



Pavement Assessment Update

How Pavement Management Fits Into The Larger Citywide AM Initiative



Pavement Management Program Components



Pavement Condition Assessment

- Provide Empirical Pavement Condition Information of the Roadway Network
- Summarize Distress Type, Distress Severity, and Distress Frequency For Each Roadway
- Inform Roadway Deterioration Curves and Impact of Maintenance Activities

Pavement Network Management Plan

- Predict Future Roadway Condition based on Deterioration Curves
- Utilize Lifecycle Optimization Model to Identify Optimized Maintenance Activity Timing for each Roadway within Planning Horizon to Meet Level of Service Requirements
- Develop a 5, 10, and 20-year Pavement Network Management Plan to Forecast Yearly Maintenance Activity, Budgetary Requirements, and Roadway Network Condition
- Updated as new pavement condition data becomes available

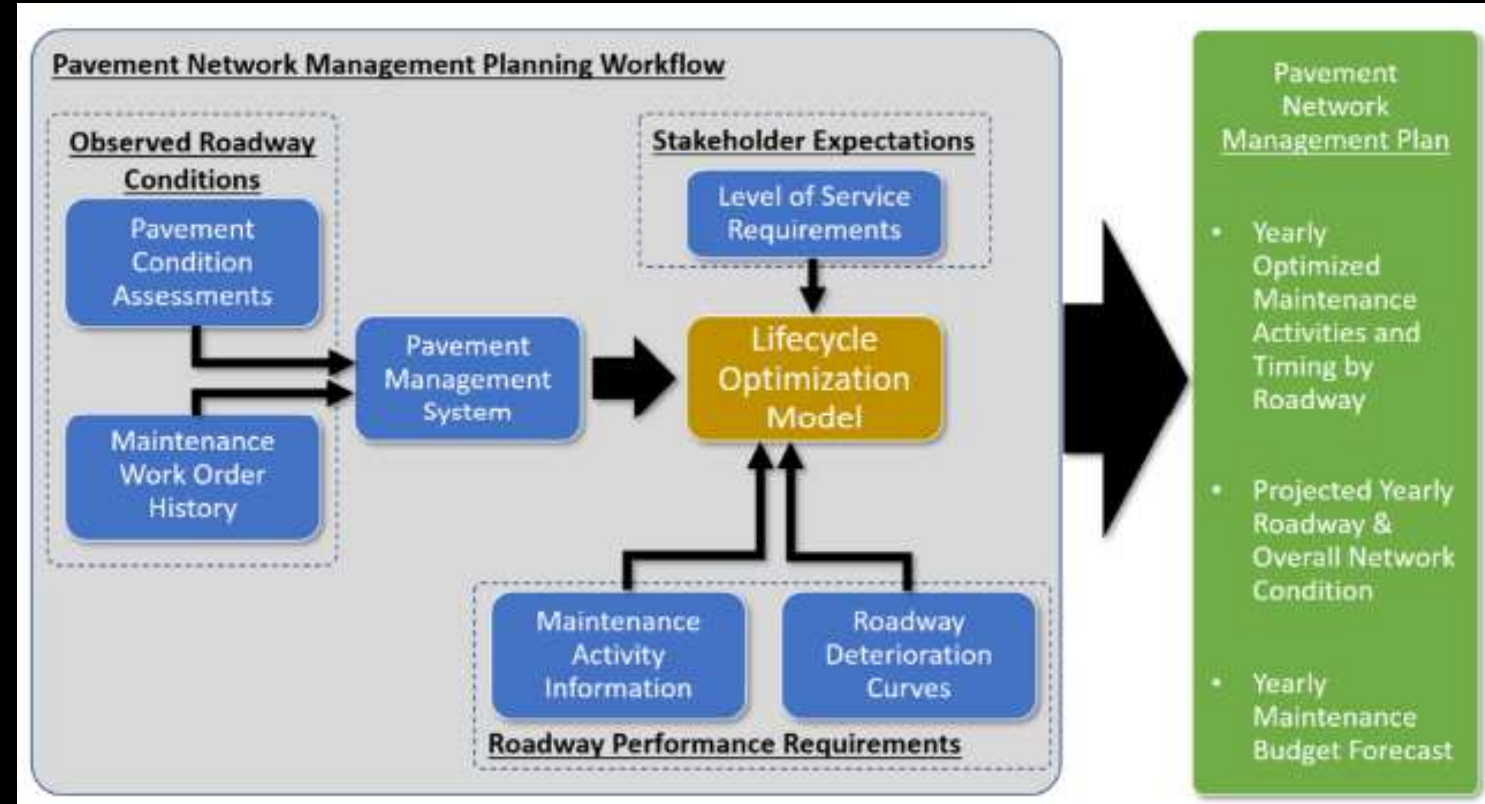
Pavement Improvement Planning Process

- Define Scope of Roadway Improvement Projects based on Optimized Maintenance Activity Timing and Pavement Distresses Observed During Pavement Condition Assessment Survey
- Consideration for Co-located Utility Renewal Replacement Improvements
- Package Adjacent Optimized Roadway Maintenance Activities into Projects

