



# Common Council Presentation - Roadway Pavement Condition Update

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BRANDON SCHWENN, P.E.  
DEPUTY DIRECTOR/CITY ENGINEER

# What is Pavement?

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- Driving Surface for vehicular traffic
- 3 Primary types within the City
  - Asphalt Pavement (Hot Mix Asphalt/HMA)
  - Concrete Pavement
  - Composite Pavement (Combination of Concrete and Asphalt)
- Supported by granular base material (Hopefully)
- Finite service life



# Statistics

253.28 centerline miles maintained by the City



5,521,103 Square Yards of Pavement

4,390,892 SY  
Asphalt Pavement  
(79.5%)

920,225 SY  
Concrete Pavement  
(16.7%)

209,986 SY  
Composite Pavement  
(3.8%)



# Condition Assessment

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HOW DOES THE  
CITY  
MONITOR/ASSESS  
5.5 MILLION SY OF  
PAVEMENT?

PCI Range	Repair
86-100	Preventive Maintenance
71-85	
56-70	
41-55	Major Rehabilitation
26-40	Reconstruction
11-25	
0-10	

# Pavement Rating

- All streets rated once every 2 years and reported to WisDOT
- Pavement Condition Index (PCI)
- All roadways given a score of 0 – 100 throughout the City.
- PCI based on the type, severity, and extent of distresses that exist on a pavement
- PCI scores utilized to compare streets to one another

# What is a Distress? - Asphalt

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Transverse Cracking



Block Cracking - High



Block Cracking - Medium



Alligator Cracking (Leads to potholes)

