

# **RUEKERT & MIELKE, INC.**

Serving Local People. Solving Local Problems.



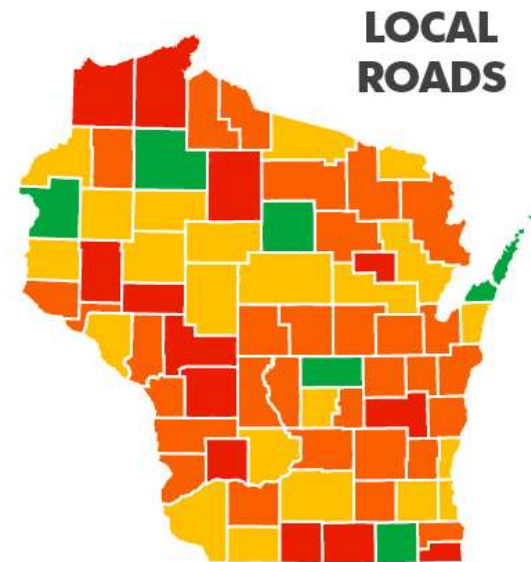
# Effective Road Ratings & Forecasting

09/28/2016 13:01

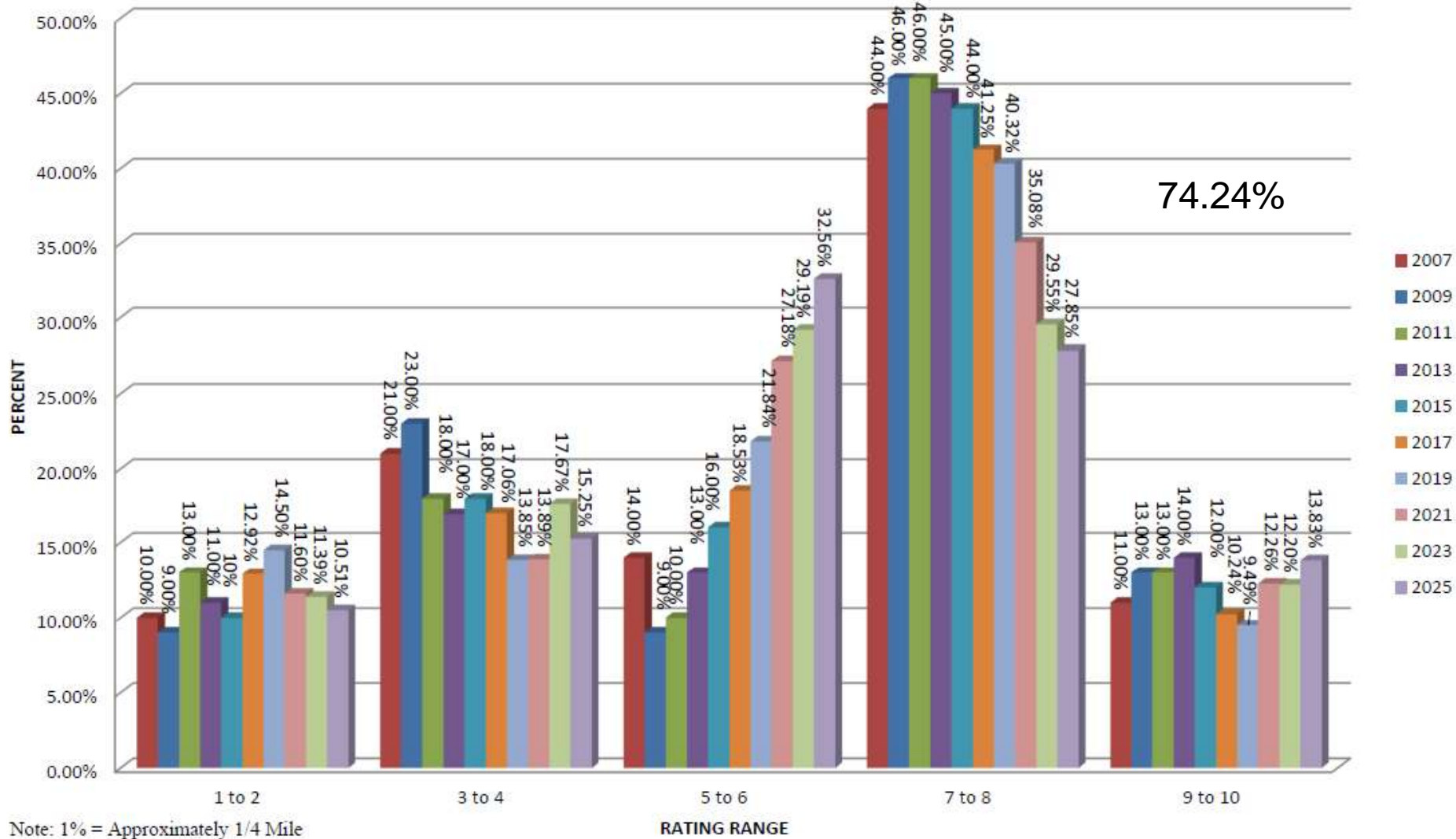
# Good Rating Practices

- When to Do Your Ratings
  - ▣ Spring or Fall
  - ▣ Sunny Days
  - ▣ After a Rainfall (Not During)
- Verify Your Mileage Certification Entries
  - ▣ 27 miles of streets

Percent of roads rated better than fair in 2015



## Columbus WISLR Pavement Ratings 2007-2025



# Where to Spend Your Time

- New Roads (9-10 PASER)
- Fair Roads (5-8 PASER)
- Poor Roads (1-4 PASER)



# Types of Pavement Distress

---

- Surface Defects
- Surface Deformation
- Cracking
- Potholes/Patching

# Surface Defects

## Raveling

- ❑ Small aggregate particles have worn away exposing tops of large aggregate.
- ❑ Erosion further exposes large aggregate.



# Surface Deformation

## Rutting

Even slight rutting is evident after a rain.



Severe rutting over 2" caused by poor mix design.





# Pavement Cracking

- Transverse
- Longitudinal
- Block
- Alligator

# Pavement Cracking

## Transverse Cracks



# Pavement Cracking

## Transverse Cracks



# Pavement Cracking

## Longitudinal Cracks

- Edge cracking from weakened subbase and traffic loads.
- First stage of wheelpath cracking caused by heavy traffic loads.



