

An aerial photograph of a large, modern roundabout. The roundabout has a wide, light-colored concrete curb and a central landscaped area with green grass and brown mulch. Several cars are visible on the roads approaching and circulating around the roundabout. The roads are marked with white dashed lines and arrows indicating the direction of traffic flow. The overall scene is captured from a high angle, providing a clear view of the roundabout's design and the surrounding infrastructure.

A SAFER COMMUTE

Traffic Engineering Workshop
June 7, 2023

National Crash Stats

6,700,000 Crashes

38,000 Fatalities

- 7,500 peds & bikes

2,700,000 Injuries

- 140,000 peds & bikes

USA ranks near bottom

Butler County Crash Stats

8,000 Crashes

- 60 ped (54 in 2019, 97 in 2017)
- 35 bike (23 in 2021, 51 in 2017)

30 Fatal

- 5 ped (8 in 2021, 1 in 2019)
- 1 bike

2,000 Injury

- 50 ped (~85%)
- 30 bike (~90%)

Crash Severity



Kinetic Energy

The energy of motion

$$\text{K.E.} = \frac{1}{2} m \times v^2$$

Where m = mass

v = velocity

Managing Crash Kinetic Energy



**Managing
speed**



**Manipulating
mass**



**Manipulating
crash angles**

Why Roundabouts?

Safety, Safety, Safety

- Conventional intersections = 10x fatality rate (FHWA)
- 90% reduction in fatal crashes
 - 8,550 lives saved
- 80% reduction in injury crashes
 - 540,000 fewer injury crashes

Traffic calming = Slower speeds

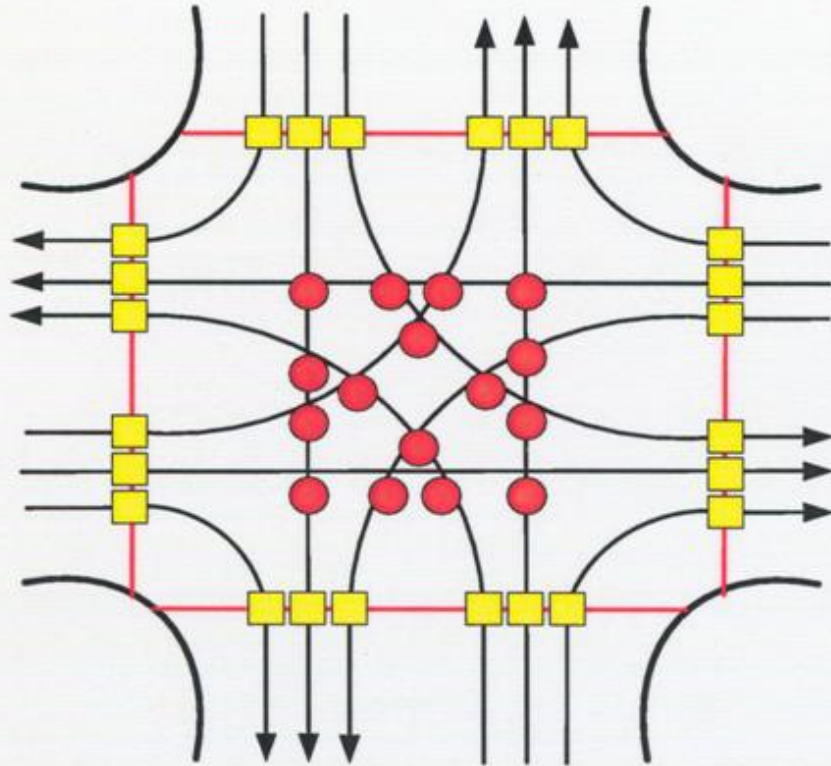
Efficient - 50% more traffic than traffic signal