Purpose And Goals Of Study



- Incorporate recently completed pavement condition results into Cartegraph
- Utilize Cartegraph to evaluate strategies to efficiently maintain the roadway network
- Estimate cost and quantity of maintenance activities to:
 - Achieve an overall network condition target within a defined timeframe
 - Maintain network conditions long-term
 - Efficiently manage backlog



Initial Pavement Assessment Findings



- Initial pavement assessment performed in 2021.
- Provided city with a report where overall OCI score was 82.
- After review of the initial findings, city staff had concerns with the scores provided as there were a number of scores missing or listed at negative values and in many cases the scores provided were much higher than actual road conditions.
- Additionally, integration with Cartegraph was not included as part of procurement process.

Current Assessment Findings



- In 2023, Fugro was hired to perform a pavement assessment for the city.
- Results were provided to the city in the form of a report as well as electronically to be pushed into Cartegraph.
- Updated assessment showed that the Burleson Streets network had an average score of 68, 20% lower than the previous assessment.
- Current assessment shows that of the City's 222 total miles of road network, 38 miles have scores below 40 which will require reconstruction.
- Freese and Nichols have been working with City Staff to push data into Cartegraph for analysis.



2021 Assessment vs 2024 Assessment

| 2021 Assessment | | | |
|---------------------|------------------|-------------|-----|
| Overall Network OCI | Group | Description | OCI |
| 82 | Pavement Type | Asphalt | 75 |
| | | Concrete | 88 |
| | Functional Class | Arterial | 85 |
| | | Collector | 81 |
| | | Local | 82 |

| 2024 Assessment | | | |
|---------------------|------------------|-------------|-----|
| Overall Network OCI | Group | Description | OCI |
| 68 | Pavement Type | Asphalt | 51 |
| | | Concrete | 83 |
| | Functional Class | Arterial | 71 |
| | | Collector | 65 |
| | | Local | 68 |

*The 2024 assessment report also highlighted a disparity between the previous assessment and current assessment. Specifically, more than 20% of the scores in the two surveys had a 50% differential.

Maintenance and Rebuilding Strategy



Strategy Options

- Determine “acceptable” average network condition score by road classification type.
- Determine “acceptable” level of backlog or percentage of failed roadway network.
- Once maintenance treatment bid items are awarded, determine how long will it take to bring excess backlog into compliance and what is the financial impact of this.

Consultant Recommendations

- Maintain an average network condition score of 75.
- Keep the percentage of roadway network in failed condition below 10%.
- Reconstruct failed roadways within 5 years, as budget resources allow.

Backlog /Reconstruction 10 year example



The calculation below uses a goal to keep the total number of failed roadways at less than 10% of the total network. The projection is set to a 10 year interval to meet that goal. The costs listed below do not include any other maintenance treatments which would need additional funding. Provided the rest of the road network is maintained in accordance with the forthcoming management plan, no additional road sections should reach a failed status (>40 OCI).

| City of Burleson Streets | |
|--------------------------|-------------------|
| Total Network (miles) | 222 |
| Backlog (miles) | 38 |
| Backlog (SF) | 5,249,000.00 |
| Total Value | \$ 600,731,474.21 |

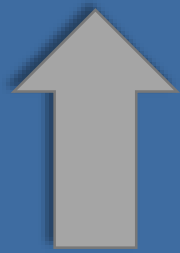
| Backlog Management Goals | |
|---|------|
| Backlog Goal (Percent of total network) | 10% |
| Reach Backlog Goal (Years) | 10 |
| Backlog Age | |
| Backlog Goal | 22.2 |
| Miles Exceeding Goal | 15.8 |

| Plan Year | Year | Total Backlog (miles) | Reconstruct Mileage to Manage Backlog | Reconstruct Cost to Manage Backlog |
|-----------|------|-----------------------|---------------------------------------|------------------------------------|
| 1 | 2024 | 38 | 1.58 | \$ 4,275,476 |
| 2 | 2025 | 36.4 | 1.58 | \$ 4,275,476 |
| 3 | 2026 | 34.8 | 1.58 | \$ 4,275,476 |
| 4 | 2027 | 33.3 | 1.58 | \$ 4,275,476 |
| 5 | 2028 | 31.7 | 1.58 | \$ 4,275,476 |
| 6 | 2029 | 30.1 | 1.58 | \$ 4,275,476 |
| 7 | 2030 | 28.5 | 1.58 | \$ 4,275,476 |
| 8 | 2031 | 26.9 | 1.58 | \$ 4,275,476 |
| 9 | 2032 | 25.4 | 1.58 | \$ 4,275,476 |
| 10 | 2033 | 23.8 | 1.58 | \$ 4,275,476 |
| 11 | 2034 | 22.2 | | |

