

Intersection Inventory & Analysis

April 23, 2024



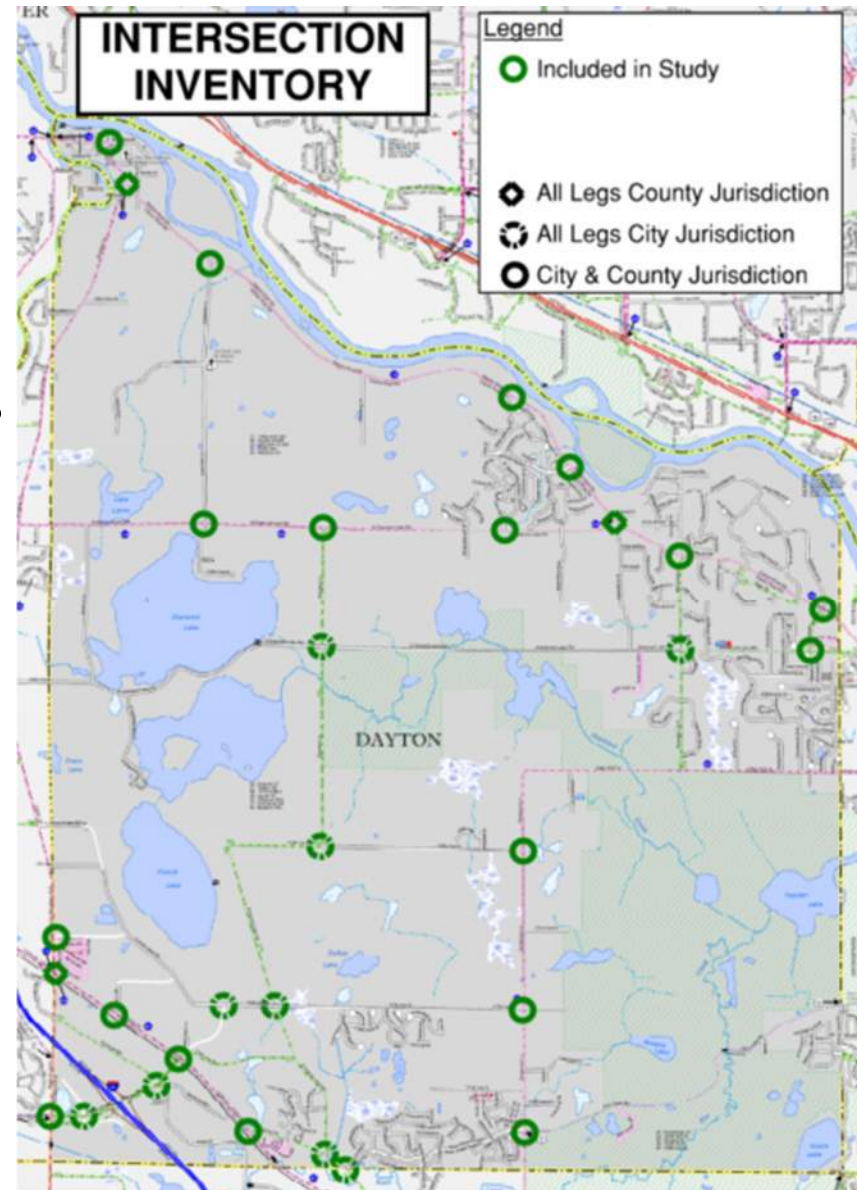
Project Background

- Past discussions regarding intersection safety and operations
- Desire to identify intersections of concern and outline potential mitigations
- Information to be used for:
 - Funding solicitations
 - Informing City Capital Improvement Program (CIP)
 - Consideration with development applications
 - Response to agency and/or public inquiries
- Council authorized a study October 2023



Study Intersections

- Thirty (30) intersection targeted
 - Reasonable level of effort
 - Covers most of collector road intersections
- Selection criteria
 - Collector roads (major intersections)
 - Anticipated growth in use
 - Reported safety concerns
 - Known operational challenges
 - Pedestrian facilities (existing or planned)



Prioritizing Intersections - Method

- Selected criteria for evaluation
 - Focus: safety, pedestrian use
- Identified thresholds for criteria selected
 - Somewhat arbitrary, generally set to target 25-50% exceedance
- Research – populate data for criteria
- Assigned points (stars) where value exceeds threshold
- Identified 'Top Ten' intersections for analysis



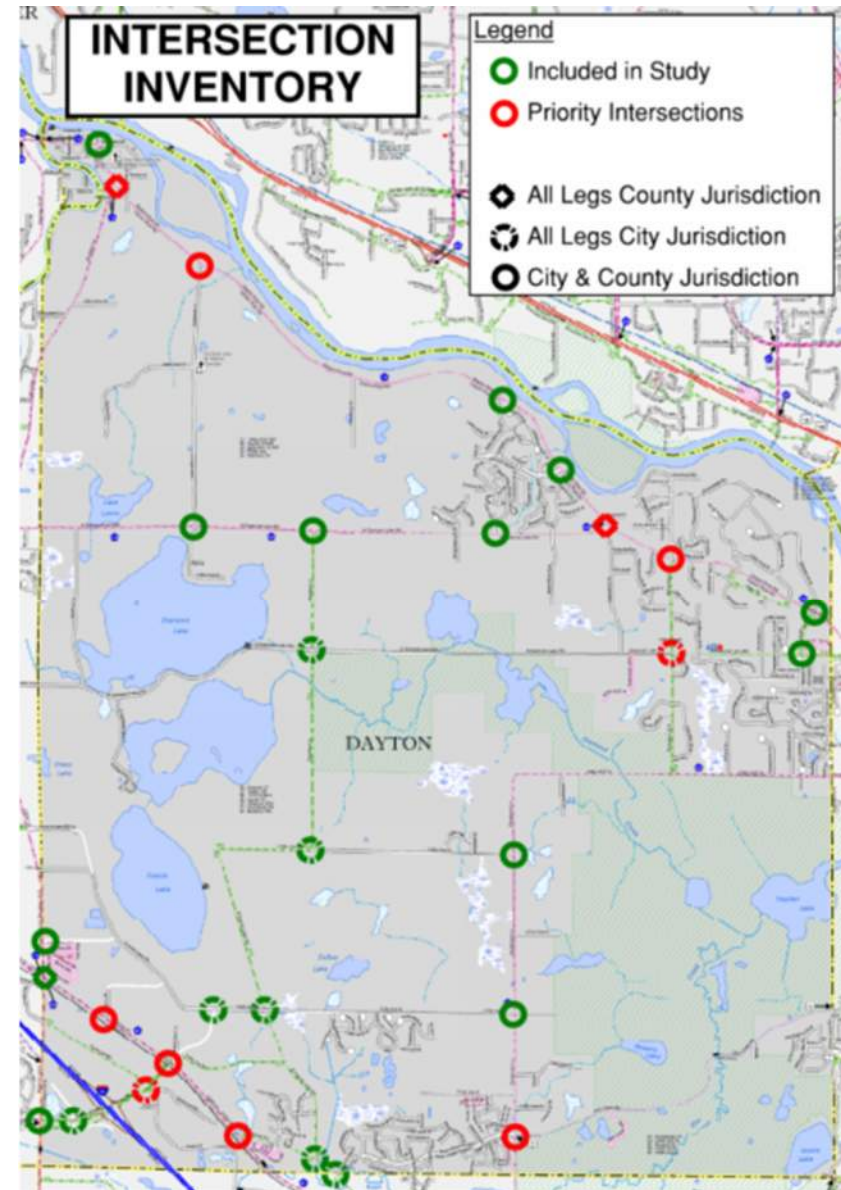
Prioritizing Intersections – Criteria [Threshold]

