

A photograph of three young calves with brown and white markings standing in a lush green field. A wire fence is visible in the background. The text is overlaid on the image in a yellow, serif font.

MICRO-SURFACING

VANCE BROTHERS INC.

AMAP 2005





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AND



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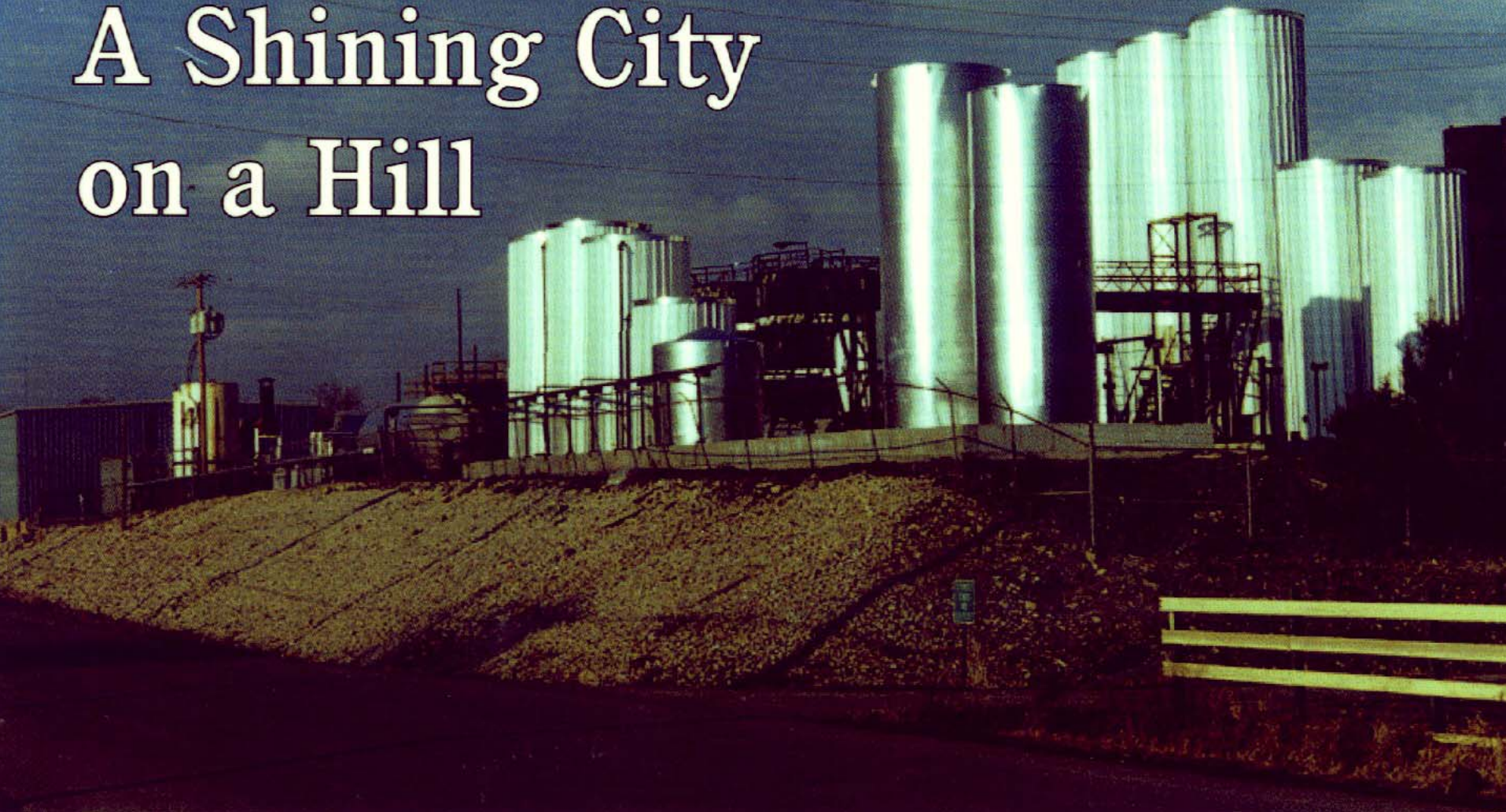
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Vance Bros Inc