**Longitudinal  
Cracks**

# Pavement Cracking

## Block Cracks

- Large blocks, approximately 10' across.
- Intermediate-size block cracking, 1'-5' across with open cracks
- Extensive block cracking in an irregular pattern





# Pavement Cracking

## Alligator Cracks

- Alligator crack pattern. Tight cracks and one patch.



# Potholes & Patching



# Rating 10 & 9 – EXCELLENT

## No Maintenance Required

- RATING 10 - New construction.

RATING  
10





# Rating 8 – VERY GOOD

Little or No Maintenance Required

- RATING 8 - All cracks are tight or sealed.

RATING  
8



# Rating 7 & 6 – GOOD

**Routine Sealing Recommended / Consider Preservative Treatment**

RATING  
7

- RATING 7 - Tight and sealed transverse and longitudinal cracks. Maintain crack sealing program.





# Rating 5 & 4 – GOOD

**Preservative Maintenance Treatment Required / Structural Improvement Required**

RATING  
4

- RATING 4 - Extensive block cracking. Blocks tight and sound.



# Rating 3 – POOR

## Structural Improvement Required

- RATING 3 - Many wide and raveled cracks indicate need for milling and overlay.

RATING  
3





# Rating 2 – VERY POOR

## Reconstruction Required

- RATING 2 - Extensive alligator cracking. Pulverize and rebuild.

RATING  
2



# Rating 1 – FAILED

## Reconstruction Required

- RATING 1 - Potholes from frost damage. Reconstruct.