- AADT product (# users) [**>5M**]
 - 2023 counts
- Speed Limit [**>55mph**]
- Existing Ped Facilities [**yes**]
- Planned Ped Facilities [**yes**]
- # Lanes Crossed by Peds [**4+**]
- Crash Data
 - Severity [**fatal or serious injury**]
 - Type [**Int or Bike/Ped related**]
- Skew [**>10°**]
- Horizontal of Vertical Curve [**yes**]
- Sight Obstructions [**yes**]
- Nearest Access [**<100'**]
- RR Crossing [**<250'**]
- Previous Control [**>5 mi**]
- Adjacent Development [**>2 accesses within 250'**]
- Staff/Public Concerns [**Any**]



Priority Intersections

1. Dayton River Road & Pineview Lane – 10 stars
2. Dayton River Road & Brockton Lane – 8 stars
3. Dayton River Road & North Diamond Lake Rd/142nd Ave – 7 stars
4. CSAH 81 & Dayton Parkway – 7 stars
5. Dayton River Road & Lawndale Lane – 6 stars
6. Fernbrook Lane & Rush Creek Parkway/Elm Creek Road – 6 stars
7. Dayton Parkway & Territorial Road/Holly Lane – 6 stars
8. CSAH 81 & Troy Lane – 4 stars
9. CSAH 81 & Territorial Road – 4 stars
10. South Diamond Lake Road & Pineview Lane – 3 stars



Intersection Analysis

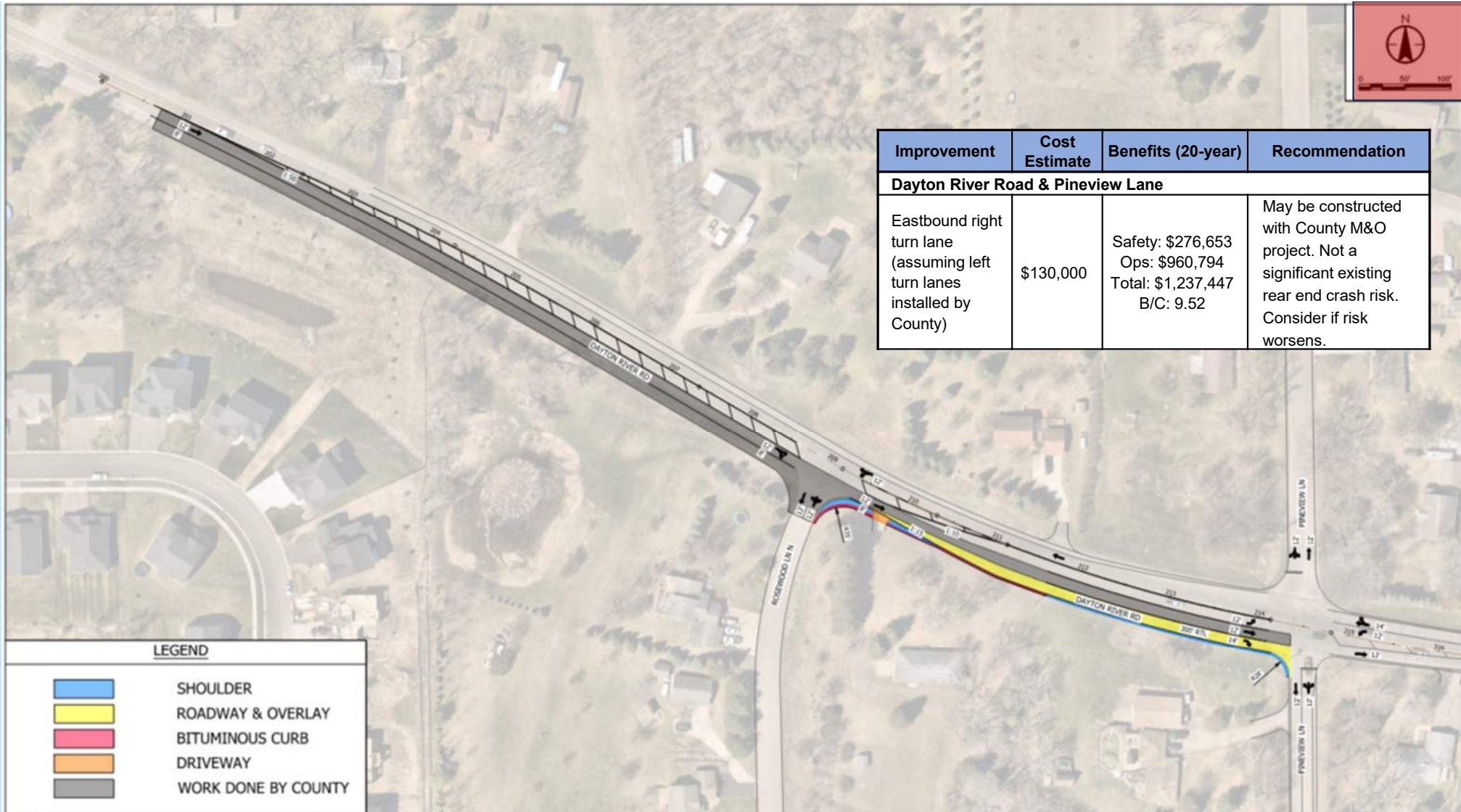
- Collected additional traffic data
 - Intersection turning movements
 - Projected traffic growth
- Safety Analysis
 - Compare actual crash data
 - Predict future crashes
- Warrant Analysis – Intersection control
- Capacity/Operational Analysis – LOS A-F