A Shining City
on a Hill











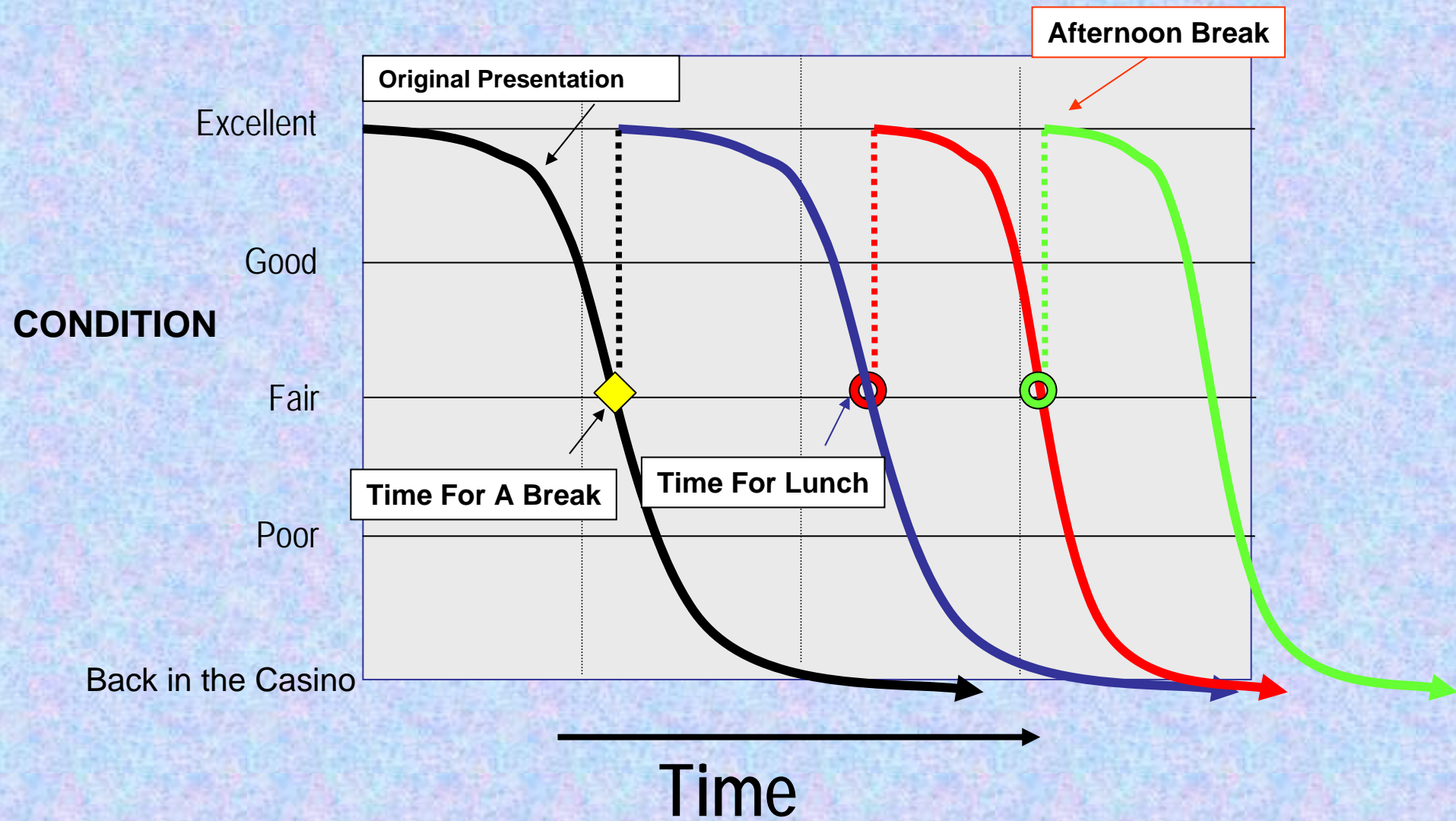




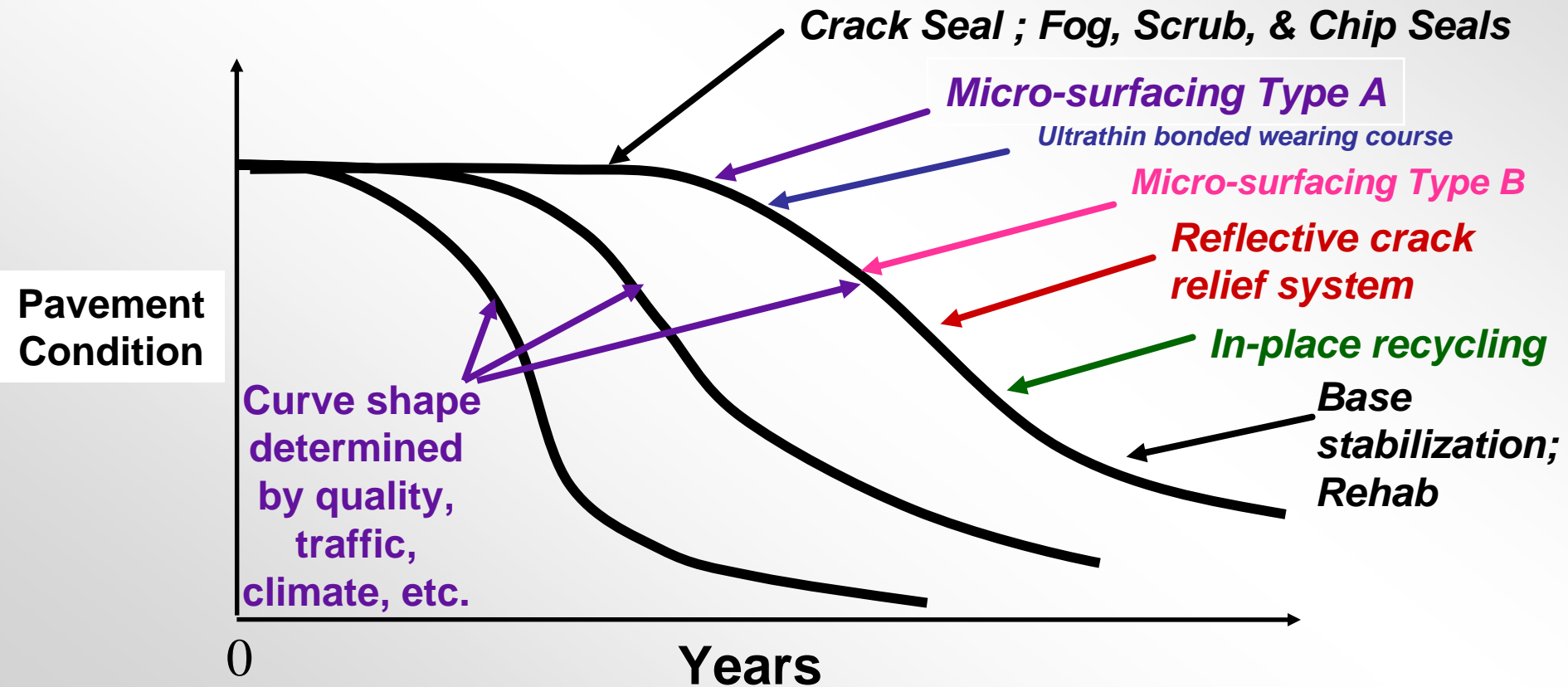








Pavement Preservation Timing



Pavement Preservation

The “Right” treatment

At the “Right” time

On the “Right” surface

At the “Right” price

Average Cost of Maintenance

• 1 ¾" Super Pave	4.25/SY
• 1" Leveling Course	2.10/SY
• Milling – Less than 3"	1.94/SY
• Ultra Thin Type B	4.39/SY
• Ultra Thin Type C	3.90/SY
• Slurry Seal	1.18/SY
• Micro Surfacing Type A	1.42/SY
• Micro Surfacing Type B	2.82/SY
• Chip Seal	1.50/SY
• Fog Seal	.25/SY
• Crack Sealing (Rout & Seal)	.60/SY
• Crack Filling (Blow & Seal)	.45/SY
• Fiberized Crack Seal	.25/SY

Micro-Surfacing

A designed mixture of polymer modified emulsified asphalt, mineral aggregate, mineral filler, water, and other additives, proportioned, mixed, and uniformly spread over a properly prepared surface.

- ◆ ISSA A-143

- ◆ State DOT Specifications

ASTM D-6372-99



Micro-Surfacing

- ◆ Mix can be placed in thicker lifts while remaining stable
- ◆ Macro-texture of the mix remains
- ◆ Quick setting for traffic
- ◆ Enhanced durability

