

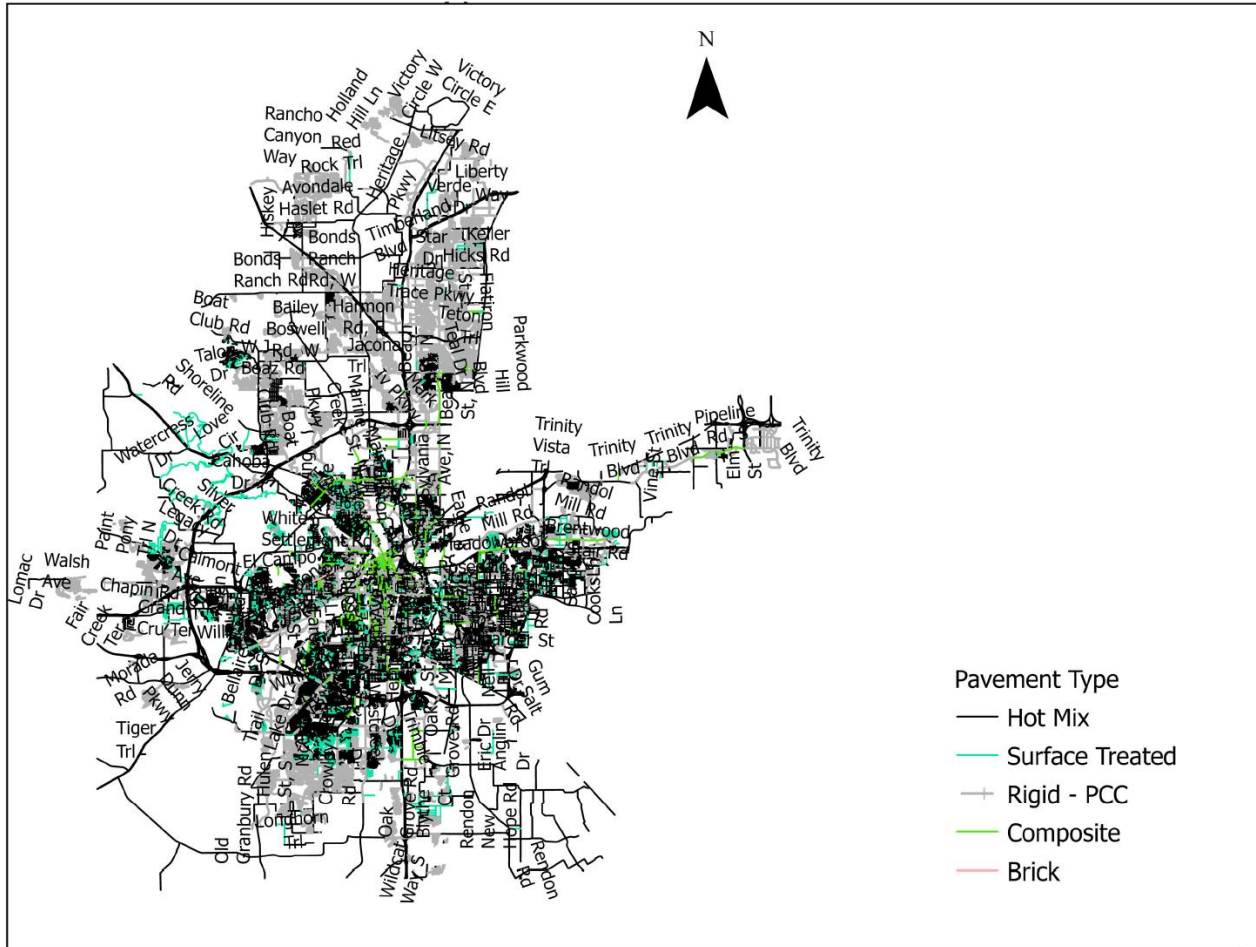
A Holistic Approach to Pavement Management: The Fort Worth Experience

