



Pavement Management Program Plan Presentation to City Council

September 12, 2023





Agenda

1

- Overview of Pavement Conditions

2

- Pavement Management Process

3

- Pavement Condition Survey

4

- Representative Conditions

5

- Analysis and Project Planning



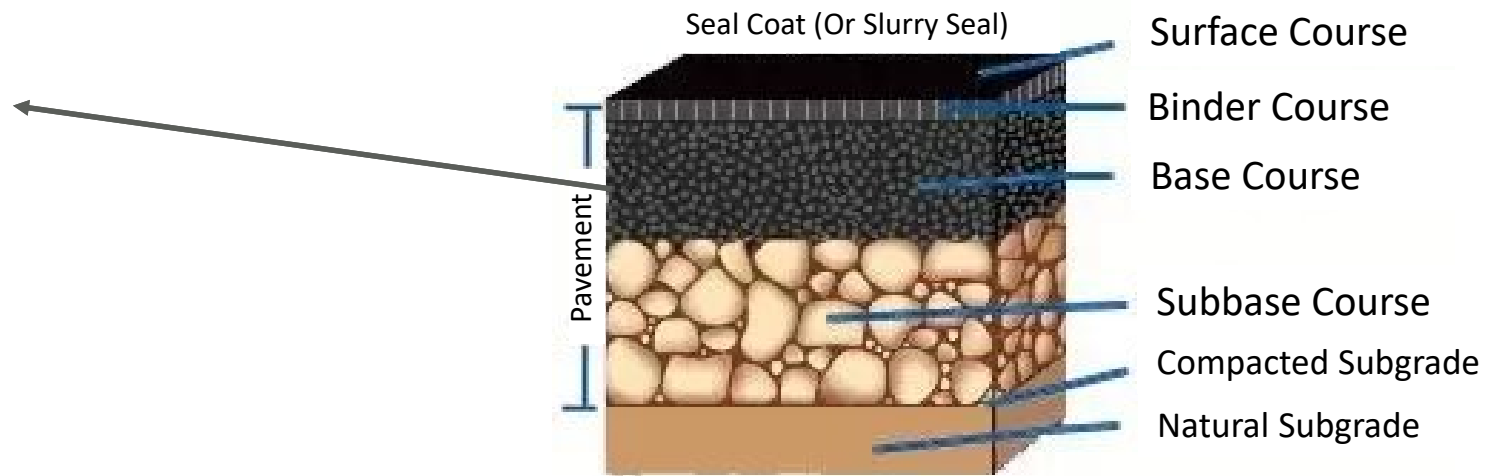


Typical Asphalt Pavement Section





Typical Asphalt Pavement Section



- Aggregate Base Course is a very important element of any pavement section.
- It is typically composed of crushed rock about $\frac{3}{4}$ " in size down to dust.
- When properly compacted, it provides the foundation upon which asphalt or concrete is placed on.