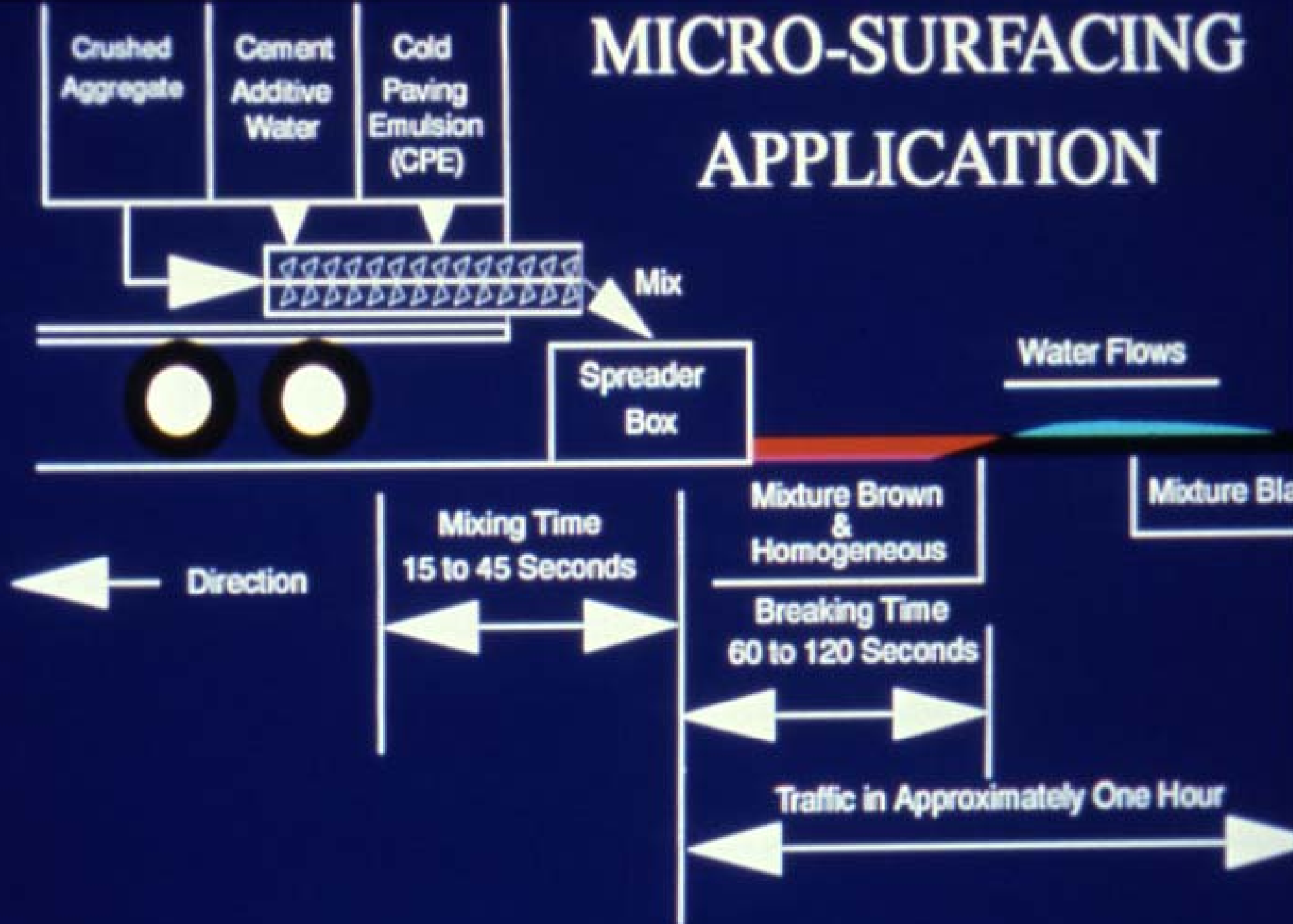








MICRO-SURFACING APPLICATION







RUTS LESS THAN $1/2$ "

MAY BE FILLED WITH SCRATCH COURSE



THE SCRATCH COAT IS GENERALLY
6" LESS THAN THE WIDTH OF THE LANE.







7. 20. 2004



7. 20. 2004



7.20.2004



3. 17. 2004





Recommended Performance Guidelines For Micro-Surfacing

**A143 (Revised)
January 2001**



NOTICE

It is not intended or recommended that these guidelines be used as verbatim specifications. They should be used as an outline, helping user agencies establish their particular project specifications. Users should understand that almost all areas vary as to the availability of materials. Efforts should be made to determine what materials are reasonably available, keeping in mind system compatibility and specific job requirements. Feel free to contact the ISSA for answers to any questions and also for a list of ISSA contractors and companies who could assist.

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4. MATERIALS**4.1 EMULSIFIED ASPHALT****4.1.1 GENERAL**

The emulsified asphalt shall be a quick-traffic, polymer-modified asphalt emulsion conforming to the requirements specified in AASHTO M208 or ASTM D2397 for CSS-1h. The cement mixing test shall be waived for this emulsion.

The polymer material shall be milled or blended into the asphalt or emulsifier solution prior to the emulsification process.