Environmentally Friendly

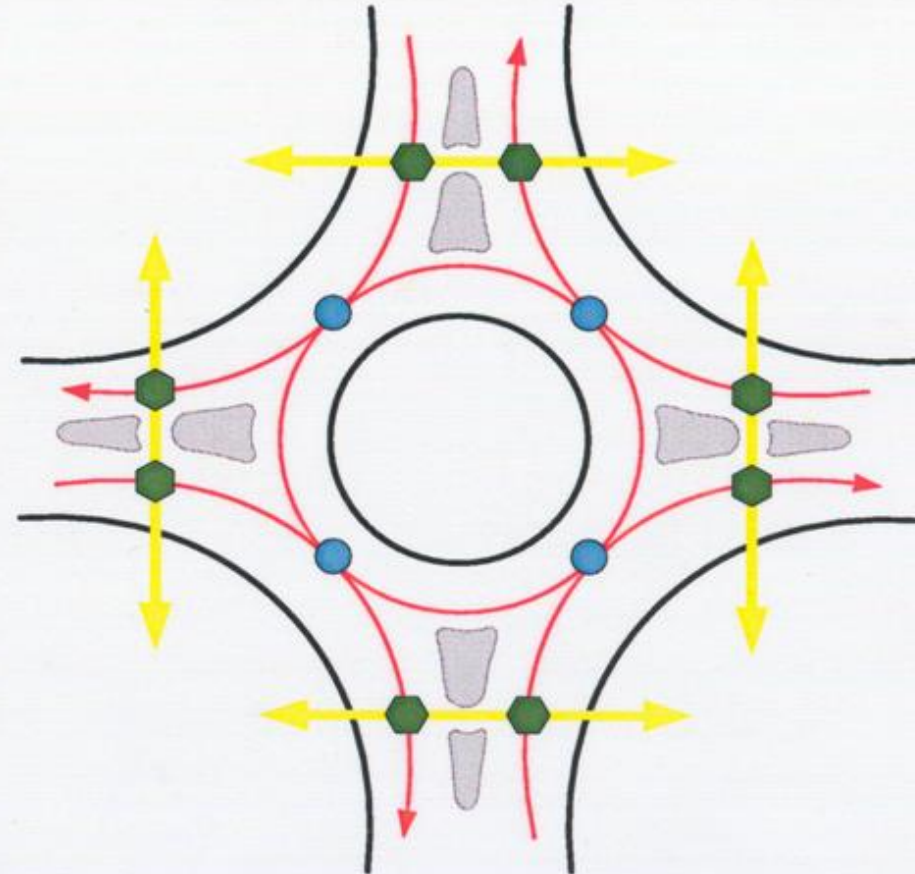
- Reduces emissions & saves fuel



No power outages

Conflict Points Comparison

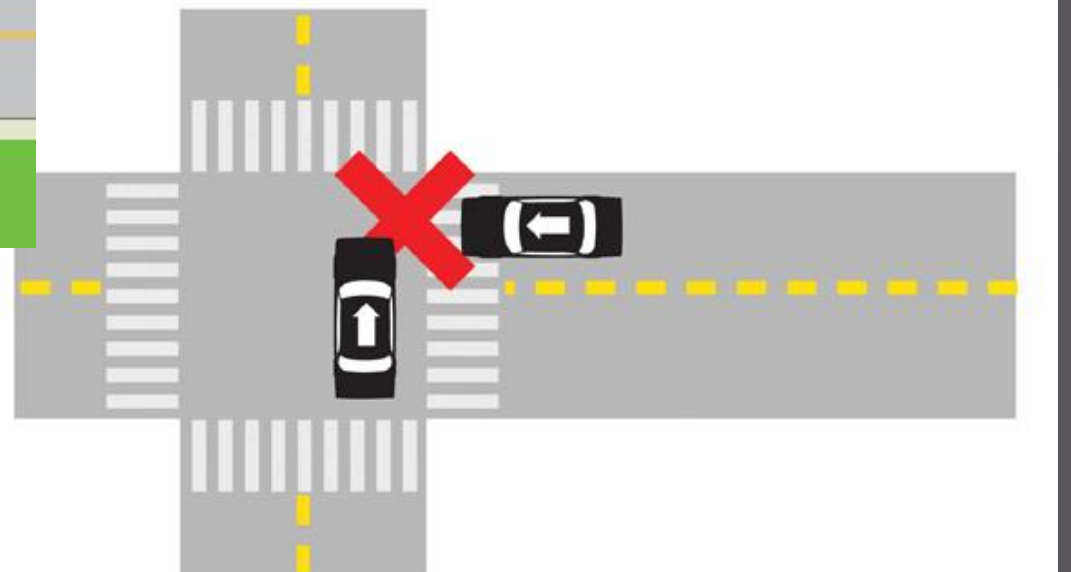
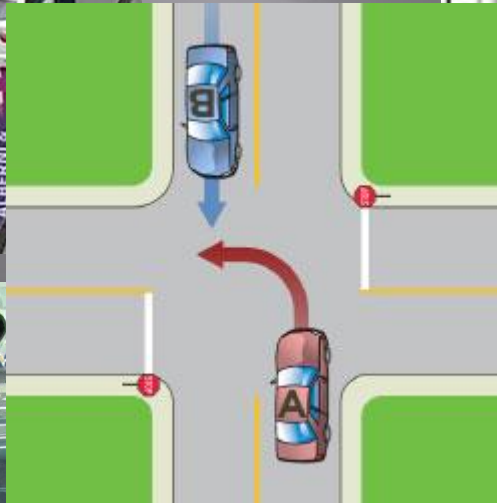
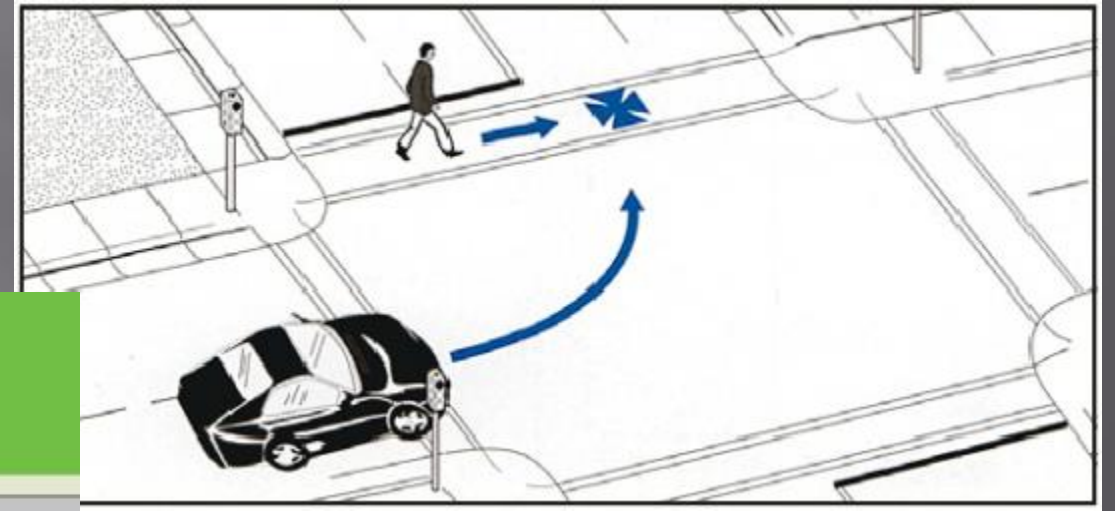


