Pavement Management & Sidewalk Study
Presentation Overview

- Pavement Management Introduction

- Pavement Management in Mansfield
  - Current Conditions
  - Projected Funding Needs
What is Pavement Management?

The practice of planning for pavement maintenance and rehabilitation with the goal of maximizing the value and life of a pavement network.

Otherwise known as:

“Getting the Biggest Bang for Your Buck”
The Process

- Visual Pavement Condition Assessment
- Pavement Condition Index (PCI)
- Define Repair Strategies and Costs
- Test Budget Scenarios
- Develop list of candidate projects
- "Ground Truth"
  - Apply engineering judgement
  - Apply local knowledge
  - Organize work within neighborhoods
  - Consider funding opportunities
  - Coordinate with other work
Pavement Treatment Bands

*Do Nothing Condition* (PCI 93-100)

*PCI* = 100

*Morse Court*
Pavement Treatment Bands

Routine Maintenance Condition (PCI 85-92)

PCI = 89

Fisher Lane

Treatment options – Crack sealing
Pavement Treatment Bands

Preventive Maintenance Condition (PCI 73-85)

PCI = 77

Fruit Street

Treatment options – Crack Seal & Patch or Chip Seal
Pavement Treatment Bands

Structural Improvement Condition (PCI 61-72)

PCI = 67

Treatment options – Mill & Overlay or Overlay, both with patching preparation

Fulton Street
Pavement Treatment Bands

Base Rehabilitation Condition (PCI 0 - 60)

 PCI = 42

Brown Avenue

Treatment options – Reclamation, Reconstruction
Pavement Management in Mansfield

- Town wide pavement evaluations in 2003, 2009, and 2017
- Average PCI has held steady at 82, 80, and 82, respectively
- Pavement network has been managed well, using variety of treatments (Reclaim, Mill & Overlay, Chip Seal, Crack Seal)
- Treatments have been used cost effectively (not “Worst First”)
- In some cases, Chip Seal has been used as a “Stop Gap” treatment
PCI Distribution

Average PCI = 82
# Pavement Backlog Summary

<table>
<thead>
<tr>
<th>Treatment Band</th>
<th>Cost</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do Nothing</td>
<td>-</td>
<td>14.7</td>
</tr>
<tr>
<td>Routine Maintenance</td>
<td>$871,000</td>
<td>14</td>
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<tr>
<td>Preventive Maintenance</td>
<td>$2,038,000</td>
<td>12.5</td>
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<tr>
<td>Structural Improvement</td>
<td>$4,420,000</td>
<td>54.3</td>
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<tr>
<td>Base Rehabilitation</td>
<td>$9,092,000</td>
<td>25.2</td>
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<tr>
<td><strong>Grand Total</strong></td>
<td><strong>$16,421,000</strong></td>
<td><strong>120.7</strong></td>
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</tbody>
</table>
Pavement Backlog Summary

**Miles**
- Routine Maintenance: 45%
- Base Rehabilitation: 12%
- Preventive Maintenance: 12%
- Structural Overlay: 10%
- Do Nothing: 21%

**Dollars**
- Base Rehabilitation: 55%
- Structural Overlay: 27%
- Preventive Maintenance: 13%
- Routine Maintenance: 5%
- Do Nothing: 21%
Sidewalk Material And Condition

- HMA: 76.4 Miles
- PCC: 21.2 Miles

Condition:
- Excellent: 50.5 Miles
- Good: 32.1 Miles
- Fair: 8.0 Miles
- Poor: 7 Miles
## Sidewalk Backlog Summary

<table>
<thead>
<tr>
<th>Material</th>
<th>Condition</th>
<th>Total Length</th>
<th>Total Cost</th>
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</thead>
<tbody>
<tr>
<td>Portland Cement Concrete</td>
<td>Poor</td>
<td>7,415</td>
<td>$576,505</td>
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<tr>
<td></td>
<td>Fair</td>
<td>24,153</td>
<td>$408,545</td>
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<tr>
<td></td>
<td>Good</td>
<td>55,714</td>
<td>$142,143</td>
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<tr>
<td></td>
<td>Excellent</td>
<td>24,457</td>
<td>$0</td>
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<tr>
<td>Hot Mix Asphalt</td>
<td>Poor</td>
<td>29,288</td>
<td>$1,882,881</td>
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<td></td>
<td>Fair</td>
<td>145,427</td>
<td>$1,766,379</td>
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<td></td>
<td>Good</td>
<td>211,076</td>
<td>$766,469</td>
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<tr>
<td></td>
<td>Excellent</td>
<td>17,585</td>
<td>$0</td>
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<tr>
<td><strong>Grand Total</strong></td>
<td></td>
<td><strong>$5,542,922</strong></td>
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# Ramp Backlog Summary

<table>
<thead>
<tr>
<th>Material</th>
<th>Condition</th>
<th>Number to Replace</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland Cement Concrete</td>
<td>Poor</td>
<td>12</td>
<td>$26,400.00</td>
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<tr>
<td></td>
<td>Fair</td>
<td>26</td>
<td>$57,200.00</td>
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<td>Hot Mix Asphalt</td>
<td>Poor</td>
<td>37</td>
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<td></td>
<td>Fair</td>
<td>98</td>
<td>$215,600.00</td>
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<td><strong>Grand Total</strong></td>
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<td><strong>$380,600</strong></td>
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Pavement Funding Scenario Analysis

The predicted effects of 3 pavement only funding scenarios were compared:

- $750,000 per year for 5 years (Chapter 90 Funding)
- $2.0 Million per year for 5 years
- $2.75 Million per year for 5 years
Pavement Funding Scenario Analysis

- $750K
- $2 Million
- $2.75 Million
Funding Needs Summary

- The funding analysis estimates $2M needed annually to maintain an average PCI of 85
- In addition, an estimated $200k (10% of pavement cost) will be required for associated drainage improvements
- Also, approximately $500k per year (25% of pavement cost) will be needed to improve sidewalk conditions
Questions & Answers