# What is a Distress? - Concrete

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Slab Cracking



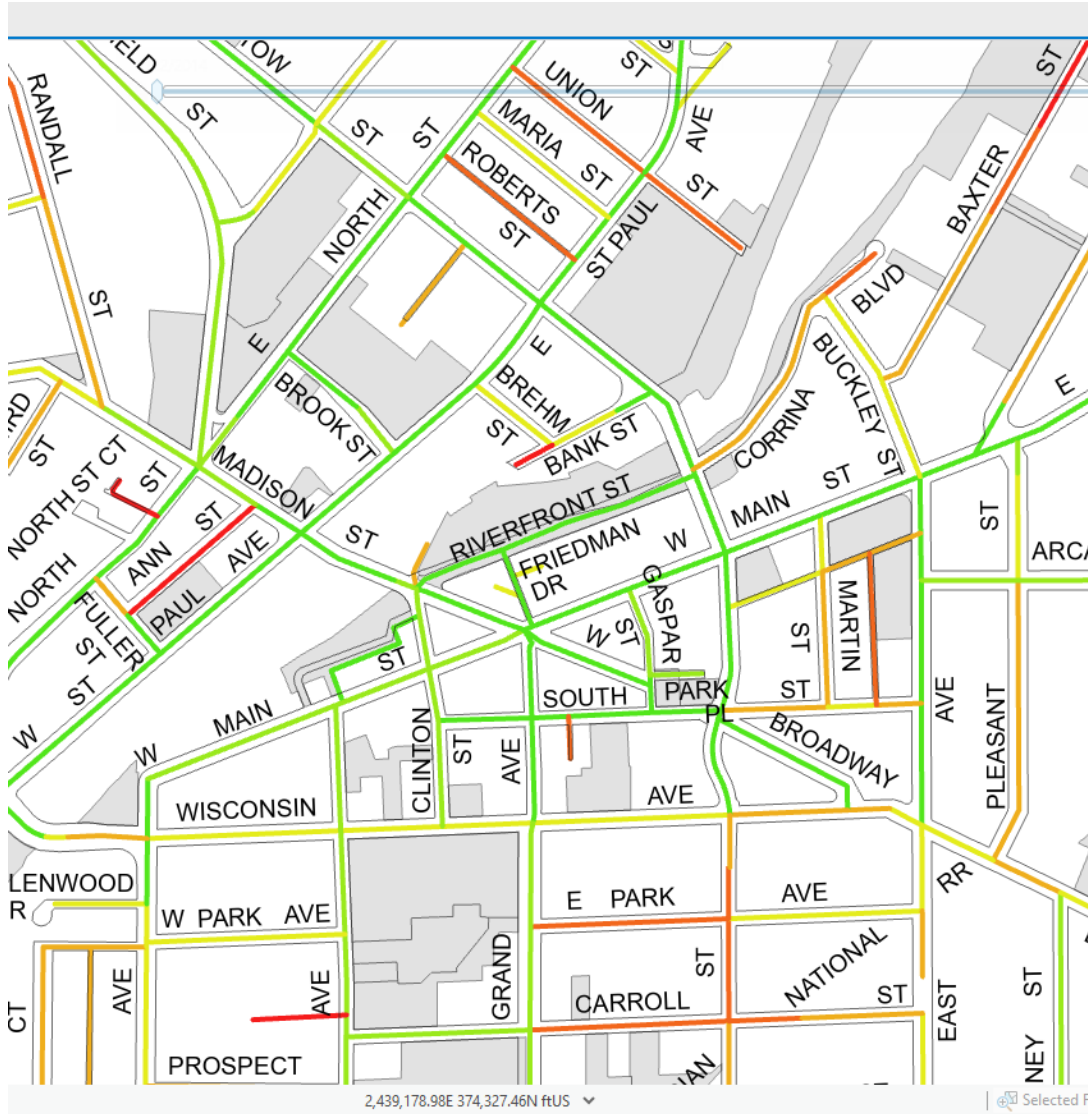
Joint Fault



Joint Spalling/Failure



End of Service Life



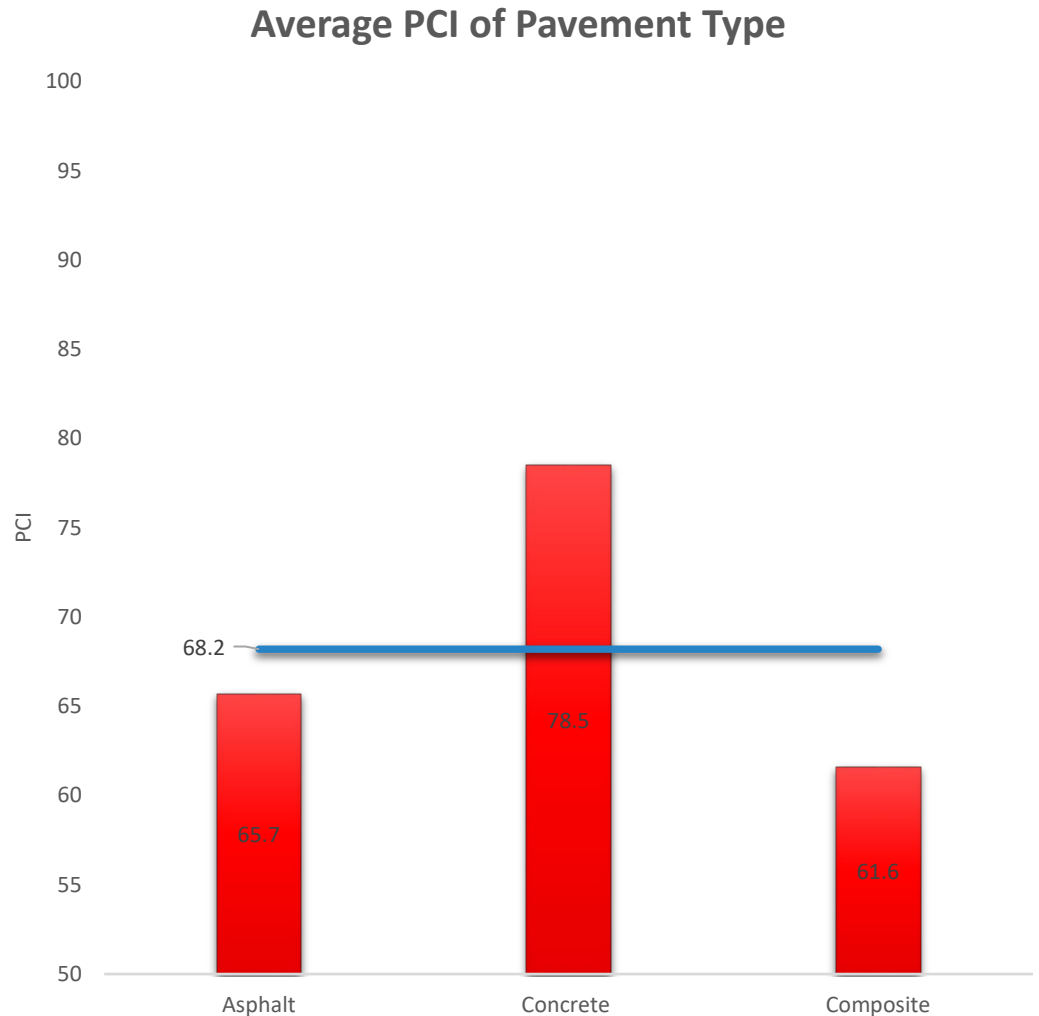