Pavement Management Process

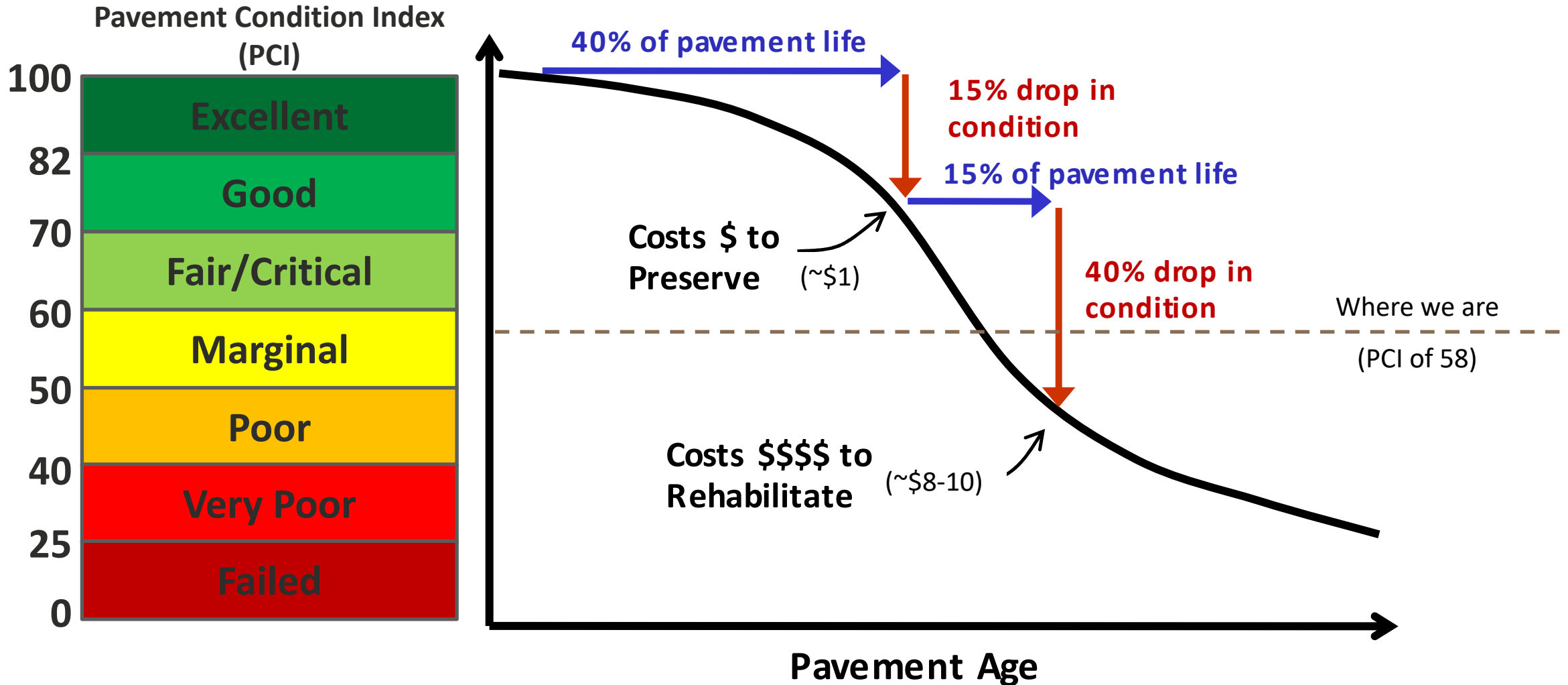


MicroPaver

- Develop and organize the pavement inventory.
- Assess the current condition of pavements.
- Develop models to predict future conditions.
- Report on past and future pavement performance.
- Develop scenarios for pavement management based on the budget or condition requirements.
- Plan and prioritize projects.
- Suggest most cost-effective treatments for the projects.