	Vehicle to Pedestrian	24
	Vehicle to Vehicle	16



	Vehicle to Pedestrian	8
	Vehicle to Vehicle	4

Roundabouts Eliminate



Butler County Roundabout Stats

- ▣ Nationally, roundabouts have 40% fewer crashes, 80% fewer injuries, 90% fewer serious and fatal injuries (FHWA)
- ▣ BCEO Data (thru 2022)
 - 20 Single-Lane Modern RABs (26 total)
 - 69% reduction in overall crashes
 - 86% fewer injury crashes
 - 95% reduction in serious injury and fatal crashes
 - No fatal crashes

Butler County Roundabout Stats

Thru 2022

OVERALL TOTALS								
20 Single-Lane Roundabouts								
	ADT	Dates	Years	All Crashes	Crash/year	Injury	Inj/year	Serious Injury/Fatal
Before Data		2003-2021	99.92	535	5.4	170	1.7	19
After Data		2008-2022	130.56	218	1.7	32	0.2	1
% Reduction					69%		86%	95%
Comments:								

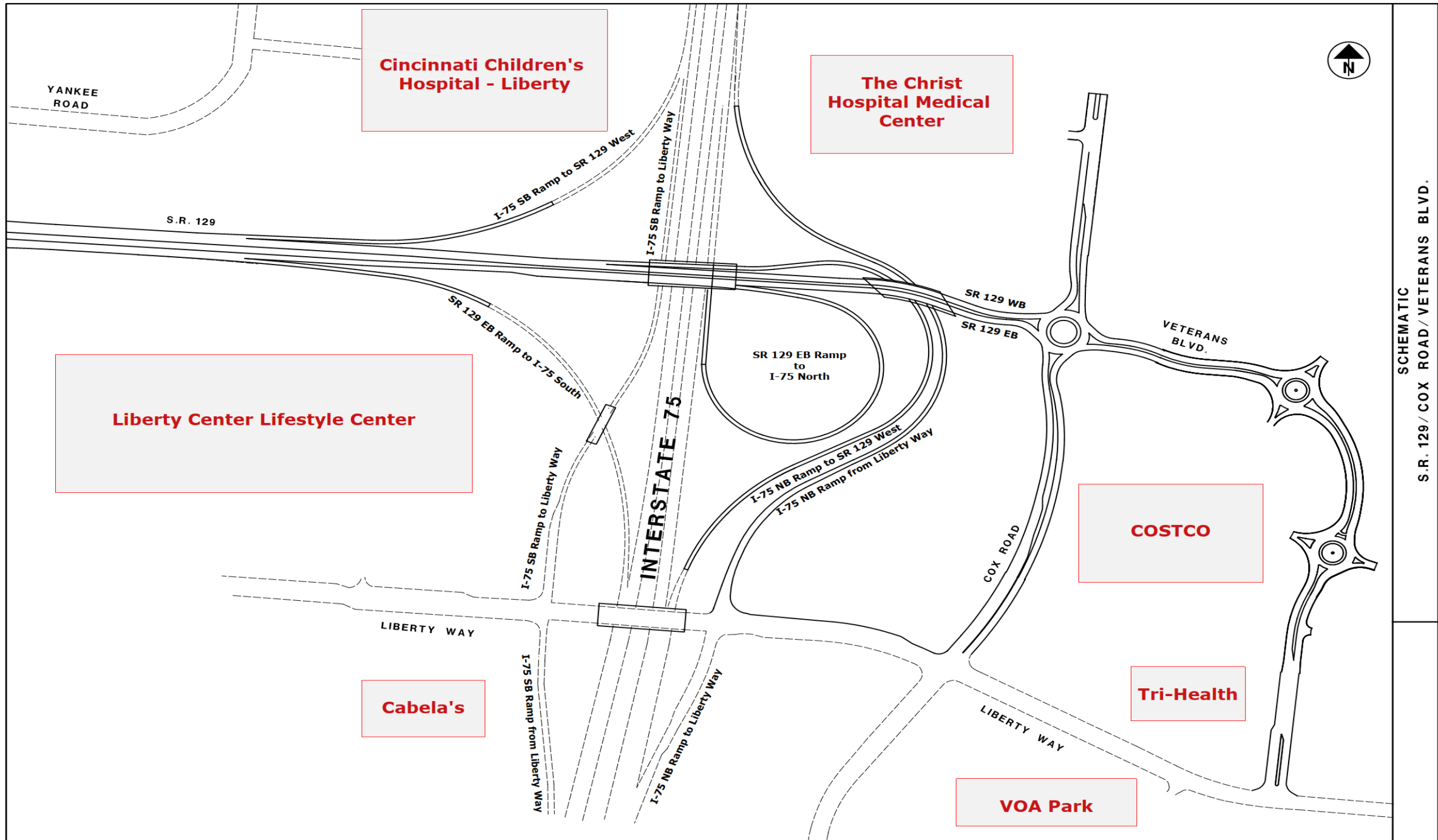
MULTI-LANE ROUNDABOUTS

An aerial photograph of a large, multi-lane roundabout interchange. The roundabout has multiple lanes and a central landscaped area. To the right of the roundabout is a large Costco store with a white roof and a large parking lot filled with cars. The surrounding area includes some residential houses and a water tower in the distance.