RATING  
1



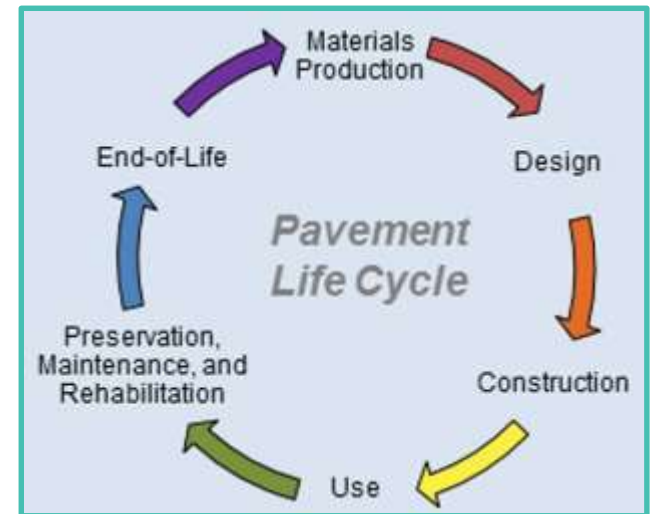


## **Maintenance Strategies to Save Dollars**

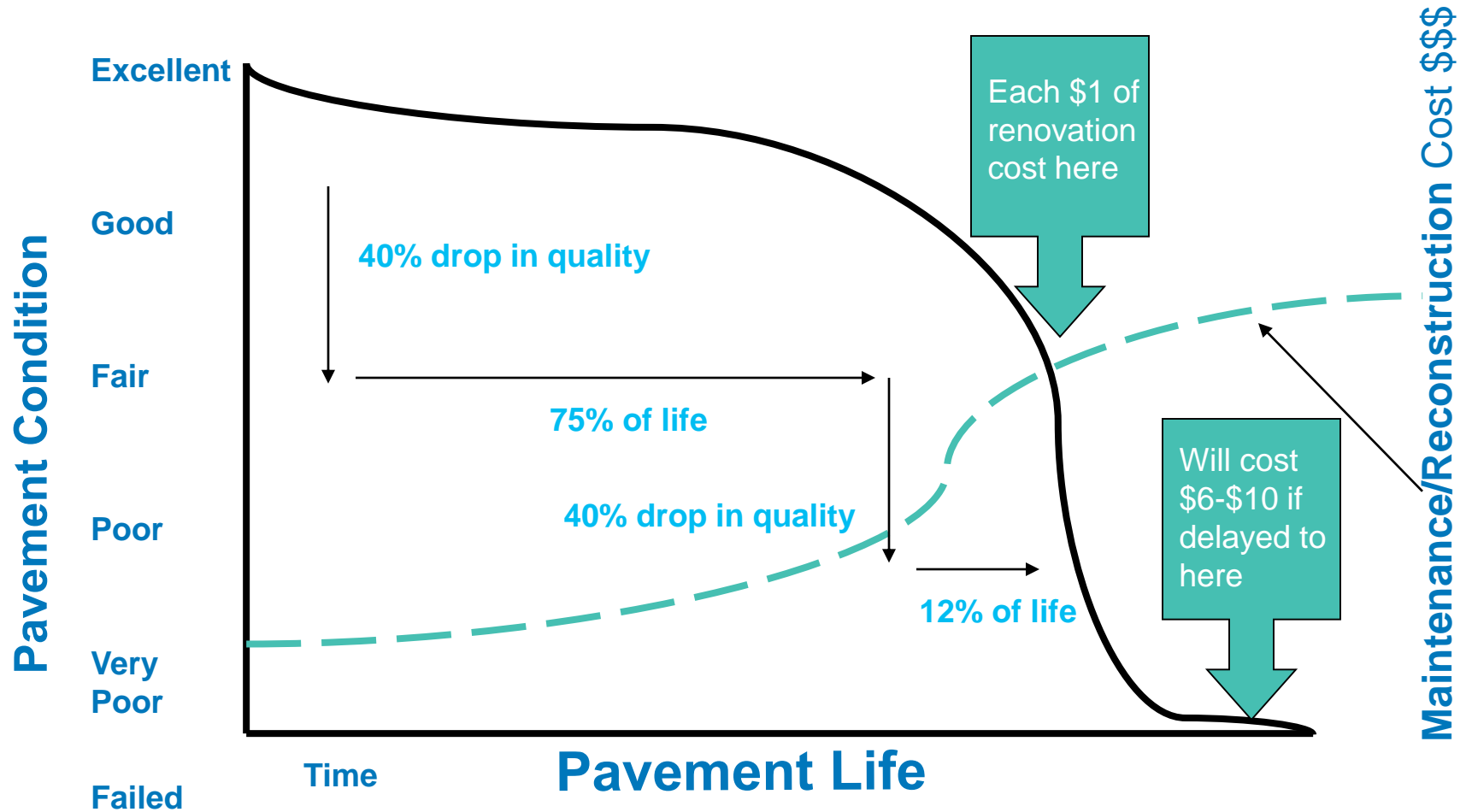


# Pavement Life

- Asphalt Roads
  - ▣ 15-20 Year Minimum with a Goal to Stretch to 30 Years
- Proper & Timely Maintenance Techniques to Reach 30 Year Target
- Poor or Little Maintenance
  - ▣ Will Reduce Life Span to Less Than 15 Years



# Review: Condition of Streets Pavement Life Cycle



# Preventative Maintenance

- Improves & Extends the Functional Life of a Pavement
- Done Prior to Failure
- Budget Separately for it