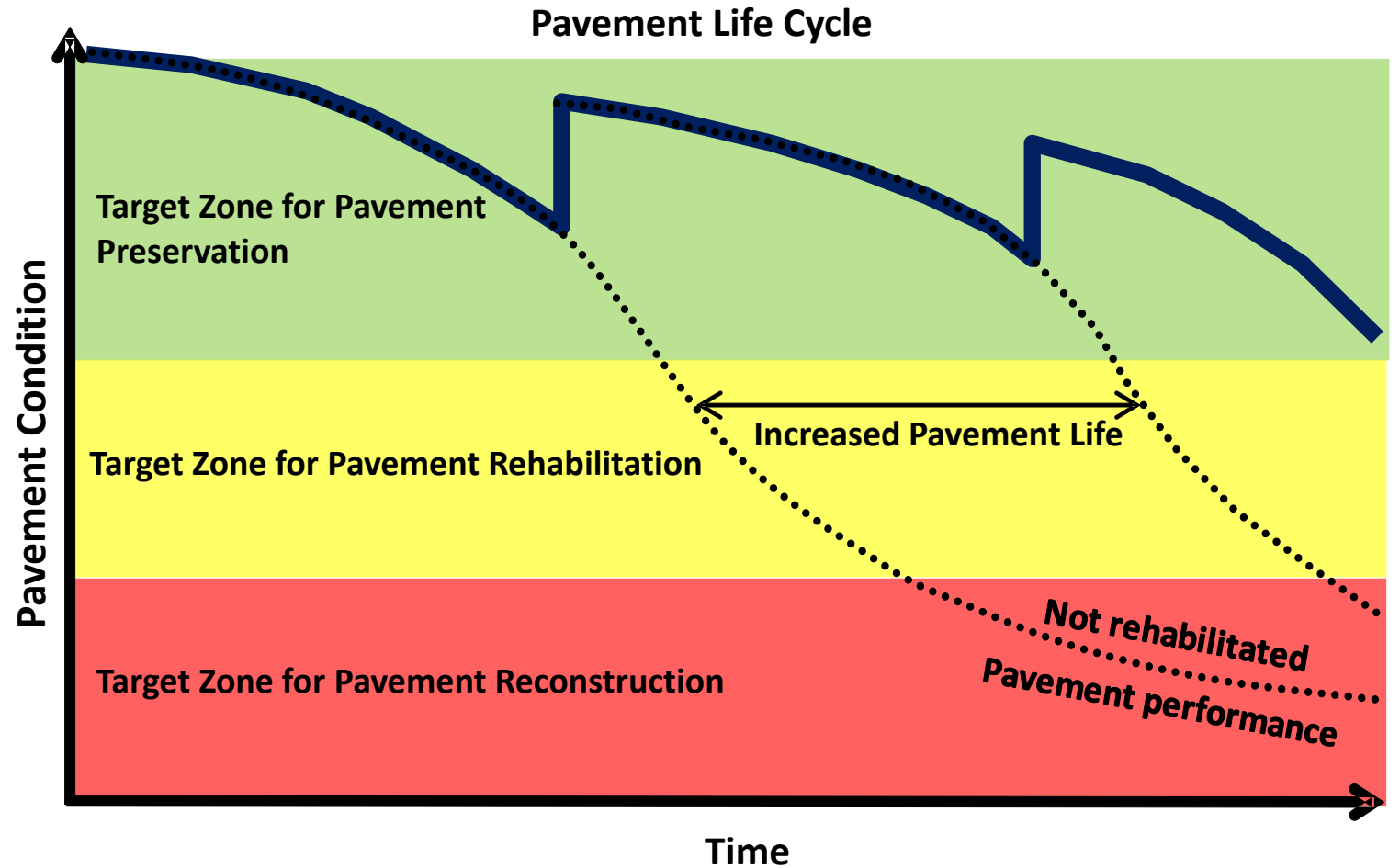


Cost of Deferral





Right Treatment, Right Time





Pavement Condition Survey

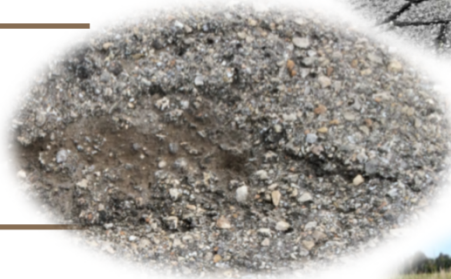


Various Pavement Distresses

Alligator Cracking



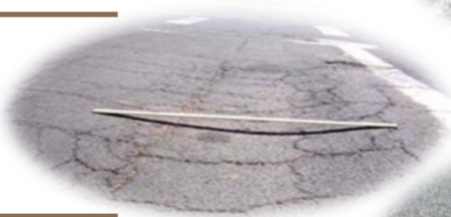
Raveling



Bleeding



Rutting



Longitudinal & Transverse Cracking



Block Cracking



Patching



Edge Cracking



Distortion



Weathering





Data Collection and Validation

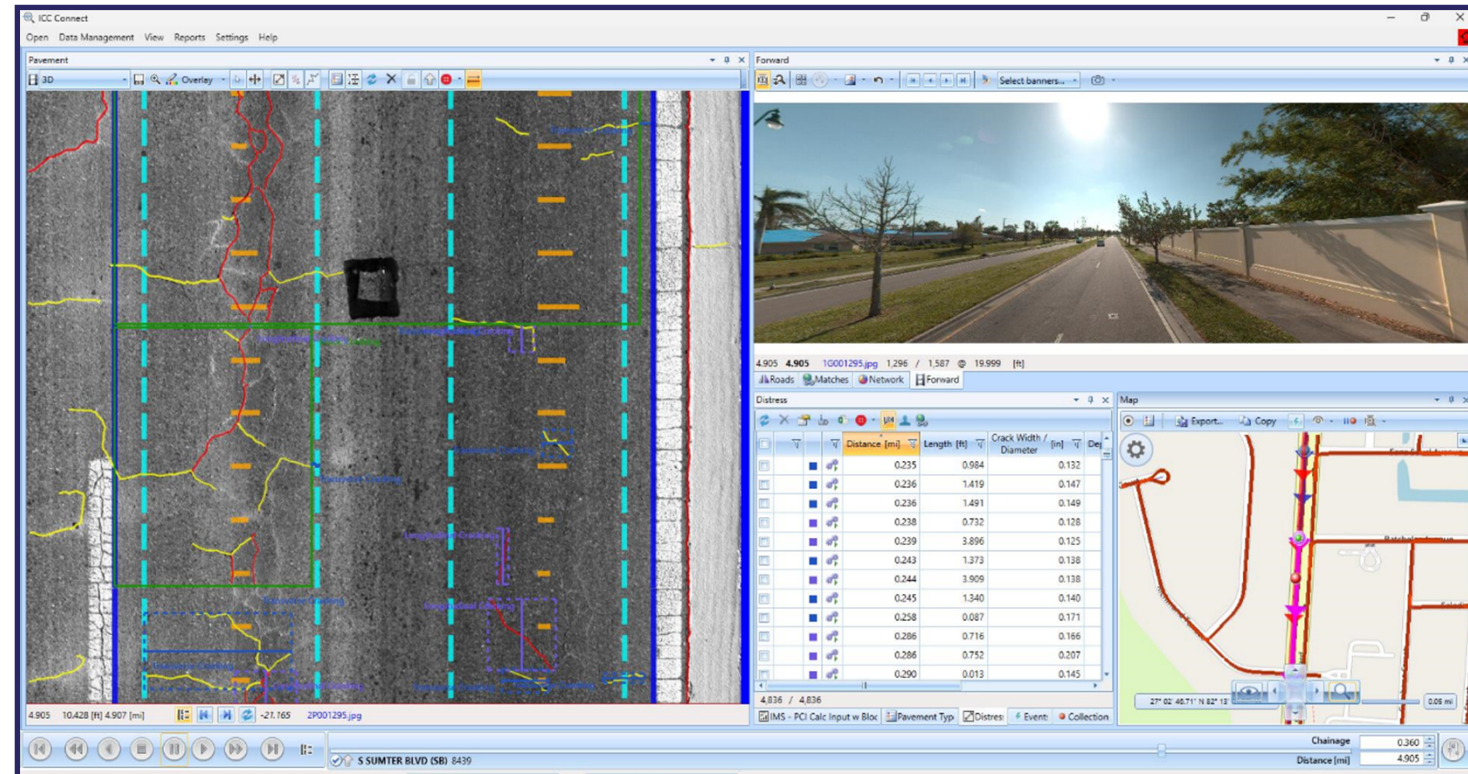
- Two downward mounted lasers
 - 3D, high-speed scanning and pattern recognition
 - Collect additional International Roughness Index (IRI)
 - Also, collects pavement distress and deformation to full depth of the roadway





