SR 175 Thin Lift Asphalt Project

**Agency Funding**
- ALDOT / County / City Funds Are Limited Even With Recent Gas Tax Increase.
- ALDOT / County / City New Construction Projects Are Still Uncommon.
- If You Can Not Afford To Maintain Existing System, Why Add New To System?
- ALDOT / County / City Priority Is Still Maintaining Current System.

**Objectives -**
- **Why** Thin Lift Asphalt?
- **Where** Thin Lift Asphalt?
- **Specifications And Project Details** For Thin Lift Asphalt.

**Why Thin Lift Asphalt?**
- Funding Crisis
  - Escalating Construction Cost
  - Limited Revenue

- Fewer Road Miles
- Less New Construction
**Why Thin Lift Asphalt?**

- Concept Of Pavement Preservation

**Benefits To The Traveling Public**

- Improved Ride
- Improved Smoothness
- Public Perception - Freshly Paved Road - New Road
- Public Perception – No Broken Windshields
- Local Contractors - Contributing To Tax Base And Employment At Local Level

**Where Thin Lift Asphalt?**

- Roads That Are Structurally Sound

**Good Candidate?**

- SR 175 Thin Lift Asphalt Project
SR 175 Thin Lift Asphalt Project

Good Candidate?

Project Selection
- Section Of SR 175 In Perry County.
- Rural 2 Lane US Route.
- 2021 AADT - 406
- 2021 TADT - 19%
- Minimal Rutting.
- Low To Moderate Cracking.

Existing Roadway Condition

Specifications For Thin Lift Asphalt

Alabama DOT Specifications
Thin Lift Mixes

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>3/8 Inch Mix % Passing</th>
<th>Thin Lift Mix (424T)</th>
<th>Project JMF % Passing</th>
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Fine Aggregate Angularity (FAA) Requirements

- FAA Greater Than Or Equal To 43 For ESAL Range A/B Mixes.
- FAA Greater Than Or Equal To 45 For ESAL Range C/D Mixes.
- Fine Aggregate Is Aggregate Passing The No. 4 Sieve.
- Project JMF : FAA 46.

Carbonate Stone (Limestone) Criteria

- Varies From A Range of 30% To A Maximum of 50% Depending Upon BPN 9 Value of Aggregate Source.
- Project JMF : 35% Slurry Stone (Limestone)

Liquid Asphalt Binder Requirements

- PG 67-22 Required For ESAL Range A/B And ESAL Range C/D Mixes.
- No ESAL Range E Mix In Specification At This Time.
- Project JMF : PG 67-22.

Design Gyration And Minimum Design AC Requirements

- Design Gyration Of 60 Gyriations.
- Minimum Design AC Content Of 6.2% For Thin Lift Mixes.
- Project JMF : 6.20% AC.
Air Voids, VMA, Dust Proportion And TSR Requirements

- Design Air Voids Of 4.0%.
- Minimum Design VMA Of 16.5% And Maximum Design VMA Of 18.0% With A 0.5% Production VMA Tolerance.
- Maximum Design VMA Applies To ESAL Range C/D Mixes Only.
- Project JMF : VMA 17.7%.
- Dust Proportion Range Of 0.90 To 2.00 Based On Effective Asphalt Content.
- Project JMF : Dust Proportion 1.10.
- TSR Minimum Of 0.80.
- Project JMF : TSR 0.97.

Density Requirements


Thin Lift Mix

- Project Mix Design
  - 35% Slurry Stone.
  - 24% Shot Gravel.
  - 20% Sand.
  - 20% RAP.
  - 1% Baghouse Fines.
  - Design Asphalt Content : 6.20%.

Project Details

- Project Letting Date – March 26, 2021.
- Project Length And Description – 5.325 Miles On SR 175 From SR 14 Northeast Of Marion To SR 5 South Of Heiberger In Perry County.
- Prime Contractor – Wiregrass Construction Company, Inc.
- Overlay Of Existing Roadway.
- Thin Lift HMA – 70 Pounds Per Square Yard of Section 424T Thin Lift Mix.
- ALDOT Guidelines Allow Placement Rate From Minimum Of 60 Pounds Per Square Yard (0.54 Inches) To Maximum Of 75 Pounds Per Square Yard (0.68 Inches).
- Project Construction – Summer 2021.
SR 175 Thin Lift Asphalt Project
ALDOT Uses Inertial Profiler To Measure Smoothness.
ALDOT Measures Smoothness By Mean Roughness Index (MRI).
Lower MRI = Smoother Ride

Average Pre – Construction MRI (2010) = 131 Inches Per Mile.
Construction Build Up ~ 355 Pounds Per Square Yard HMA (Approximately 3.20”)
Ride Quality / Smoothness - Thin Lift Asphalt

- Average Pre - Construction MRI (2020) = 72 Inches Per Mile.
- Construction Build Up = 70 Pounds Per Square Yard HMA (Approximately 0.63”)
- Average Post - Construction MRI (2021) = 53 Inches Per Mile.
- Significant Average MRI Improvement Of 19 Inches Per Mile.
- Quiet Ride.

ECONOMICS OF THIN LIFT ASPHALT TREATMENTS

Project Cost - Thin Lift Asphalt Mix

- Thin Lift Asphalt = 3,102 Tons At $99.87 Per Ton. Approximately $3.50 Per Square Yard.
- Total Cost - $309,796.74
- Average Cost Per Mile = $58,178 Per Mile.
- Average Cost Per Lane Mile = $29,089 Per Lane Mile.

Thank You

- ALDOT (Scott George, John Jennings and Frank Bell).
- ALDOT West Central Region – Tuscaloosa Area.
- Wiregrass Construction Company, Inc. (Garrett Pass).
- 2021 AAPA Quality Pavement Award Winning Project – Special Projects Category.

Other Thin Lift Mix Projects

- NCAT Test Track.
- NCAT County Road 159 Sections.
- NCAT US 280 Sections.
- City Of Opelika Roads.
- No Structural Issues Reported.
- No Major Performance Issues Reported.
- No Friction Number Issues Reported. Some NCAT Sections Exceeded ALDOT Carbonate Stone (Limestone) Criteria.

Projects To Date
Thin Lift Mix
Sample Mix Design #1
- 50% Limestone Screenings.
- 38% Granite Screenings.
- 10% Sand.
- 2% Baghouse Fines.
- Design Asphalt Content : 6.25%.

Thin Lift Mix
Sample Mix Design #2
- 57% Granite Screenings.
- 22% Sand.
- 20% RAP.
- 1% Baghouse Fines.
- Design Asphalt Content : 6.20%.

City Of Opelika Road

SR 175 Thin Lift Asphalt Project
Pavement Design Program
- PaveXpress
- www.pavexpressdesign.com
- Accessible Via Web And Mobile
- Free, No Cost To Use
- Based On AASHTO Pavement Design Equations
- User - Friendly
- Share, Save And Print Project Designs
- Interactive Help And Resource Links

AAPA Publications
- www.alasphalt.com
- Asphalt Pavement Design Guide For Low-Volume Roads And Parking Lots
- Alabama Porous Pavement Parking Lots Guide Specifications
- OGFC Best Practices Guidelines

Questions ?????

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SR 175 Thin Lift Asphalt Project