

# Prime Factors for Successful Preservation Treatments

Arizona Pavements / Materials Conference

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# Preservation Treatments

## Asphalt Treatments

Fog Seal	Crack Treatment
Chip Seal	Scrub Seal
Slurry Seal	Micro Surfacing
Cape Seal	Patching
Ultrathin HMA Overlay	Hot In-place Recycling
Thin HMA Overlay (1½")	Cold In-place Recycling
Ultrathin Bonded Wearing Course	High Friction Surface Treatments

## Concrete Treatments

Joint & Crack Sealing
Diamond Grinding
Diamond Grooving
Dowel-Bar Retrofit
Partial Depth Repair
Full Depth Repair
Cross-Stitching
Slab Stabilization

# Successful Preservation Treatment Examples

## Chip Seal



## Micro Surfacing



## Dowel Bar Retrofit



# So what are the prime factors for successful preservation treatments?



# Factor 1 – Qualified Personnel

- **Training is essential for successful pavement preservation projects.**



# Qualified Personnel

- **Contractor and agency employees need to acquire knowledge about how to build a pavement preservation treatment.**



# Qualified Personnel

- **Technicians conducting material sampling and testing for quality acceptance or quality control activities need to be certified by a nationally recognized organization.**



# Qualified Personnel

- **Certain contractor employees need to be certified for the treatment(s) they construct.**
- **These employees should include:**
  - **Superintendents**
  - **Foreman**
  - **Operators of major equipment**



# Qualified Personnel

**Certification is confirmation that a person has the necessary knowledge of a specific pavement preservation treatment by examination from a recognized independent third party specializing in the field.**



# Factor 2 – Laboratory Accreditation

**Accredited laboratories conducting tests used in mix design or acceptance have trained personnel knowledgeable on specific test methods.**



# Laboratory Accreditation

- **Accredited laboratories must undergo an on-site third party assessment.**
- **This includes a scheduled review of:**
  - Technician training and competency records
  - Equipment calibration and check records
  - Each test method demonstrated by lab staff
  - The proficiency sample program

# Laboratory Accreditation

Many laboratory accreditation programs are available:



# Factor 3 – Quality Materials

**Quality materials are essential for quality results.**



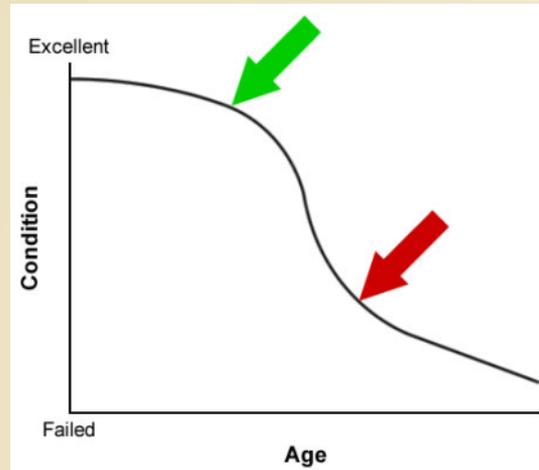
# Quality Materials

## Specifications address quality materials through:

- Certificate of Compliance or Certificate of Analysis
- Prequalified Aggregate Suppliers
- Qualified Products List (QPL)
- Approved Products List (APL)
- Tested Stock Suppliers

# Factor 4 – Project Selection

**Fiscal constraints and pressure from legislators and administrators force agencies to work on pavements too far down the deterioration curve.**



# Project Selection

- **Pavement Management Systems**
  - Pavement Inventories
    - > Type, Age, Location, etc.
  - Ride Quality Measurements
  - Distress
    - > *Functional and Structural*
  - Rutting
  - Faulting

# Project Selection

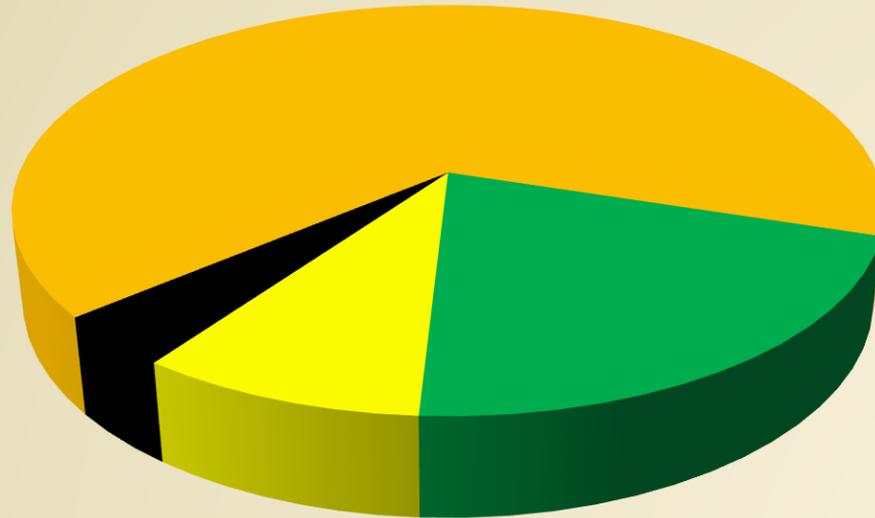
- **Field Review (Windshield Survey)**
  - Asphalt Pavements
    - > Oxidation
    - > Early Raveling
    - > Bleeding
    - > Drainage Issues
  - Concrete Pavements
    - > Joint Seals
    - > Pop-outs