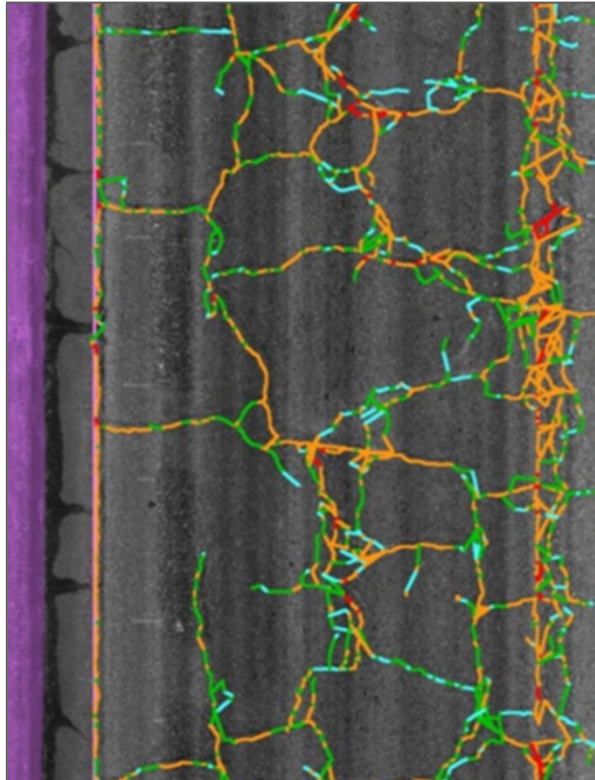
Data Collection and Validation

- High-definition 4k cameras
 - Collect forward, downward, and rearward pavement distress/deformation
- Realtime validation of collected data by the technician in the field
 - Distress severities and extents

