



Fourth & Cedar/Lockett Roundabout

February 16, 2021



The central graphic is a dark blue rectangle with white text and logos. At the top, the title 'Fourth & Cedar/Lockett Roundabout' is written in a large, white, serif font. Below the title, the date 'February 16, 2021' is written in a smaller, white, sans-serif font. At the bottom left of the rectangle is the official seal of the City of Flagstaff, Arizona, which depicts a mountain range and a river. At the bottom right is the 'TEAM FLAGSTAFF' logo, which consists of the words 'TEAM FLAGSTAFF' in a bold, sans-serif font above a stylized sunburst graphic, with the tagline 'WE MAKE THE CITY BETTER' below it.





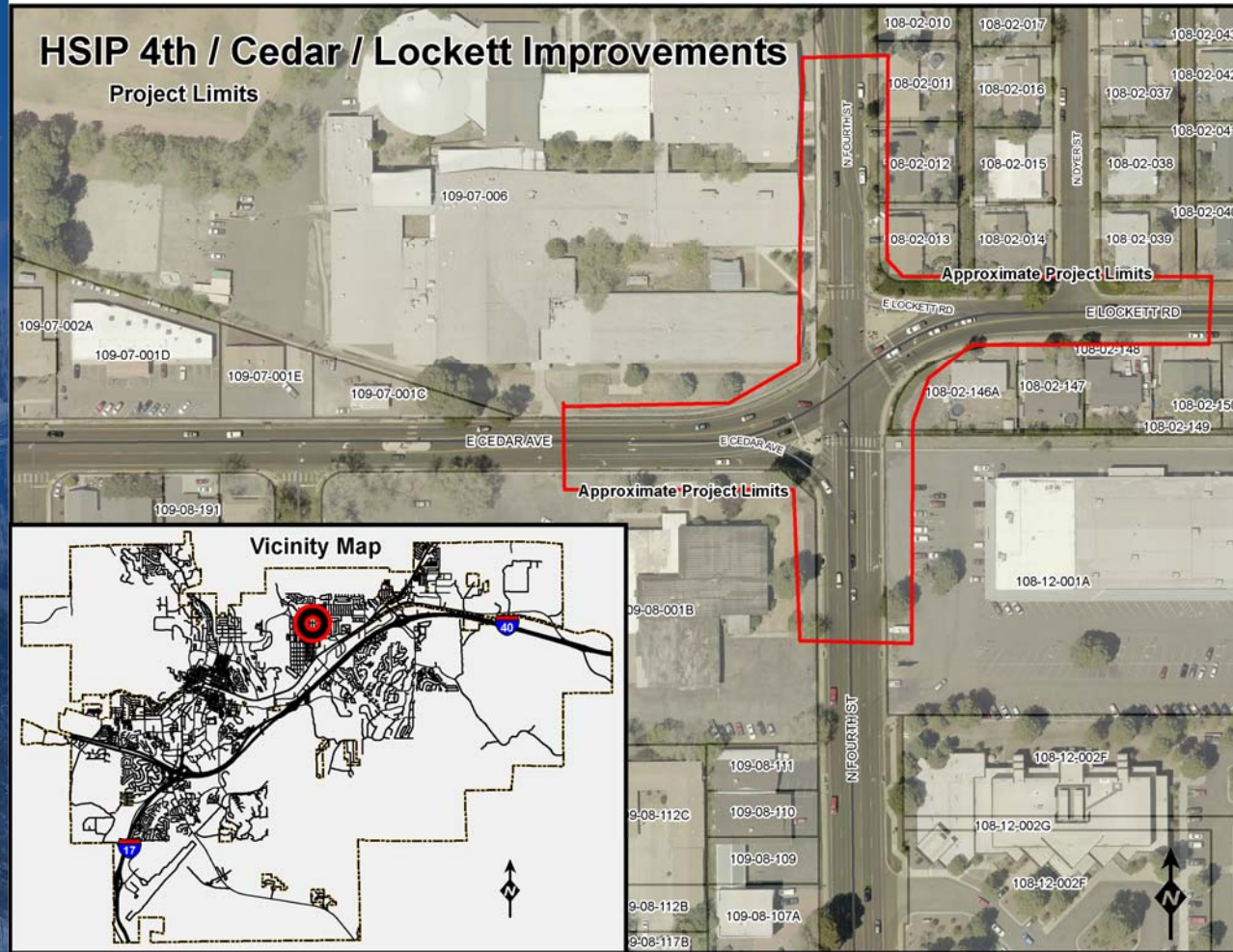
Fourth & Cedar/Lockett Roundabout



1. Project Overview
2. Roundabout Concepts and Design Treatments
3. Preferred Alternative
4. Next Steps

Project Location

- North Country HealthCare
- East Flagstaff Library
- Coconino Community College
- Pine Forest School
- Mount Elden Middle School and Puente de Hozho School
- Greenlaw and Sunnyside





Highway Safety Improvement Program (HSIP)



- Purpose:
 - “to achieve a significant reduction in traffic fatalities and serious injuries on all public roads through the implementation of infrastructure-related highway safety improvements.”
- Other Flagstaff HSIP Projects:
 - City-wide Sign Inventory and Replacement program
 - City-wide Pavement Markings
 - Beulah Bike Lanes
 - Switzer & Turquoise Roundabout
 - City-wide Guardrail Replacement
 - Countdown Pedestrian Signal Heads



Financial Impact



Fiscal Year 2020 - Design

- City share \$30,000
- HSIP Federal Funds \$450,000

Fiscal Year 2021 - ROW

- HSIP Federal Funds \$92,398
- City share \$30,813

Fiscal Year 2022 - Construction

- HSIP Federal Funds \$1,385,968

Notes:

- City is responsible for any project costs in excess of the current HSIP grant award of \$1,928,366



Common Site Applications



- A modern roundabout should be considered anywhere a traffic signal or stop control is under consideration
- Schools: Reduce vehicle speeds
- Corridors: Opportunity to shape cross sections - transitional
- Intersections with existing high crash severity and frequency patterns