# Keeping Track of Road Ratings

- Direct Input into VueWorks (City's current asset management software)
- Linked to GIS for additional map creation and data analysis
- All previous records/ratings can always be accessed.

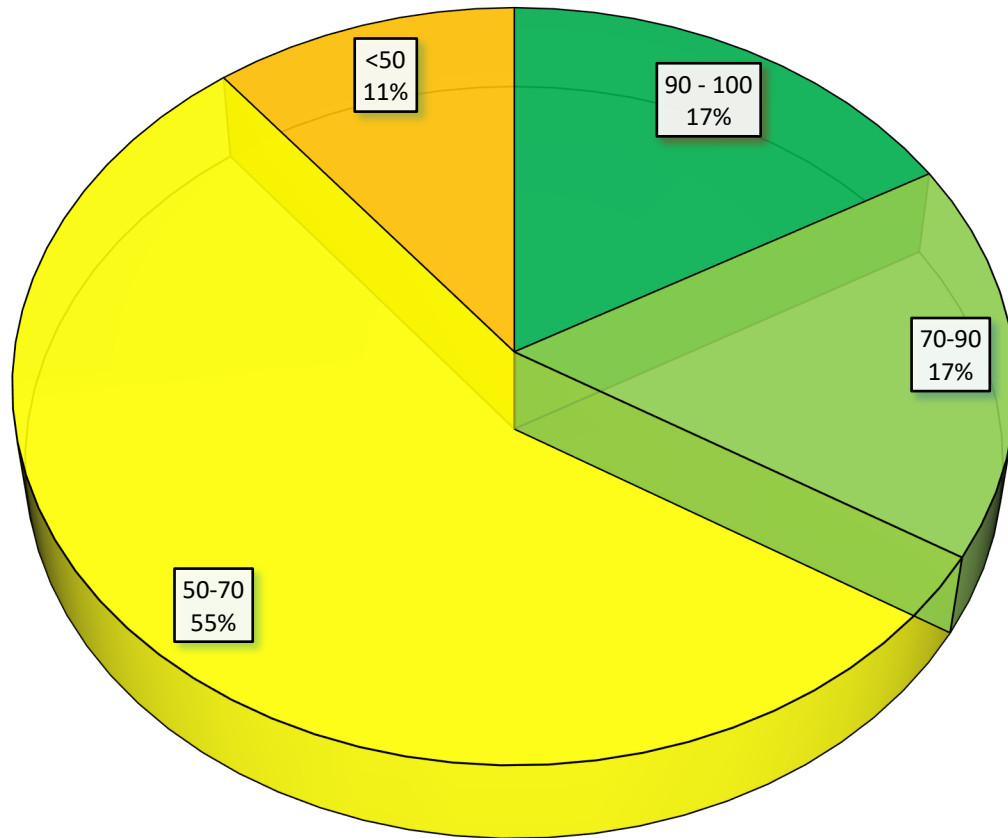


# Pavement Condition Status

- City-wide Average PCI Rating: 68.2
- Asphalt Pavement Average PCI: 65.7
- Concrete Pavement Average PCI: 78.5
- Composite Pavement Average PCI: 61.6