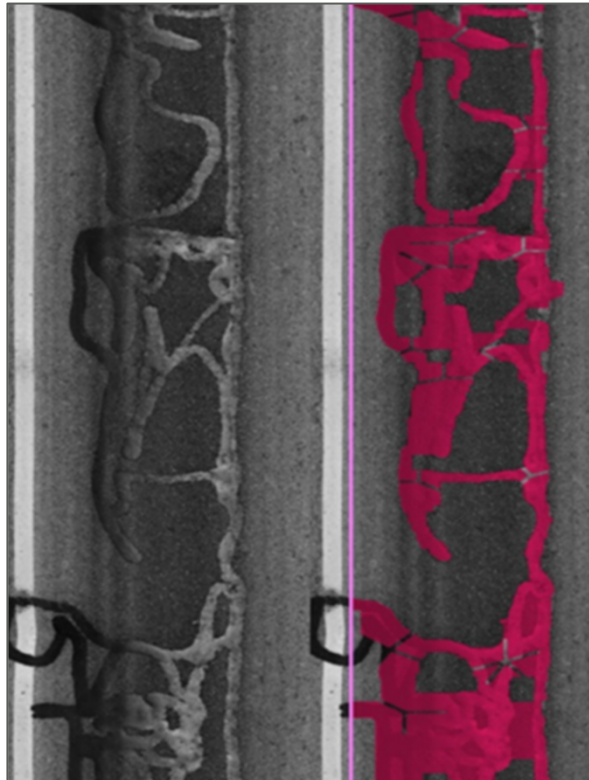


Laser Crack Measurement System (LCMS-2) Pavement Distress Analysis

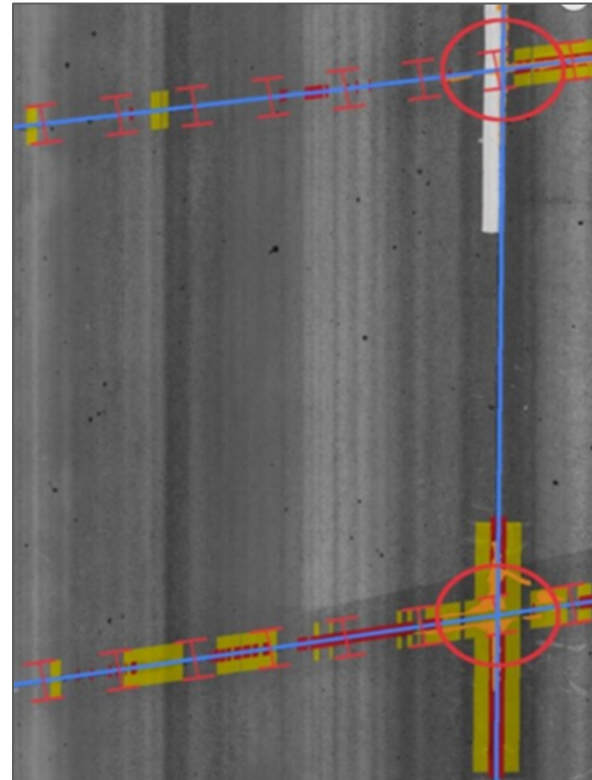
Cracks



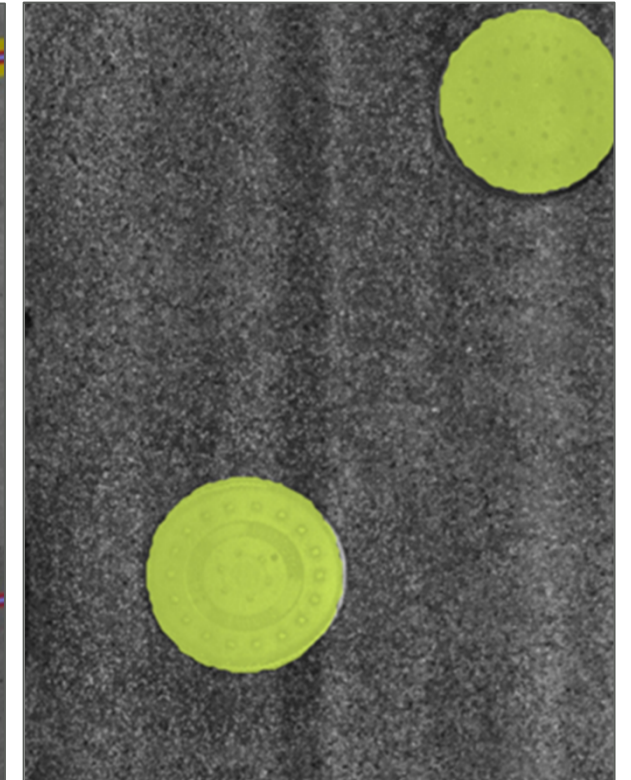
Sealed Cracks



Concrete Joints

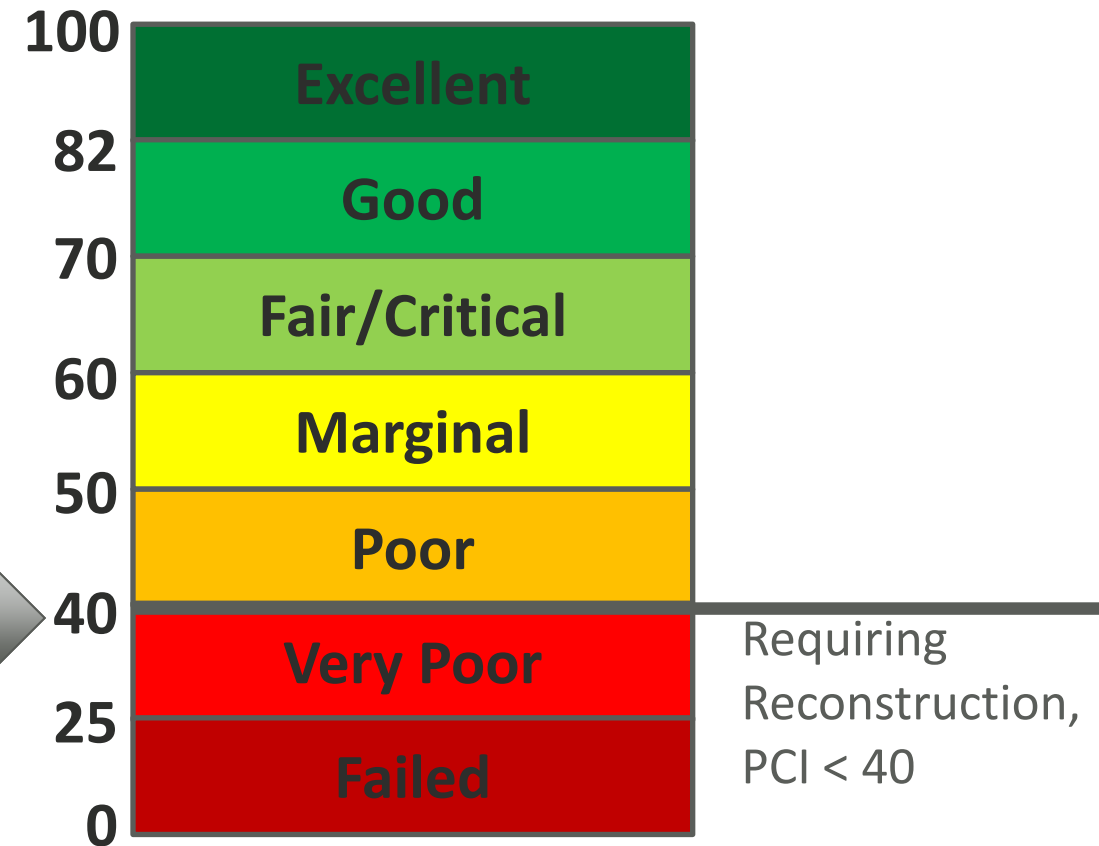
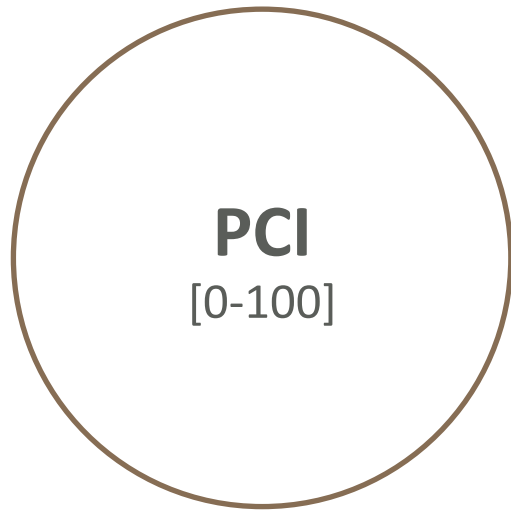


