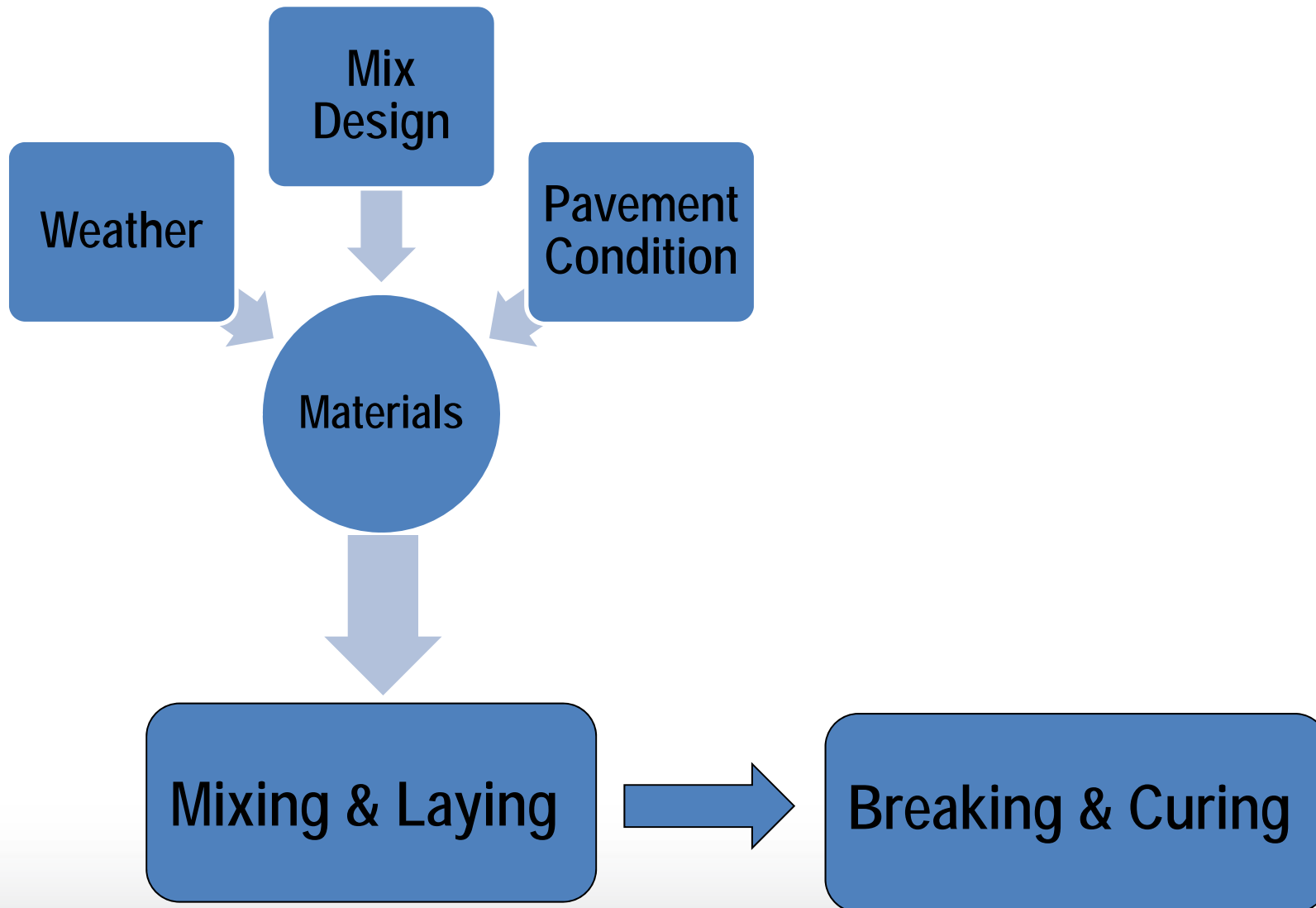
- Clean road
- Dry cracks
- Manholes, etc. covered w/ BAR
- No dry aggregate spills

## Reality

- Alligator, or other cracking
- Structural integrity of pavement



# Factors During Construction





# Mixing & Laydown



- Mechanical energy
- Time in box
- Strike off effects
- Start-off – finishing
- Box upkeep



