

# Micro Milling

Applications and Advantages for  
Pavement Preservation



# Drum Categories:

- Standard Milling-  $5/8$ " (15mm) Spacing
- Fine Milling- $5/16$ " (8mm) Spacing
- Micro Milling- $2/10$ " (5mm) Spacing



# Surface Comparison

Micro Milled Surface



Standard Milled Surface



# Determining Factors of Surface Texture/Surface Pattern

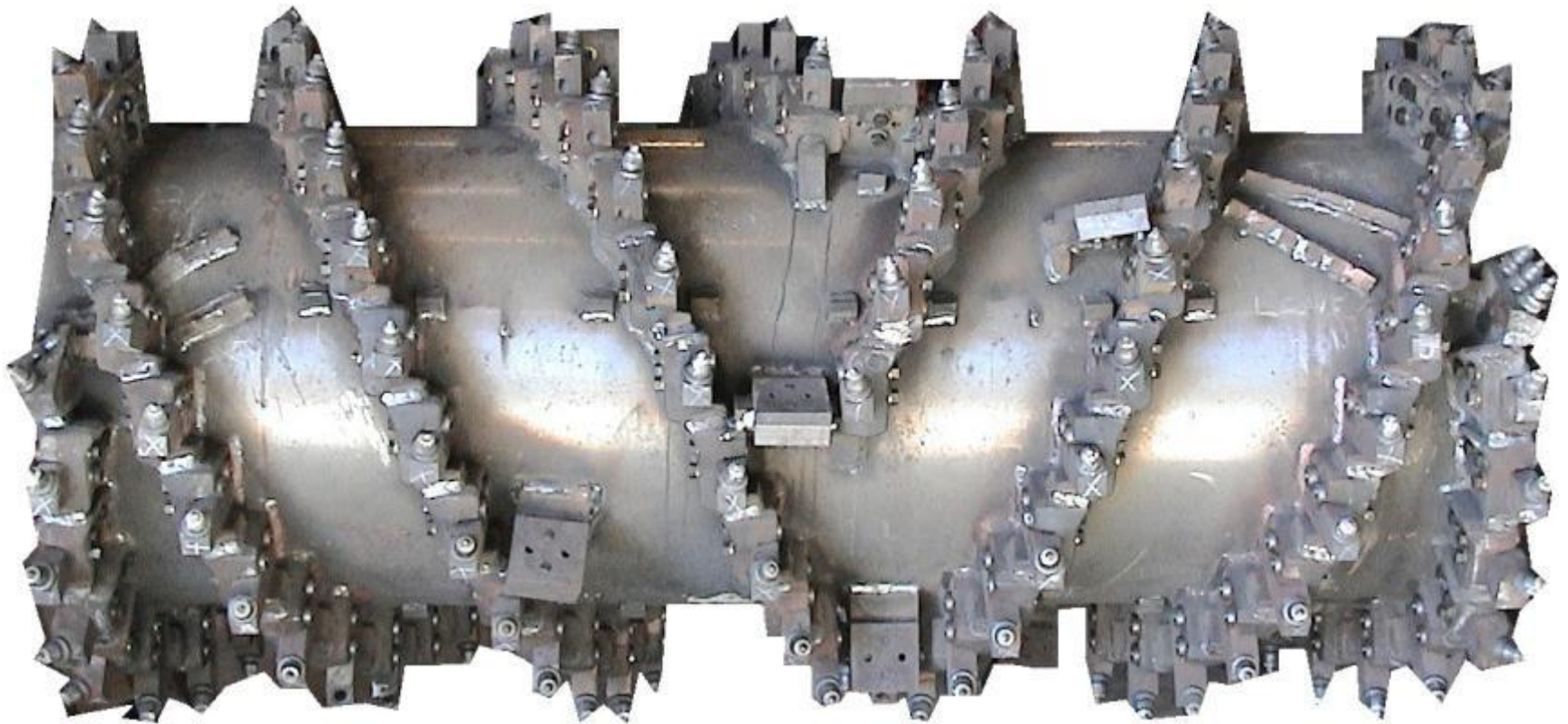
1. Bit Spacing
2. Forward Cutting Speed
3. Wrap Configuration
4. RPM
5. Diameter of Drum
6. Drum Maintenance