Wayne Madison
& Trenton Road

SR 129/Veterans
Blvd & Cox
Road

Veterans Blvd.
at Costco (x2)



SCHEMATIC
S.R. 129 / COX ROAD / VETERANS BLVD.



MULTI-LANE ROUNDABOUTS

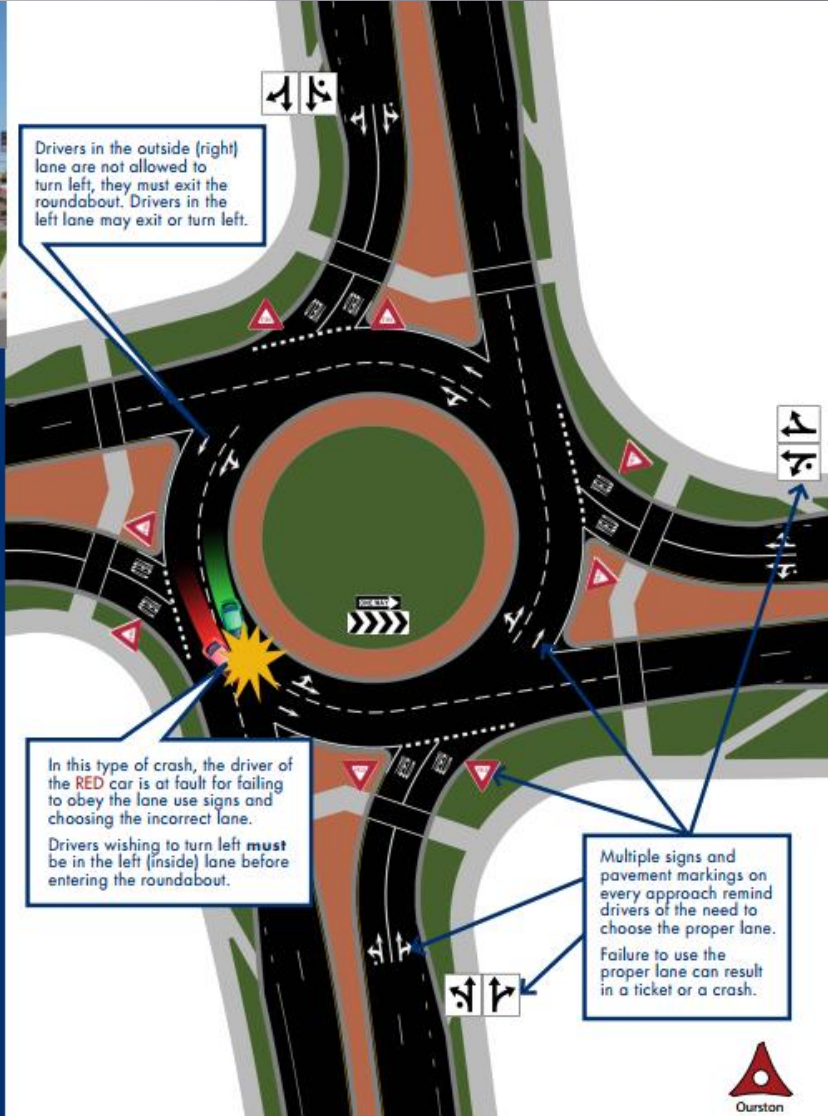


As with any other intersection, the proper lane must be chosen before entering a roundabout.

In advance of the roundabout, signs and pavement markings will always indicate which lanes may be used for the direction you want to go.

Keep left to turn left through the roundabout and keep right to turn right.

Never change lanes within a roundabout.



Observe all standard road rules, including yielding for pedestrians in crosswalks.

To safely and efficiently drive a roundabout:

- Slow down.
- Read advance signing and choose correct lane.
- Yield to traffic in all lanes on your left before entering.
- Stay in your lane to your exit.



ALWAYS OBEY THE SIGNS AND MARKINGS

As you get closer to the roundabout entrance, it is very important to observe the signs and arrows to determine which lane to use before entering a roundabout. Signs above the road and white arrows on the road will show the correct lane to use.



Roundabout ahead, slow down.



Guide signs near the entry to a roundabout show lane designations.






