



2023 Pavement Management Program Review & Recommendations

Public Works Capital Improvements & Preservation Plan
April 10, 2023 City Council Study Session

Overview

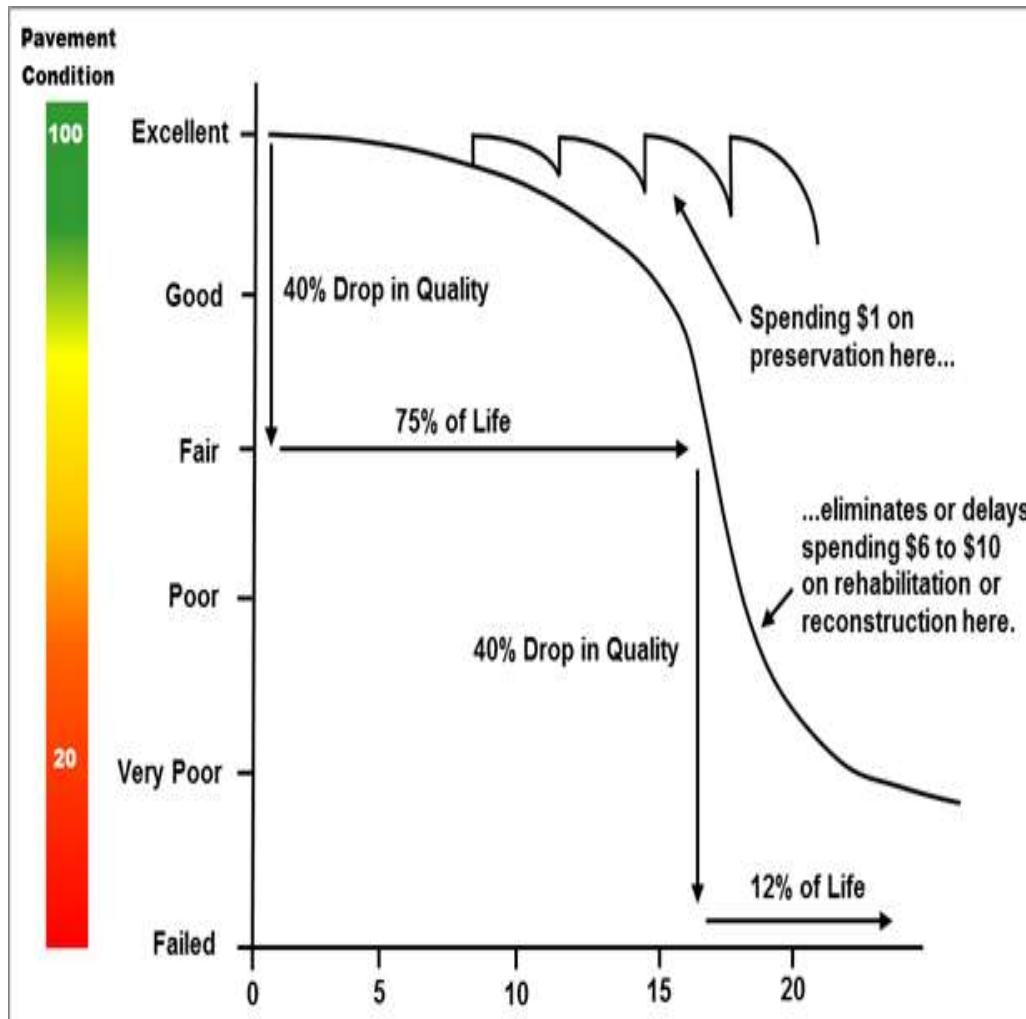
- Purpose and Need
- Principles
- Maintenance Types
- Maintenance Cost Analysis
- Process
- Condition Ranges
- Type/Condition
- Methodology
- Recommendations
- Funding
- Next Steps

Purpose and Need

- To preserve and extend the useful life of asphalt paved surfaces throughout the City and optimize the available funds to meet the roadway network condition requirements
 - 1) Maximize performance and safety standards of City roadways
 - 2) Minimize overall long-term costs of managing the network roadway system



Principles



- Keep the Good Roads Good!
- Good Roads Cost **Money**. Poor Roads Cost **More!**

Maintenance Types



Slurry Seal Application



Micro surfacing Application

Preventive & Preservation:

- Performed to protect the existing pavement through surface treatments
- Extends the service life
- Does not add any structural strength
- Proactive/applied to pavements in good condition

Examples:

- 1) Slurry Seal
- 2) Chip Seal
- 3) Micro surfacing



Maintenance Types

Routine & Reactive:

- Planned; cyclical
- Reactive to problems; performed after a deficiency occurs in the pavement
- Does not extend service life

Examples:

- 1) Crack sealing/filling
- 2) Full depth crack repair with mastic material
- 3) Joint sealing (concrete)
- 4) Pothole patching
- 5) Leveling low spots



Crack Sealing/Filling

Pothole Patching



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Maintenance Types



Mill and Overlay



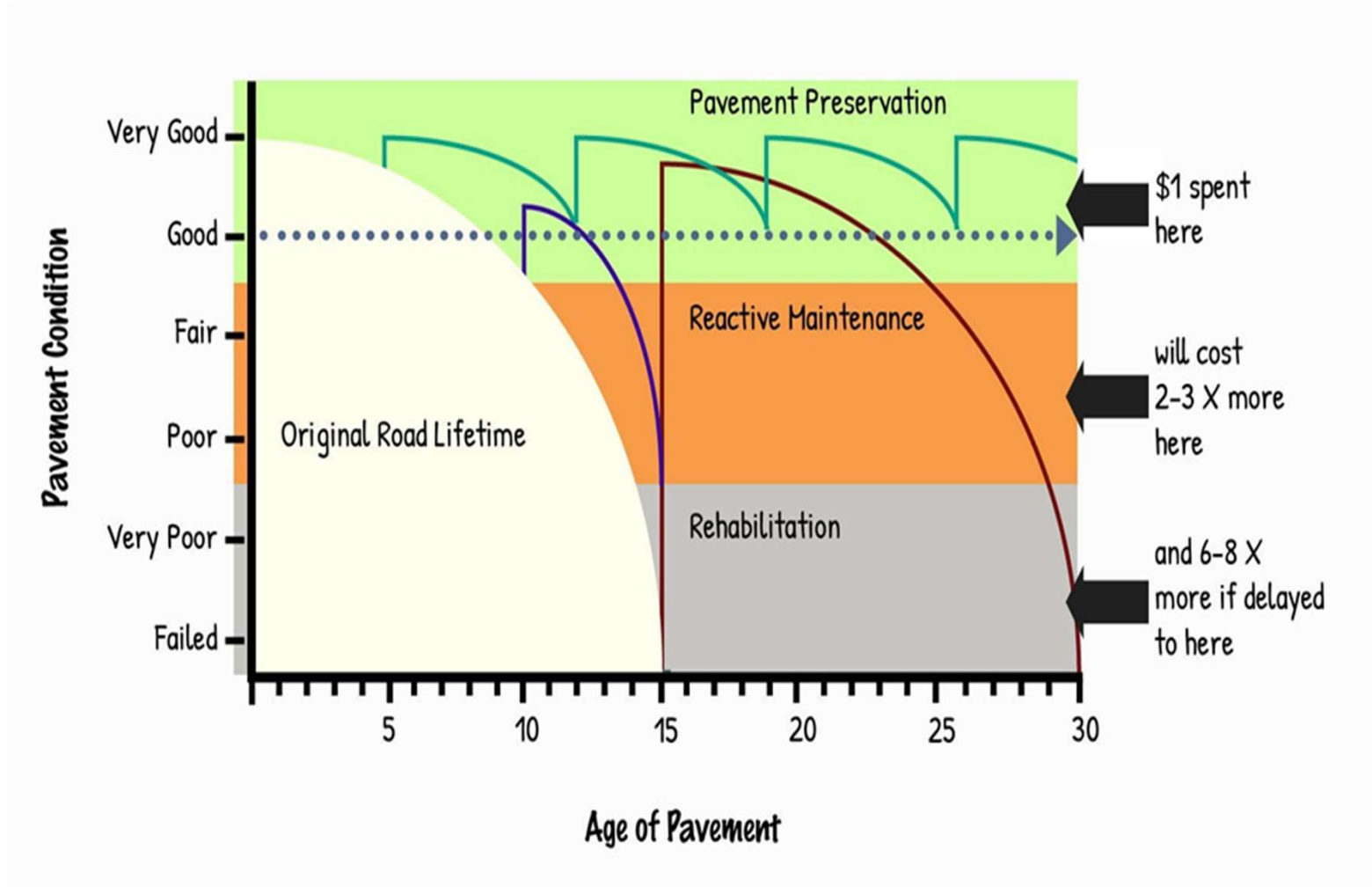
Corrective / Rehabilitation:

- Reactive
- Extends the service life through structural enhancements
- Performed when deficiencies are so significant that preventive maintenance will no longer be effective
- More extensive and more expensive

Examples:

- 1) Mill and Overlay (Resurfacing)
- 2) Full Depth Reclamation
- 3) Hot mix overlay (with or without leveling course)

Pavement Maintenance Cost Analysis



Process



Figure 1-2 - The Pavement Management Process

- 1) System Configuration – Identify all roadways, their physical characteristics (length, width, etc.), pavement type, and road classification, then link this information to our GIS map.
- 2) Data Collection/Field Survey – Condition is assessed based on surface distress (such as cracking, potholes, raveling, etc.) as well as severity (Low, Moderate, High) and is attached to the appropriate road segment along with the pertinent information relating to the roads condition (e.g. number of potholes), square footage and lineal feet of distress (area and length of specific cracking for example).
- 3) Analysis and Reporting – Provide a quantitative performance score (Pavement Condition Index (PCI)) representing the surface condition of the pavement on a scale of 0 to 100 – the higher the score the better the condition of the roadway.

Typical PCI Condition Ranges

PCI Range	Work Type	Rehabilitation Options
86-100 Good	Rejuvenation	Little or no maintenance E.g. Crack Seal, Reclimite, fog seal
71-85 Satisfactory	Global	Routine Maintenance E.g. Seals such as slurry seal
56-70 Fair	Critical	Non-structural overlay, cape seal
41-55 Poor	Conventional	Structural overlay Overlay, Mill and overlay
26-40 Very Poor	Conventional	Structural Overlay Overlay, Mill and overlay
11-25 Serious	Reconstruction	Reconstruction, rebuild, full depth reclamation
0-10 Failed	Reconstruction	Reconstruction, rebuild, full depth reclamation

- The table above shows typical pavement condition indexes, work type, and recommended rehabilitation options



Type/Condition

- Commerce City has 260.89 miles of paved roads

Distribution of Roads by Pavement Type

Pavement Type	# of Sections	# of Miles	# of Square Yards	% by # of Square Yards	Weighted Average PCI
Asphalt	2,861	250.73	4,818,180	93%	79
Concrete	54	10.16	381,047	7%	95
Total	2,915	260.89	5,199,228	100%	80

Distribution of Asphalt Roads by Functional Class

Functional Class/ Paver Designation	# of Sections	# of Miles	# of Square Yards	% by # of Square Yards	Weighted Average PCI
Arterial & Collector/ B & C	759	94.17	2,121,064	44%	78
Local/ E	2,102	156.57	2,697,116	56%	79
Total	2861	250.74	4,818,180	100%	79



Methodology

- Asphalt roadways were divided into 2,861 sections and then evaluated based on Average PCI, as well as other factors listed below:
 - 1) Current Traffic Volumes
 - 2) Roadway Classification
 - 3) Snow Routes
 - 4) Proximity to Schools, Transit, Parks, and Commercial Businesses
 - 5) Economic Development Potential
 - 6) Coordination With SAWSD Water Line Replacement Schedule

- Several road sections were eliminated from this program due to the current conditions and level of reconstruction which will be required in addition to planning with SACWSD utility projects



Recommendations

- Focus on roadways with PCI less than 70
- Staff added some residential streets with PCI greater than 70
 - ❖ Based upon citizen concerns and staff observations (E. 63rd Ave. from Monaco St. west to the end of the cul-de-sac)
 - ❖ Example – Weiman Ct. with a PCI of 85
 - ❖ Example – Fairfax neighborhood which had a waterline replacement project that was completed in 2020
- Most work is mill and overlay
- Crack Sealing - Completed continuously & coordinated w/Street Maintenance Division
- Crack Repair - Completed under a separate project/contract – Approx. \$250K
 - ❖ Locations include; E. Southlawn, Quintero, E. 102nd Ave., E. 102nd Place, E. 99th Pl, E. 99th Way, E. 102nd Pl, E. 106th Way, Heartland, E. 110th Ave, and E. 111th Ave.
- Street Reconstruction – Carryover of 2022 Reconstruction Projects for Dahlia and Elm Street.
 - ❖ Dahlia delayed due to weather and contractor equipment failure. ECD Q2/2023
 - ❖ Elm delayed to due extent of reconstruction, cost, and extensive testing/design requirements. ECD Q3/2023