Photo: Lee Rodegerdt (used with permission)



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Benefits of Roundabouts

- Safety – Reduced Crashes

- Total crashes by 35%
- Pedestrian Crashes by 40%
- Injury crashes by 76%
- Fatalities by 90%

- Traffic Calming

- Reduced vehicle speeds using geometric design
- Transitional element

- Pedestrian Safety

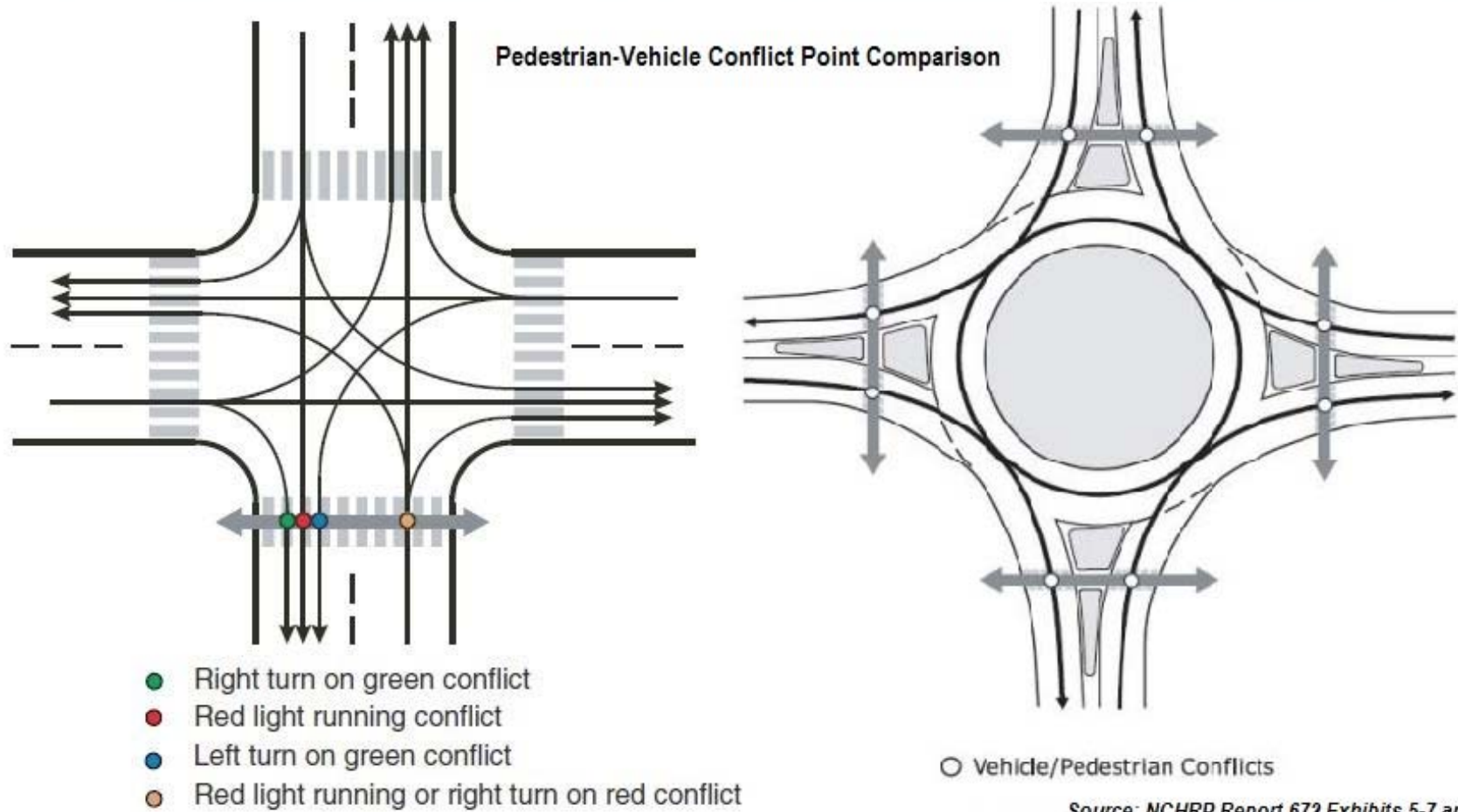
- Reduced crossing distances
- Reduced vehicle speeds
- Crossings focus on one traffic stream at a time - visibility

- Bicycle Safety

- Reduced vehicle speeds
- Two options
 - Take the lane
 - Separated/Protected facility