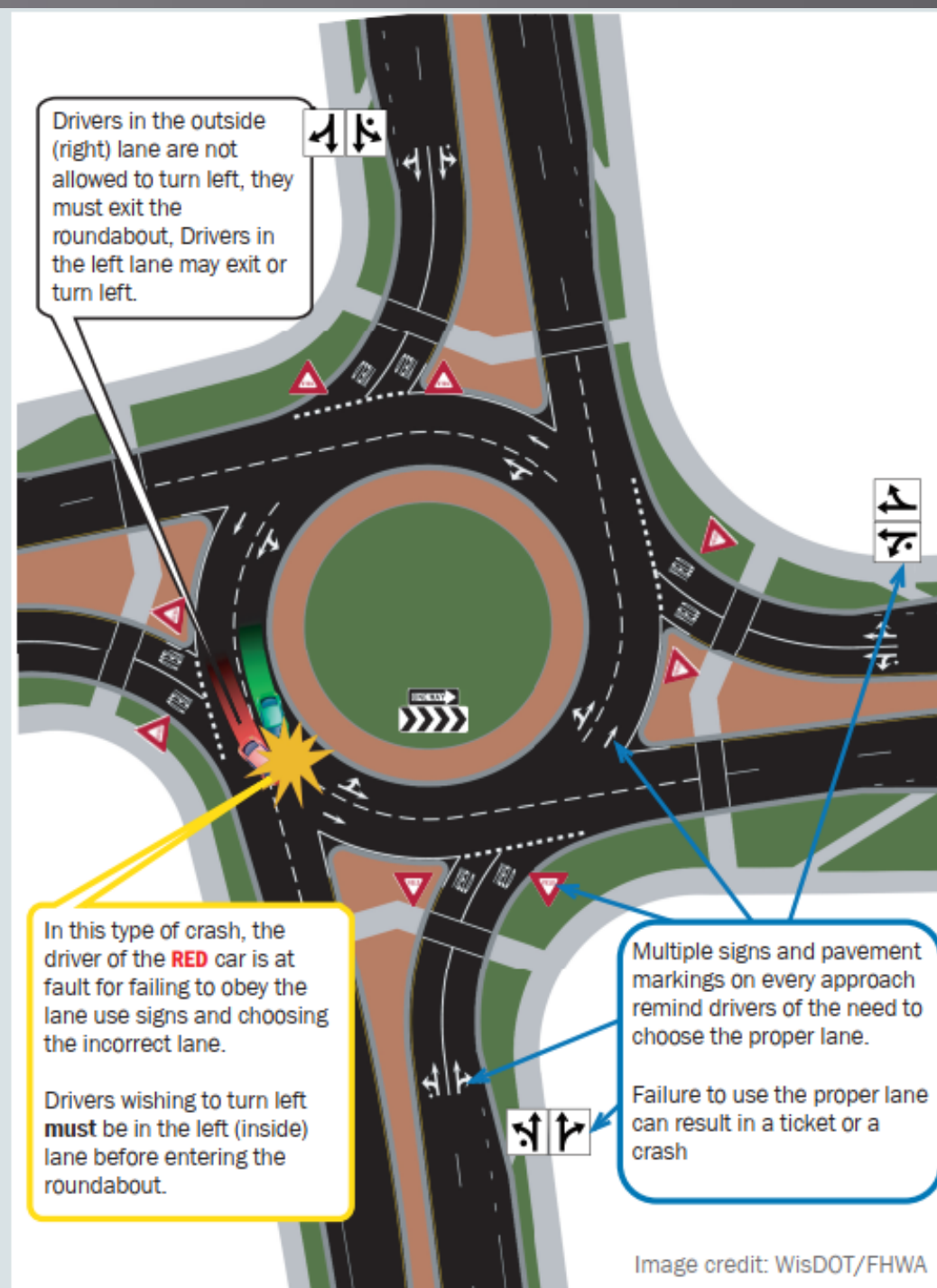
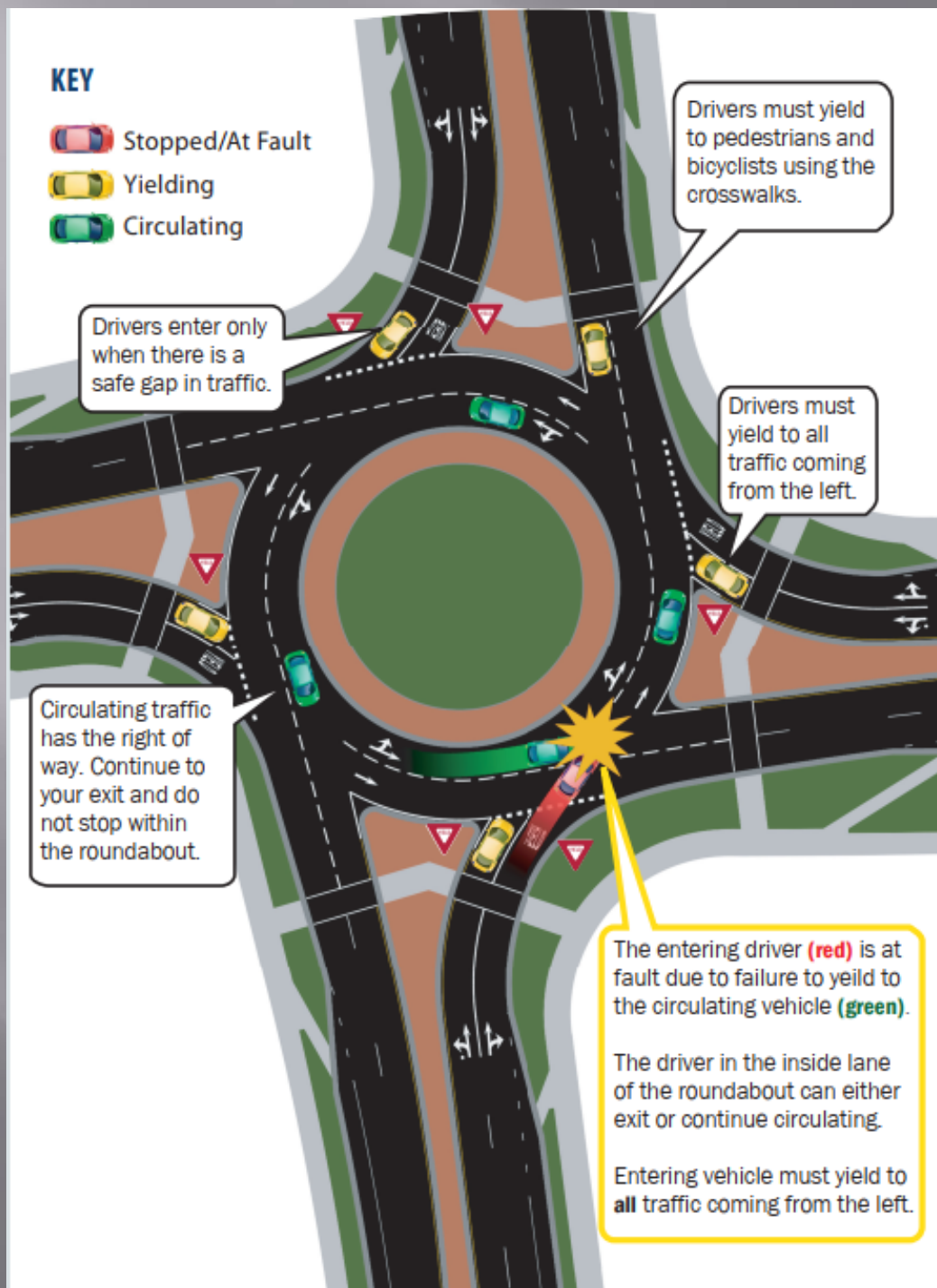
Yield to all traffic in the roundabout.