Zelalem Arega, PhD, PE
City of Fort Worth
Pavement Management

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Outline

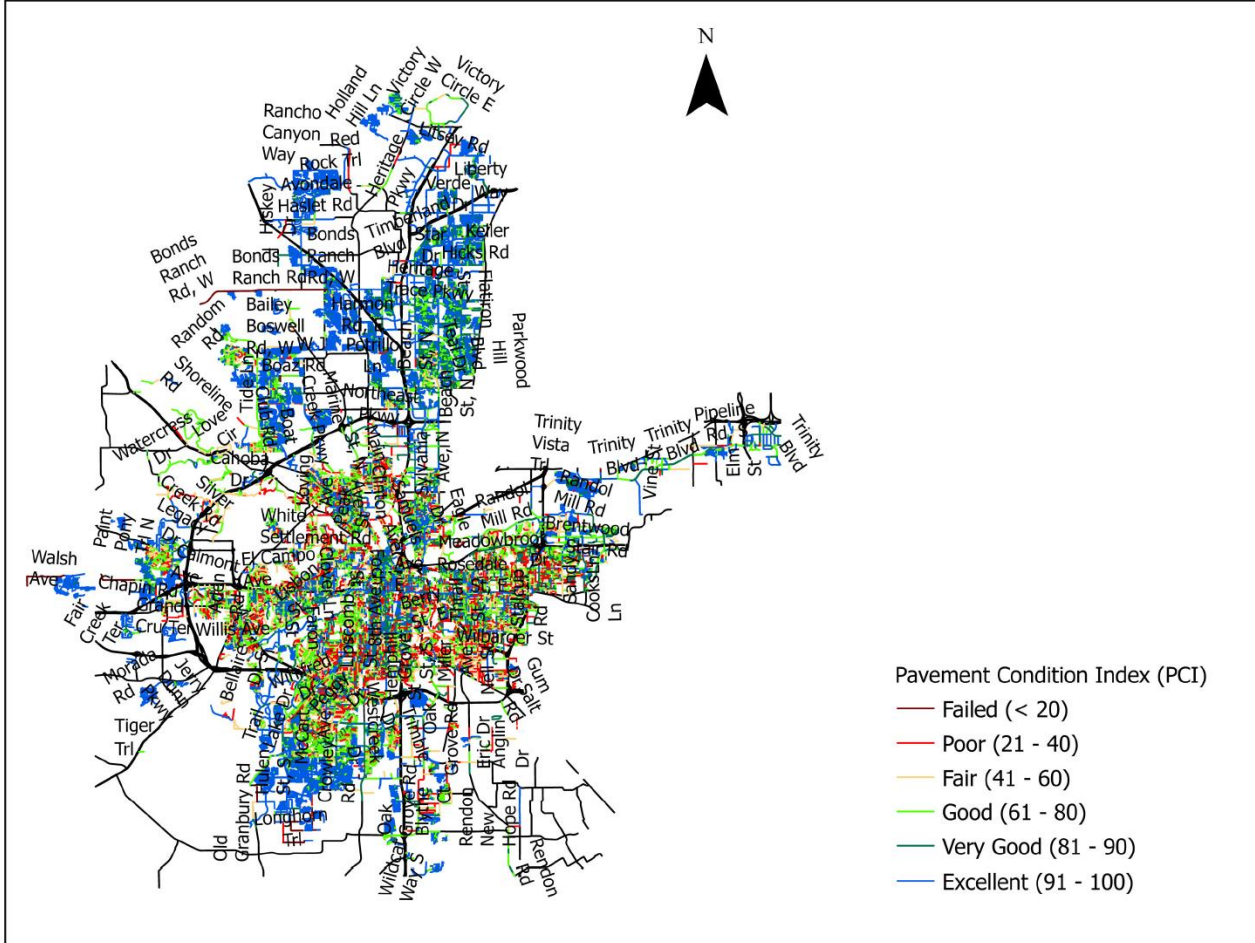
- ❑ Pavement Statistics
- ❑ Pavement Management Approach
- ❑ Pavement Performance
 - Pavement Materials
 - Pavement Design
- ❑ Takeaways



Pavement Statistics

Pavement Type	Lane Miles	Network Percentage
Asphalt (including Surface Treated)	4,314	51.8%
Concrete (Including Composite)	3,998	48.0%
Brick	19	0.2%

Network Lane Mile 8,334



Pavement Statistics

<u>Pavement Type</u>	<u>PCI</u>
Asphalt Pavement (52%)	58
Concrete Pavement (48%)	87