Recommended Improvements

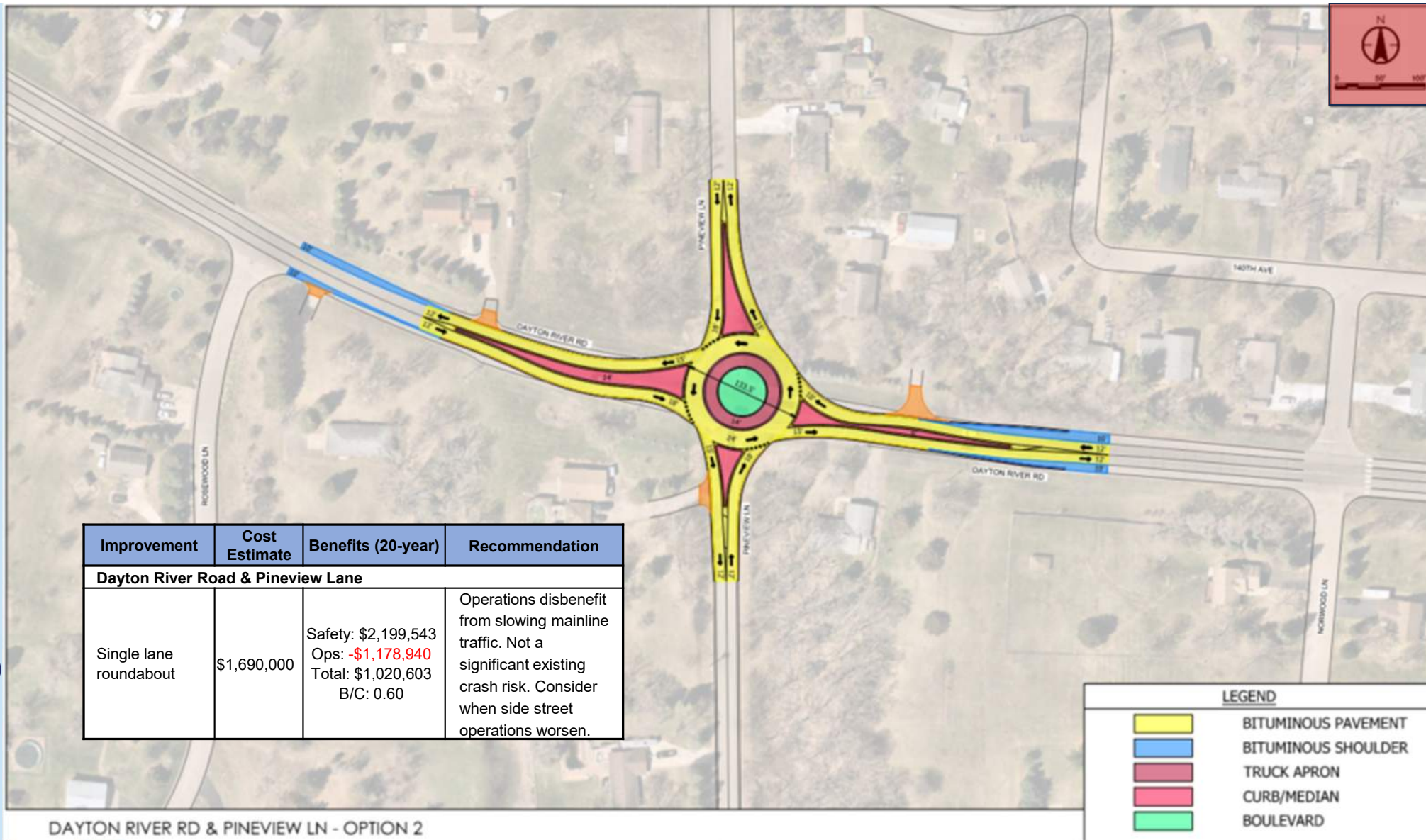
- Identified potential improvements at each intersection
 - Some with options
- Estimated costs associated with constructing improvements
- Monetized benefit resulting from implementation of improvements
 - Using predictive modeling and MNDOT guidance
- Calculated the Cost-Benefit (B/C) ratio for each improvement
- Suggested Short-, Mid-, and Long-Term implementation projects
 - Based on B/C ratios and general magnitude of construction





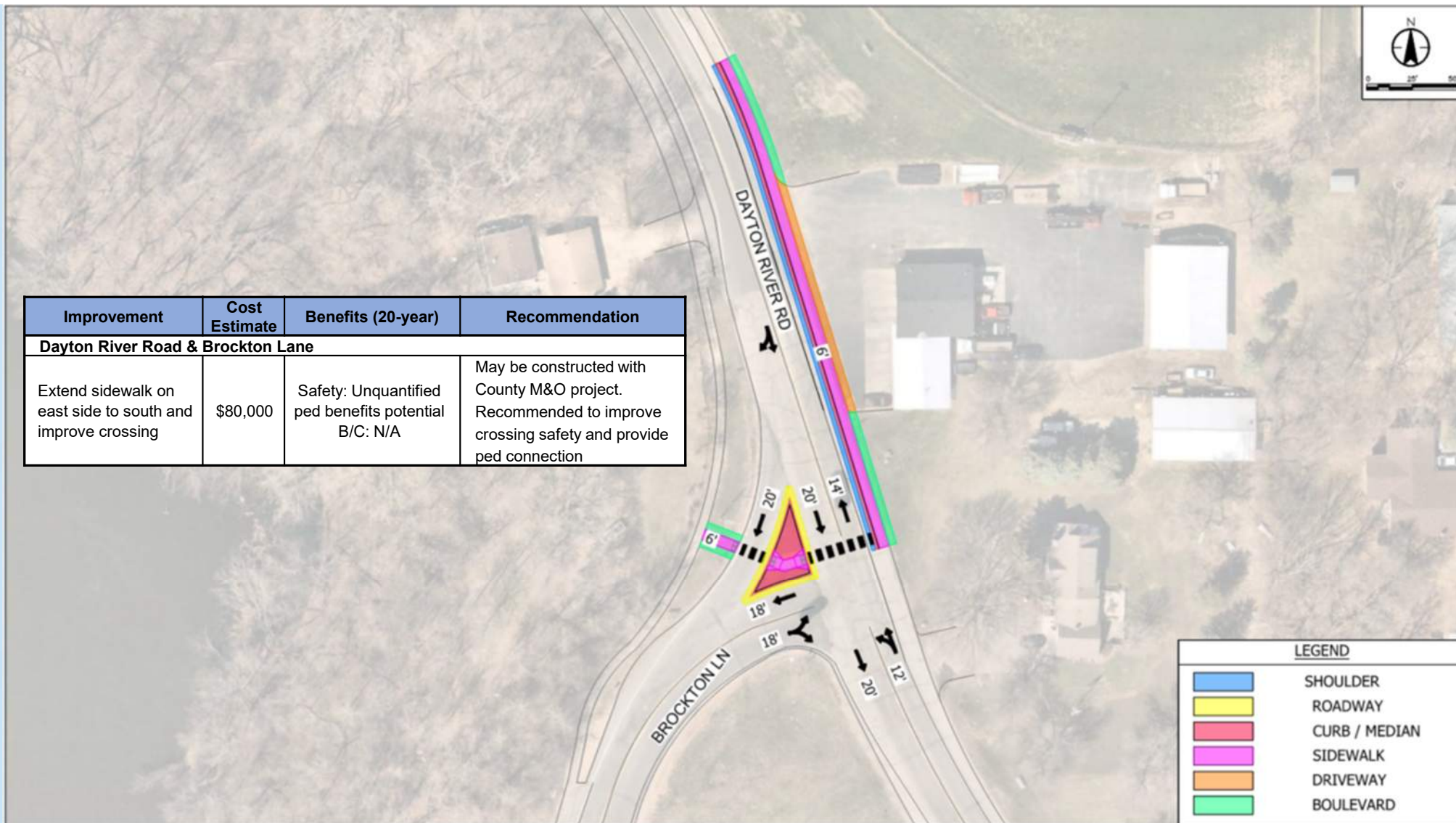
DAYTON RIVER RD & PINEVIEW LN - OPTION 1

Long-Term Recommendation



Short-Term Recommendation

| Improvement | Cost Estimate | Benefits (20-year) | Recommendation |
|--|---------------|--|---|
| Dayton River Road & Brockton Lane | | | |
| Extend sidewalk on east side to south and improve crossing | \$80,000 | Safety: Unquantified ped benefits potential B/C: N/A | May be constructed with County M&O project. Recommended to improve crossing safety and provide ped connection |