# Common Causes of a Failure... ...in Asphalt Pavements

- Inadequate Drainage (Primary Cause)
- Poor or Improper Maintenance
- Base Failure
- Fatigue



# How Pavements Fail

- Loading
  - ▣ Crack Creation
- Drainage
  - ▣ Poor Drainage





# Cost-Effective Maintenance Techniques

- Crack Sealing

- Crack Sealing

- Crack Sealing

- Crack Sealing



# Inadequate or Improper Maintenance

- Keep Water Out of the Road Base



# Types of Pavement Seals

- ❑ Slurry Seal
  - Requires Road Closures (4-6 Hours)
  - Provides Non-Fading Surface
  - Subject to Plow Damage
- ❑ Chip Seal
  - Quick Application
  - Dust & Sweeping Issues
  - Potential Property Damage Claims



# Other Types of Pavement Maintenance

- Overlays
- Patching







2 Year Old Slurry  
Seal

Crack Seal Prior  
to Placement



# 2023 Streets CIP

Capital Streets Expenditure Requests	Budget Year 2023	Budget Year 2024	Budget Year 2025	Budget Year 2026	Budget Year 2027	Budget Year 2028	Budget Year 2029	Budget Year 2030	Budget Year 2031	Budget Year 2032
Tower	\$ -	\$ -	\$ 200,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
STH 73 Faith-Middleton	\$ -	\$ -	\$ 385,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
School Street	\$ -	\$ -	\$ -	\$ 1,700,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Dickason Blvd Fuller/James	\$ -	\$ -	\$ 350,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Commercial Drive M/O	\$ -	\$ 675,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Seiden/Richmond		\$ 325,000			\$ -					
Hibbard/Dix Triangle								\$ 2,500,000		
CFR Rd						\$ 275,000				
Maple - ALL							\$ 750,000			
Dix										\$ 575,000
<b>Total:</b>	\$ -	\$ 1,000,000	\$ 935,000	\$ 1,700,000	\$ -	\$ 275,000	\$ 750,000	\$ 2,500,000	\$ -	\$ 575,000

- 2010 Streets Plan
- Updated in 2013
- Various Council have requested different information
- First 10 year CIP in 2023
- Recommend updating this year with budget

# Street Project Selection

- Sewer and Water needs
  - I/I for sanitary sewer
  - 4 inch water main
    - Lead Service Replacement
- Traffic Volume
- Pavement Rating
- Other Factors (Funding, Crash Rate, Wisdot, etc.)