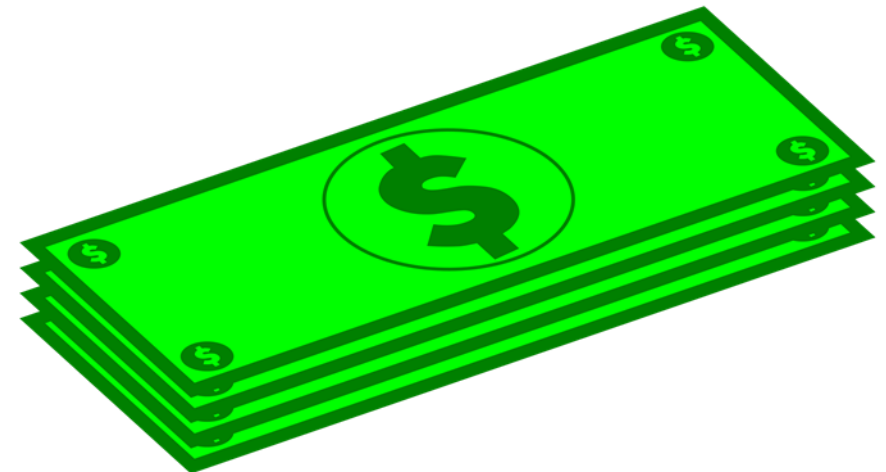
<u>Street Classification</u>	<u>PCI</u>
Residential Streets	73
Collector Streets	68
Arterial Street	75