Safety – Reduce the Conflicts



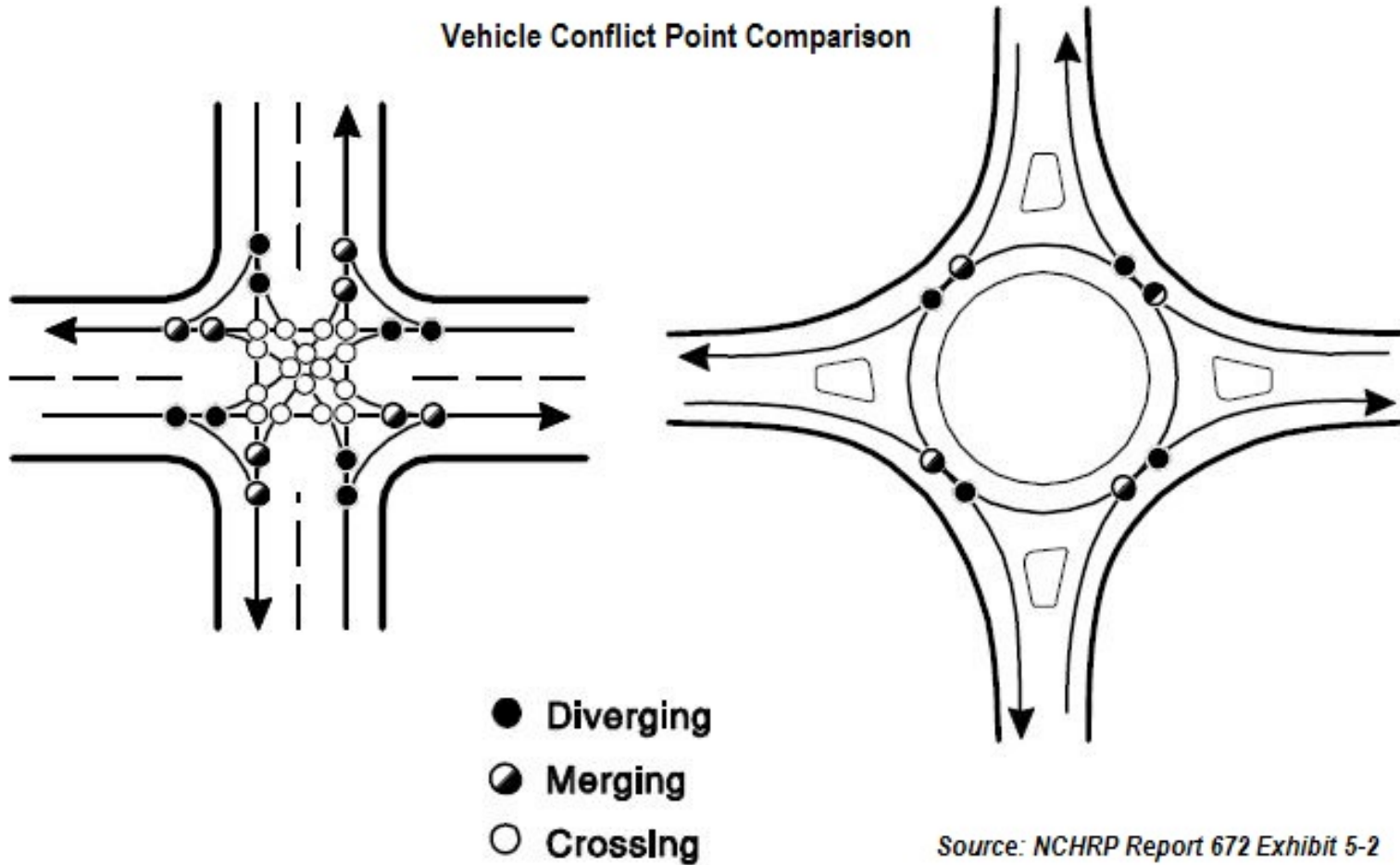
Source: NCHRP Report 672 Exhibits 5-7 and 5-8



Safety – Reduce the Conflicts



Vehicle Conflict Point Comparison



Source: NCHRP Report 672 Exhibit 5-2



Existing Conditions



Pedestrian Circulation

- Shorter
- One direction
- Setbacks
- No waiting
- Slower speeds
- Schools





Bicycle Circulation – The Basics



- Bicycle lanes end in advance of roundabouts
- Bicyclist may utilize the adjacent multi use pathway -or-
- Bicyclists may 'take the lane' as a vehicle in this slow speed environment





