USES OF SLURRY SEAL IN THE RESTORATION OF ASPHALT PAVEMENT SURFACES

by

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AN OUTLINE PRESENTATION FOR THE
SUSTAINING MEMBER SEMINARS,
INTERNATIONAL PUBLIC WORKS CONGRESS
AND EQUIPMENT SHOW

September 14, 1977
McCormick Place
Chicago, Illinois
U.S.A.

International Slurry Seal Association
1730 Pennsylvania Avenue N.W.
Washington, D.C. 20006
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Reprinted February 1, 1978 for use of ISSA members as a nucleus to build their own presentations.
Total price, including postage, outline and 77 numbered slides in a Kodak Carousel 80 is $50.00. (Allow 3 weeks for delivery)

"USES OF SLURRY SEAL IN THE RESTORATION OF ASPHALT PAVEMENT SURFACES"

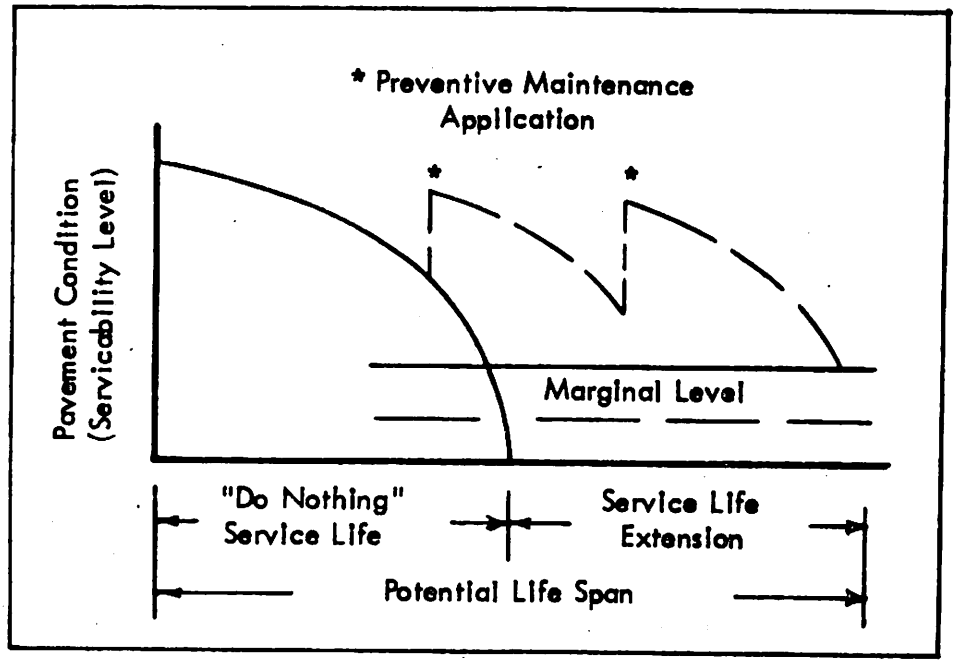
Bituminous pavements require periodic maintenance. Most require some attention between four and eight years.

SLIDE NO.

1 Newly laid and rolled asphalt pavement. → old paver

2 Old parking lot paved with patches. — something happened

3 Preventive maintenance concept--"Seal sooner. . . . Save more."



Theoretical Histogram Showing
Consequences of Maintenance Policy

4 Pavement components, kinds of distress.

PAVEMENT SYSTEM COMPONENTS:

1. STRUCTURE - Supports the load
2. SURFACE - Protects the structure

TYPES OF PAVEMENT DISTRESS

1. STRUCTURAL - Load/Base associated
2. SURFACE - Surface associated

SLIDE NO.

