PIATT COUNTY
MONTICELLO ROAD
COUNTY HIGHWAY 4
WHITETOPPING
RUBBLIZATION
THOSE INVOLVED

• Agency: Piatt County
• Contractor: Open Road Paving Company, LLC
• Sub-Contractor: Antigo Construction Inc.
• Lead Consultant: Fehr-Grahm & Associates
• Consultant: Engineering and Research International, Inc.
PROJECT SCOPE

• Original project was to add 4 foot safety shoulders
• New drainage structures and upgrade ditches
• Existing 5 miles of 5 inch PCC Pavement Whitetopping placed in 2000 showing signs of distress
PROJECT SCOPE

• Original project was to add 4 foot safety shoulders
• New drainage structures and upgrade ditches
• Existing 5 miles of 5 inch PCC Pavement Whitetopping placed in 2000 showing signs of distress
• Decision was made to address failing PCC Pavement
EXISTING CROSS SECTION
EXISTING CROSS SECTION

± 8” AGGREGATE BASE
EXISTING CROSS SECTION

3” HMA SUB-BASE

± 8” AGGREGATE BASE
EXISTING CROSS SECTION

- 5” PCC PAVEMENT
- 3” HMA SUB-BASE
- ± 8” AGGREGATE BASE
REPLACEMENT OPTIONS

- Remove existing PCC Pavement and place new HMA directly over existing HMA Pavement
REPLACEMENT OPTIONS

• Remove existing PCC Pavement and place new HMA directly over existing HMA Pavement

• Remove existing PCC Pavement and existing HMA Pavement and place new PCC Pavement over Base Course (Rigid Pavement Design)
REPLACEMENT OPTIONS

• Remove existing PCC Pavement and place new HMA directly over existing HMA Pavement

• Remove existing PCC Pavement and existing HMA Pavement and place new PCC Pavement over Base Course (Rigid Pavement Design)

• Remove existing PCC Pavement and place new PCC Pavement over existing HMA Pavement (Whitetopping Pavement Design)
REPLACEMENT OPTIONS

• Remove existing PCC Pavement and place new HMA directly over existing HMA Pavement

• Remove existing PCC Pavement and existing HMA Pavement and place new PCC Pavement over Base Course (Rigid Pavement Design)

• Remove existing PCC Pavement and place new PCC Pavement over existing HMA Pavement (Whitetopping Pavement Design)

• Rubblize existing PCC Pavement and place new HMA over rubblized PCC Pavement
MINIMUM THICKNESS REQUIRED
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| REMOVE PCC | 7.75" HMA |
## Minimum Thickness Required

<table>
<thead>
<tr>
<th>REMOVE PCC</th>
<th>REMOVE PCC &amp; HMA</th>
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<tbody>
<tr>
<td>7.75” HMA</td>
<td>7.25” PCC (Rigid)</td>
</tr>
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## Minimum Thickness Required

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<th>RUBBLIZE PCC</th>
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</thead>
<tbody>
<tr>
<td>7.75” HMA</td>
<td>7.25” PCC (Rigid)</td>
<td>9.00” PCC  (Whitetopping)</td>
<td>4.75” HMA</td>
</tr>
</tbody>
</table>
PROPOSED CROSS SECTION

5” PCC RUBBLIZED PAVEMENT

3” HMA SUB-BASE

± 8” aggregate base
PROPOSED CROSS SECTION

2.5” TO 3.5” HMA LEVEL BINDER

5” PCC RUBBLIZED PAVEMENT

3” HMA SUB-BASE

± 8” AGGREGATE BASE
HMA LEVEL BINDER

• 2.5” TO 3.5” thick depending on location
• To be placed full width in two separate but equal lifts
• IL 9.5 Fine Graded level binder
• PG 64-22
• N50
• Concerns over first lift thickness and eventual ride quality
PROPOSED CROSS SECTION

± 8" AGGREGATE BASE

3” HMA SUB-BASE

5” PCC RUBBLIZED PAVEMENT

2.75” HMA BINDER
HMA BINDER

- Single lift of Fine Graded Binder
- 2.75” Thick placed full width
- PG 58-28
- N50
PROPOSED CROSS SECTION

- ± 8” AGGREGATE BASE
- 3” HMA SUB-BASE
- 5” PCC RUBBLIZED PAVEMENT
- 2.75” HMA BINDER
- 0.75” HMA LEVEL BINDER
HMA LEVEL BINDER

- 0.75” HMA Level Binder
- Placed full width
- IL 9.5 Fine Graded level binder
- PG 64-22
- N50
FINAL CROSS SECTION

- 1.5” HMA SURFACE
- 0.75” HMA LEVEL BINDER
- 2.75” HMA BINDER
- 5” PCC RUBBLIZED PAVEMENT
- 3” HMA SUB-BASE
- ± 8” AGGREGATE BASE
HMA SURFACE

- 1.5” HMA Surface
- Placed full width
- IL 9.5
- PG 64-22
- N50
RUBBLIZING EQUIPMENT

- Multi-head Breaker (MHB)
- Z-Pattern Steel Grid Roller
- Vibratory Steel Wheel Roller
- Pneumatic Tired Roller
MULTI-HEAD BREAKER

• Self-contained, self-propelled MHB

• Hammer heads shall be mounted laterally in a single row or in pairs with half the hammers in a forward row and the remainder diagonally offset in a rear row

• Hammer drop height shall have the ability to be independently controlled
Z-PATTERN STEEL GRID ROLLER

• Self-contained, self-propelled vibratory steel wheel roller with a Z-pattern grid cladding mounted transversely to the surface of the drum

• Minimum gross weight of 10 tons
VIBRATORY STEEL WHEEL ROLLER

• Minimum gross weight of 10 tons
PNEUMATIC TIRED ROLLER

• Roller shall develop a compression of not less than 300 lb/in nor more than 500 lb/in of width of the tire tread in surface contact
RUBBLIZING SPECIFICATIONS

• Upper half of the pavement shall be broken such that 75% of the pieces are a maximum of 3”

• Lower half of the pavement shall be broken such that 75% of the pieces are a maximum of 9”
COMPACTION REQUIREMENTS

• Minimum of four passes with Z-pattern roller
• Minimum of four passes with a vibratory roller
• Minimum of two passes with a pneumatic-tired roller
• Minimum of two passes with a vibratory roller immediately prior to overlay
AWARDED COST

• Total awarded bid $4,853,677.40
• Concrete Rubblization bid $84,489.75 (62,585 SQ YD @$1.35)
SS-1H at 0.30 GAL/SQYD