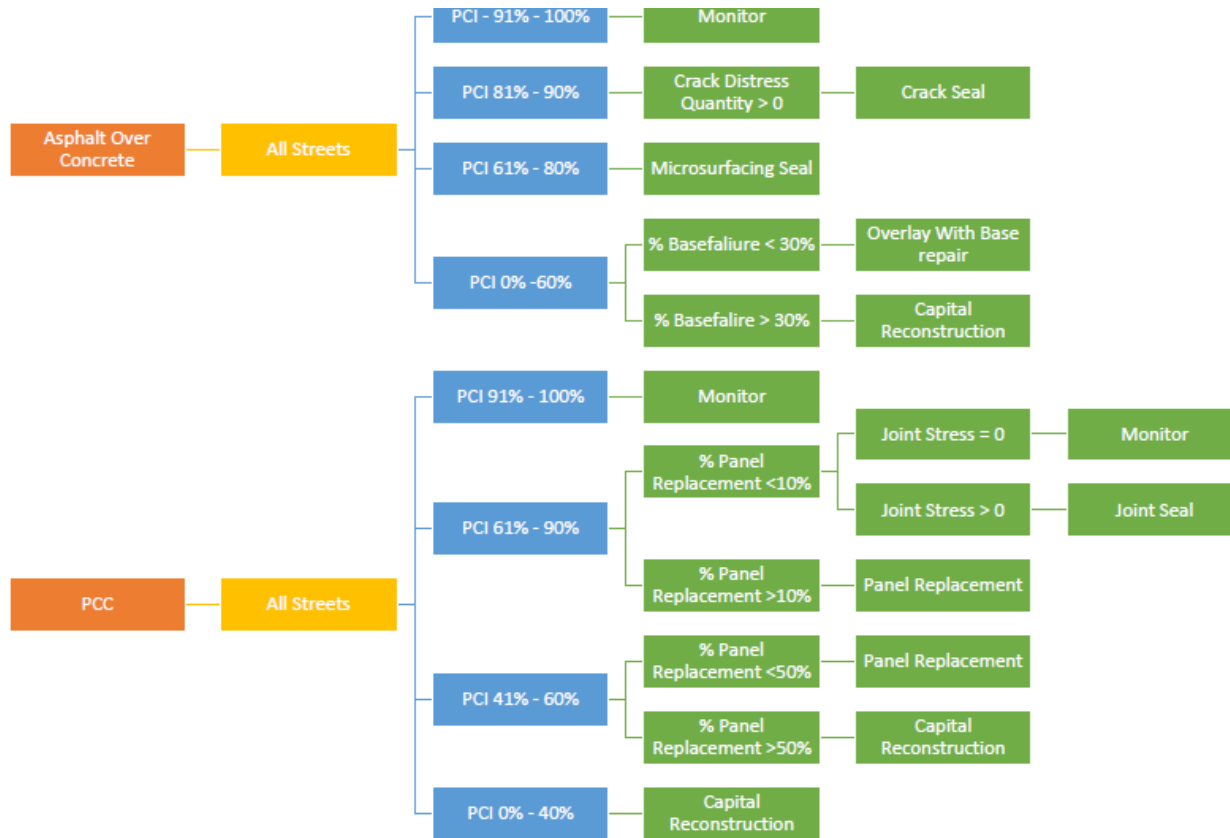
Network Average PCI: 72



Pavement Management Approach

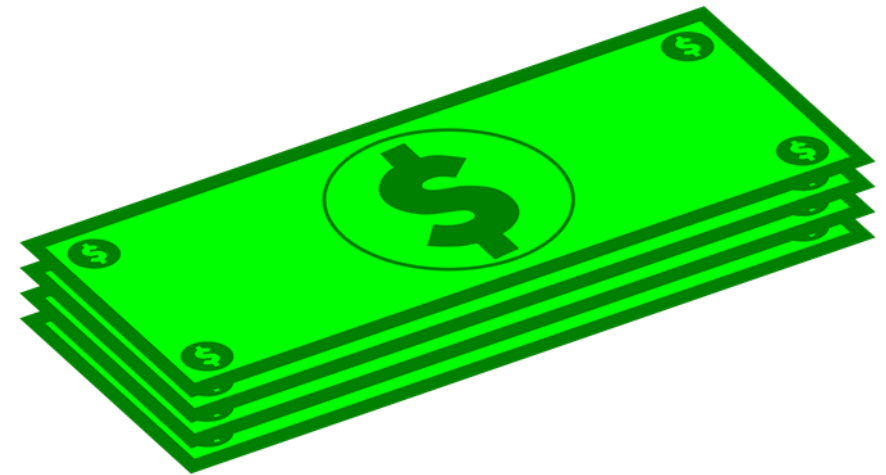
- Decision Tree
- Financial Constraint
- Other Constraints