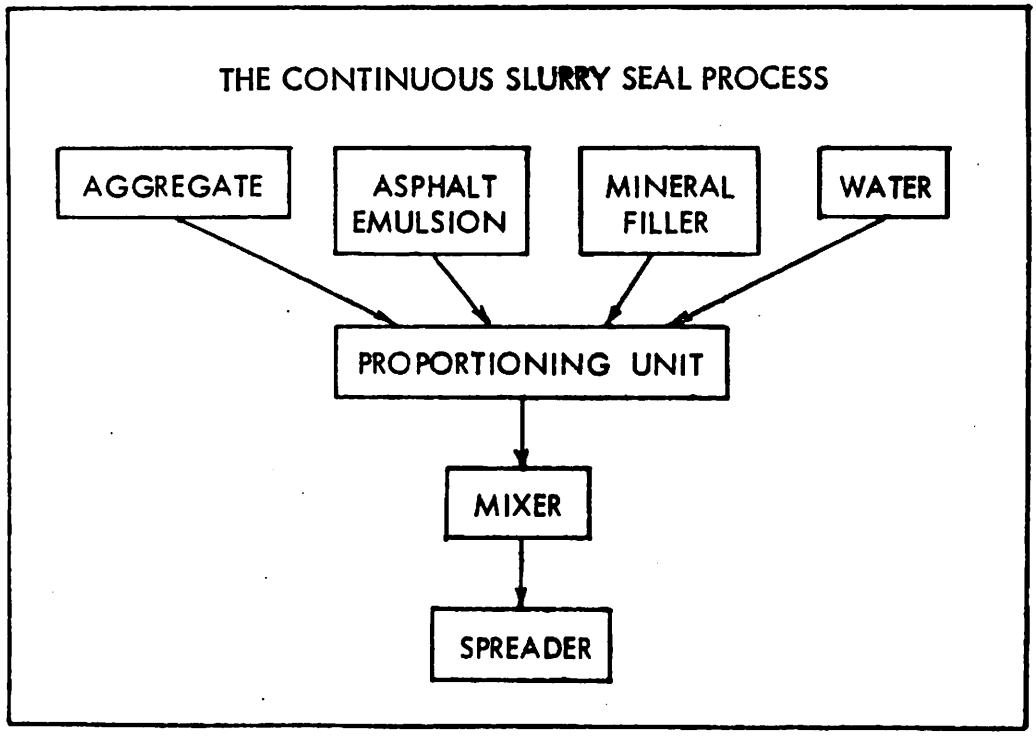
5 Kinds of surface treatments.

KINDS OF SURFACE TREATMENTS

1. Non-Penetrating Liquids
2. Penetrating Liquids
3. Aggregate Seals - Bar or Mix
4. Surface Reworking
5. Special Membrane Treatments

6 Slurry Seal surface application at Wright-Patterson Air Force Base.

7 Slurry Seal is a homogeneous mixture of continuously graded fine aggregate, asphalt emulsion, mineral filler and water. The continuous Slurry Seal process precisely proportions, mixes and spreads the mixture.

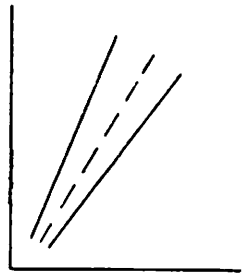


SLIDE NO.

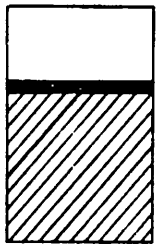
8 Materials for Slurry Seal.

AGGREGATES FOR SLURRY SEAL MUST BE

- CLEAN
- CRUSHED
- DURABLE
- WELL GRADED
- UNIFORM



ASPHALT EMULSIONS FOR SLURRY SEAL ARE

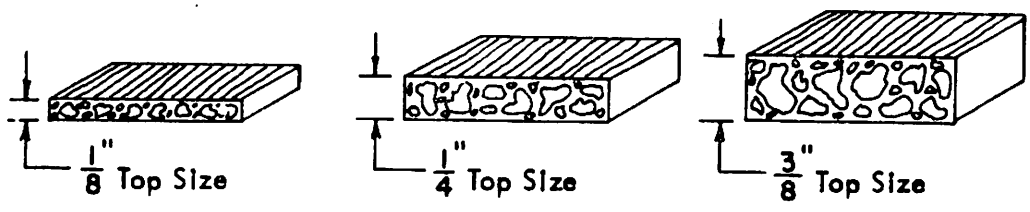


The AASHTO "SS" dense mixing types made from paving grade asphalt may be :

- HARD OR SOFT
- SLOW OR QUICK SET
- ANIONIC, CATIONIC OR NON-IONIC EMULSIFIERS

9,10,11 Aggregate gradations.