Utilities





Pavement Condition Index (PCI)



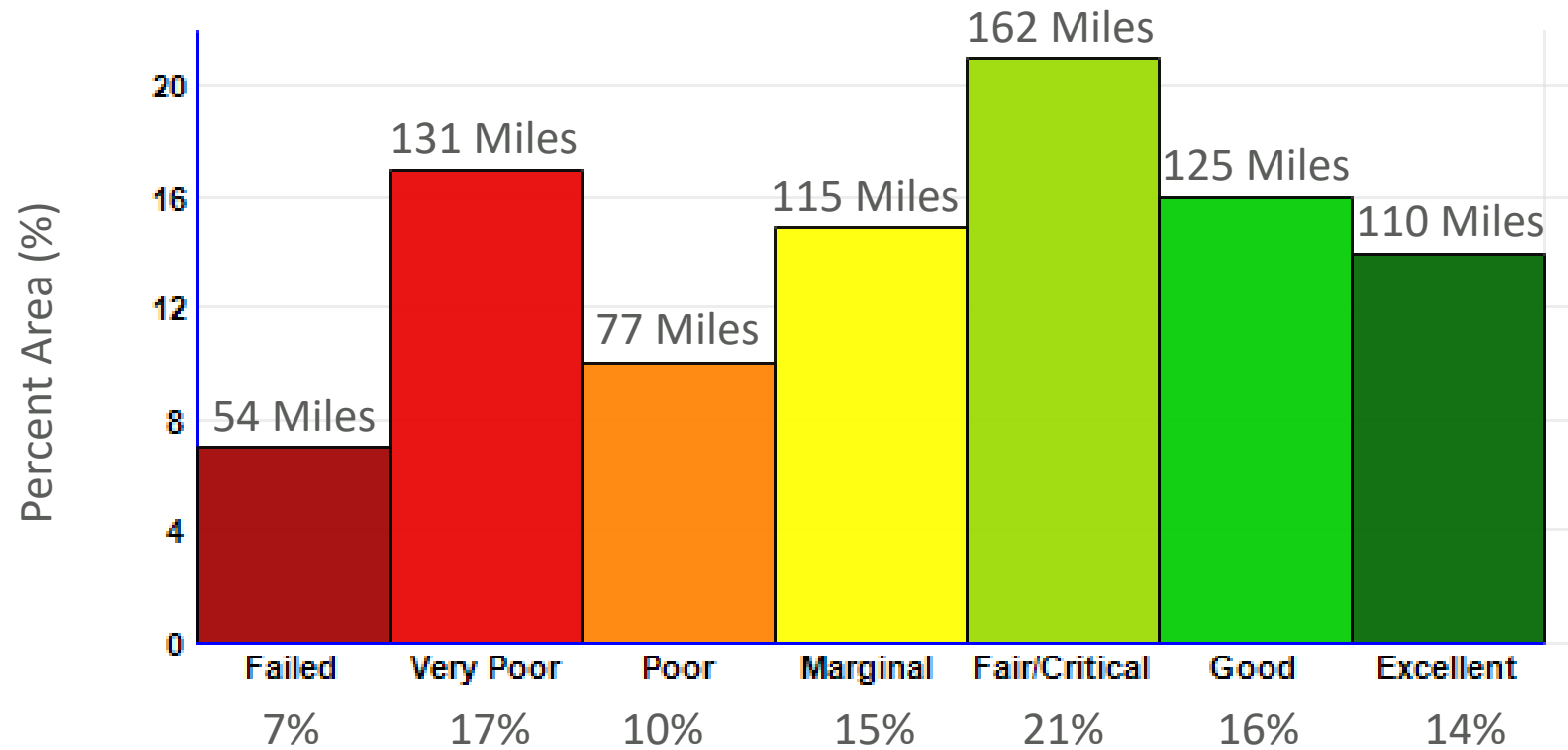
At about a 40 PCI or below
Routine Repair & Maintenance
is no longer an option!