DAYTON RIVER RD & BROCKTON LN - OPTION 1

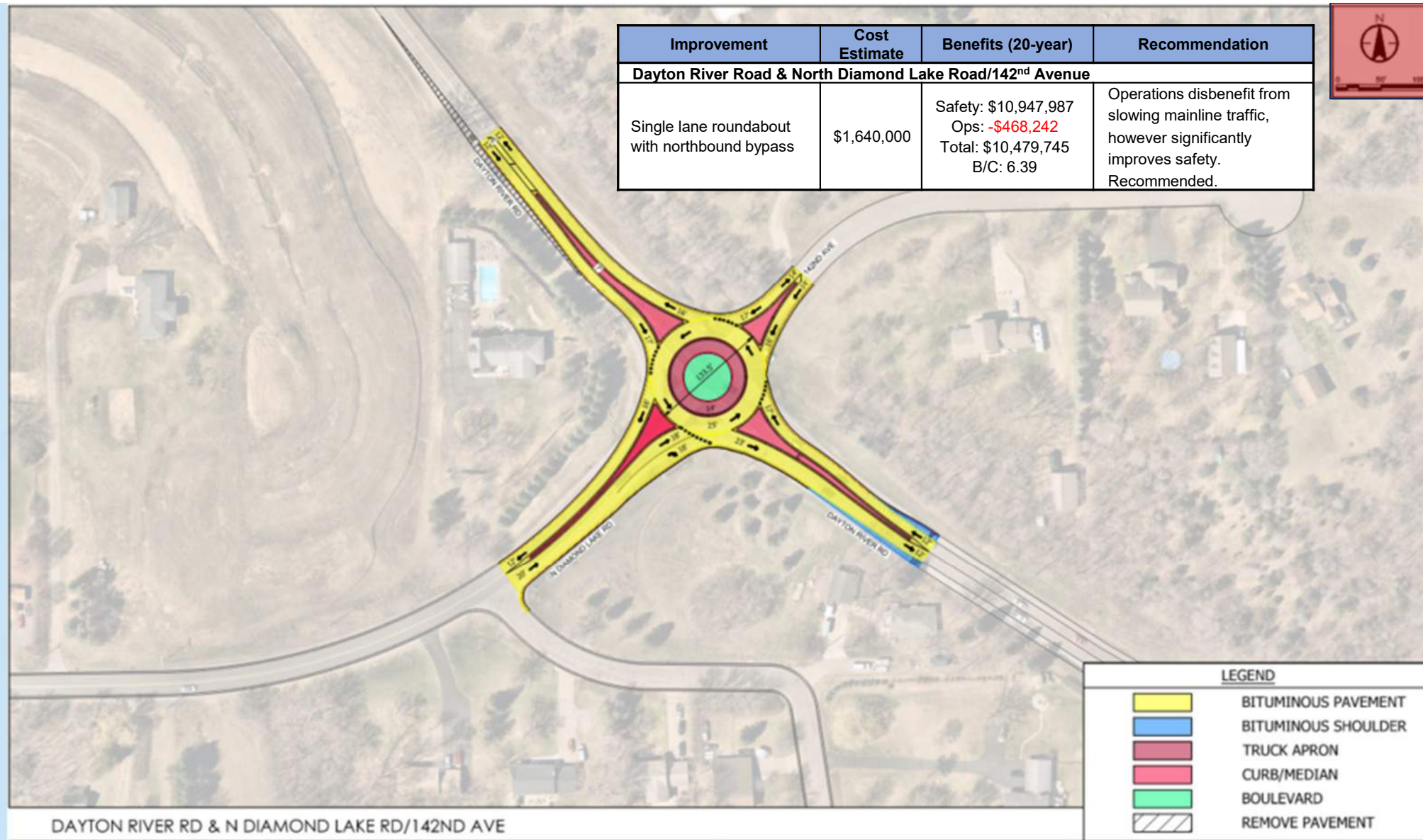
| Improvement | Cost Estimate | Benefits (20-year) | Recommendation |
|--|---------------|---|---|
| Dayton River Road & Brockton Lane | | | |
| Remove southbound right turn channel | \$80,000 | Safety: -\$445,194 , unquantified ped benefits potential B/C: N/A | Not recommended due to increased rear end crash risk. Similar safety affect with improvements to existing |

LEGEND

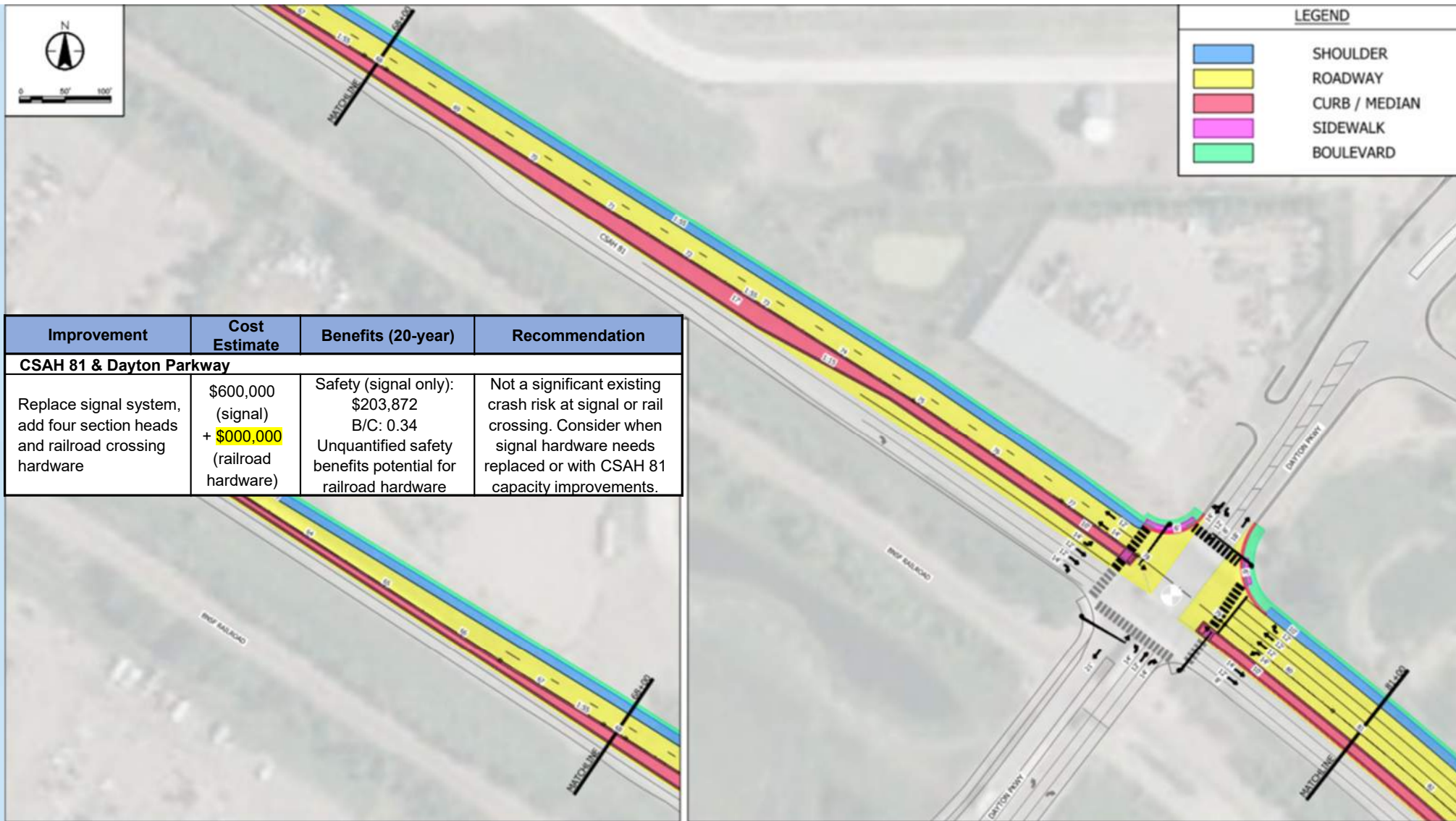
- SHOULDER
- ROADWAY
- CURB / MEDIAN
- SIDEWALK
- DRIVEWAY
- BOULEVARD
- REMOVE PAVEMENT