Bicycle Pavement Markings



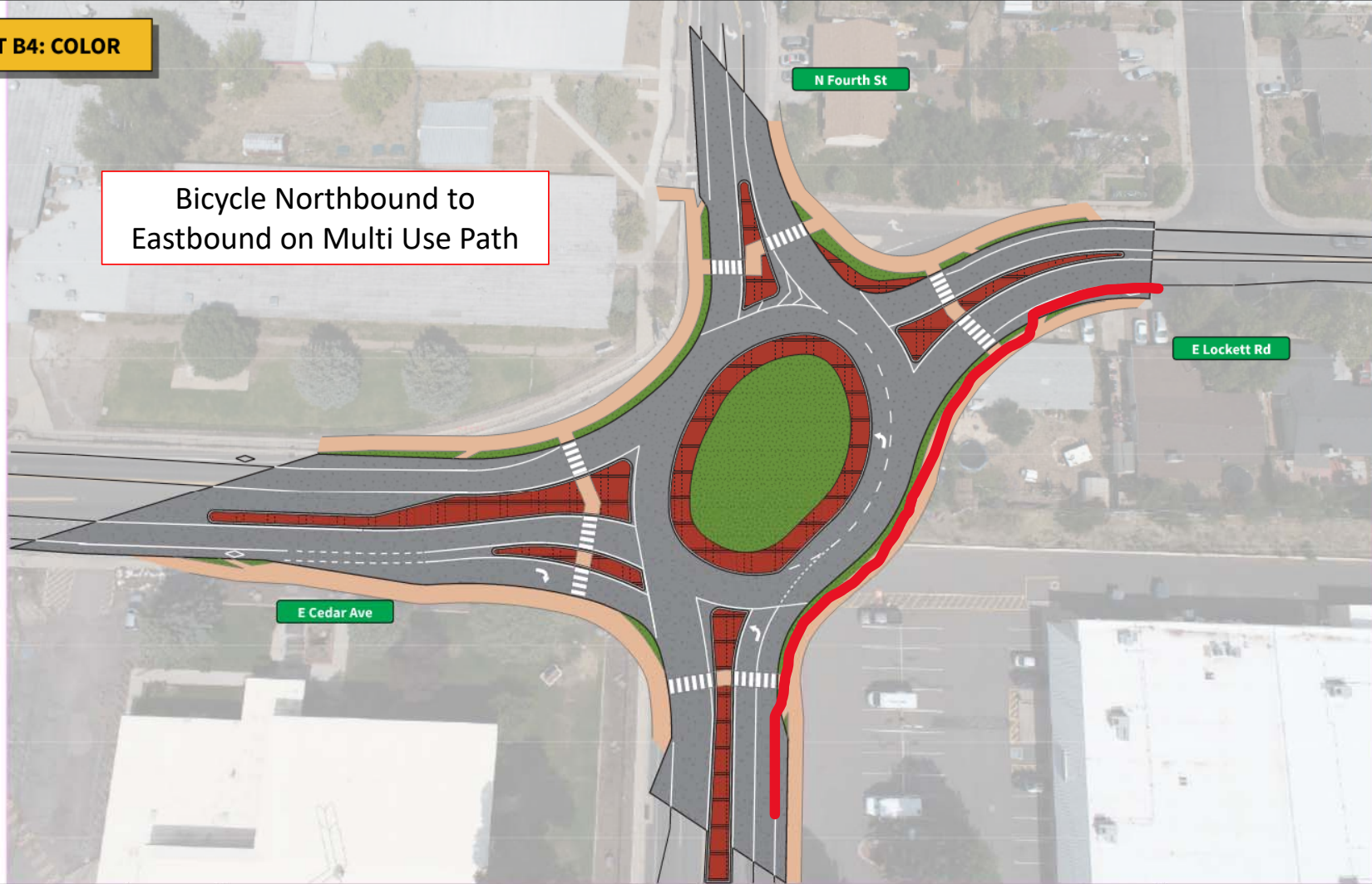


Bicycle Entrance Ramps



ALT B4: COLOR

Bicycle Northbound to
Eastbound on Multi Use Path



N Fourth St. @
E Cedar Ave. & E Lockett Rd.
Flagstaff, AZ



Scale= 1:50

MTJ CONCEPT DESIGN
ALT B4: COLOR WITH AERIAL



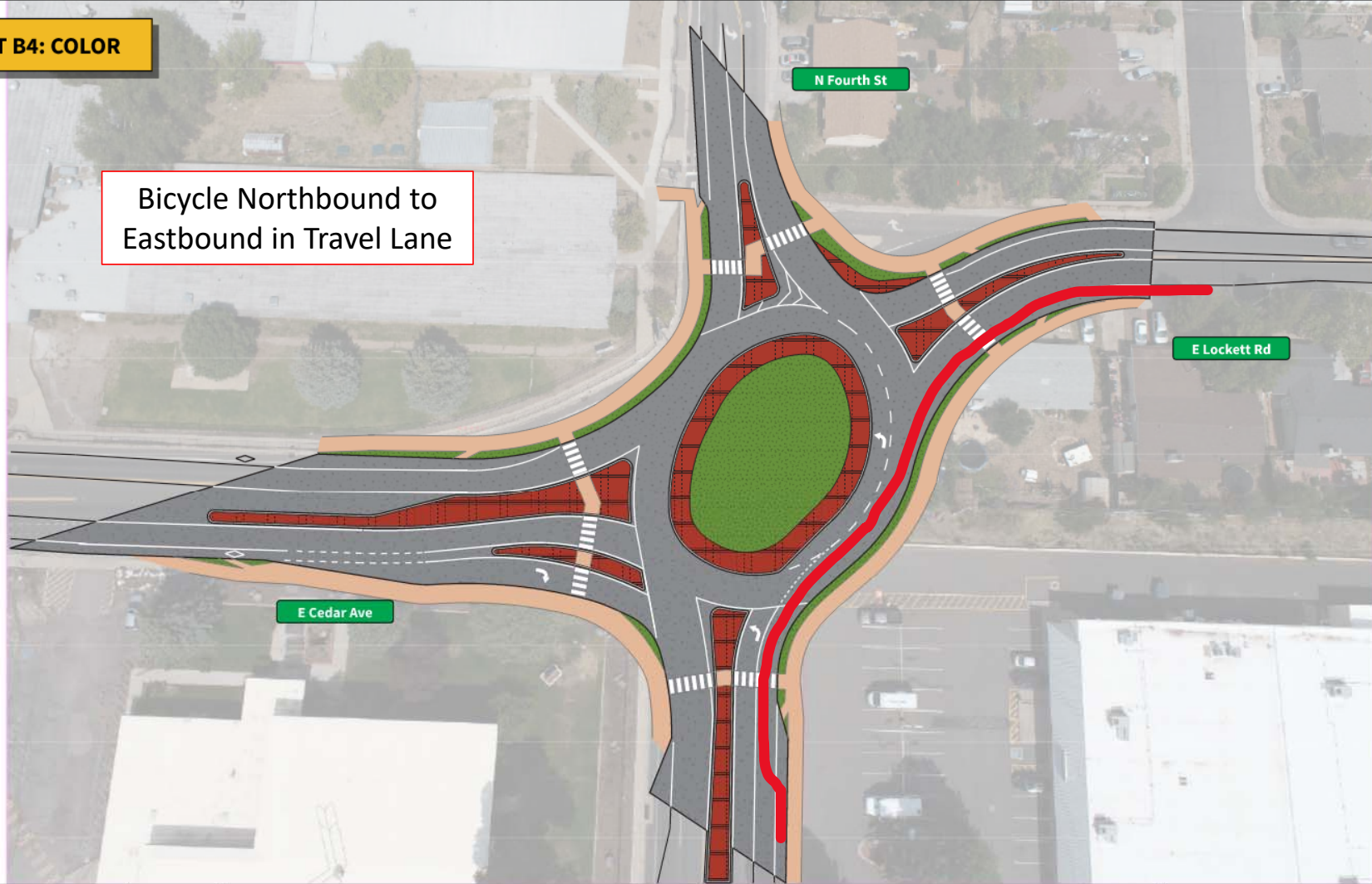
313 Price Place, Suite #11
Madison, WI 53705
608.238.5000
info@mtjengineering.com