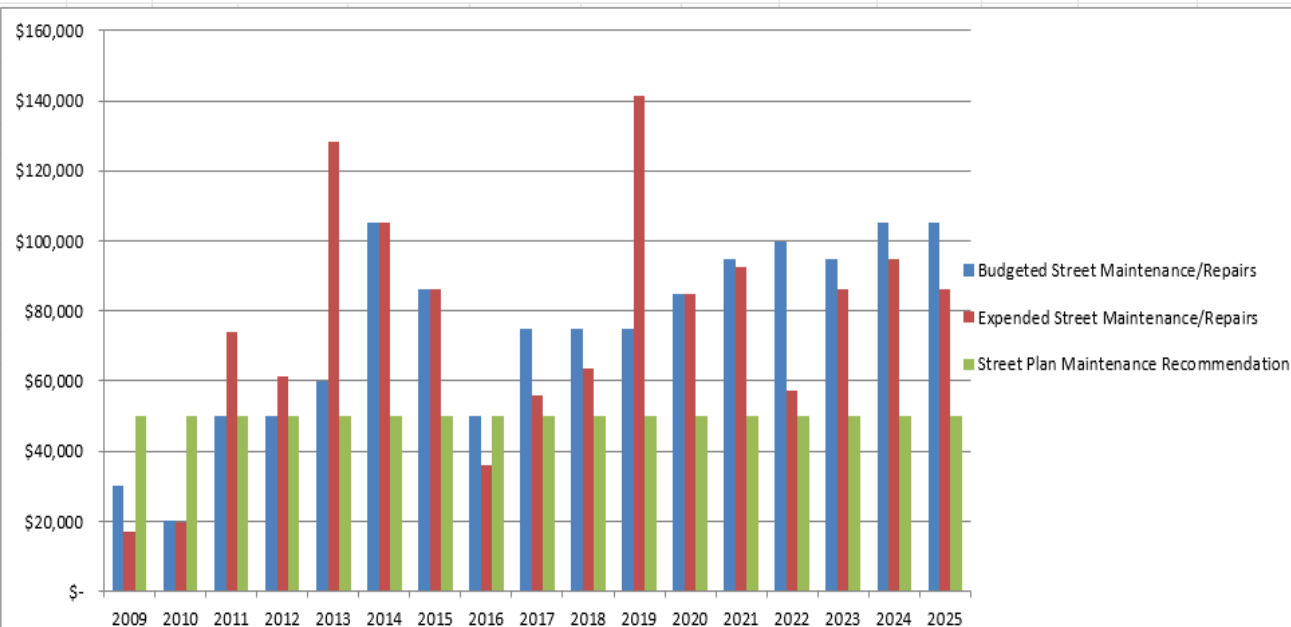
Est. Year Last Improved	PAVEMENT TYPE	Current WISLR Rating	Street	To	From	Sanitary Sewer	Water	Storm Sewer	Curb Condition	Base Condition	Notes
1964	Asphalt	1 [2019]	Chapel St	Lewis	Termini	8" Clay	10" Water Main - Dead End, no need to replace	None	No curb, rural section	very poor, alligator cracking	Dead End Street ; Reconstruction
1962	Gravel	1 [2019]	W Church St	N Spring St	Termini	None	None	30" RCP	None	poor	New Street Construction, existing gravel
1964	Asphalt	1 [2019]	W Church St	N Dickason Blvd	N Spring St	6" Clay	6" - No issues with water main	27" RCP	Partial Curb ; poor condition	alligatored	Reconstruction
1964	Asphalt	1 [2019]	N Dickason Blvd	Oak St	Middleton St	8" Clay	8" WM, no break history	12" RCP	marginally ok	alligatored, very poor	Reconstruction
1964	Asphalt	1 [2019]	N Dickason Blvd	Termin Rd (1) / Termin Rd (2)	Oak St	8" Clay	8" WM, no break history	None	marginally ok	alligatored, very poor	Reconstruction
1964	Asphalt	1 [2019]	Folsom St	Waterloo St	Farnham St / STH 89	8" Clay; Cured In Place Pipe Lined	6"WM, Undersized Water Main, Lead Laterals	Inlets at Waterloo Intersection; increase inlet capacity	marginally ok, settling	Substantial gator cracking; significant lack of base for underlying soils	Reconstruction
1979	Asphalt	1 [2019]	Hibbard St	W School St	Sunset Rd	8" Clay	4" WM, Break History, Numerous Repair Sleeves, Undersized Water Main	None	No curb, rural section	minimal base, very poor subgrade	Reconstruction
1979	Asphalt	1 [2019]	Hibbard St	Chapin St	W School St	8" Clay	4" WM, Break History, Numerous Repair Sleeves, Undersized Water Main	None	No curb, rural section	minimal base, very poor subgrade	Reconstruction
1979	Asphalt	1 [2019]	Hibbard St	Richmond St	Chapin St	8" Clay	4" WM, Break History, Numerous Repair Sleeves, Undersized Water Main	None	No curb, rural section	minimal base, very poor subgrade	Reconstruction
1979	Asphalt	1 [2019]	Hibbard St	Turner St	Richmond St	8" Clay	4" WM, Break History, Numerous Repair Sleeves, Undersized Water Main	None	No curb, rural section	minimal base, very poor subgrade	Reconstruction
							4" WM, Break History, Numerous Repair Sleeves		No curb, rural section	minimal base, very poor	

# Columbus Maintenance Street History

## MAINTENANCE & REPAIRS

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
Budgeted Street Maintenance/Repairs	\$ 30,000	\$ 20,000	\$ 50,000	\$ 50,000	\$ 60,000	\$ 105,000	\$ 86,000	\$ 50,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 85,000	\$ 94,709	\$ 99,779	\$ 95,000	
Expended Street Maintenance/Repairs	\$ 16,900	\$ 19,930	\$ 73,774	\$ 61,349	\$ 128,316	\$ 105,000	\$ 86,000	\$ 36,106	\$ 56,071	\$ 63,515	\$ 141,177	\$ 85,000	\$ 92,406	\$ 57,457	\$ 86,000	
Street Plan Maintenance Recommendation	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	
	2024	2025														Average
	\$ 105,000	\$ 105,000														\$ 74,146
	\$ 95,000	\$ 86,000														\$ 75,882
	\$ 50,000	\$ 50,000														\$ 50,000