Overview of Pavement Conditions



2023 Pavement Conditions



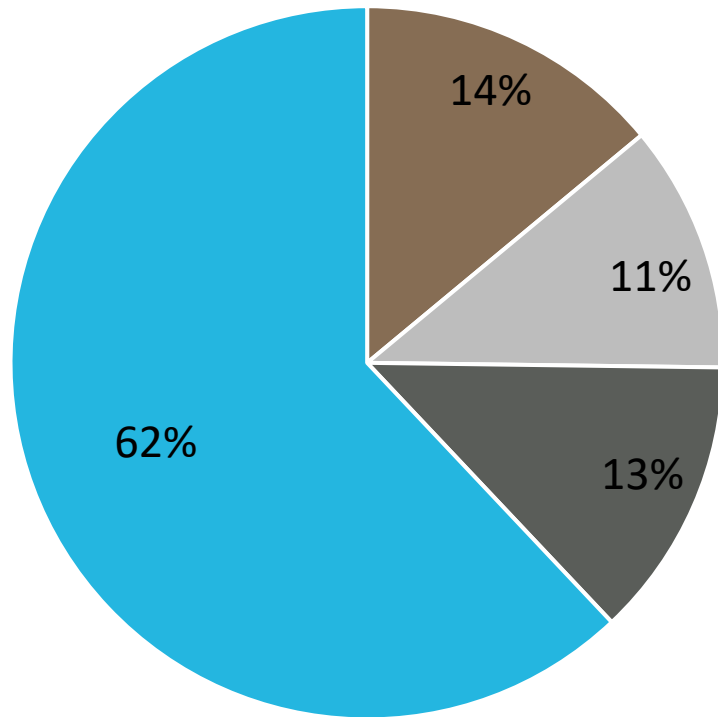
Centerline Miles:
774

Network Average
PCI: 58

Reconstruction
Needed: 24%



2023 Pavement Conditions per Functional Class



Functional Class	Area (SY)	Length (Mile)	PCI
Major Arterial	2,499,961	65	58
Arterial	2,008,287	62	54
Collector	2,280,652	91	64
Local	11,092,455	556	57



PMP Strategy

- **Recent 7 years** – Stabilized pavement throughout the City.
- **Next 10 years** – Bring pavement up to good condition (70-82 PCI), so that we spend less and thereby maximize spending to provide longer pavement life.
- **Ultimate target** – Bring pavement to excellent (82+ PCI) condition.



Analysis and Project Planning



Analysis and Project Planning

- Based on current funding levels (PMP budget + Bonds)
~30M/Yr.
- Identify annual budget to:
 - Maintain current PCI.
 - Funding for PCI of 72 in 5 years & 10 years.
 - Funding for PCI of 82 in 5 years & 10 years.



Funding Level Impact on PCI

Duration	Post PCI	Annual Budget (\$M/Yr)
5	58	12.5
5	72	41.7
5	82	51.5

Duration	Post PCI	Annual Budget (\$M/Yr)
10	58	20.8
10	72	31.0
10	82	35.9



Funding Level Impact on PCI

FY	PMP Budget (Transportation Sales Tax & HURF) (\$M)*	Bond Budget** (\$M)	Total Budget (\$M)	Mileage to Rehab/Reconst.
FY24	17.1	11.4	28.5	141
FY25	18.1	11.6	29.6	145
FY26	19.0	12.0	31.0	150
FY27	19.9	11.5	31.4	152
FY28	20.9	6.8	27.7	135
FY29	21.9	7.0	28.9	141
FY30	23.0	7.2	30.2	146
FY31	24.1	7.4	31.5	152
FY32	25.3	5.6	30.8	150
FY33	26.5	1.0	27.5	134
FY24-28 Total:	94.9	53.3	148.2	723
FY29-33 Total:	120.8	28.2	149.0	723
FY24-33 Total:	215.7	81.5	297.2	1446