## PCI RANGE BREAKDOWN



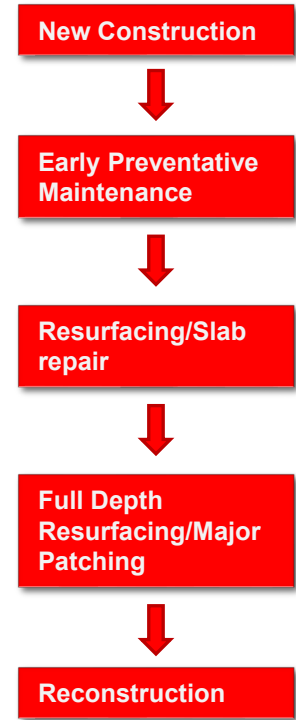
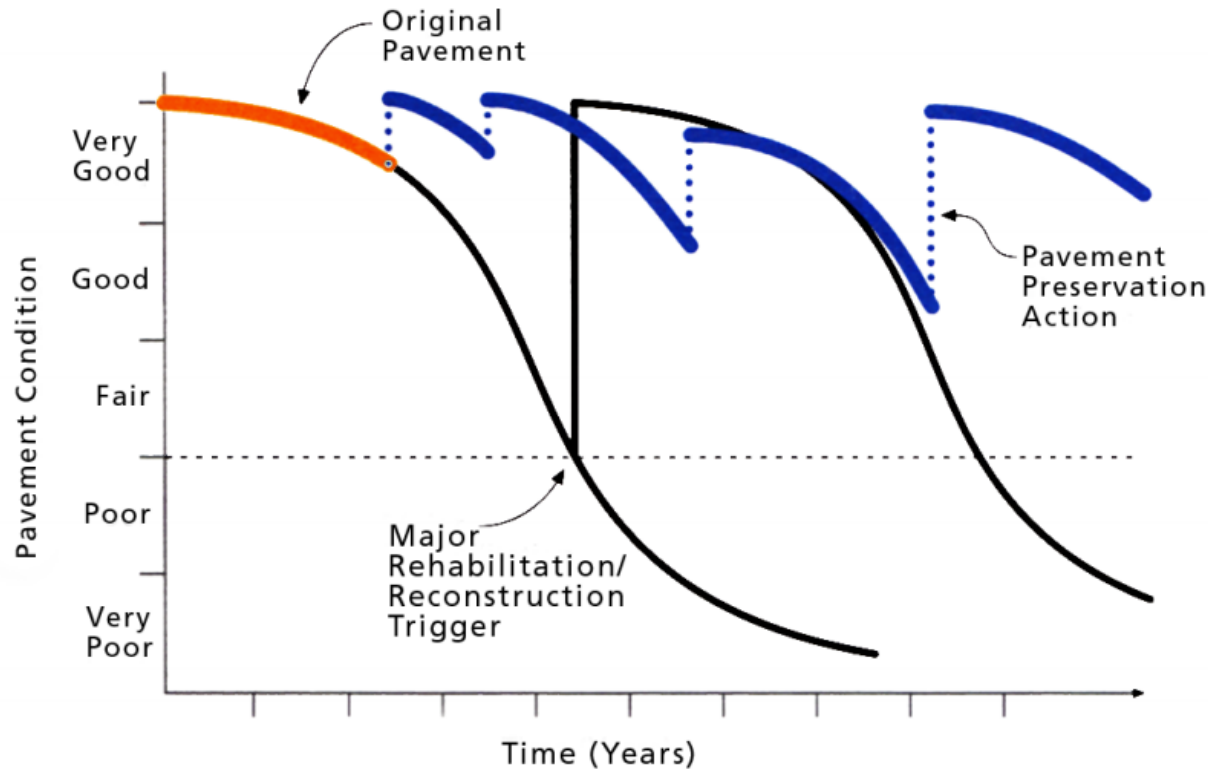
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# Condition Data Over Time