## BUDGET VS ACTUAL STREET MAINTENANCE/REPAIRS

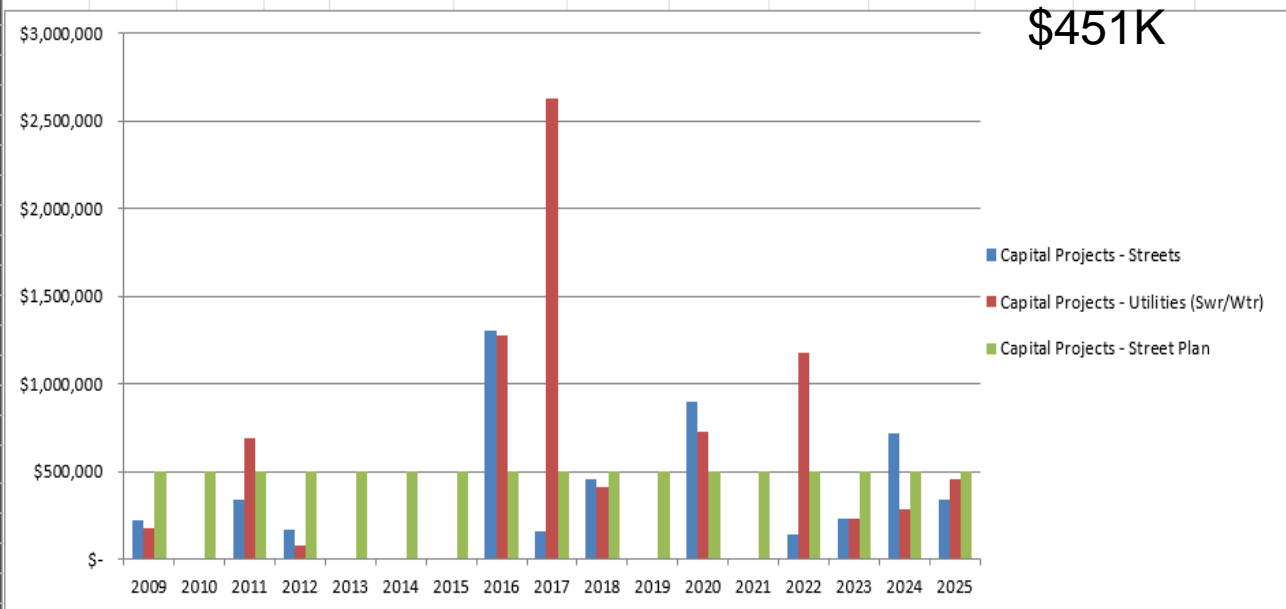


# Columbus Reconstruction Street History

## CAPITAL PROJECTS - RECONSTRUCTION COSTS

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Capital Projects - Streets	\$ 225,089	\$ -	\$ 335,264	\$ 164,515	\$ -	\$ -	\$ -	\$ 1,307,101	\$ 157,306	\$ 451,710	\$ -	\$ 896,877	\$ -	\$ 137,300	\$ 234,103
Capital Projects - Utilities (Swr/Wtr)	\$ 175,926	\$ -	\$ 688,750	\$ 73,041	\$ -	\$ -	\$ -	\$ 1,279,238	\$ 2,628,438	\$ 414,898	\$ -	\$ 723,775	\$ -	\$ 1,181,037	\$ 229,367
Capital Projects - Utilities (STm)	\$ 70,654	\$ -	\$ 64,400	\$ 144,914	\$ -	\$ -	\$ -	\$ 198,950	\$ -	\$ 36,425	\$ -	\$ 397,290	\$ -		\$ 53,888
Capital Projects - Street Plan	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000
	2024	2025													Average
	\$ 719,799	\$ 339,124													\$ 292,246
	\$ 286,455	\$ 456,523													\$ 478,673
	\$ 138,415	\$ 101,355													\$ 75,393
	\$ 500,000	\$ 500,000													\$ 500,000

## CAPITAL PROJECTS - RECONSTRUCTED STREETS 2009-2025



2009	William Street
	Lewis Street
2011	N. Water Street
	Farhnam Street
2012	APC Way
2013	Gateway / Heritage (NOT INCLUDED BECAUSE NEW)
2016	Mill Street
	Charles Street
	West Prairie Street
	West Church Street
2017	James Street
2018	Hall Road (NOT INCLUDED BECAUSE NEW)
	S. Water Street
	E. School Street
2020	Hibbard Street
2022	STH 89
2023	Folsom
2024	Commercial, Seldon, Richmond
2025	Brookside Lane

Street costs include = removals, grading, aggregate base, pavement, curb and gutter, storm sewer, sidewalk, driveways



# Questions