THE THREE BASIC GRADATIONS OF SLURRY SEAL



TYPE I (fine)	TYPE II (general)	TYPE III (coarse)
6 to 10 lbs/SY Aggregate 8	10 to 15 lbs/SY Aggregate 8	15 to 25 lbs/SY Aggregate 8
10 to 16% Residual AC	7.5 to 13.5% Residual AC	6.5 to 12% Residual AC

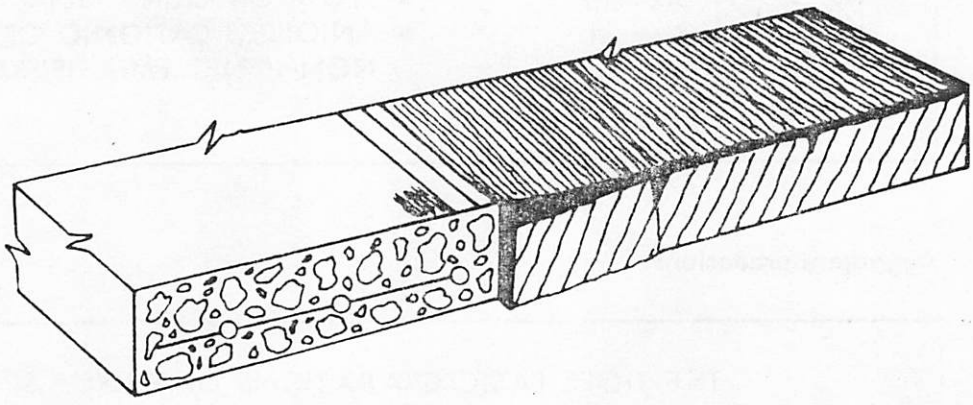
SLIDE NO.

12 Versatile Slurry Seal. Cross section of an interstate shoulder.

Slurry Seal is a dense bituminous mix which is perhaps the most versatile of all pavement surface materials. Slurry is unique because of its ability to deposit a bituminous mix according to the demands of the surface being treated.

Since Slurry Seal is a relatively thin surface treatment, it becomes economically feasible to use special or exotic materials.

VERSATILE SLURRY SEAL



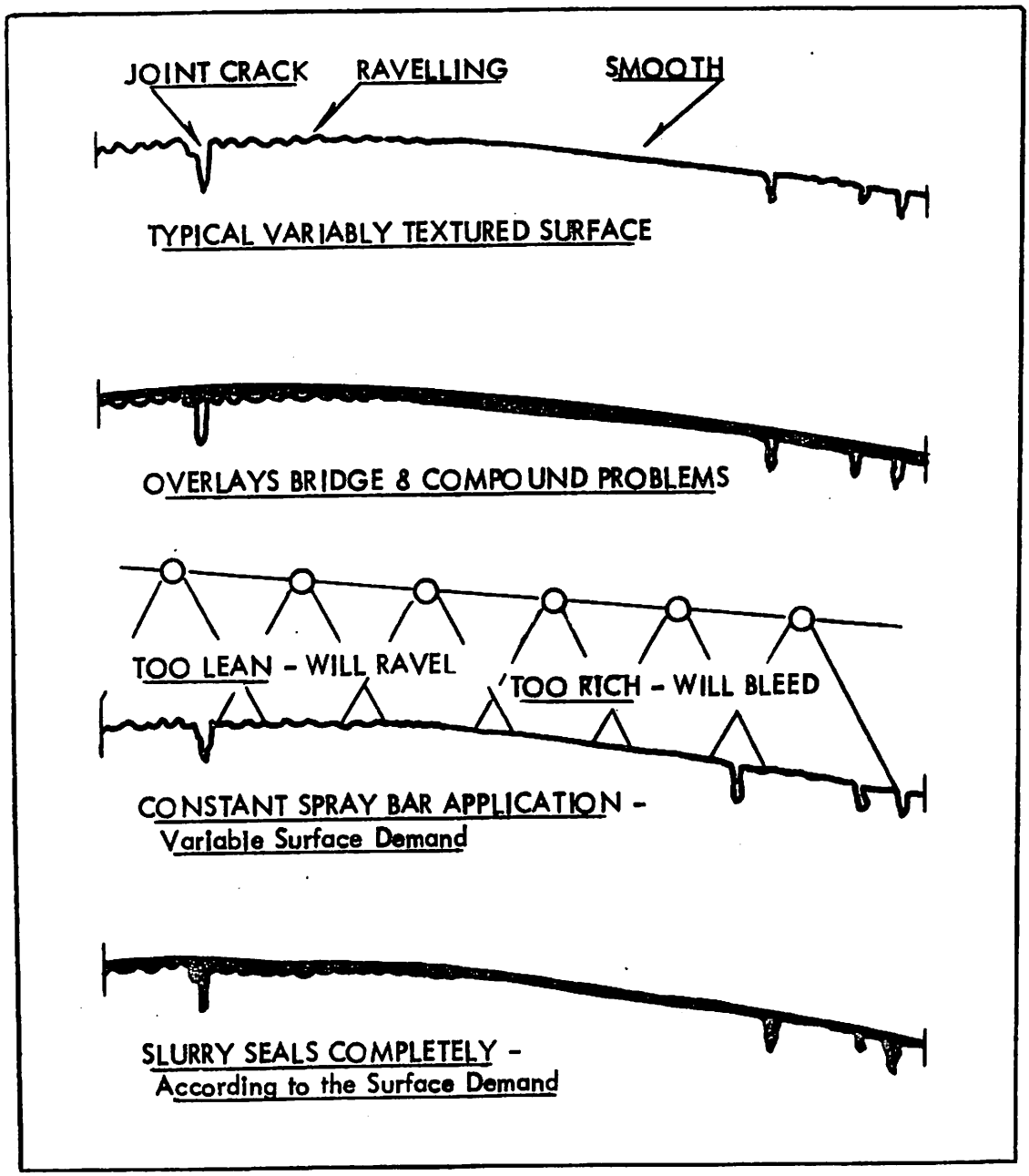
SLURRY SEAL CAN, IN ONE PASS:

1. Deposit a bituminous seal according to the surface demand
2. Fill the interface crack
3. Place a modest wedge
4. Place a weather tight seal
5. Fill the surface voids
6. Provide color/texture delineation
7. Give good skid resistance

13-14 Shoulder application, crack filling and wedge after four years.

SLIDE NO.

15 Thin overlays and chip seal compared to Slurry Seal. Slurry seals completely.



Effectiveness of Surface Treatments Applied to a
Variable Cross Sectional Surface Texture

SLIDE NO.

16-17	Wheat drilled pavement, five years after Slurry.
18-19	Wet shode erosion, three years after Slurry.
20-21	Crack filling (not fixing).
22	Surface crack and reflective crack.
23	Strain relieving inter layer. Tred rubber Slurry.
24	Soft asphalt Slurry compared with hard asphalt Slurry.
25-29	Bridge deck, re-bar cracks, wipe tack coat. Two-course latex Slurry.
30-31	Two-course airport run-off with roller on second course (Spain).
32-33	Ohio State University, black base over fill with Slurry.
34-35	Cape seal to choke chip seal, Richmond, Indiana, five years later.
36-37	Wright State University, old chip seal, cleaned, rolled, tacked and Slurried.
38	To sell a township bond issue.
39	Low density traffic: Wright Brothers grave at Woodland Cemetery, Dayton, Ohio.
40	High density traffic: The A-B test road.
41-45	Slippery pavement problems and their solutions: Polishing and flushing.
46-48	Dallas, Texas. Boiler slag Slurry--85% reduction in wet pavement rear-end collisions.
49-51	Hydroplaning prevention. Oakwood, Ohio, 5/8" latex Slurry.
52-54	Stripe delineation, Columbus, Ohio. Shoulder delineation, I-75, central Spain.
55-56	Slurry as a seal for motor-paver mixes, Miami County, Ohio.
57-60	Slurry Seal for heater planer, Wright-Patterson Air Force Base, Fairborn, Ohio.
61	Light Slurry Seal on I-75 near Lexington, Kentucky. Load-on-the-run machine.
62-65	Total tack coat preparation for hot mix overlay. Type "O" Slurry.

SLIDE NO.

66-70 Slurry Seal for heater scarifier, Oehawa Airport, Ontario, Canada.

71-72 Open graded Slurry overlay.

73-74 Slurry Seal design and control.