Recommendations

STREET RESURFACING 2023

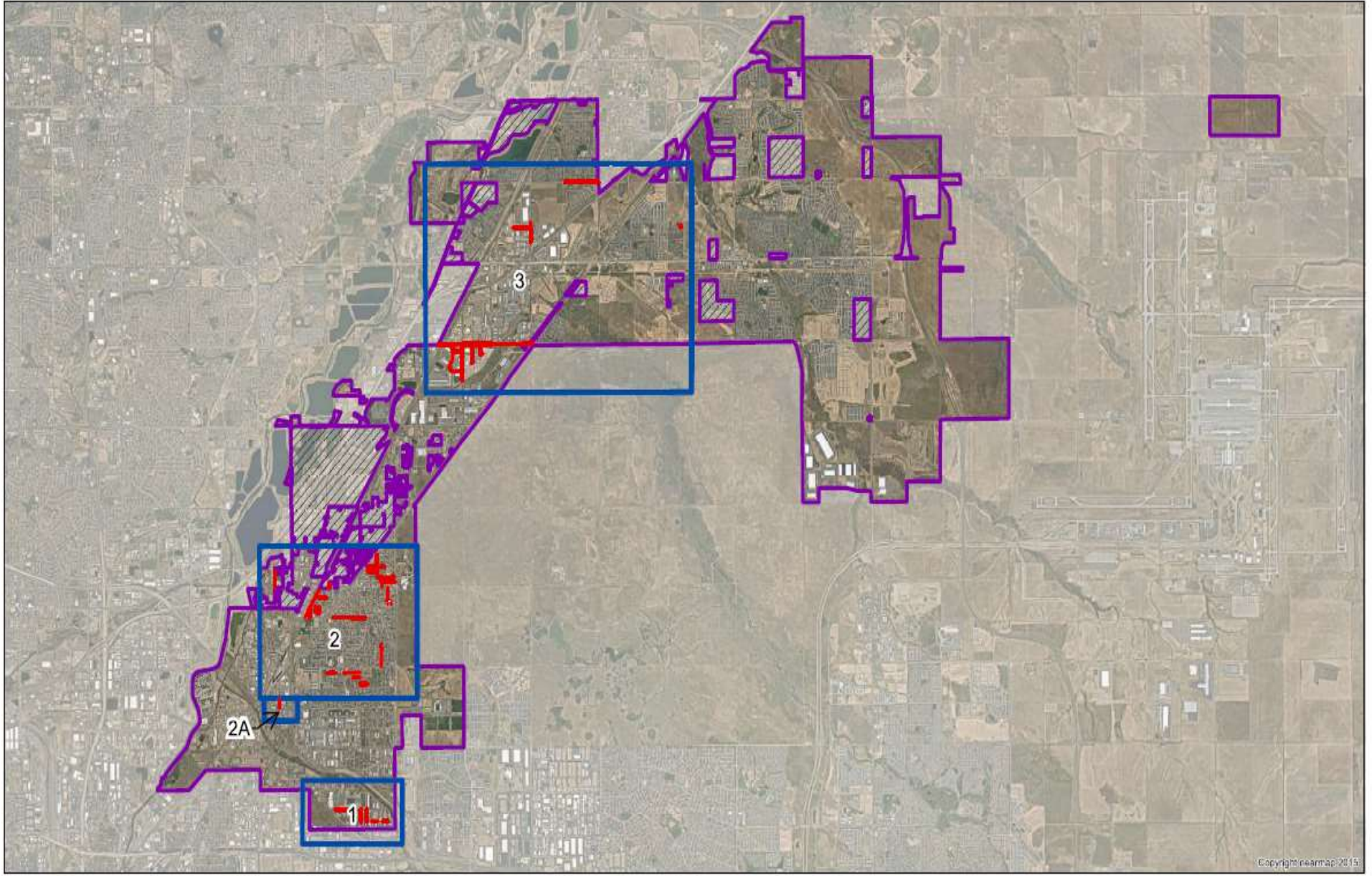
NOTE:	TOTAL ESTIMATED PROJECT COST:	\$2,419,200
CONTINGENT STREETS ESTIMATED TO BE \$175,000	CONTINGENCY (10%):	\$268,800
	TOTAL:	\$2,688,000