# 1. Bit Spacing



# Standard Milling Drum



Triple Wrap Lacing at 5/8" (15mm)  
Spacing – 150 Bits



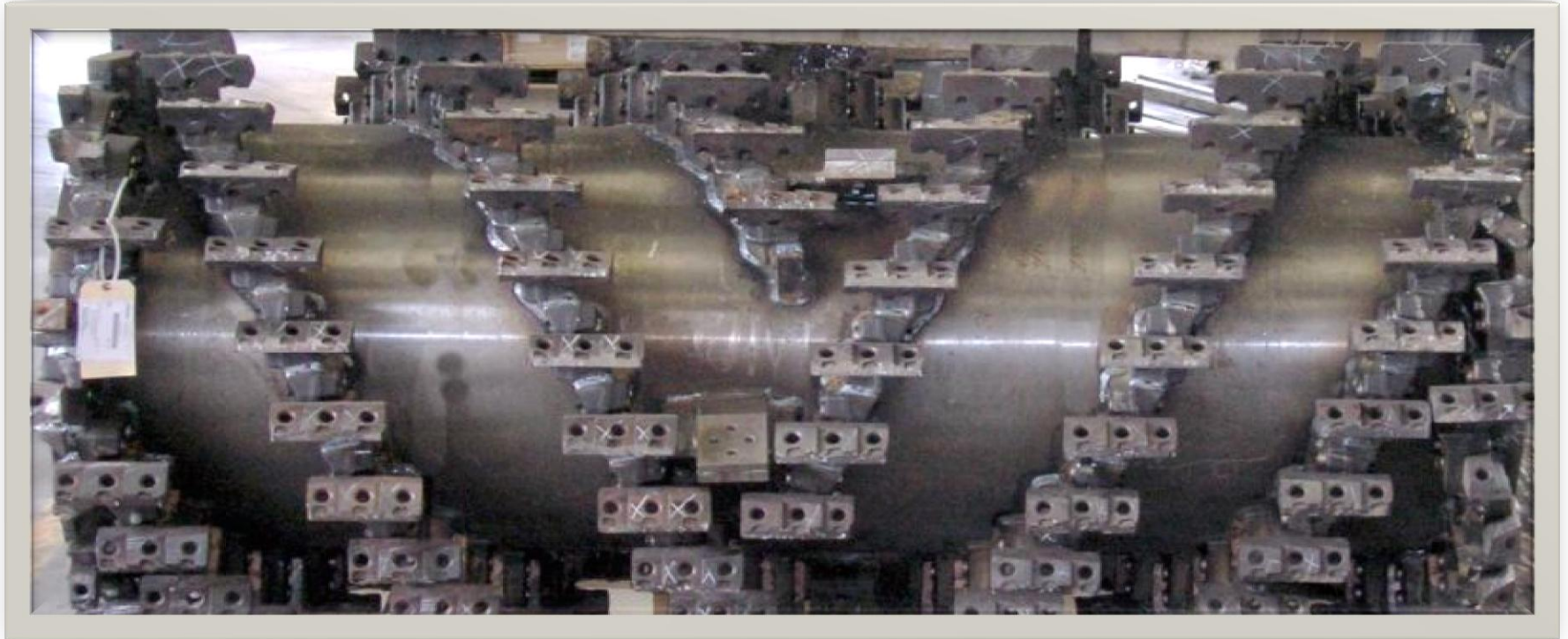
# Fine Milling Drum



Triple Wrap Lacing at  $3/10''$  (8mm)  
Spacing - 300 Bits



# Micro Mill Drum



Triple Wrap Lacing at  $2/10''$  (5mm)  