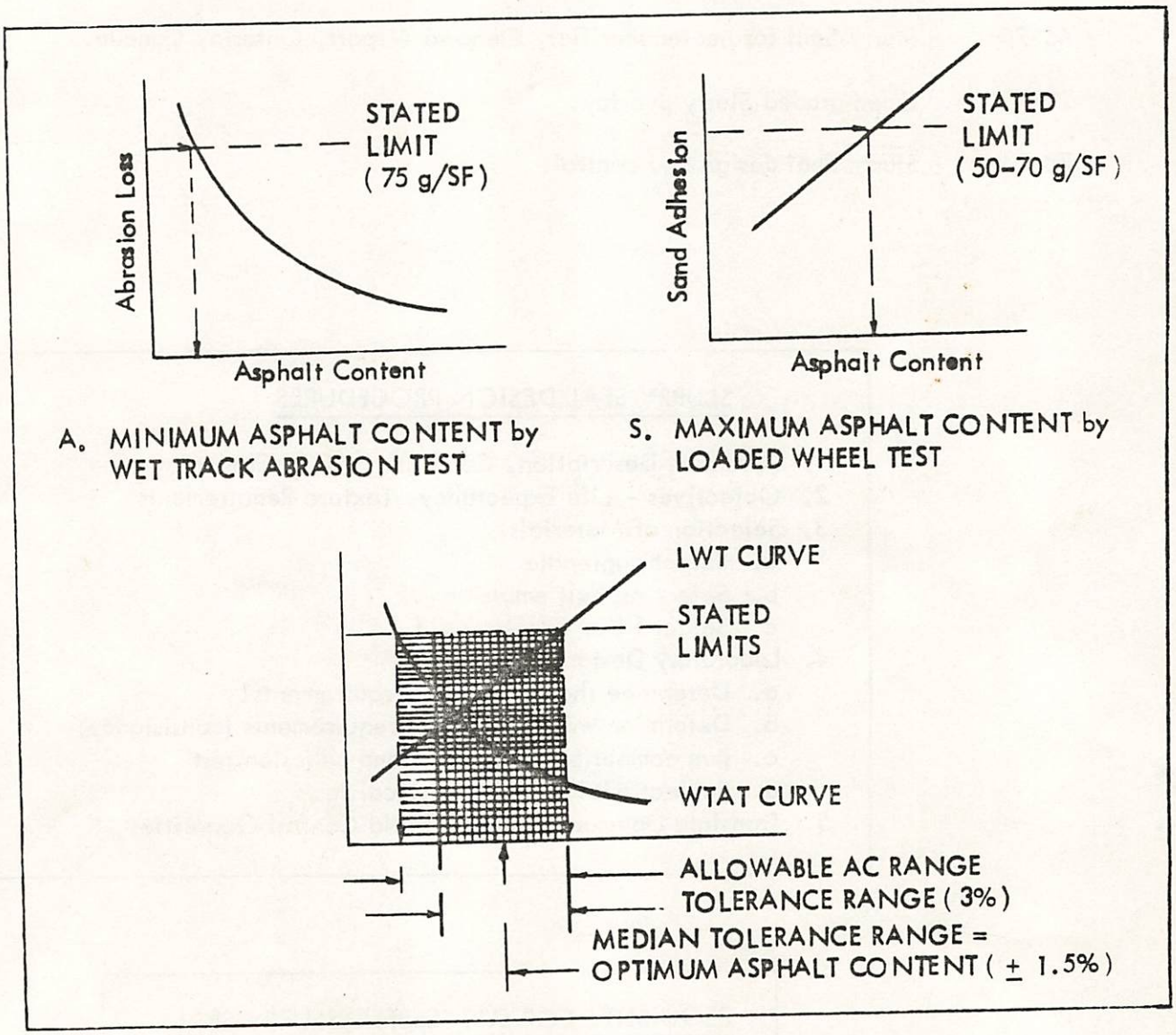
SLURRY SEAL DESIGN PROCEDURES

1. Pavement Description, Condition, ADT, Climate
2. Objectives - Life Expectancy, Texture Requirements
3. Selection of Materials
   a. Select aggregate
   b. Select asphalt emulsion
   c. Select filler
4. Laboratory Design
   a. Determine theoretical AC requirements
   b. Determine water and filler requirements (consistency)
   c. Run compatibility cup test and adhesion test
   d. Subject trial mixes to physical tests
5. Translate Optimum Design to Field Control Quantities

REQUISITES FOR SUCCESSFUL SLURRY SEAL

1. ISSA A-105 Guide Specifications, also FAA or USCA specs.
2. Laboratory evaluation of materials
3. Laboratory design with job materials
4. Qualified contractors and suppliers
5. Knowledgeable inspectors
6. Field control by contractors and buyer

SLIDE NO.



GRAPHICAL DETERMINATION OF OPTIMUM ASPHALT CONTENT

75-76 Pavin' with patches? . . . Save 'em with Slurry!

The International Slurry Seal Association invites your inquiries and encourages you to use their current guide specifications and technical bulletins.

Thank you.