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12.17.20

ALT B4: COLOR

Bicycle Northbound to
Eastbound in Travel Lane



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ALT B4: COLOR WITH AERIAL



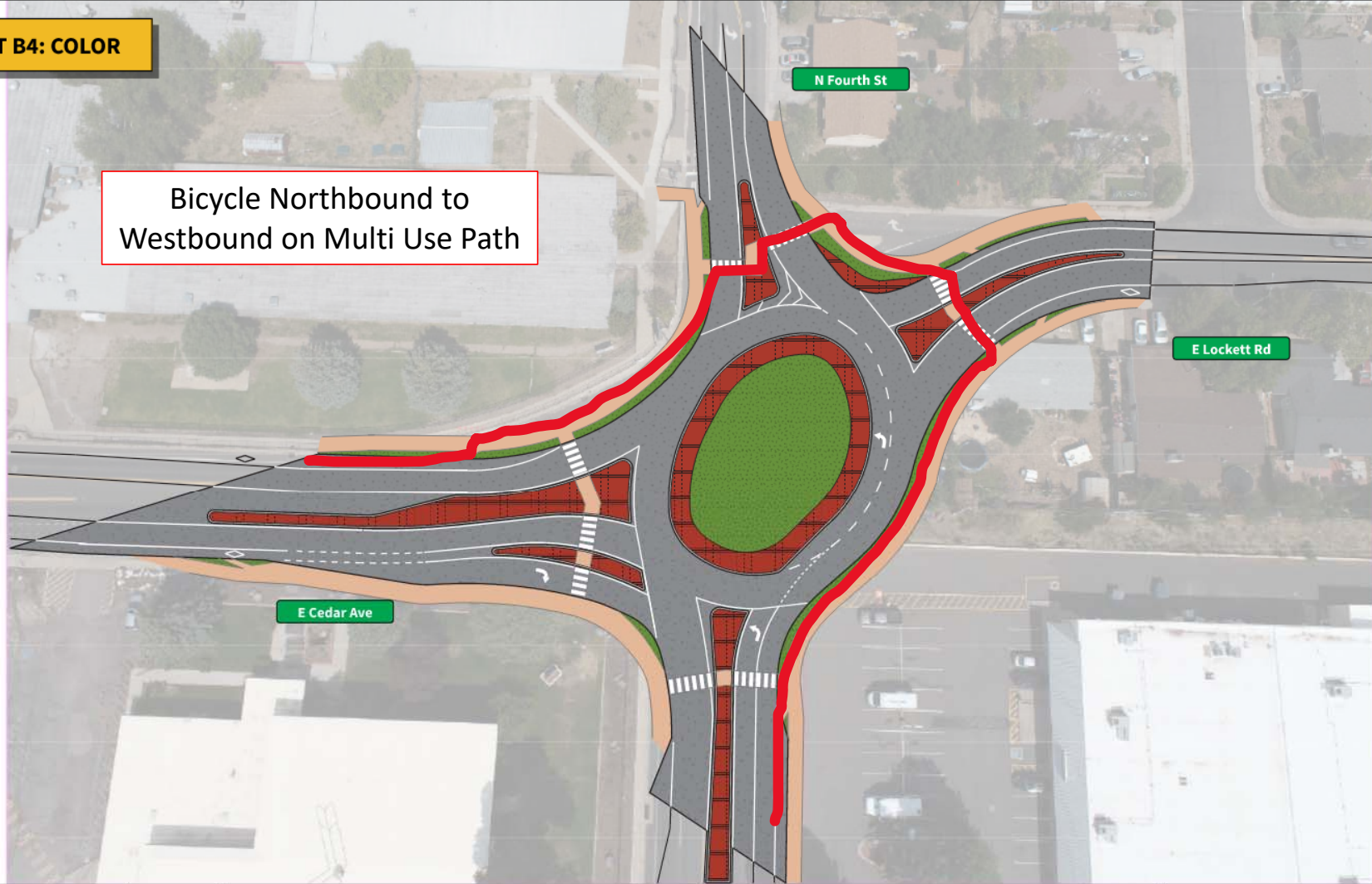