Spacing - 450 Bits

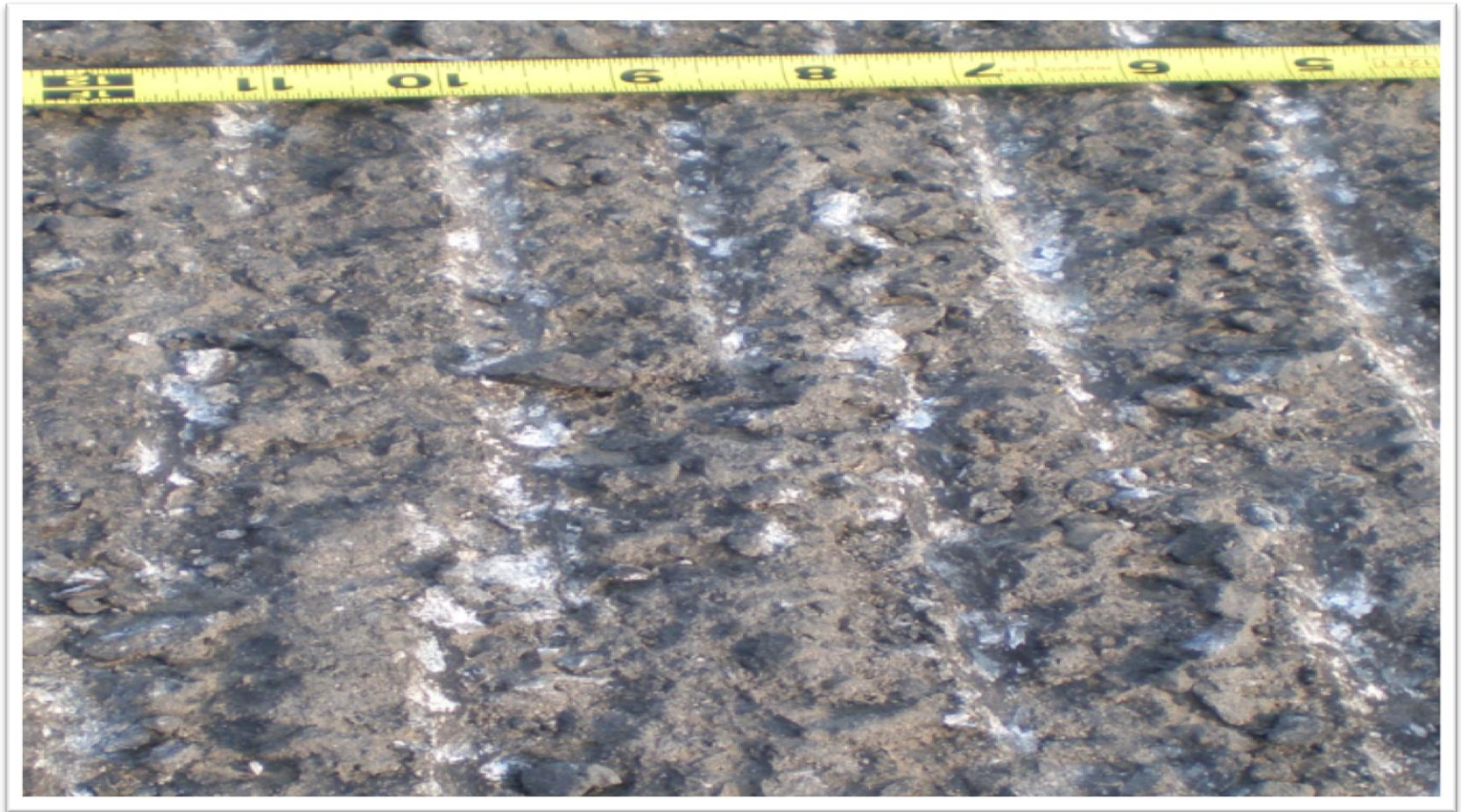




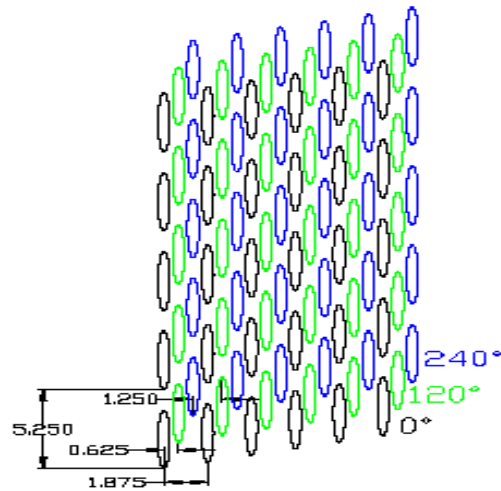
## 2. Forward Cutting Speed



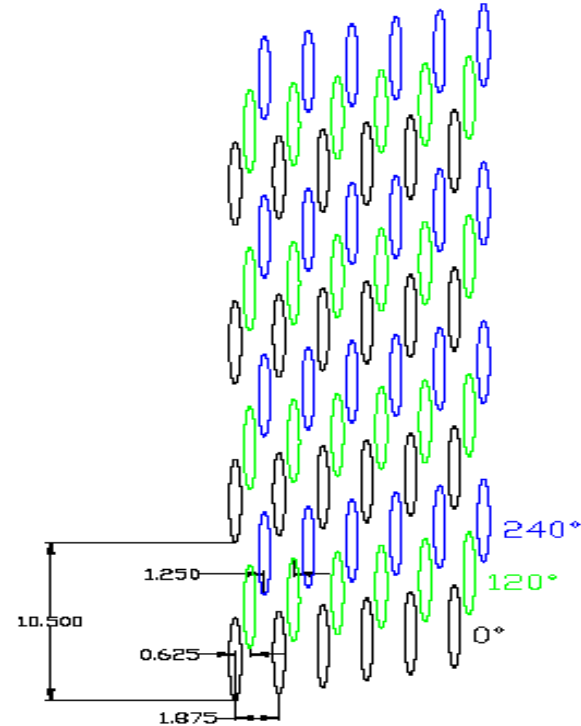
# 5/8" (15mm) Standard Drum Bit Strikes



# Forward Cutting Speed



Triple Wrap  