DAYTON RIVER RD & BROCKTON LN - OPTION 2

Short-Term Recommendation



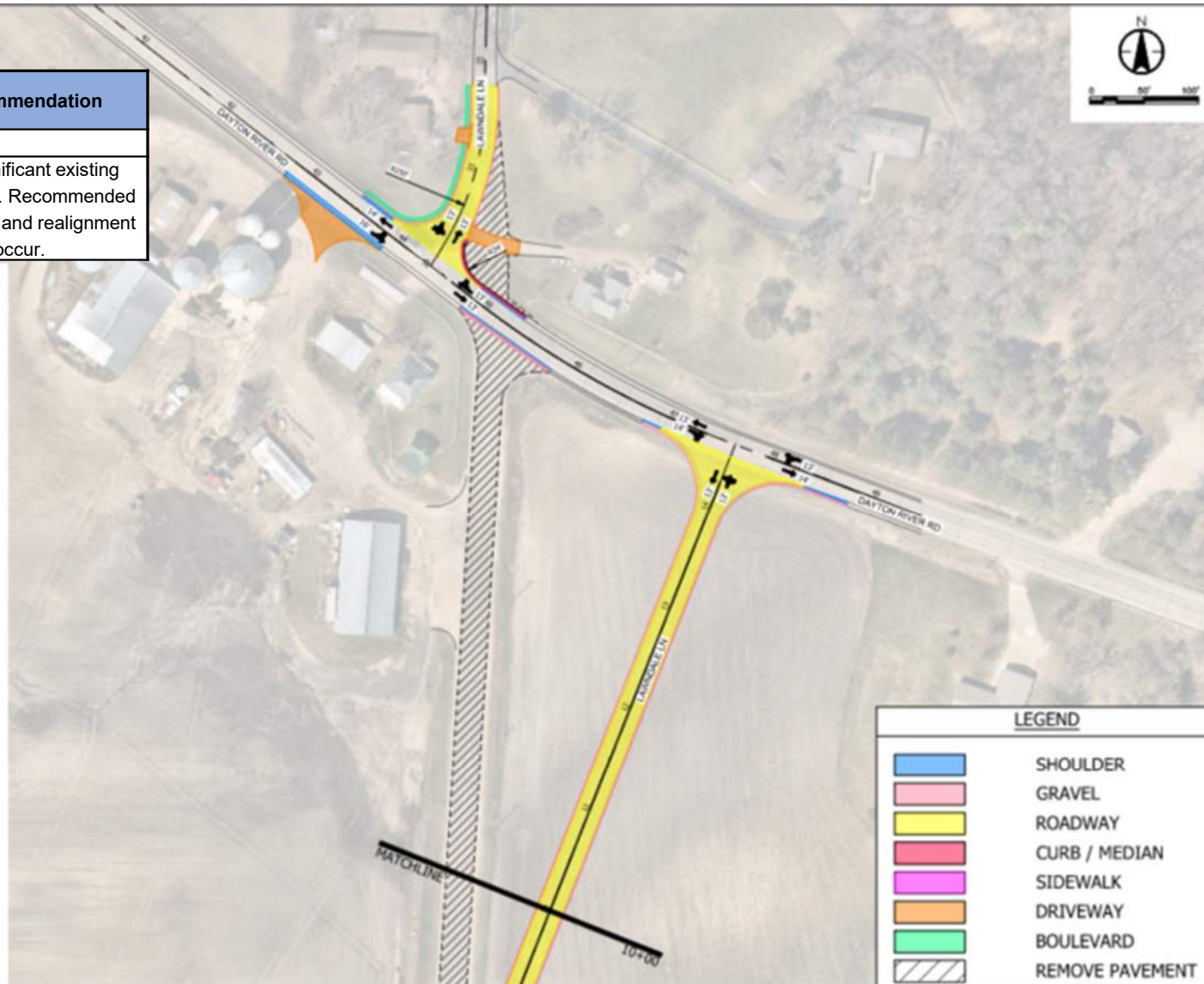
Mid-Term Recommendation



CSAH 81 & DAYTON PKWY

Long-Term Recommendation

| Improvement | Cost Estimate | Benefits (20-year) | Recommendation |
|-----------------------------------|---------------|---|---|
| Dayton River Road & Lawndale Lane | | | |
| Regrade embankment | \$80,000 | Safety: Unquantified veh benefits potential B/C: N/A | Not a significant existing crash risk. Recommended if feasible and realignment does not occur. |