Typical Planned Maintenance Activities



MAXIMIZE

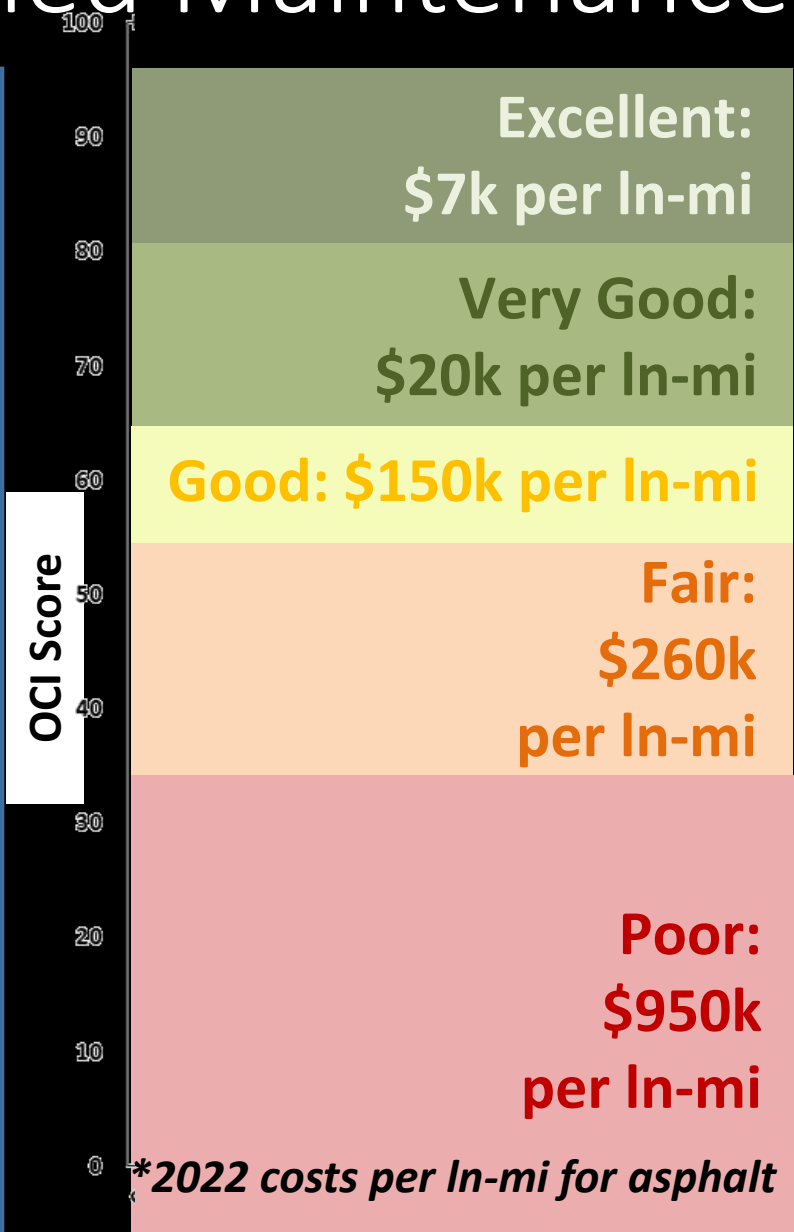


Network OCI ≥ 70
Community satisfaction
Roadway safety

MINIMIZE



Backlog % ($\leq 10\%$)
Whole Life Cost
Backlog % achievement timeframe
Backlog Age
Construction fatigue



Surface Treatment
Crack Seal
Micro Surfacing

Rehabilitation Maintenance
Mill & Overlay
Panel Replacement

Reconstruction (Bond-eligible)



Next steps

- Continue working with Freese and Nichols to push assessment data from “test” data base into production.
- Formalize backlog (rebuilding) vs maintenance funding and expectations as well as where ideal average network score should be.
- Pavement Maintenance bid documents are being prepared for advertising.
- Once contracts are finalized, bid amounts can be pushed to Cartegraph’s “scenario builder” to help Public Works & Engineering estimate and project budget resources.
- Develop and bring 5 and 10 year pavement management plan forward for council review.



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