# Project Selection

**Poor choices for pavement preservation.**



# Causes of Poor Pavement Performance in USA



■ Workmanship - 66%

■ Material Failure - 9%

■ Design Deficiency - 21%

■ Natural Disaster - 4%

# Factor 5 - Quality Control

*The system used by a Contractor party to monitor, assess and adjust their production or placement processes to ensure that the final product will meet the specified level of quality.*

# Acceptable Quality Control Plan

1. Scope and Reference Documents
2. Definitions
3. Quality Control Personnel
4. Quality Control Testing Facilities and Equipment
5. Materials Control
6. Quality Control Sampling and Testing
7. Production Equipment
8. Treatment Placement and Workmanship
9. Documentation
10. Non-Conformance and Corrective Action

# Quality Control Plan Parts

## 1. SCOPE and REFERENCE DOCUMENTS

- ASTM Standards
- AASHTO Standards
- Guidelines and Technical Bulletins
- Standard Specifications and Project Special Provisions

# Quality Control Plan Parts

## 2. DEFINITIONS

- Making Terms Used in QC Plan Clear and Distinct

# Quality Control Plan Parts

## 3. QUALITY CONTROL PERSONNEL

- Company Personnel Responsible for QC
- Subcontractors Responsible for QC
- Material Suppliers Meeting Testing Requirements

# Quality Control Plan Parts

## 4. QUALITY CONTROL TESTING FACILITIES and EQUIPMENT

- Laboratory Used for Material Sampling and Testing
- Laboratory Used for Mix Designs
  - > Must be Accredited Laboratories

# Quality Control Plan Parts

## 5. MATERIALS CONTROL

- All Materials Used in Treatment are Identified
- List of Approved Material Sources
- Storage Requirements and Stockpiling Provisions

# Quality Control Plan Parts

## 6. QUALITY CONTROL SAMPLING and TESTING

- Lot Size Defined for Sampling
- Sampling Identification System
- Storage and Retention Procedures for Samples
- Sampling Methods, Test Procedures and Frequency

# Quality Control Plan Parts

## 7. PRODUCTION EQUIPMENT

- Identify All Equipment Used During Construction
- Provide Spec Sheets for Major Equipment



# Quality Control Plan Parts

## 8. PLACEMENT and WORKMANSHIP

- Calibration Procedure for Equipment
- Equipment Checks, Inspection Methods and Frequency
- Pavement Surface Preparation Procedures
- Pre-Production Quality Control Checks
- Related Production Activities
  - Traffic Control
  - Tack Coat, etc.

# Quality Control Plan Parts

## 8. PLACEMENT and WORKMANSHIP - continued

- Critical Factors That Can Affect Production Results
- Identify Protocols for Proper Workmanship
- Production QC Activities, Test Frequencies, and Inspection Methods
- Cleanup
  - Daily
  - End of Project

# Quality Control Plan Parts

## 9. DOCUMENTATION

- Examples of Reporting Forms
- Production Quality Control Reporting
  - Sampling and Testing Results
  - Daily Production Records
  - Non-Conformance Report
  - Document Retention Details

# Quality Control Plan Parts

## 10. NON-CONFORMANCE and CORRECTIVE ACTION

- Corrective Actions Described for:
  - Materials Not Meeting Specifications
  - All Potential Defects in Workmanship

# Quality Control Plan Parts

## APPENDICES – Supporting Documents

- Company Organization Chart
- Resumes of QC Personnel
- Employee Certifications
- Equipment Specifications
- Examples of Report Forms

# Factor 6 - Agency / Owner - Acceptance

***Acceptance is the process which the Agency, Owner, or Designated Agent determines whether the quality of the product meets the contract requirements.***



# Agency / Owner - Acceptance

- **The Agency, Owner, or Designated Agent will verify the degree of compliance by independently performing:**
  - Random Material Sampling and Testing
  - Inspection of Workmanship



# Agency / Owner - Acceptance

- **The objectives of acceptance are to:**
  - Perform sampling and testing for key quality characteristics.
  - Inspect to identify visually deficient work.
  - Measure the quality of all materials produced and placed by the contractor.
  - Determine the corresponding payment the contractor should receive.

# Quality Assurance

- 1. Quality is critical for the contractor to achieve customer satisfaction and retain future pavement preservation work.**



# Quality Assurance

2. **Quality pavement preservation treatments make an important contribution to long-term revenue and profitability.**





# Questions