City of Lomita, CA

PAVEMENT MANAGEMENT PROGRAM

2014-2019
Background

Pavement Maintenance Inventory

- Pavement studies performed in 2006, 2011 & 2014
- 6,306,200 SF of pavement throughout City
- Arterial network – 4.2 centerline miles
- Local network – 29.0 centerline miles

The City’s largest asset with an estimated replacement cost of $60 million
Factors That Effect Pavement Life

• Traffic volume and static / dynamic loads
• Weather (rain, poor drainage, extreme heat, freezing)
• Type of pavement
• Age of pavement
• Water runoff / pumping (high water)
• Soil and base material under pavement
• Preventative maintenance efforts and available funding
Need a Tool to Manage Pavement Information and Answer Questions:

- What is the size of the pavement network?
- What condition is it in?
- How fast is it deteriorating?
- When do I need to perform repairs to maximize pavement life?
- Where should we focus our maintenance?
- How much will it cost?

MicroPAVER

- This software is heavily used throughout Southern California:
  - This includes over 200 cities within California; 30+ cities in LA County and all 35 cities in Orange County
  - MicroPAVER allows for the collection of 20 Asphalt Concrete (AC) and 19 Portland Cement Concrete (PCC) distress types
  - Three levels of severity can be collected for each distress type (Low, Medium, and High)
Pavement Management Program

• Steps to Implementing a PMP:

Step 1: Assessment of Existing Pavement Network

Step 2: Update of Work Histories

Step 3: Pavement Condition Survey (Inspections)

Step 4: Develop Rehabilitation Strategies / Life-cycle Analysis

Step 5: Forecast Future Pavement Rehabilitation Projects and Costs

Step 6: Develop 5-year Plan based on available budget and desired goals
2014 Update of Lomita PMP

- Over the past several months the City has been working with Bucknam Infrastructure Group to assess the previous PMP database, its pavement segmentation and to incorporate data recent pavement maintenance work histories

- Completed a pavement condition survey on all streets to generate a Pavement Condition Index (PCI) for each pavement section – QC variances to 2011 study

- Developed and ranked street conditions, maintenance recommendations, and cost estimates for all streets based on current conditions and maintenance practices

- Developed a CIP maintenance and rehabilitation schedule to report on the overall weighted average PCI anticipated for the next 5 years based on projected available funding

- Prepared the citywide PMP report for LACMTA (METRO)
Pavement Condition Index (PCI)

- The PCI is a condition rating that ranges from 0 to 100
- Citywide Weighted Average PCI = Pavement section PCI x by its area / by the total area of the network
PCI = 86 to 100 (Very Good)

Action → Preventative/Stop Gap
PCI = 60 to 85 (Fair to Good)

Action → Surface Treatment (Slurry Seal)
PCI = 41 to 60 (Poor)

Action → 2” – 3” Cape Seal or Overlay
PCI = 0 to 40 (Failed)
Action → 4” to 6” Reconstruction
Lomita Street Network

- The City of Lomita Street Network:
  - Arterial roads consist of approx. 1,508,000 SF of pavement totaling 4.2 centerline miles
  - Local streets consist of approx. 4,798,000 SF of pavement totaling 29.0 centerline miles

- The weighted average PCI for the Arterials is **70.2 (66.8 in 2011)**

- The weighted average PCI for the Locals is **59.2 (56.9 in 2011)**

- The overall citywide average PCI is **61.8 (Overall PCI in 2011 study was 59.2)**
Current Street Network Pavement Condition Summary

<table>
<thead>
<tr>
<th>Condition</th>
<th>PCI Range</th>
<th>Arterials</th>
<th>Locals</th>
<th>Total Mi.</th>
<th>% of Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Good</td>
<td>86-100</td>
<td>1.5</td>
<td>5.1</td>
<td>6.6</td>
<td>20%</td>
</tr>
<tr>
<td>Good</td>
<td>75-85</td>
<td>0.8</td>
<td>4.6</td>
<td>5.4</td>
<td>16%</td>
</tr>
<tr>
<td>Fair</td>
<td>60-74</td>
<td>0.7</td>
<td>5.7</td>
<td>6.4</td>
<td>19%</td>
</tr>
<tr>
<td>Poor</td>
<td>41-59</td>
<td>0.5</td>
<td>5.0</td>
<td>5.5</td>
<td>17%</td>
</tr>
<tr>
<td>Failed</td>
<td>0-40</td>
<td>0.7</td>
<td>8.6</td>
<td>9.3</td>
<td>28%</td>
</tr>
</tbody>
</table>

Arterial and Local quantities show total centerline miles
Current Street Conditions

PCI Distribution by Section Mileage (All Ranks)

- Very Good; 6.6; 20%
- Good; 5.4; 16%
- Fair; 6.4; 19%
- Poor; 5.5; 17%
- Failed; 9.3; 28%

Public Works Department
PCI Comparison to Surrounding Cities

- Citywide Weighted PCI’s
  - Fountain Valley = 75.2
  - Hermosa Beach = 74.6
  - El Segundo = 64.2
  - Sierra Madre = 69.4
  - Lomita = 61.8
  - Compton 58.1
  - Pico Rivera = 50.1
Citywide Street Network PCI Map
It is more cost effective to maintain a pavement section in good condition over its useful life in comparison to letting it deteriorate to the point that it requires a major overlay or reconstruction.
Maintenance Development

