CHIP SEAL: A PROGRAMMATIC APPROACH

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Texas – A Whole Other Country

Statistics

- 194,000 Lane Miles
- 21,000 LM chip sealed annually
- $357 Million annually spent on chip seals
Safety + Preservation = Chip Seals

- Average annual fatalities on Texas roads: 3,208
- Average annual fatalities attributable to wet weather: 286
- **87.19** percent of our roads in good or better condition
Statewide Preservation: A Programmatic Asset Focus

PAST
PM FUNDING: FOCUSED ON ADT / LOADING

FUTURE
PM FUNDING: FOCUS ON CONDITION “KEEPING THE GOOD / GOOD”

- Typical Financial Investment in Preventative Maintenance and Rehabilitation
- $1.3 Billion / YR : Choosing PM vs. REHAB – looking to optimize
Competitive Bidding

- **Statewide Specifications**
  - Tiered system for binder selection
  - Aggregate selection tool
  - PG binder system
Competitive Bidding

- Alternative Contract Bidding Processes
  - Bid Alternates
  - Bid Options
  - Bid Optimization

- Performance Based: Looking Ahead
  - Warranty
  - Embedment Performance
Support Knowledge Transfer

- **Annual Training**
  - Inspector Training
  - Chip Seal workshops

- **Industry Partnerships**
  - Texas Asphalt Pavement Association
  - Texas Transportation Institute
  - UT Center for Lifetime Engineering Education (CLEE)
  - Associated General Contractors of Texas
## Project Samples Tested as SPG

<table>
<thead>
<tr>
<th>Current Grade</th>
<th>Surface Performance Grade of Multiple Project Samples</th>
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<tbody>
<tr>
<td>AC-20-5TR</td>
<td>67-16  70-13  70-16  70-19  73-16  73-19  76-16  79-19</td>
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<tr>
<td>CRS-2</td>
<td>64-10  67-13</td>
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<tr>
<td>CRS-2P</td>
<td>70-10  76-16  79-16</td>
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<tr>
<td>AC-10</td>
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<tr>
<td>AC-15P</td>
<td>70-19  73-13  73-19  73-22</td>
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</tbody>
</table>

- Grade selection based on climatic temperature and field condition
- Current specifications allow for multiple proposed SPG grade binders.
Possible SPG Requirements (6 degree increments)
Impacts on Pavements Conditions

- Hansford Co: -20.8%
- Winkler Co: -10.3%
- Karnes Co: -30.7%
- McMullen Co: -20.0%
Surface Damage and Deformation

Traditional materials and design have to be changed.
SUCCESSFUL PROJECT SELECTION

Pavement Management System
Best Practice: tool to use in determining “proper treatment at the proper time”...
Good Chip Seal Cycle Builds a Good Maintenance Program

Best Practice: full-time chip seal designer and inspector

“...it’s an annual operation that requires designer and inspector working together...”
Candidate Selection Process

Development

- Surface Work History
- Existing 4-yr Plan
- PMIS Data
- District Staff and Offices

Selection

- Candidates
- Full Construction and Maintenance Listing

Letting

Candidate Selection
Figure 4-10
Repairs and Patching

- Base Repair
- Edge Repair
- Crack Sealing
Repairs and Patching

- Milling or Planing
- Level Up
- Pothole Repair
Considerations:

- Distance from roadway
- Drainage
- Sight distance
- Adjacent property access
Chip Seal Placement
Seal coat program preparations are iterative and repeating processes

Lessons Learned for That Year

Winter: surface preparation, patching, etc

Spring: stockpiling aggregate, early seals begin

Project Selection and Placement

Fall: monitor performance, fog seal if needed