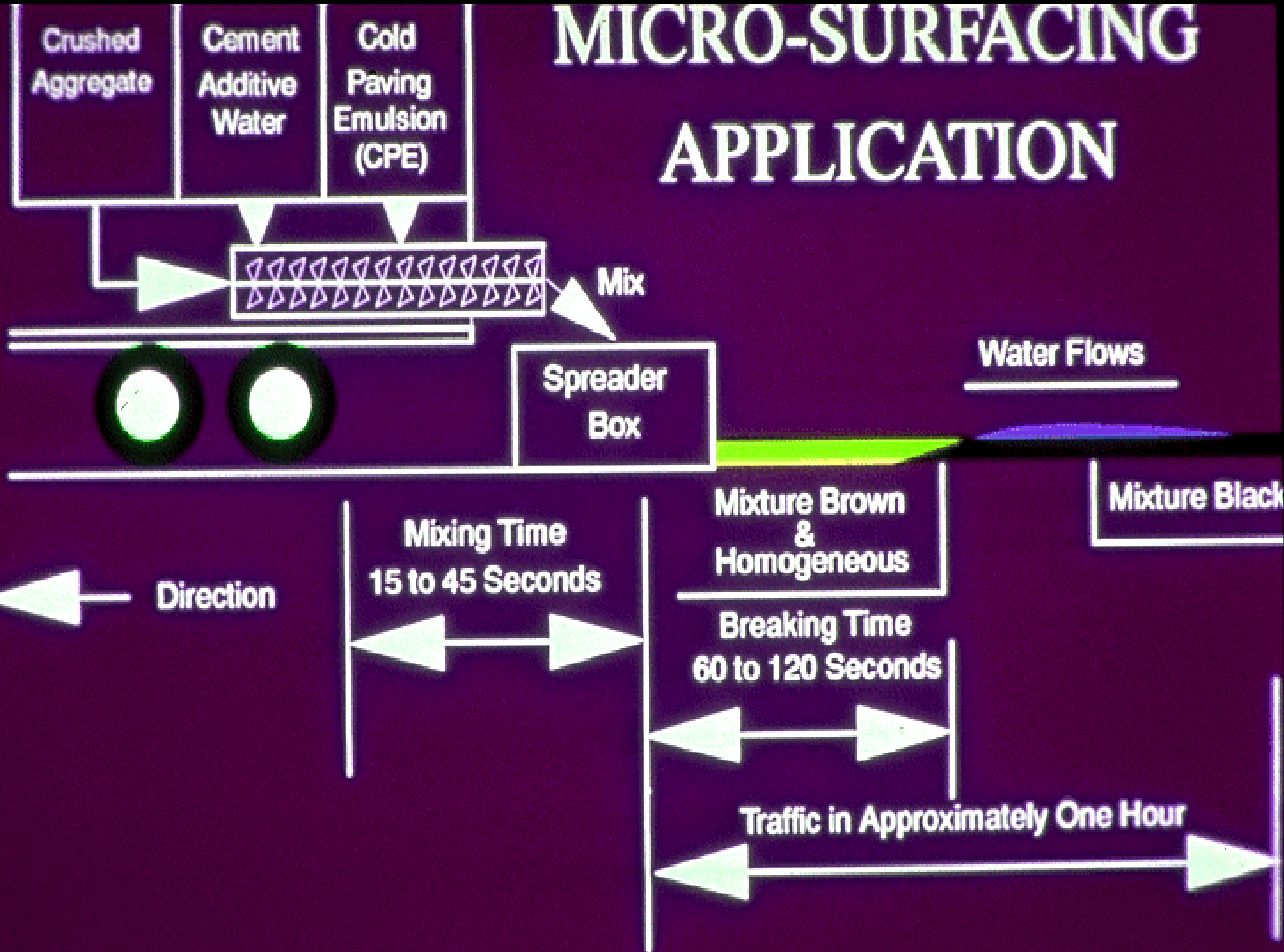
# Breaking & Curing



- Traffic effects
- Humidity & environment effects
- False Slurry



# MICRO-SURFACING APPLICATION



# Brown Mix

- Stable Emulsion
- Excess Retarder
- False Slurry
- Poor Emulsion
- Rain/humidity



# White/Grey Mix

- Excess cement
- Excess additive
- Grey/white rock
- Too little water
- High humidity



# Slow Set

- Stable emulsion
- Lack of cement
- Excess additive
- Excess water
- Aggregate
- Weather



# False Slurry



- Emulsion breaks onto fine aggregate
- Initial cohesion, then less
- Can correct with time, if traffic kept off



# Flushing

- Excess water
- Lack of emulsion
- Thin slurry





# Raveling

- Lack of emulsion
- Wrong amount of other materials
- Weather (to hot, to cold, rain, humid)
- Early traffic
- Aggregate/Oil Compatibility



# Delamination



- Dirty surface
- Spilled aggregate
- Wet surface
- Early standing traffic
- Fresh traffic



# Delamination

Structural Deficiencies



Early Standing Traffic



# Segregation

- Lack of cement
- Excess water
- Incompatibility



# Washboarding



- Rough, rippled texture, perpendicular to travel
- Low application rate
- Stiff strike-off
- Stiff mix



# Bad Joints

- Excess additive
- No paper
- Unbalanced mix



# Tire Marks



# Tire Marks





# Tire Marks



# Wheel Path Consolidation



# Breaking In Box

- Unstable emulsion
- Hot emulsion
- High fines
- Excess cement
- Inadequate additive



# Excess Water



# Uncoated Surface Aggregate



- Not necessarily a sign of failure
- False slurry
- Tender mix
- Incompatibility



# Water Shedding

- Water squeezed out of mix
- May be greyish, white or clear
- Not usually a sign of a problem



# Oil Shedding



- Excess oil in mix
- Emulsion too stable
- Lack of aggregate
- Mix may be ok, cure time likely long.



# Summary

- Inputs
  - Materials
  - Weather
  - Mix Design
  - Pavement Condition
- Mixing & Laying
- Breaking & Curing





# Thank You

[WWW.SLURRY.COM](http://WWW.SLURRY.COM)

**Mike Heath**  
Technical Representative  
VSS International, Inc.  
530.510.0530  
[mike.heath@slurry.com](mailto:mike.heath@slurry.com)