Roundabout traffic travels one-way.

KEY

-  Stopped/At Fault
-  Yielding
-  Circulating

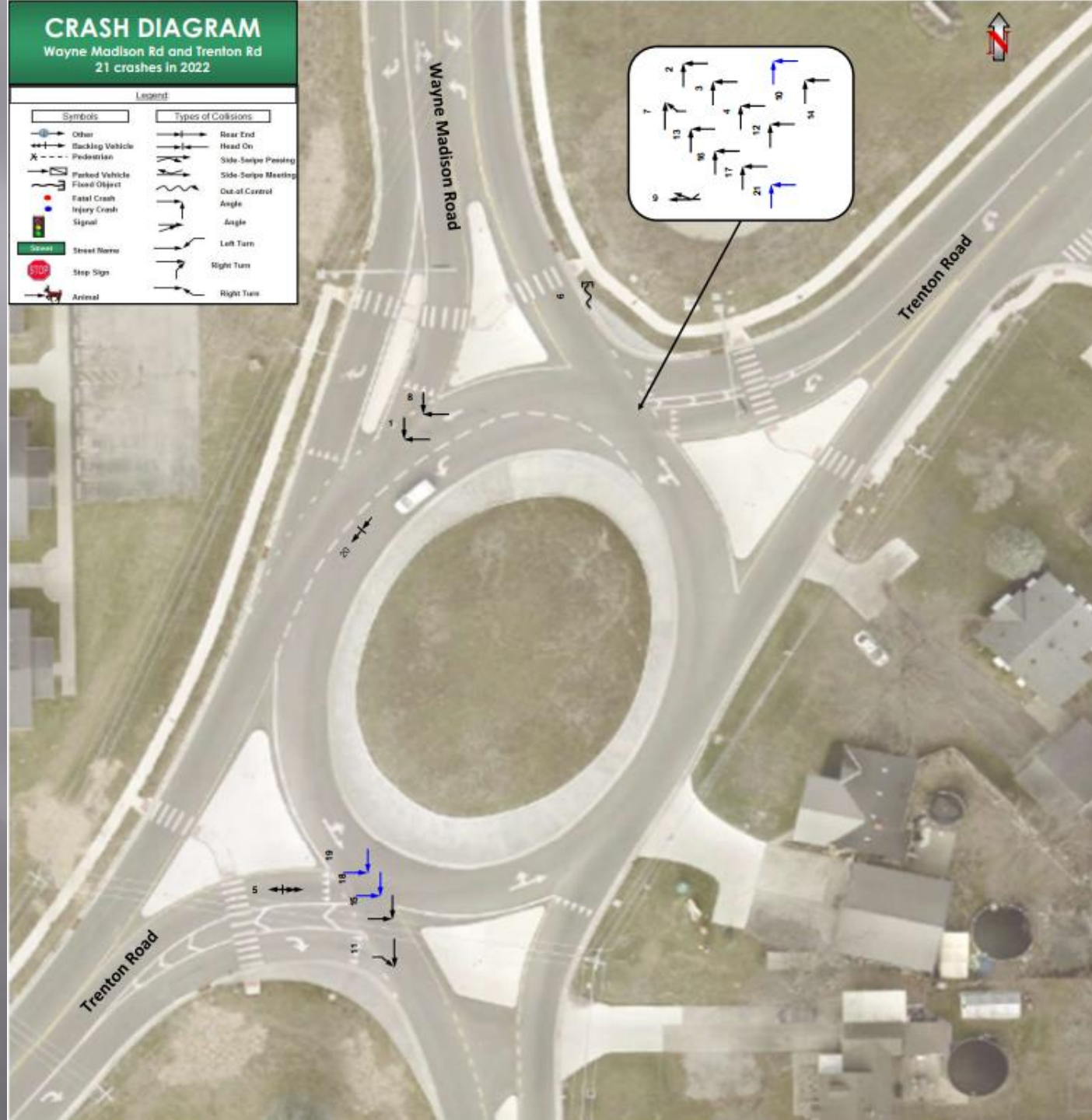


CRASH DIAGRAM

Wayne Madison Rd and Trenton Rd
21 crashes in 2022

Legend

Symbols	Types of Collisions
Other	Rear End
Backing Vehicle	Head On
Pedestrian	Side-Swipe/Passing
Parked Vehicle	Side-Swipe/Meeting
Fixed Object	Out-of-Control
Fatal Crash	Angle
Injury Crash	Angle
Signal	Left Turn
Street Name	Right Turn
Stop Sign	Right Turn
Animal	