The minimum amount and type of polymer modifier shall be determined by the laboratory performing the mix design. The minimum amount required will be based on asphalt weight content and will be certified by the emulsion supplier. In general, a three percent (3%) polymer solids, based on asphalt weight, is considered minimum.

The five-day (5) settlement test may be waived, provided job stored emulsion is used within thirty-six (36) hours from the time of the shipment, or the stored material has had additional emulsion blended into it prior to use.

4.1.2 QUALITY TESTS

When tested according to the following tests, the emulsion shall meet the requirements of AASHTO M208 or ASTM D2397 for CSS-1h, plus the following:

AASHTO TEST NO.	ASTM TEST NO.	QUALITY	SPECIFICATION
AASHTO T59	ASTM D244	Residue after Distillation	62% Minimum

The temperature for this test should be held below 280°F (138°C). Higher temperatures may cause the polymers to break down.

AASHTO TEST NO.	ASTM TEST NO.	TESTS ON RESIDUE	SPECIFICATION
AASHTO T53	ASTM D36	Softening Point	135°F (57°C) Minimum
AASHTO T49	ASTM D397	Penetration at 77°F (25°C)	40 - 100"
	ASTM D1178	Kinematic Viscosity @ 275°F (135°C)	658 cSt/min. Minimum 7"

* Climate conditions should be considered when establishing this limit.