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- Current condition data is extremely useful, but how does it change over time?
- Pavement condition over time = Life Cycle
- Pavement has a finite life cycle that is non-linear
- Maintenance work/methods extend the overall life cycle of pavement





# Pavement Life Cycle

# Pavement Maintenance Approach

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- Preventative Maintenance
  - Asphalt Pavement Crackfilling
  - Concrete Pavement Joint Filling (Previous completed program)
- Moderate Rehabilitation
  - 2-Inch asphalt Mill and Overlay
  - Concrete pavement panel replacement
  - Spot asphalt pavement patching
- Major Rehabilitation
  - Full depth asphalt pavement resurfacing
  - Full depth concrete pavement replacement
- Full Reconstruction

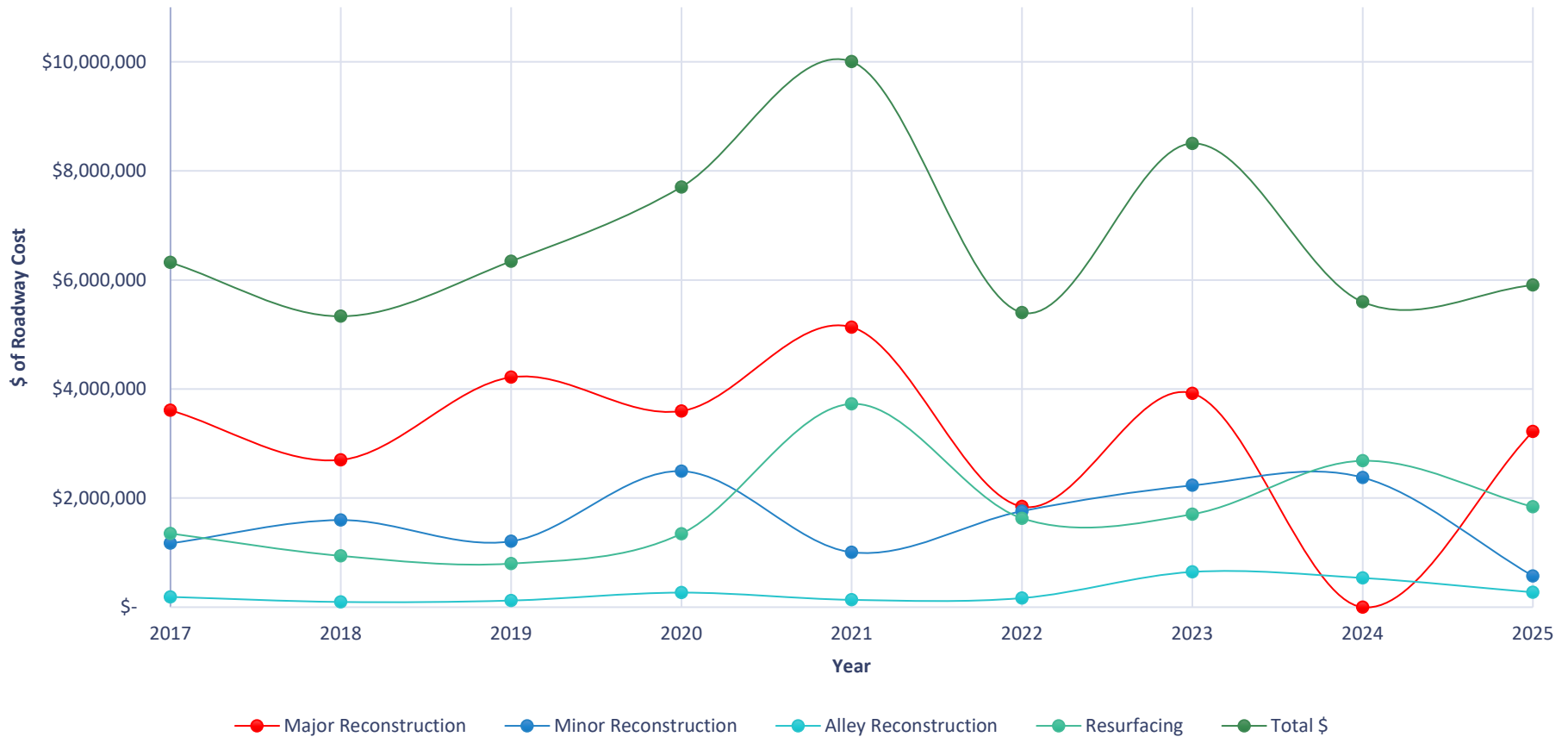


# Pavement Maintenance Programs

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- Preventative Maintenance
  - Asphalt pavement crackfilling (Annual CIP Project)
  - Spot crackfilling and hot applied mastic (Internal DPW crews)
- Rehabilitation
  - Asphalt street resurfacing (Annual CIP Project)
  - Concrete slab and joint repair (Annual CIP Project)
  - Spot concrete slab and curb repair (Internal DPW crews)
  - Asphalt street resurfacing and patching (Internal DPW crews)
- Reconstruction
  - Major Street Reconstruction (CIP Project when budgeted)
  - Minor Street Reconstruction (CIP Project when budgeted)
  - Alley Reconstruction (CIP Project when budgeted)

## CIP Program Investment History



# Program Investment History

# Program Investment History (con't)

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Year	Total Miles Reconstructed/ Resurfaced	Total Cost Reconstructed/ Resurfaced
2017	4.72	\$ 6,507,400
2018	3.71	\$ 5,429,000
2019	3.58	\$ 6,463,900
2020	4.16	\$ 7,971,100
2021	9.93	\$ 10,136,500
2022	4.89	\$ 5,568,700
2023	4.79	\$ 9,149,700