- ❖ Note: Total project cost includes mobilization, traffic control, and contingency





Street Resurfacing 2023



Street Resurfacing Commerce City Boundary Enclave

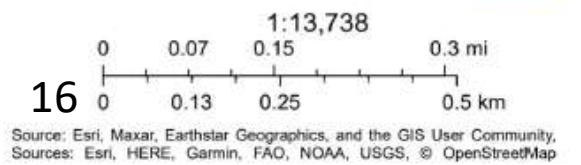


STREET RESURFACING 2023 MAP AREA 1



2/21/2023

- Street Resurfacing
- Commerce City Boundary
- Enclave

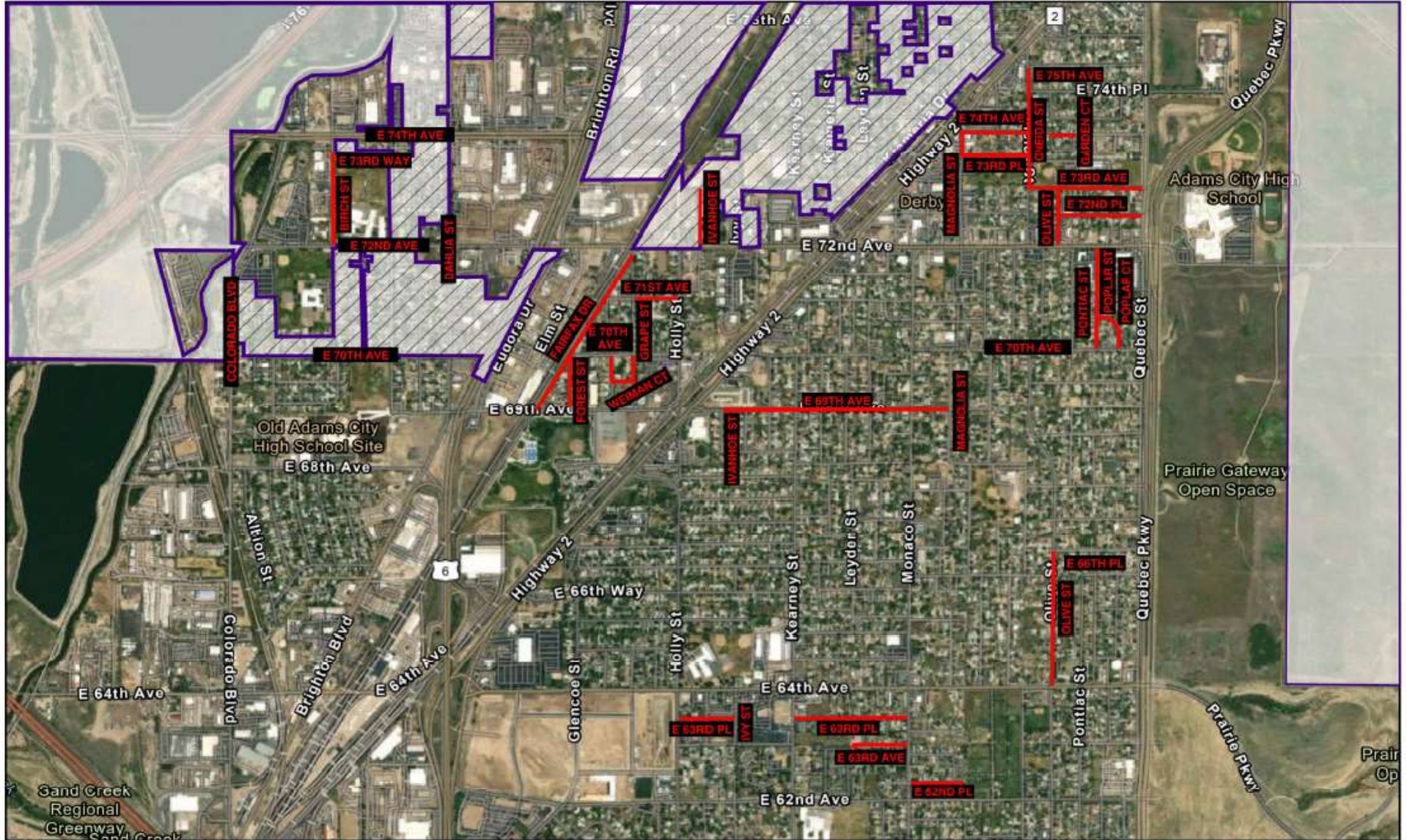


Street Resurfacing Area 1



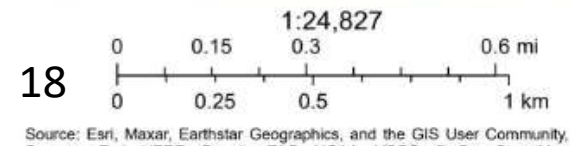


STREET RESURFACING 2023 MAP AREA 2



2/21/2023

- Street Resurfacing
- Commerce City Boundary
- Enclave



Street Resurfacing Area 2



Street Resurfacing Area 2



Street Resurfacing Area 2

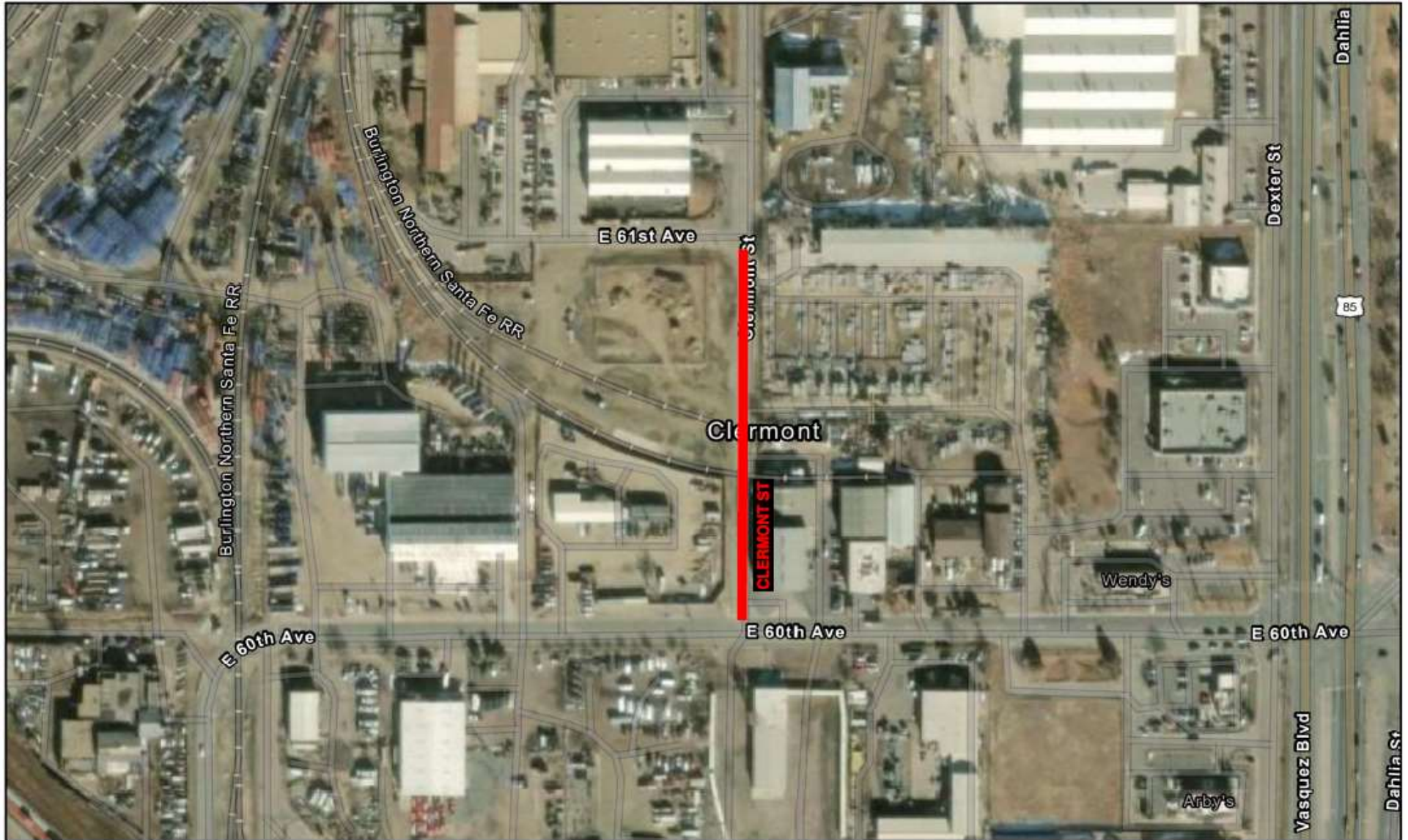


Street Resurfacing Area 2



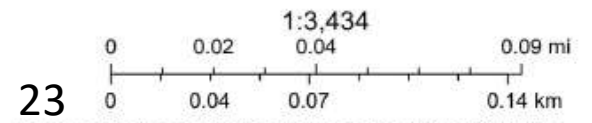


STREET RESURFACING 2023 MAP AREA 2A