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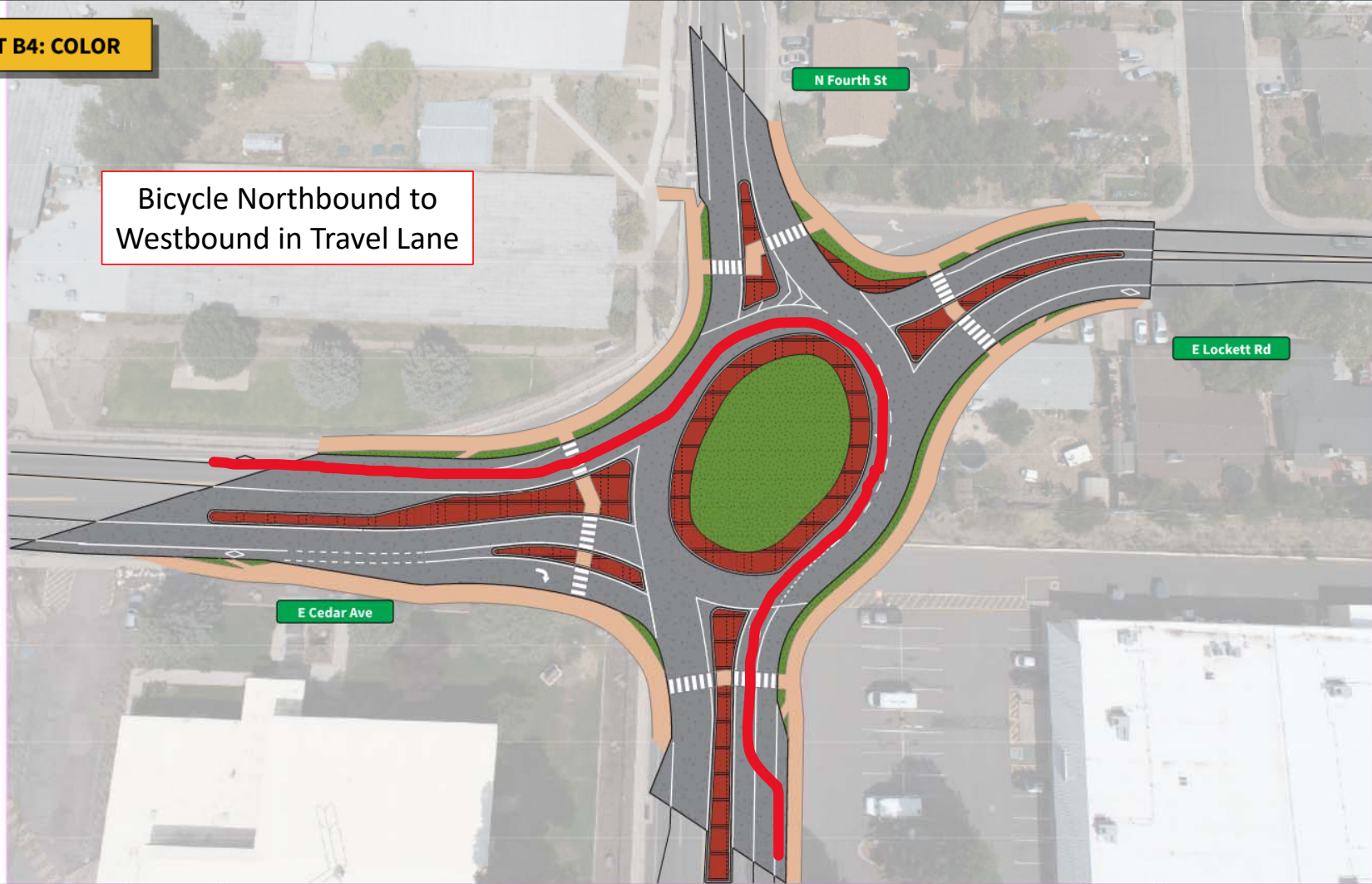
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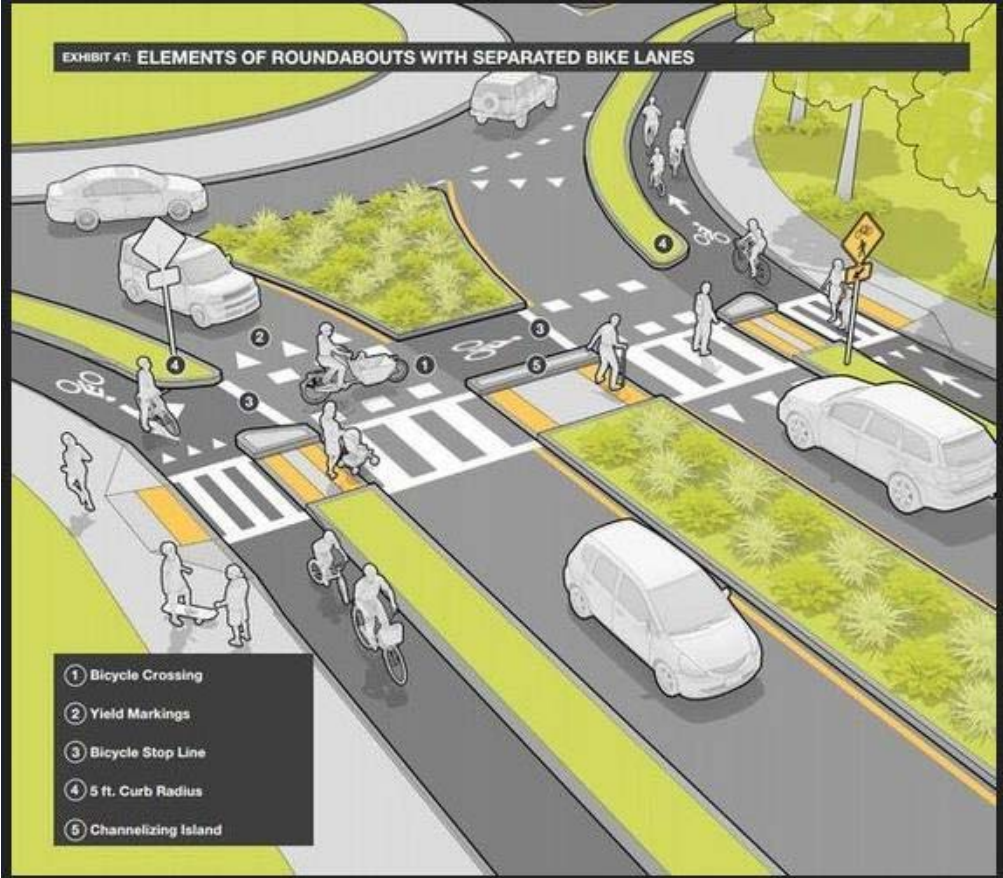
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Conceptual Bicycle Pavement Markings



