Rubbilization

Paving The Way To Smooth Pavement
A.L. Blades & Sons
Who We are!

- Started in early 1900’s

Work is commenced on the North Hornell Trolley Line

Witt & Blades, Who Have Contract, Will Rush Construction as Rapidly as Possible

Witt & Blades, the successful contractors who secured the contract for building the spur through North Hornell to the grounds of the County Club, started the actual construction work this morning. Teams and men are at work rushing the grading which they expect to have completed within the coming month.

Three other bids were submitted for the contracts. Mr. Blades stated this morning that the road would be completed and ready for use long before snow flies. The material for the road has been on the ground some time and the bridge which is to be erected across the river a short distance below the road bridge will be started within a few days.

The track is about a mile long and will follow the right of way of the Bath-Hammondsport Intercity line which traverses the land of the Pitts- burg Hornell Realty Company. The new road will be up to date in every respect. The Intercity Company has given permission to use the right of way and everything is in readiness to rush the work along.
A.L. Blades & Sons
Who We are!

First in the Liquid Asphalt Business

1923
A.L. Blades & Sons

Who We are!

- Added Hot Mix Asphalt

1931
A.L. Blades & Sons

Who We are!

- Added Emulsion Asphalt Manufacturing Plant

1965
A.L. Blades & Sons
Who We are!

Added Aggregate Production

Howard Gravel 1995

Bath Quarry 1968
A.L. Blades & Sons
Who We are!
Added Structures
Division

1985
A.L. Blades & Sons

Who We are!

Vertically Integrated
A.L. Blades & Sons
Who We are!

Vertically Integrated
Project Locations

Map showing locations for D259845 and D259577 projects.

[Map details with project locations marked]
I-86 Project Background

- **Project Objective:**
  - Restore pavement to a condition of Structural and functional adequacy
  - 7 alternatives considered
  - Ranged from Maintenance to Full depth asphalt or concrete Pavements
    - Maintenance did not meet objective
    - Complete Reconstruction out because of financial limitations
    - Poor pavement Condition ruled out overlay and saw and seal
    - Also ruled out Crack & Seat and overlay
  - Rubblizing offered only feasible and affordable solution!
Project Details

- Two Contracts totaled $22.7 Million Dollars
- Rubblize with Three Course Superpave Overlay
- 280,000 Metric Tons
  - PG 64-28 with 2% SBR Injected at the Plant during Production
Rubblization Projects

- Original Construction
  Early 70’s
- Little Maintenance
Rubblization Projects

- Broken Slabs, Spalling
- Extensive Slab Cracks
Underdrain Installation

Underdrain installed the previous Year
Rubblization Equipment

Resonant Breaker

Multi-Head Breaker
Resonant Breaker

Min. Impact Energy:
2.7 kJ @ 44 Impacts/sec.
Unstable Areas at Joints

Unstable Area

03/01/2002
Rolling with Double Drum Vibratory Roller
One Lane Broken and Rolled
Surface: Resonant Breaker

Acceptable Pattern:
Surface: 150mm (6”) Max.
Bottom: 450mm (18”) Max.
Resonant Resonant Breaker

Rubblized Pavement
Multiple Head Breaker

- 12 – 1ft. Drop hammers
- 1000 to 1200 Lb. each
- Variable Height
- Adjustable Sequence
- Adjustable Speed
Multiple Head Breaker
Multiple Head Breaker
Multiple Head Breaker
Vibratory Grid Roller
Effect of Grid Roller

[Image of a road with a grid pattern and the words "Grid Rolled" overlaid]
Unstable Areas at Joints
Multi-Head Sizing
Wire Mesh
Wire Mesh Removal
Rubblized Paving Surface
Pavement Design

- Superpave Mixes
- <10.0 Million ESALs
- 100 mm (4in.) 37.5mm Base
- 60 mm (2.5in.) 19.0mm Binder
- 40 mm (1.5in.) 9.5 mm Top
Polymer Modified PG Binder

- PG 64-28
- 2 Options:
  - Meet Elastic Recovery of 60% min.
  - 2% solids SBR or SBS in-line Blended or injected into the pugmill at the HMA Facility
Challenges to Paving Smooth on Rubblized Concrete