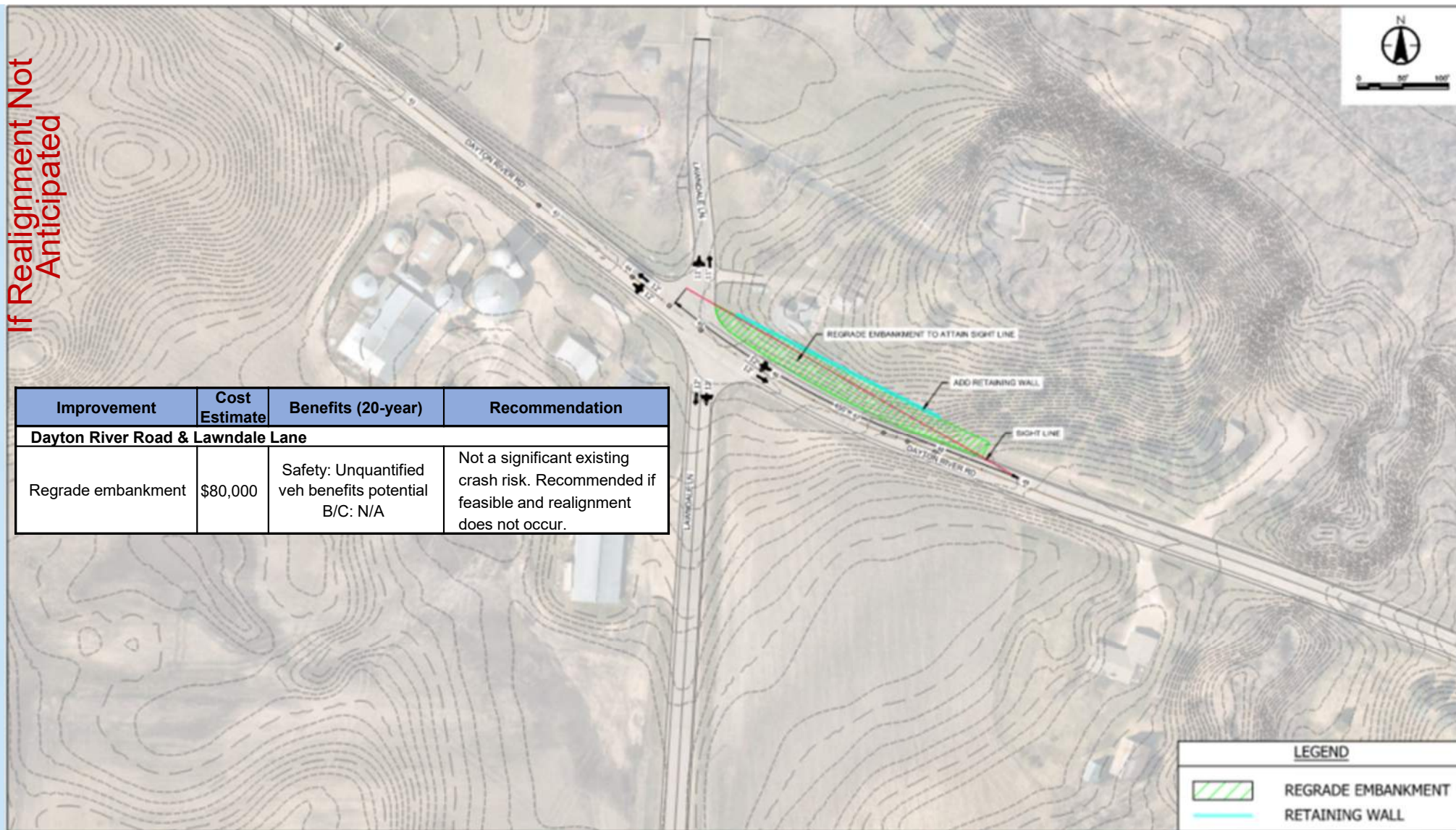


DAYTON RIVER RD & LAWDALE LN - OPTION 2

Mid-Term Recommendation

If Realignment Not Anticipated

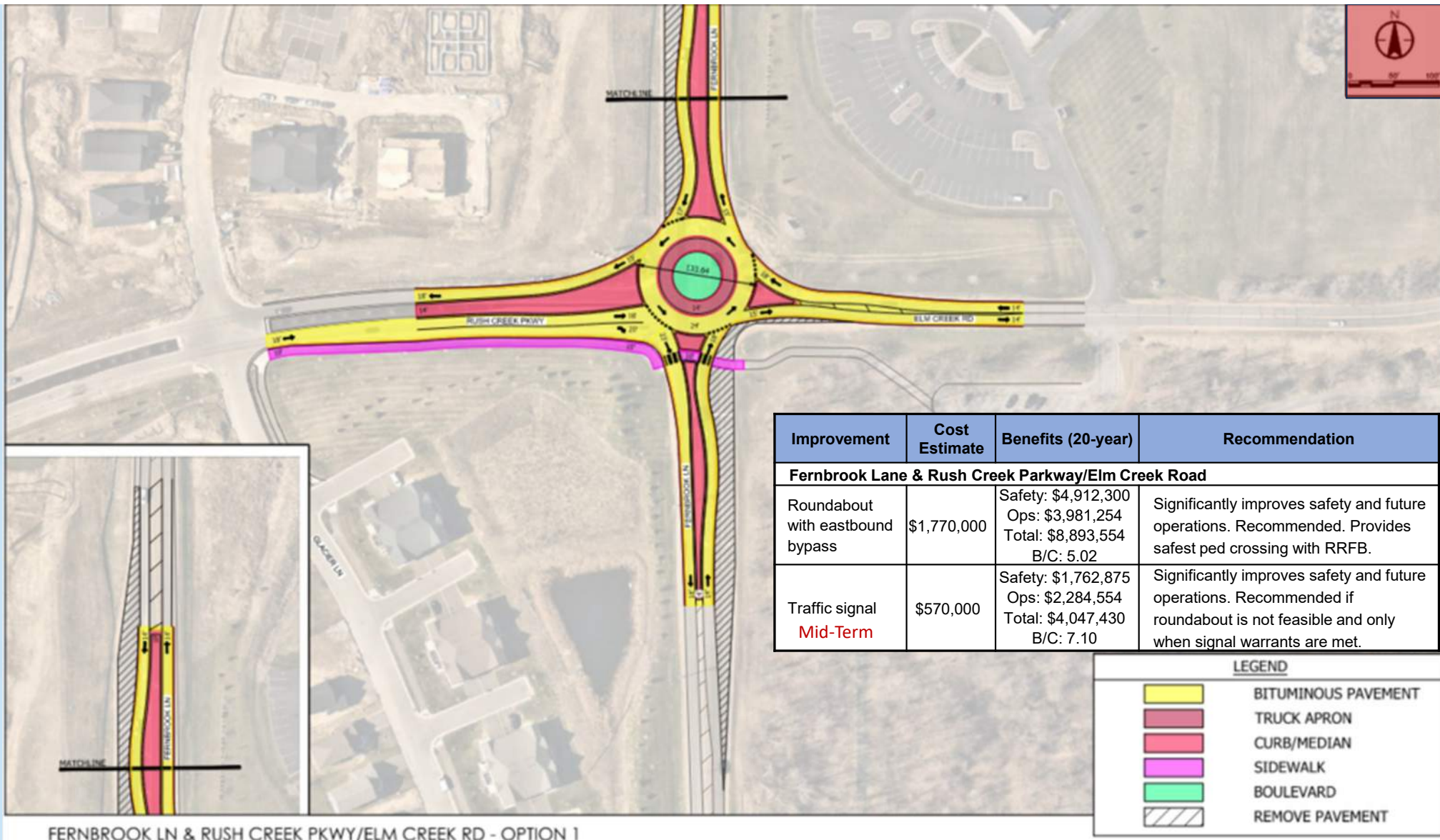
| Improvement | Cost Estimate | Benefits (20-year) | Recommendation |
|-----------------------------------|---------------|---|--|
| Dayton River Road & Lawndale Lane | | | |
| Regrade embankment | \$80,000 | Safety: Unquantified veh benefits potential B/C: N/A | Not a significant existing crash risk. Recommended if feasible and realignment does not occur. |