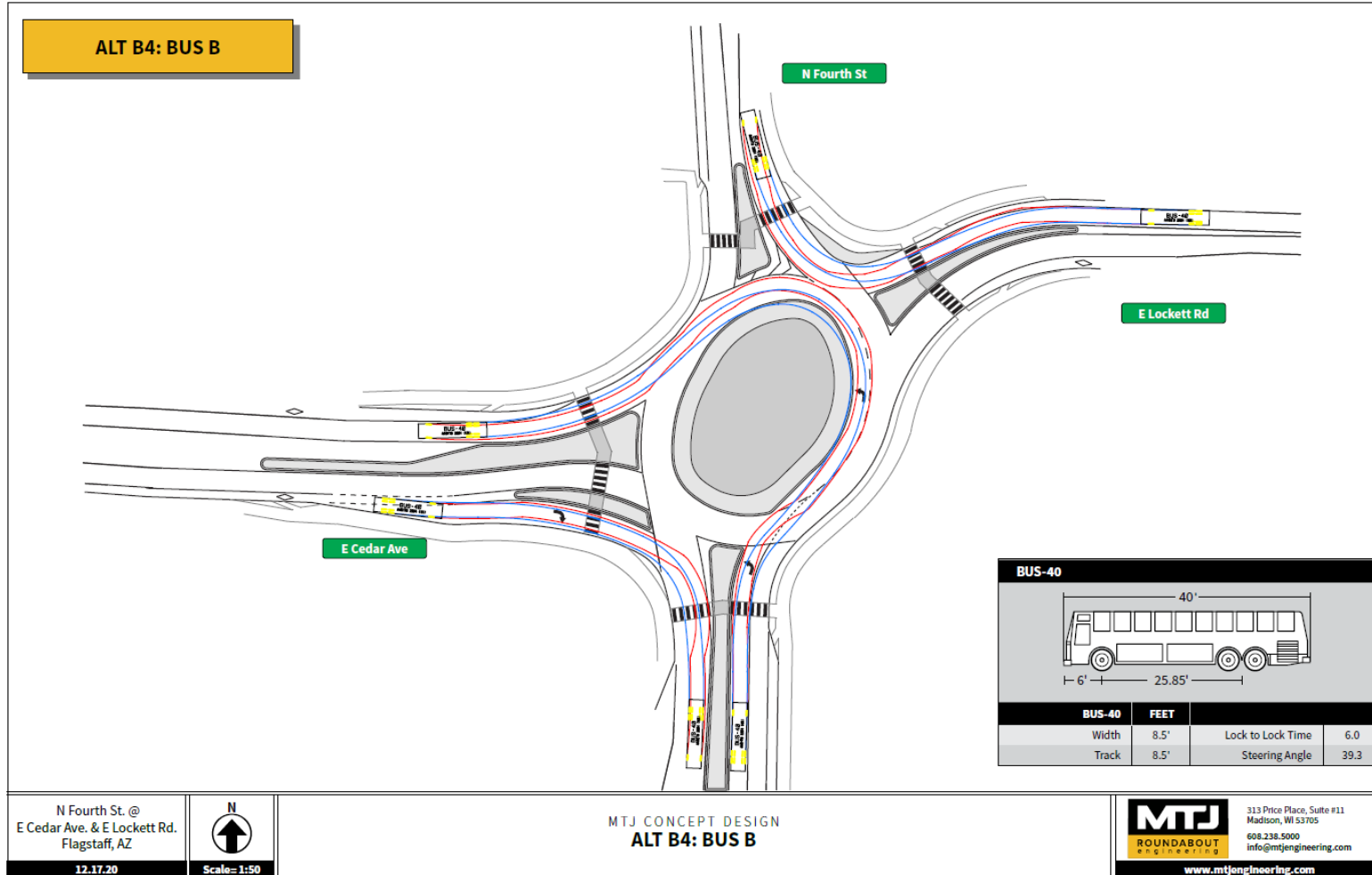


Auto/Bus/Truck Operations

- Operational Performance
 - Lower overall delay than other controlled intersections
 - Operational trade-offs of laneage
- Ongoing Operations and Maintenance
 - Lower life cycle operating and maintenance costs
- Approach Roadways
 - Does not require lengthy turn lanes
 - Total lane count 15 to 10
 - Greater right-of-way needs at the intersection quadrants