- D259577 Cuba to Friendship
  - **No** Smoothness Specification
- D259845 Friendship to Belvidere
  - NYSDOT Smoothness Specification Level 1
  - Incentive and Disincentive
  - Measured on final Top Course
Grade and Slope Change
Section After Rubblization
Differences in Depths

- **Binder:**
  - Over 29% Difference in Core Heights

- **Top:**
  - Over 25% Difference in Core Heights
Tandem Paving

- 200 ft. between pavers
Tandem Paving

- Different Widths = Different Rates
- More Frequent Paver Stops
Rolling Pattern

Congestion at 2nd Paver
Tackcoat Troubles
Effect of Latex Binder

Sticky
Latex
Modified
Binder
Paver Modifications for Dump Man
Top Course Paving Challenges

- Completed thru Binder in 2004
  - Opened to Traffic for winter
- Top Course moved under rollers
  - Variable Densities
  - Probably impacted smoothness
Top Course Paving Challenges

- Increased Tack Coat Application Rate
- Changed Roller Patterns
## General Ride Quality

<table>
<thead>
<tr>
<th>IRI (M/Km)</th>
<th>D259577 Cuba to Friendship</th>
<th>D259845 Friendship to Belvidere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binder</td>
<td>Top</td>
<td>Base</td>
</tr>
<tr>
<td>EB Drive</td>
<td>.921</td>
<td>1.942</td>
</tr>
<tr>
<td>WB Drive</td>
<td>.821</td>
<td>1.689</td>
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<tr>
<td>EB</td>
<td>.904</td>
<td>1.735</td>
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<tr>
<td>WB Passing</td>
<td>.904</td>
<td>1.660</td>
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</table>
Driving Lane/Passing Lane Comparisons

IRI Readings I-86 Friendship to Belvidere

**Base**

**Binder**

IRI Readings I-86 Friendship to Belvidere

**BASE:**

**DRIVING LANE**

**PASSING LANE**

**BINDER:**

**DRIVING LANE**

**PASSING LANE**

Segment

0.500 0.700 0.900 1.100 1.300 1.500 1.700 1.900 2.100 2.300 2.500 2.700 2.900 3.100 3.300 3.500 3.700

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37
Base to Binder Improvement

IRI Improvement Driving Lane

IRI Improvement Passing Lane

BLADES
## NYS Incentive/Disincentive

### Table 1: Determination of Quality Units

<table>
<thead>
<tr>
<th>LEVEL 1 PRQ 1ot IRI (m/km)</th>
<th>Quality Units</th>
<th>LEVEL 2 PRQ 1ot IRI (m/km)</th>
<th>Quality Units for Two Courses</th>
<th>Quality Units for Single Course</th>
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</thead>
<tbody>
<tr>
<td>&lt; 0.60</td>
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<td>&lt; 0.75</td>
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<td>5</td>
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<tr>
<td>0.61 - 0.85</td>
<td>5</td>
<td>0.76 - 1.00</td>
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<tr>
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<td>1.01 - 1.25</td>
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<tr>
<td>1.11 - 1.30</td>
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<td>1.26 - 1.45</td>
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<td>1.31 - 1.50</td>
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<td>1.46 - 1.65</td>
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<td>-5</td>
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<tr>
<td>&gt; 1.50(^{(1)})</td>
<td>-20</td>
<td>&gt; 1.65(^{(1)})</td>
<td>-20</td>
<td>-10</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Indicates special conditions or notes for these values.
• **Incentive on D259577**
  (If It had the Pavement Ride Quality Spec.)

- **Incentive Available:** $91,200
- **Incentive Achieved:** $19,069
- **20.9% of Available Incentive**

<table>
<thead>
<tr>
<th>Region</th>
<th>Index Price ($/Quality Units)</th>
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<tbody>
<tr>
<td>1</td>
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<td>80</td>
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Conclusions: (sort of)

- Rubblization makes a great Base
- Limit Destruction of Grade and Slope
- The Smoother you Start the smoother you finish
- Leveling Course on Rubblized Concrete
- Designers: Construction Restrictions will effect smoothness!
Questions?

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