Year	Overall PCI
2017	67.4
2019	67.2
2021	67.5
2023	68.2

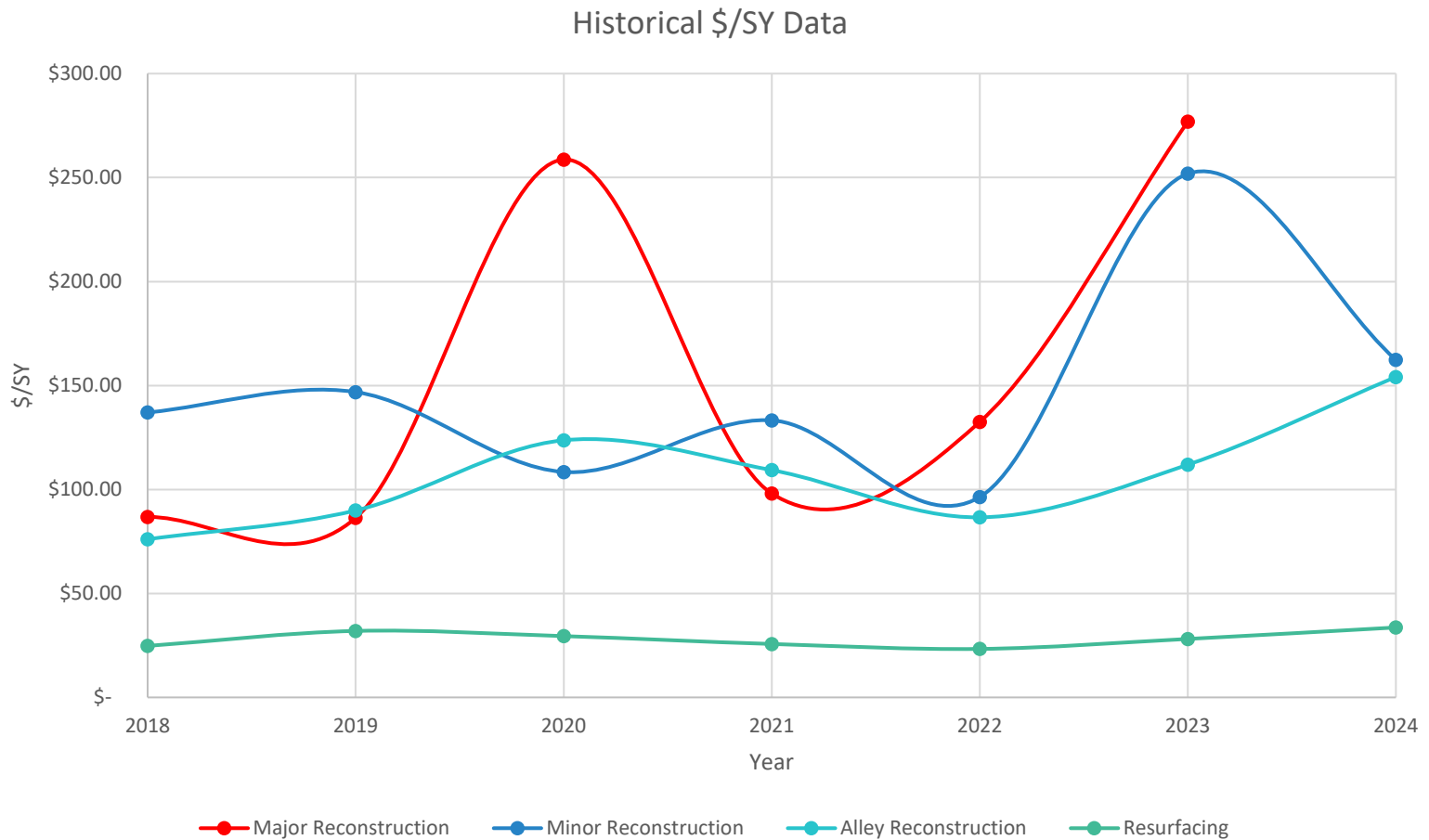




# Future Investment Impacts on PCI

- What level of funding would be required to maintain or improve the City's overall PCI?
  - Difficult question to predict – Dependent on deterioration and outside conditions
- Results based on Scenarios:
  - The investment made in 2024, \$5.6 million would increase the average PCI from 68.2 to 68.9 (Assuming no drop in ratings)
  - If the entire 2025 – 2029 proposed CIP, \$24.8 million were to be completed in 1 year, the average PCI would increase from 68.9 to 71.1
  - Overall Average pavement rating average drops approximately 0.5 to 1.0 every 2 years.
- Major changes to average PCI requires investment

# Cost History/Increases



# Cost History/Increases (Con't)

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- Recent history of project bids showing a 10-15% annual increase of bid costs.
- Current CIP proposal includes reconstruction cost increases of 8% annually, and resurfacing 3% annually.
- If annual budgets are kept flat or reduced, less infrastructure can be improved annual due to cost increases.
  - i.e. a minor street reconstruction project of \$1,630,000 in 2024 dollars is projected to cost \$2,220,000 in 2029.

# Current Project Backlog

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- Major Reconstruction Program:
  - Streets below a PCI of 60, and at the end of their service life
  - \$21.7 Million (2024 Dollars)
- Minor Reconstruction Program:
  - Streets below a PCI of 60, and at the end of their service life
  - \$36.5 Million (2024 Dollars)
- Alley Reconstruction Program:
  - Alleys below a PCI of 60, and at the end of their service life
  - \$12.0 Million (2024 Dollars)
- Resurfacing Program
  - Streets below a PCI of 65 and in need of resurfacing:
  - \$83.0 Million (2024 Dollars)

# Where Do We Go From Here?

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- Maintaining the City's current roadway/pavement infrastructure requires ample funding.
  - Need to keep in mind the relationship between raising construction costs and flatlined/reduced budget allocation.
- After major investment in the Major Reconstruction program over the last 8-10 years, a shift in the approach to focus on resurfacing to have a higher impact on overall infrastructure.
- Reconstruction is expensive. Resurfacing/rehabilitation is exponentially more cost effective.
  - \$30.00/SY vs. \$275.00/SY
- Understand the importance of roadway and pavement infrastructure.
  - Residents, businesses, industry, stakeholders, commuters, visitors, police, fire all use this infrastructure on a daily basis.



Questions