Design Vehicles – Buses and Trucks

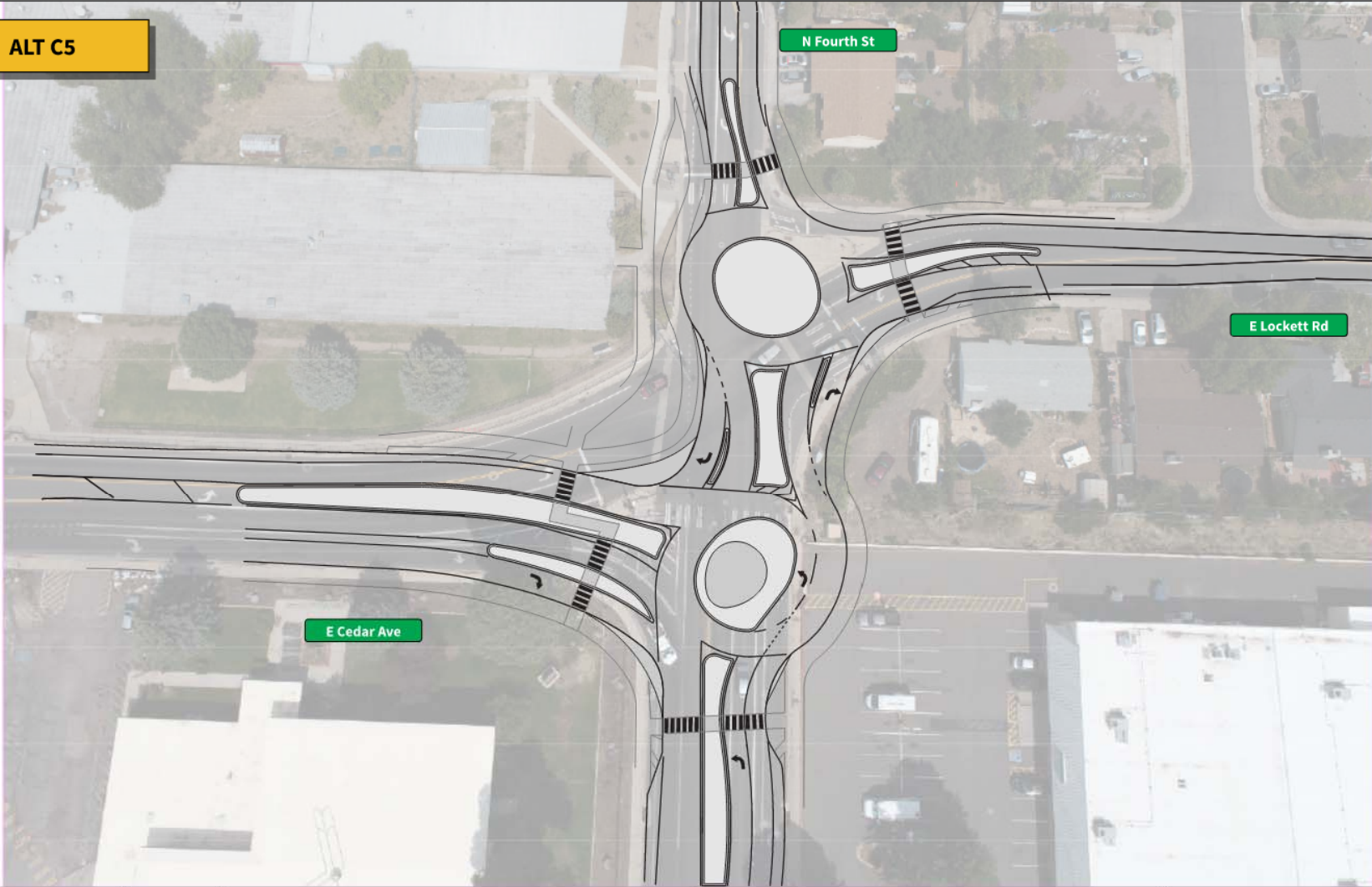




Existing Conditions



ALT C5



N Fourth St. @
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Scale= 1:50

MTJ CONCEPT DESIGN
ALT C5: WITH AERIAL



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ALT C5: COLOR



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MTJ CONCEPT DESIGN
ALT C5: COLOR WITH AERIAL

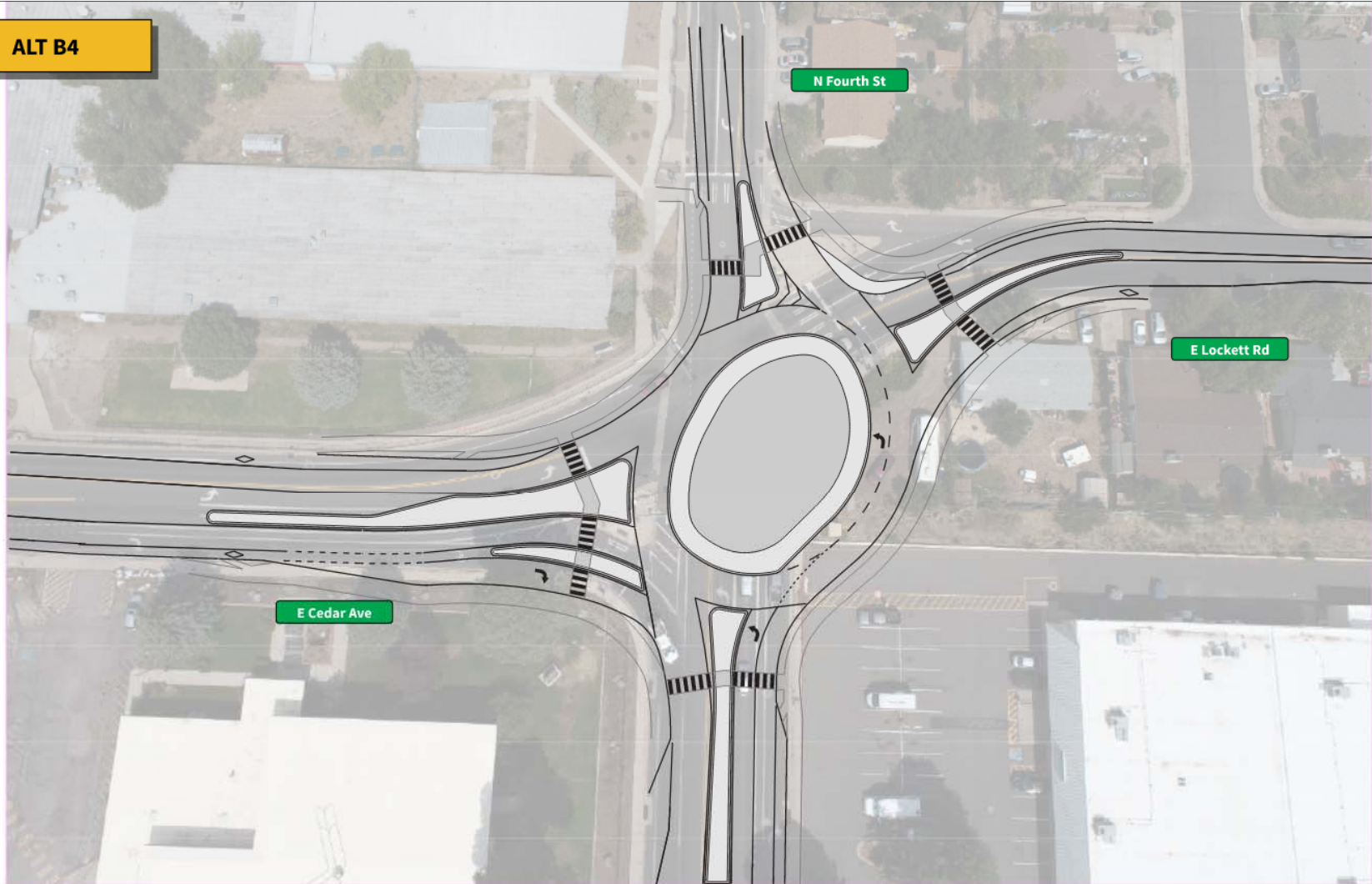


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Decision Matrix Summary



- Considered and scored alternatives based on multiple factors:
 - Safety for all modes, Operations for all modes, Environmental Factors, Buildings and Structures Impacts, Right of Way needs, Stakeholder Feedback and more.

Criteria Rating
1 - Strong Disadvantage
2 - Some Disadvantage
3 - Neutral
4 - Some Advantage
5 - Strong Advantage

EVALUATION CRITERIA	Design Alternative		
	<i>B4 - Single Roundabout</i>	<i>C5 - Double Roundabout</i>	<i>Existing Signal</i>
Total Net Effect:	74	68	62

- **Single roundabout is preferred alternative.**



Next Steps



- Select final design alternative.
- Project moves into full design.
 - Design Phase: 2021
 - Public Information Meeting
 - Right of Way Acquisition: 2021
 - Utility Relocation: 2021
 - ADOT advertises Project: 2021/22
 - Construction: 2022



Questions and Discussion