- Sample of projects considered and needing major overlay or reconstruction (Very Poor 0-40)
  - Oak Street (253rd to PCH), AC Reconstruction cost of $1,128,000-Funded
  - Narbonne Avenue (PCH to South City Limit), ARHM Overlay cost $392k
  - 241st Street (Pennsylvania to Narbonne), AC Overlay cost $334k
  - All three projects listed include five total sections @ 132,600 SF

- Spending an equal amount of revenue ($1.85 million) on slurry or cape seal would allow for 155 sections to receive maintenance covering 2,573,000 SF

It is more cost effective to maintain a pavement section in good condition over its useful life in comparison to letting it deteriorate to the point that it requires a major overlay or reconstruction – FINDING THE BALANCE BETWEEN PROJECTS IS KEY!
Next Steps

- Forecast Pavement Rehabilitation Projects
  - How does our current $200k/yr budget perform
  - What level of funding is necessary to achieve a PCI level of 75 in five years

- Need to Consider:
  - Current Funding – Special Assessment alternatives / Grants
  - Long-term Goals – Proactive Arterial - Local planning
  - Alternative pavement applications
  - Achieve goal of “preventative maintenance” condition
## Unit Cost Estimates (Pavement)

**Per Square Foot**

<table>
<thead>
<tr>
<th>PCI Range</th>
<th>Description</th>
<th>Unit Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 100</td>
<td>Preventative, Zipper, Stop Gap, Patching</td>
<td>Varies by Activity</td>
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<tr>
<td>60 - 80</td>
<td>Type II Slurry Seal</td>
<td>$0.40/SF</td>
</tr>
<tr>
<td></td>
<td><strong>Minimal Level of Service (65)</strong></td>
<td></td>
</tr>
<tr>
<td>40 - 60</td>
<td>Cape Seal</td>
<td>$0.75/SF</td>
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<tr>
<td>20 - 60</td>
<td>2&quot; AC Grind &amp; Overlay (Local)</td>
<td>$2.50/SF</td>
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<tr>
<td>20 - 60</td>
<td>2.5&quot; AC ARHM Overlay (Arterial)</td>
<td>$4.00/SF</td>
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<tr>
<td>0 - 60</td>
<td>Deep Patching, PCC Repair</td>
<td>$12.00/SF</td>
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<tr>
<td>0 - 20</td>
<td>Recon 4&quot;/6&quot; CAB</td>
<td>$10.00/SF</td>
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Unit Costs shown include a 35% contingency for admin, design, construction, etc.
Funding Analysis for PMP

**Scenario 1 - Actual Budget $200,000 / yr**

Budget – PCI = 58

<table>
<thead>
<tr>
<th>Plan Year</th>
<th>PCI Before</th>
<th>PCI After</th>
<th>Slurry / Cape</th>
<th>Overlay / Recon</th>
<th>Total $</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-15</td>
<td>61.8</td>
<td>63.6</td>
<td>$0</td>
<td>$334,000</td>
<td>$334,000</td>
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<tr>
<td>2015-16</td>
<td>62.4</td>
<td>64.3</td>
<td>$0</td>
<td>$1,128,000</td>
<td>$1,128,000*</td>
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<tr>
<td>2016-17</td>
<td>60.5</td>
<td>61.4</td>
<td>$59,220</td>
<td>$141,630</td>
<td>$200,850</td>
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<tr>
<td>2017-18</td>
<td>59.5</td>
<td>59.9</td>
<td>$61,710</td>
<td>$138,970</td>
<td>$200,680</td>
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<tr>
<td>2018-19</td>
<td>57.6</td>
<td>58.1</td>
<td>$60,430</td>
<td>$140,550</td>
<td>$200,980</td>
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<tr>
<td></td>
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<td></td>
<td><strong>$181,360</strong></td>
<td><strong>$1,883,150</strong></td>
<td><strong>$2,064,510</strong></td>
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</table>

**Scenario 2 – Reach PCI of 75 in Five Years $1,330,000 / yr**

City included annual 3% inflation and 35% contingency for contract administration, design, construction and management area included within budgetary calculations and summary tables.
2014 Lomita PMP Findings-Recommendations

- Current citywide weighted average PCI is 61.8 (Fair per MicroPAVER criteria) – an improvement since 2011 due to additional street maintenance budget
- Based on cost benefit, proactive overlay / reconstruction and right-of-way improvement program should be implemented to address deferred overlay maintenance and reduce backlog
- Implement MicroPAVER software and continue to inspect all streets every two to three years to monitor and audit the Lomita PMP deterioration model
- Use recommended pavement sections with Section IV of the Final Report to guide selection of street CIP projects, and to help select street sections for use of Asphalt Zipper
- Where street overlay or reconstruction is necessary, combine with water main replacement projects to increase efficiency
- Pursue alternative funding sources such as special assessments, grants, and cost effective asphalt materials (i.e. Cape Seal, HA-5 slurry, etc.)

Public Works Department
Questions?

City of Lomita
Public Works Department