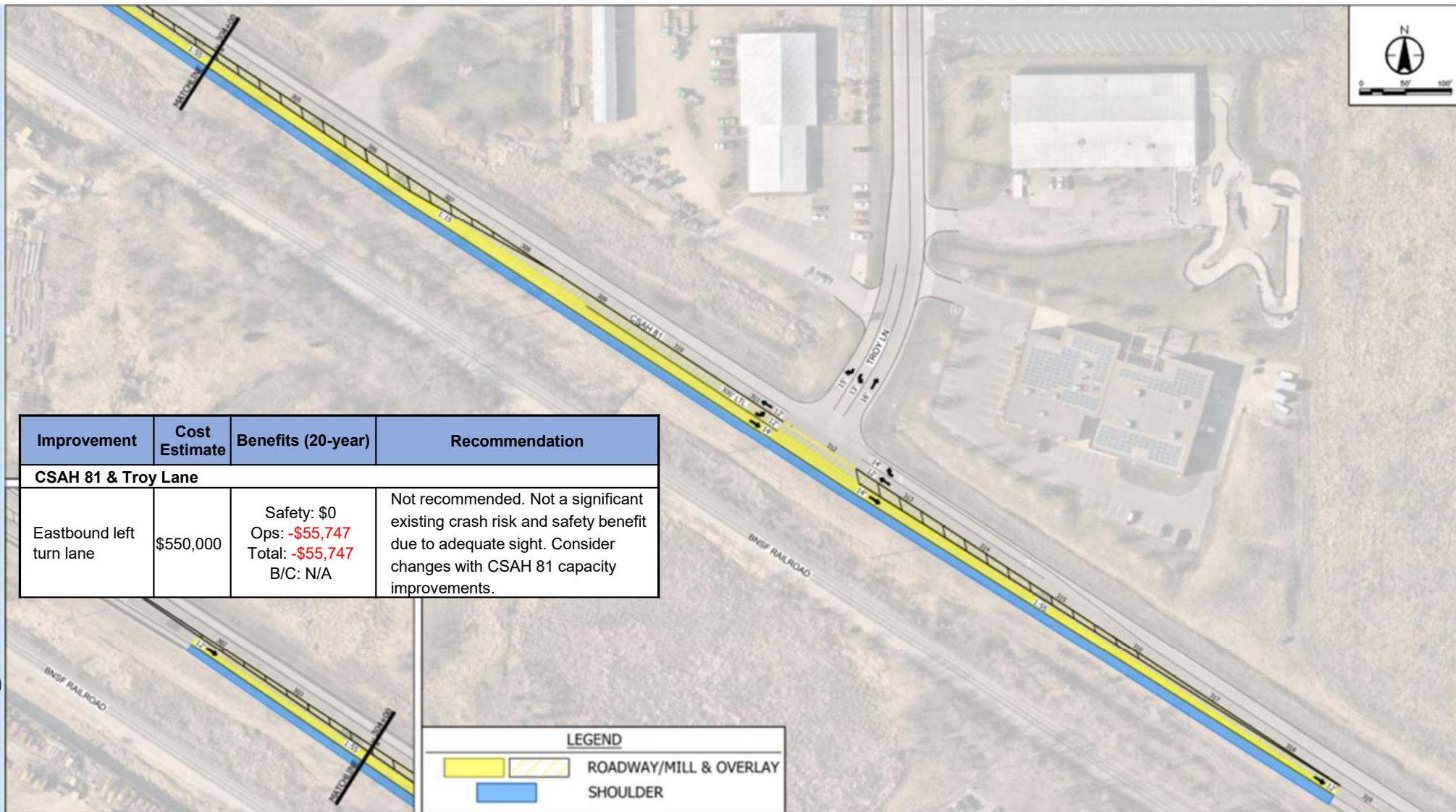
| LEGEND | |
|--------|--------------------|
| | REGRADE EMBANKMENT |
| | RETAINING WALL |