Each load of emulsified asphalt shall be accompanied with a Certificate of Analysis/Compliance to ensure that it is the same as that used in the mix design.

All the component materials used in the mix design shall be representative of the materials proposed by the contractor to be used on the project.

The percentages of each individual material required shall be shown in the laboratory report. Adjustments may be required during construction, based on field conditions. The B.A.R. will give final approval for all such adjustments.

COMPONENT MATERIALS	LIMITS
Residual Asphalt	5.5 to 10.5% (5) by dry weight of aggregate
Mineral Filler	0.0 to 3% by dry weight of aggregate
Polymer-Based Modifier	Minimum of 3% solids based on bitumen weight content
Additives	As needed
Water	As required to produce proper mix consistency

5.3 RATE OF APPLICATION

The Micro-Surfacing mixture shall be of the proper consistency at all times, so as to provide the application rate required by the surface condition. The average single application rate, as measured by the B.A.R., shall be in accordance with the following table:

AGGREGATE TYPE	LOCATION	SUGGESTED APPLICATION RATE
Type II	Urban and Residential Streets Airport Runways	10 - 20 lb/yd ² (4.5 - 9.1 kg/m ²)
Type III	Primary and Interstate Routes Wheel Ruts	15 - 30 lb/yd ² (6.8 - 13.6 kg/m ²) As Required (See Appendix B)

Application rates are affected by the unit weight of the aggregate.

Micro-Surfacing is often put down in two full-width passes in place of rut-filling when the rutting or deformation is not severe. When two passes are used, the first pass (scratch course) is made using a metal or stiff rubber strike-off and applying only what the surface demands for leveling. The second course is applied at 15 - 30 lb/yd² (6.8 - 13.6 kg/m²).

6. EQUIPMENT

6.1 GENERAL

All equipment, tools, and machines used in the performance of this work shall be maintained in satisfactory working condition at all times to ensure a high-quality product.

6.2 MIXING EQUIPMENT

The machine shall be specifically designed and manufactured to lay Micro-Surfacing. The material shall be mixed by an automatic-sequenced, self-propelled Micro-Surfacing mixing machine, which shall be a continuous-flow mixing unit able to accurately deliver and proportion the aggregate, emulsified asphalt, mineral filler, control setting additive, and water

Average Cost of Maintenance

2 • 1 ¾" Super Pave	4.25/SY
2 • 1" Leveling Course	2.10/SY
• Milling – Less than 3"	1.94/SY
2 • Ultra Thin Type B	4.39/SY
2 • Ultra Thin Type C	3.90/SY
4 • Slurry Seal	1.18/SY
5 • Micro Surfacing Type A	1.42/SY
5 • Micro Surfacing Type B	2.82/SY
2 • Chip Seal	1.50/SY
1 • Fog Seal	.25/SY
• Crack Sealing (Rout & Seal)	.60/SY
• Crack Filling (Blow & Seal)	.45/SY
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Field Dynamics

- Pavement Temperature
- Precipitation on Stockpile
- Type of Precipitation on Stockpile
- Loader Operator
- Stockpile Changes
- Changes in Emulsion residue & temperature
- Water Supply
- Type of Cement
- Humidity
- Equipment Malfunctions



Manufacturing Tips

Spring in Kansas City

on Microsurfacing



Manufacturing Tips on Microsurfacing

- Uniform & Consistent Supply of Asphalt Cement











Manufacturing Tips on Microsurfacing

- Uniform & Consistent Supply of Asphalt Cement**
- Monitor your Water Supply**
- Consistent Residual**
- Proper Shear**
- SBR**
- Cure Time in Storage**
- Adjustments for Ambient Temperature**
- Adjustments for Speed of Production at job site**