80RPM-35FPM



5/8" Triple Wrap  
80RPM-70FPM



# Forward Cutting Speed

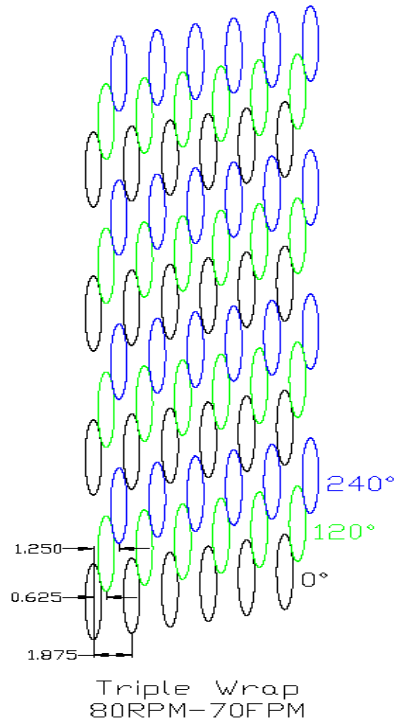


# 3. Wrap Design

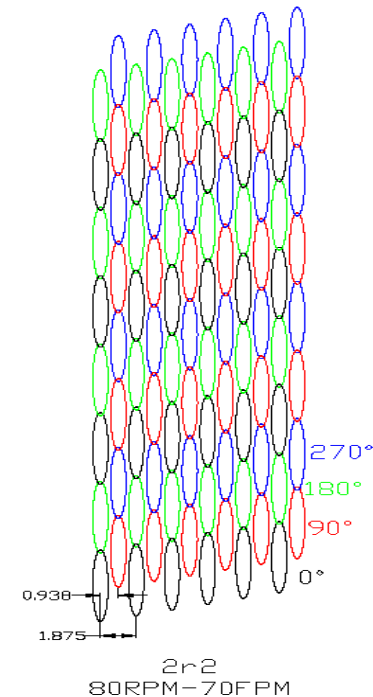


# Triple Wrap vs. Quad Wrap

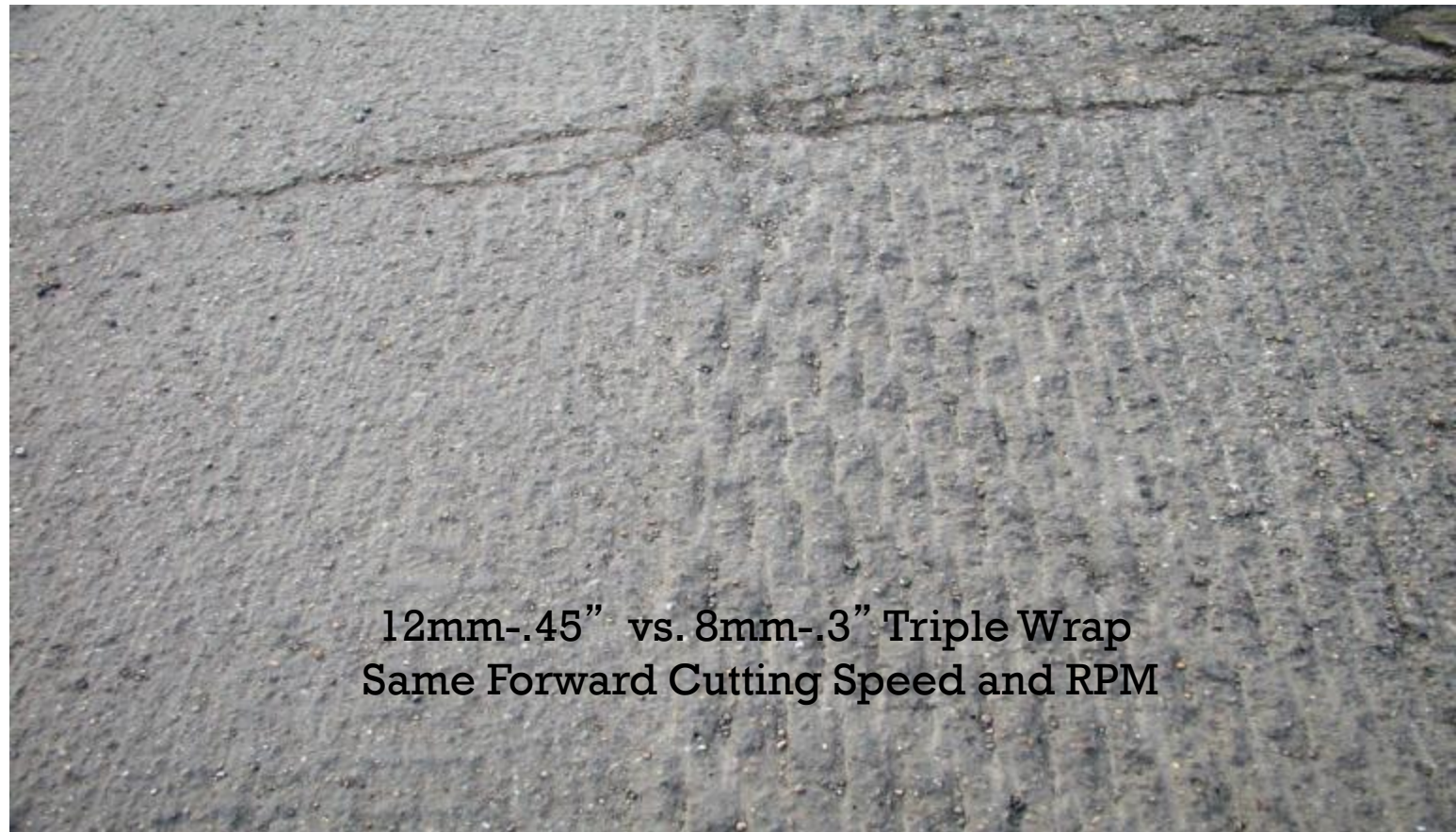
5/8" -15mm Spacing (150 Bits)