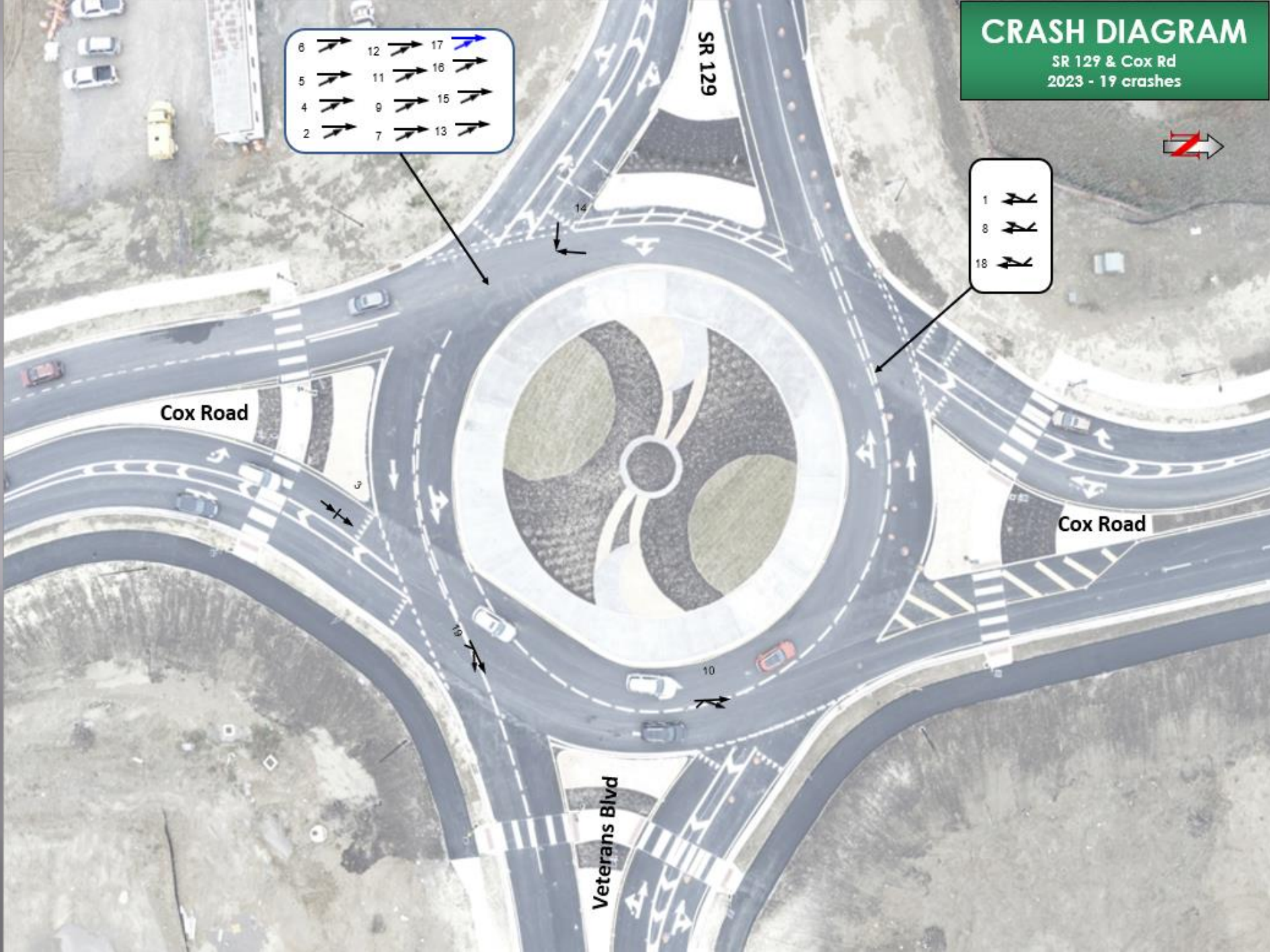


CRASH DIAGRAM

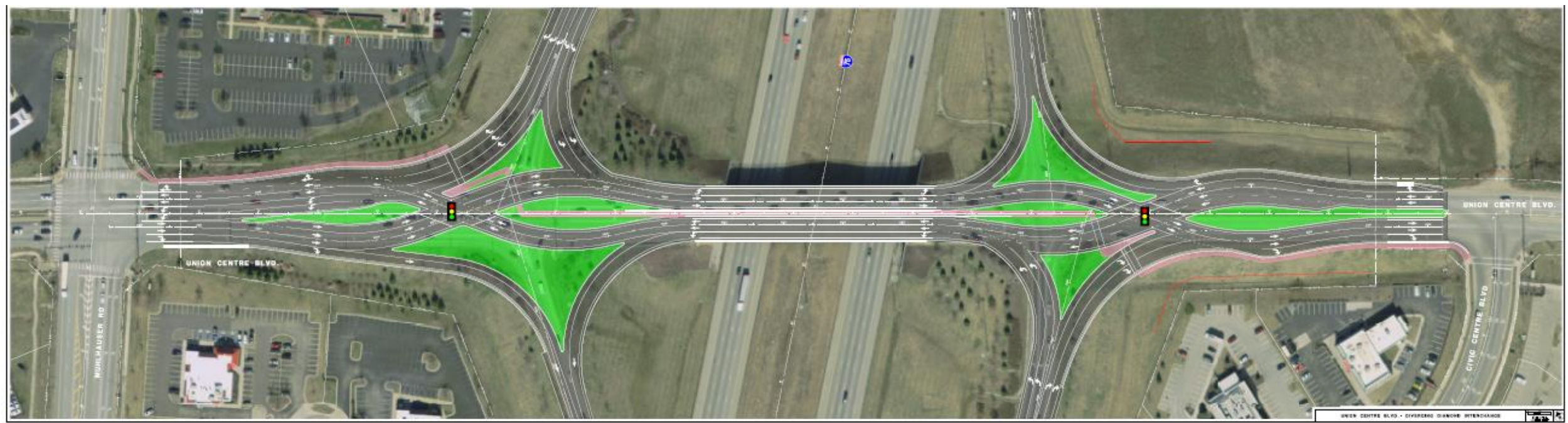
SR 129 & Cox Rd
2023 - 19 crashes

6	12	17	18
5	11	16	15