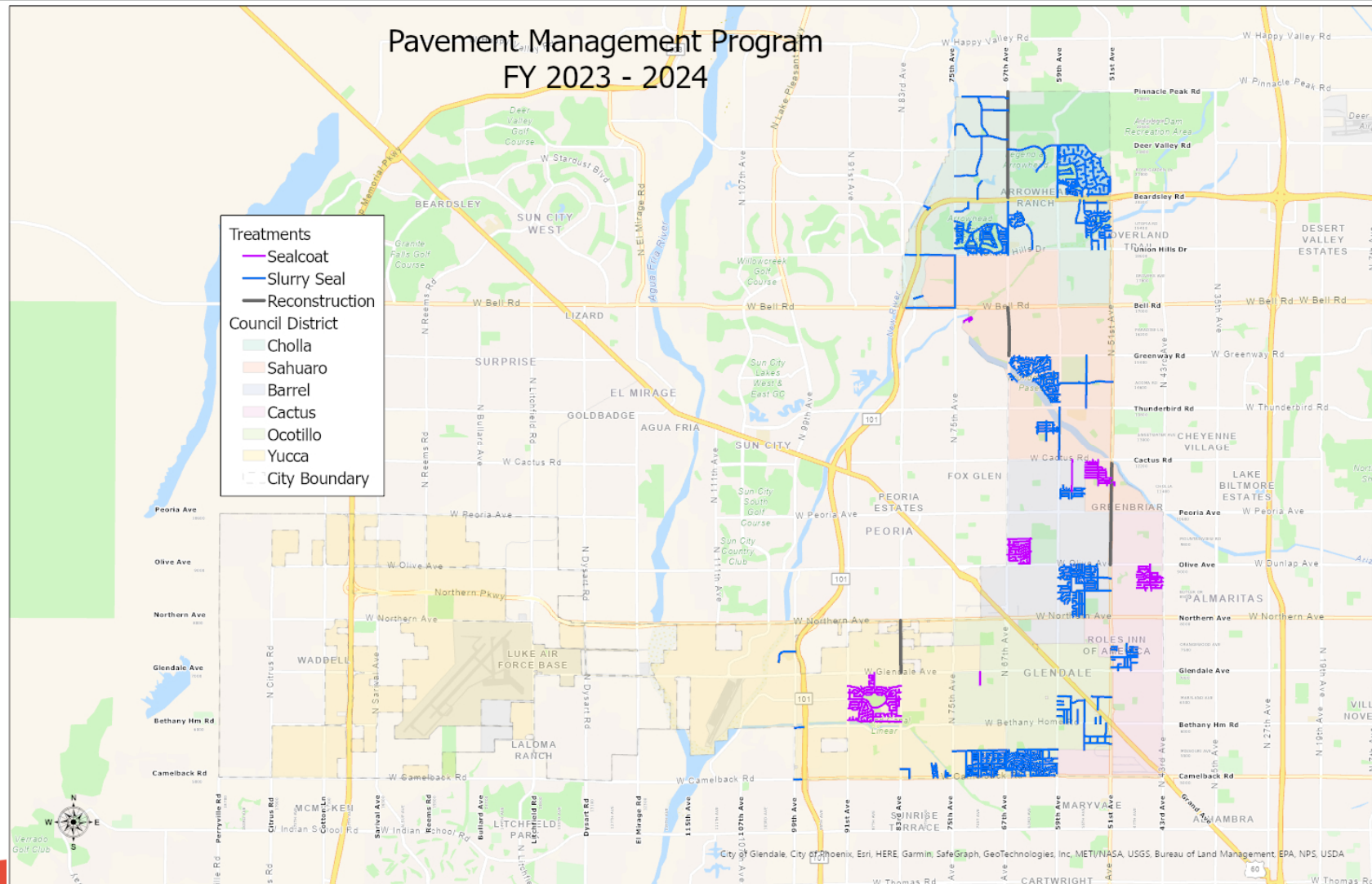
Current Funding		
Duration	Post PCI	Annual Budget (\$M/Yr)
5	63	30
10	70	30

*FY 2024-2033 CIP

**Annual budget amounts identified do not include adjustments needed for inflation.



Fiscal Year 2024 Proposed PMP





Fiscal Year 2024 Proposed PMP

- Pavement Preservation
 - 135 miles (2,937,122 SY)
- Reconstruction
 - 6 miles of reconstruction
 - 83rd Ave from Glendale Ave to Northern (Yucca) **1 Mile**
 - 51st Ave from Olive Ave to Cactus Rd (Cactus, Barrel, & Sahuaro) **2 Miles**
 - 67th Ave from Greenway Rd to Bell Rd (Sahuaro) **1 Mile**
 - 67th Ave from Beardsley Rd to Pinnacle Peak Rd (Cholla) **2 Miles**



Questions?

September 12, 2023





Representative Pavement Conditions



Failed (PCI 0 -25)

**Bethany Home Rd from
N Mobile Home Park to
N 49th Ave (PCI = 19)
Alligator Cracking is
major distress.**





Very Poor (PCI 25 - 40)

**W Luke Ave from N 52nd
Ave to N 53rd Ave
(PCI = 27)**

**Block Cracking is major
distress.**



Poor (PCI 40 - 50)

**N 79th Ln from W Myrtle Ave to W Oranewood Ave
(PCI = 46)**

**Longitudinal & Transverse
Cracking are major
distresses.**



Marginal (PCI 50 - 60)

**N 46th Ave from W Cheryl
Dr to W Beryl Ave
(PCI = 54)**

**Minor Block Cracking is
major distress.**



Fair/Critical (PCI 60 - 70)

N 50th Dr from W Mountain View RD to W Ironwood Dr (PCI = 65)

Minor Longitudinal & Transverse Cracking are major distresses.



Good (PCI 70 - 82)

**W Kings Ave from DS@40W
N 51st Ave to N 51st Dr
(PCI = 75)**

**Minor Longitudinal
Cracking is major distress.**





Excellent (PCI 82 - 100)

**W Cactus Rd from N 61st
Ave to N 62nd Dr
(PCI = 100*)**

***Newly Reconstructed; few
to no detectable distresses.**