15/16" - 22.5mm spacing (200 Bits)



# Spacing Can Be Misleading





8 mm Triple Wrap Fine Drum (300 Bits) Vs. 22.5mm-15/16" Quad Wrap Standard Drum (200 Bits)  
Both Milled at 85' /Minute





# Remaining Factors

4. **RPM-** *Equally important as speed but is far less volatile*

5. **Drum Diameter-** *Typically set by machine manufacturer*

6. **Cutter Drum Maintenance**





# Specifications

## Equipment Specs

*DO NOT insure end result*

## Performance Specs

*INSURES end result*

*Allows room for competitiveness and creativity*



# Performance Based Specs for Micro Milling

- Georgia- Laser Road Profilograph
- Virginia- Micro Milling Sand Test



# Micro Milling Applications

- **Ride Correction Before Pavement Preservation**
- **Surface Prep Before Overlay or Surface Treatment**
- Surface/ Friction Course Removal
- Correctional Work
- Faulted Concrete Correction
- Wheel Rut Removal
- Temporary Driving Surface
- Bridge Deck Repair
- In-field Crushing of Material



# Micro Milling Advantages

- Ride Improvement Option for Surface Treatment Projects
- Enhance Pavement Life Cycle
- Reduction in Material Cost
- Reduction in Construction Cost
- Provide a Safer Driving Surface
- Reduction in RAP Processing Costs



# Micro Milling Before Surface Treatments

1. Improve Ride/Smoothness of Road
2. Create a Better Bonding Surface
  - Removal of Old Surface/Curb Line
  - Removal of Paint, Oil Slicks, Bleeding
3. Less Material Required (vs. standard milling)
  - Shallower Grooves .1" vs. .5"
  - Improved Spread Rates

# Rt. 111

- **Rough Road-** *7.3 Magnitude Earthquake*
- **22.5 Miles-** *11,747 Must Grinds Identified*
- **Low Volume Road**
- **Structurally Sound Base**
- **Minor Number of Structural Repairs Needed**





# Ride Improvement Options:

1. Surface Treatment
  - Too Rough
2. Mill and Fill
  - Too Costly



# HYBRID APPROACH

Micro Milling-

- Improve ride

Asphalt Rubber Seal Coat-

- Seal Surface

- Provide a New Wearing Course



# RT. 111: BEFORE



# 1<sup>st</sup> Phase: Micro Mill Process



# 2<sup>nd</sup> Phase: Asphalt Rubber Seal Coat Application



# Aggregate Spreading Process



# Compacting



# AFTER: RT 111



- 61.4% PRI Improvement
- 3.73" per 1/10 of Mile
- Estimated life extension of 10+ Years





# Escondido Canyon, L.A. County



# Summary....

## Provides Options!

Ride Improvement in Addition to Pavement Preservation

## Significant Cost Savings!

Reduce Material and Construction Costs

## Increase Pavement Life Cycle!

Provides a Better Quality Product



# Questions?

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