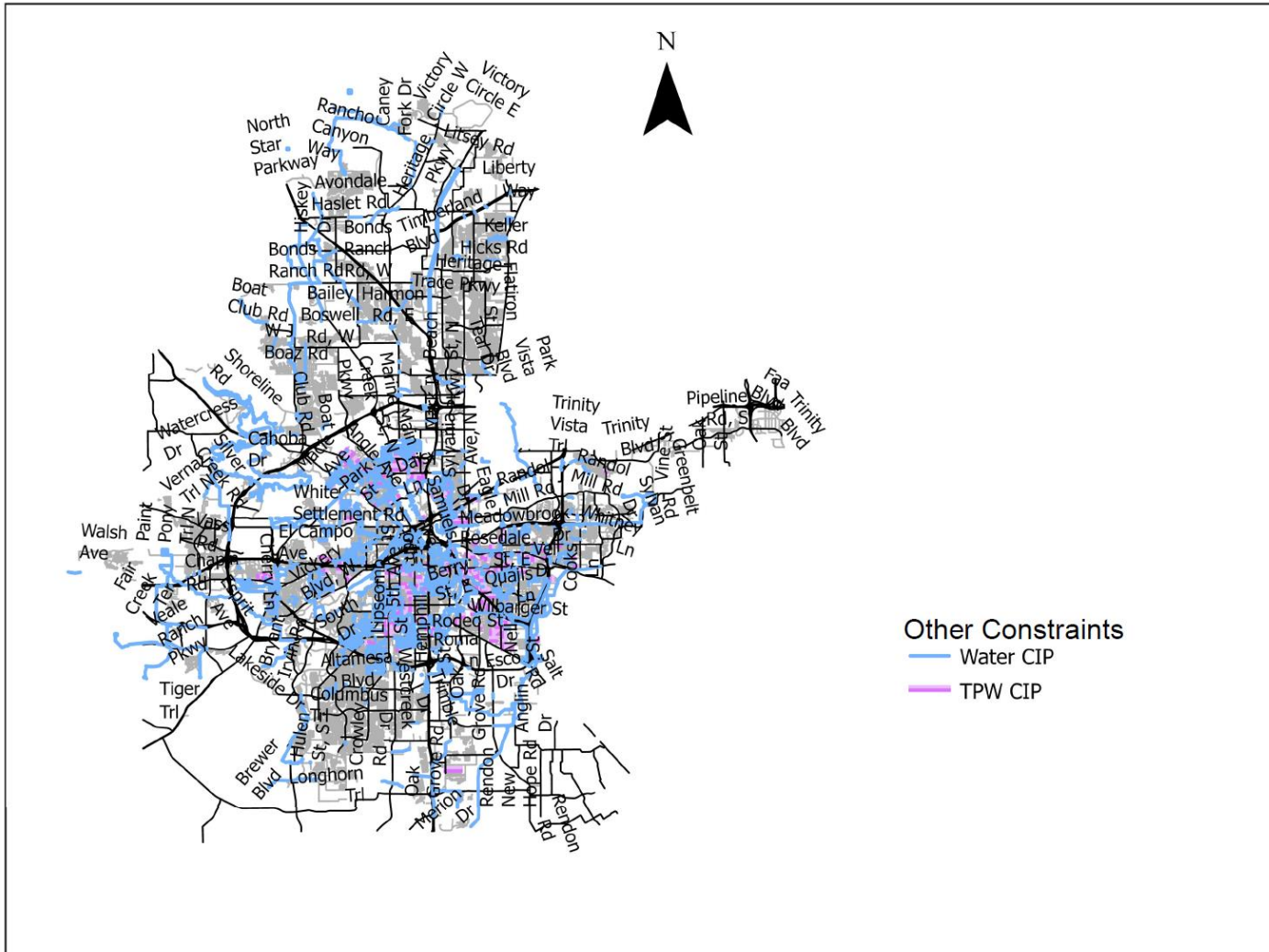




Pavement Management Approach

- Decision Tree
- Financial Constraint
- Other Constraints



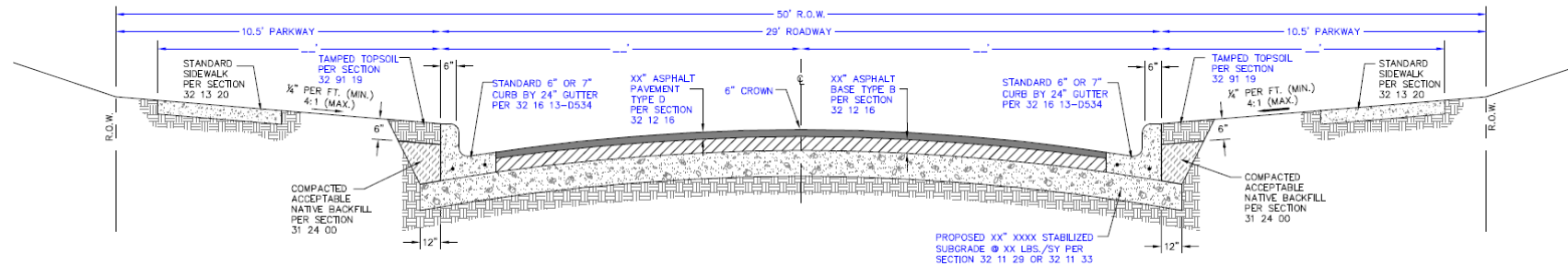


Pavement Management Approach

- Other Constraints
 - ✓ Water CIP Projects
 - ✓ TPW CIP Projects
 - ✓ Cast Iron Pipes

Pavement Performance

- ✓ Pavement Materials - Revised asphalt paving spec to include superpave mixes
 - PG70-22 Superpave SP-D or Type D – Surface mixes
 - PG64-22 Superpave SP-B or Type B – Base mixes



Residential Asphalt Street Section

NOTE:

1. SIDEWALK SLOPE SHALL BE 1/4" PER FOOT (MAX) UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

Pavement Performance

- ✓ Perform geotechnical tests to ensure quality, prevent premature failure, and make informed decisions on pavement treatment options



Pavement Performance

- ✓ Perform geotechnical tests to ensure quality, prevent failure, and make informed decisions in pavement treatment options



Pavement Coring



Thickness
Measurement



Concrete Strength
Test



Subgrade Soil Property Test



Core Existing pavement – to measure thickness of the asphalt/concrete pavement, measure compressive strength of concrete pavement, determine base/subgrade material properties

Pavement Design

- ✓ Working on developing a pavement design review and approval process

Concrete Pavement

Design E 18's:	933,149 (20 Years Design Life)
Initial Serviceability:	4.5
Terminal Serviceability:	2.25
Modulus of Rupture:	588 psi (4,000 psi concrete)
Elasticity Modulus:	3,932,000 psi
Effective k-value:	250 psi/in - for flex base 250 psi/in - for lime treated base 50 psi/in - for compacted subgrade
Reliability Level:	95%
Standard Deviation:	0.39
Load Transfer J:	3.2 no edge support 2.7 with adequate edge support
Drainage Coefficient:	1.0

Pavement Design

- ✓ Working on developing a pavement design review and approval process

Recommended pavement section – Geotech report

Table 4.5-1 Pavement Thickness Summary					
Pavement Section		Street Classification	Growth Factor	Design Life (Years)	Design ESAL
Thickness (in.)	Material				
10½	Portland Cement Concrete	Arterial	2.5%	30	13,170,000
8	Lime Stabilized Subgrade or Flexible Base				
2	HMAC Type D				
11	HMAC Type B				
8	Lime Stabilized Subgrade or Flexible Base				

PM decided to do 2" mill overlay on concrete base

Takeaways

- ❑ Know the condition of your assets and perform the right treatment at the right time
- ❑ Construct long-lasting pavements
 - ✓ Update specifications to include better materials
 - Have an expert review and approve pavement designs
 - Perform geotechnical tests for better decisions on the treatment type

Thank You for Listening!