DAYTON RIVER RD & LAWNDALE LN - OPTION 1

Short-Term Recommendation



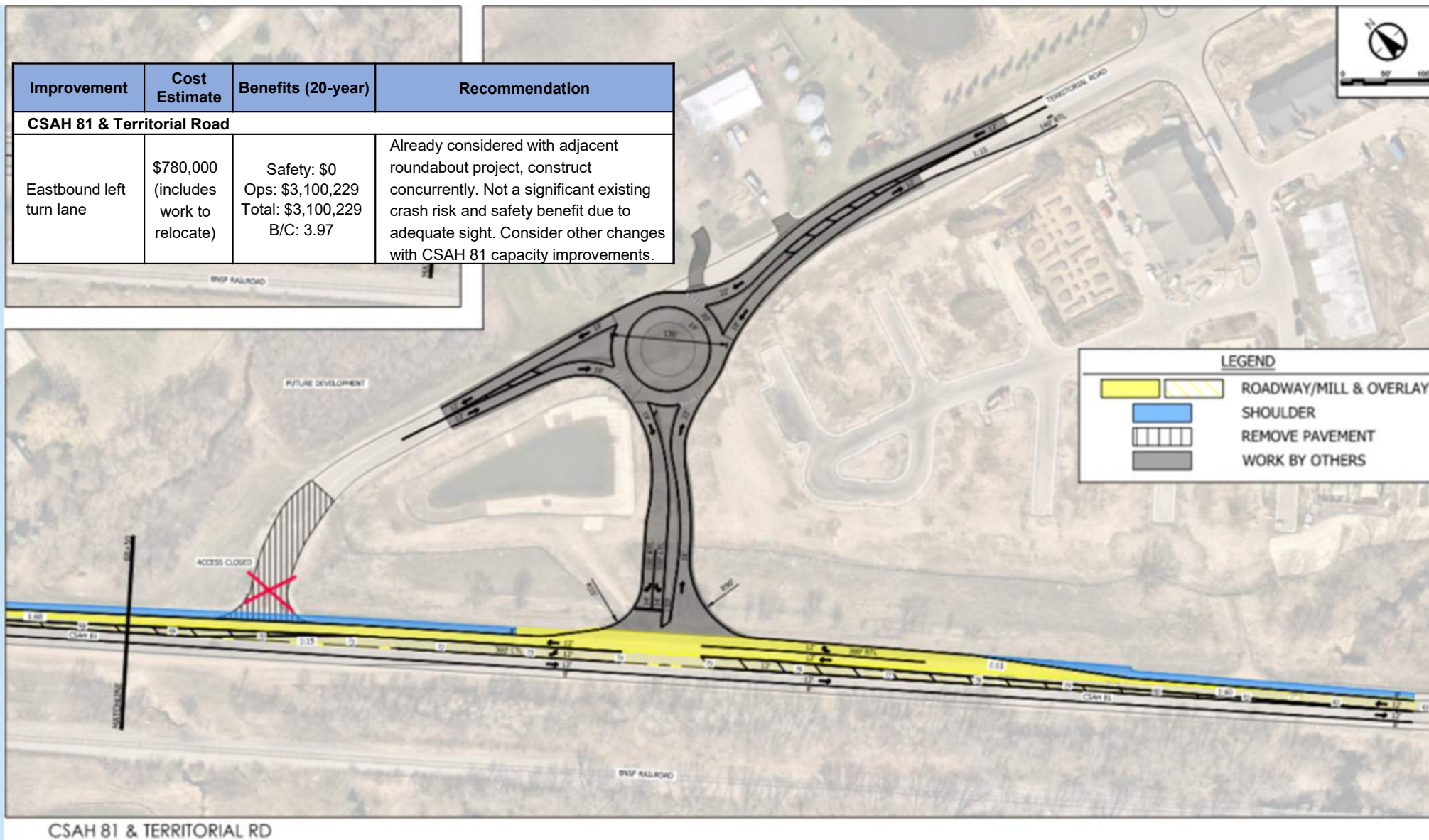
Long-Term Recommendation



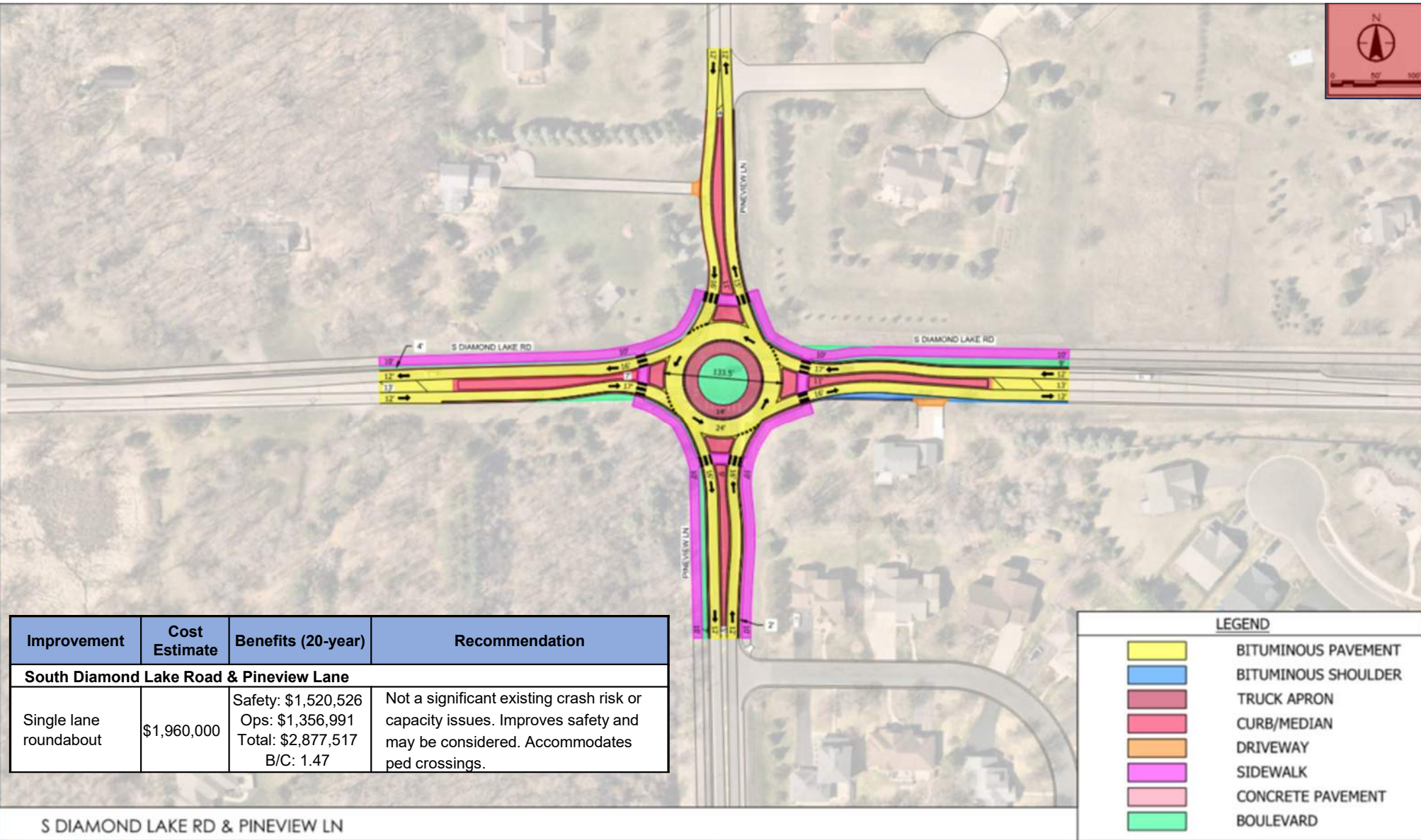
CSAH 81 & TROY LN

Mid-Term Recommendation

| Improvement | Cost Estimate | Benefits (20-year) | Recommendation |
|---------------------------------------|--|--|---|
| CSAH 81 & Territorial Road | | | |
| Eastbound left turn lane | \$780,000 (includes work to relocate) | Safety: \$0 Ops: \$3,100,229 Total: \$3,100,229 B/C: 3.97 | Already considered with adjacent roundabout project, construct concurrently. Not a significant existing crash risk and safety benefit due to adequate sight. Consider other changes with CSAH 81 capacity improvements. |

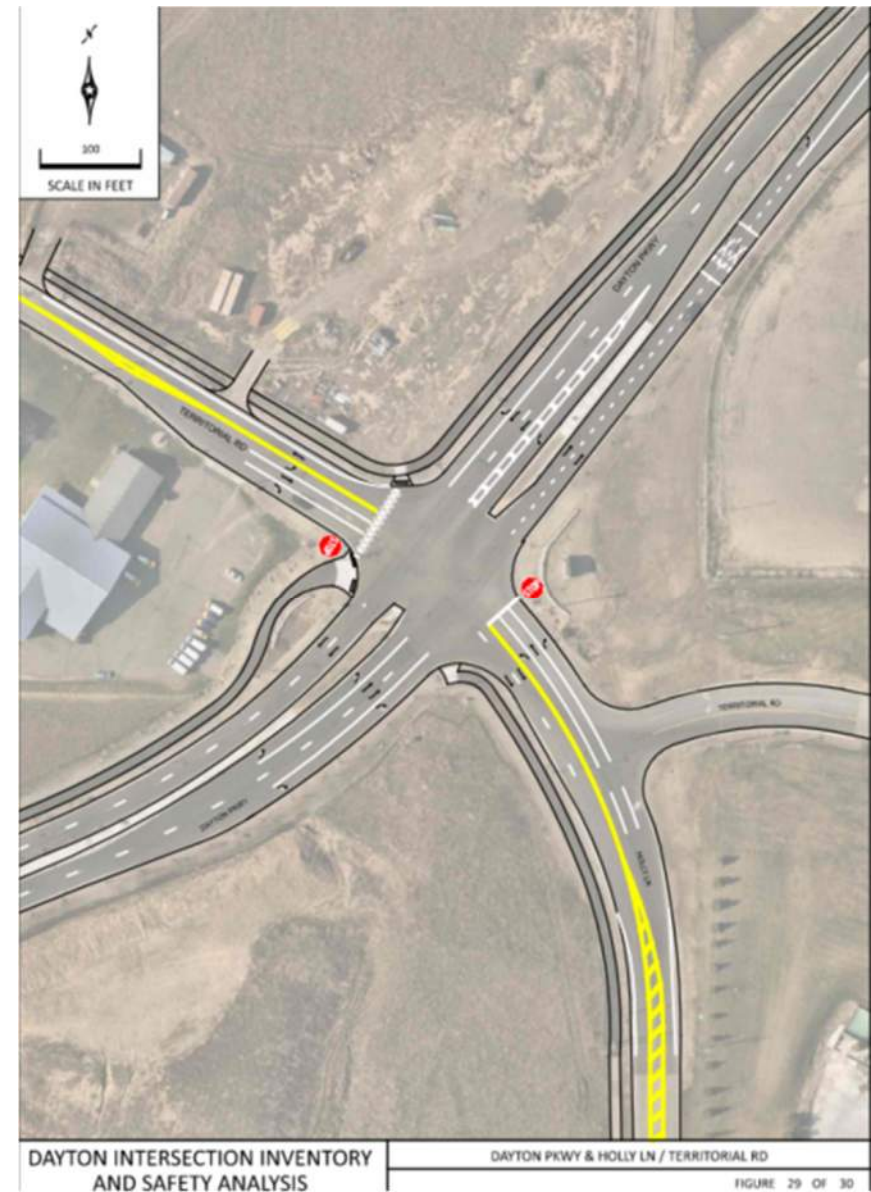


Long-Term Recommendation



Long-Term Recommendation

| Improvement | Cost Estimate | Benefits (20-year) | Recommendation |
|---|---------------|--|--|
| Dayton Parkway & Territorial Road/Holly Lane | | | |
| RRFB on existing Dayton Parkway crossing | \$30,000 | Safety: Unquantified ped benefits potential B/C: N/A | Recommended to improve crossing safety across Dayton Parkway until signal is considered |
| Traffic signal Mid-Term | \$570,000 | Safety: \$1,119,385 Ops: -\$942,284 Total: \$177,101 B/C: 0.31 | Operations disbenefit from slowing mainline traffic. Not a significant existing crash risk. Consider when development warrants installation. |



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