2/22/2023

- Street Resurfacing
- Commerce City Boundary
- Enclave



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.
 Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap

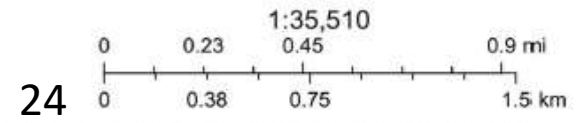


STREET RESURFACING 2023 MAP AREA 3



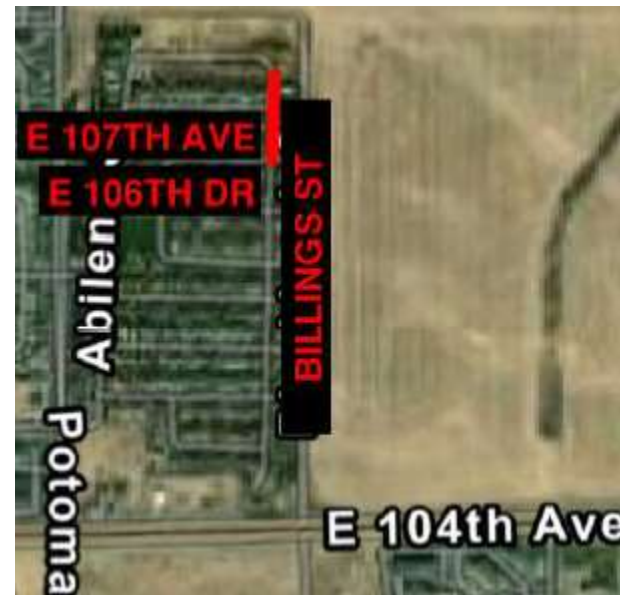
2/21/2023

- Street Resurfacing
- Commerce City Boundary
- Endave



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 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.
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Street Resurfacing Area 3



Street Resurfacing Area 3



Funding

Improvement Type	Estimate Cost (\$)	Note
Mill and Overlay	\$2,688,000	Includes Traffic Control, Mobilization and 10% Contingency

Available Funding Sources:

- 2023 Pavement Management Budget \$ 2,500,000.00
- 2022 Pavement Management Budget Carryover \$ 100,000.00
- 2023 Core City Infrastructure Improvements \$ 150,000.00
- Total Budget \$ 2,750,000.00

Note:

Core City Improvements Budget is \$250,000. We are proposing to use \$100K in Concrete Flatwork Program and \$150K in Asphalt Pavement Management Program



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Funding per Area

<i>Funding Per Area</i>	
Core City	\$ 1,350,300
Irondale	* SEE NOTE *
Northern Range	\$ 1,337,700
Total	\$ 2,688,000

*NOTE – Anticipated Start of Rosemary Widening Project Q3/2023 – CWE \$6.5M



Next Steps

- Advertise a request for bid for pavement management program
- Bring contract to City Council in May 2023
- Begin Work June 2023



Questions?