4	9	13	
2	7		

1	8	16
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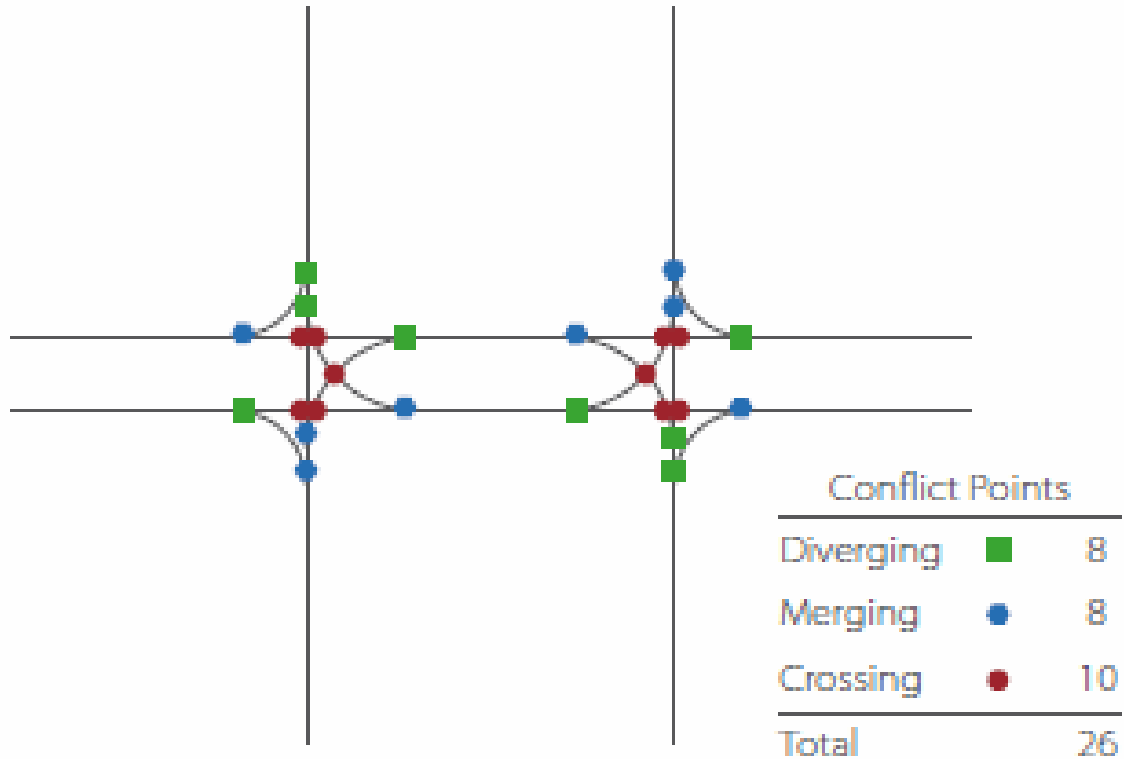


Diverging Diamond Interchange (DDI)

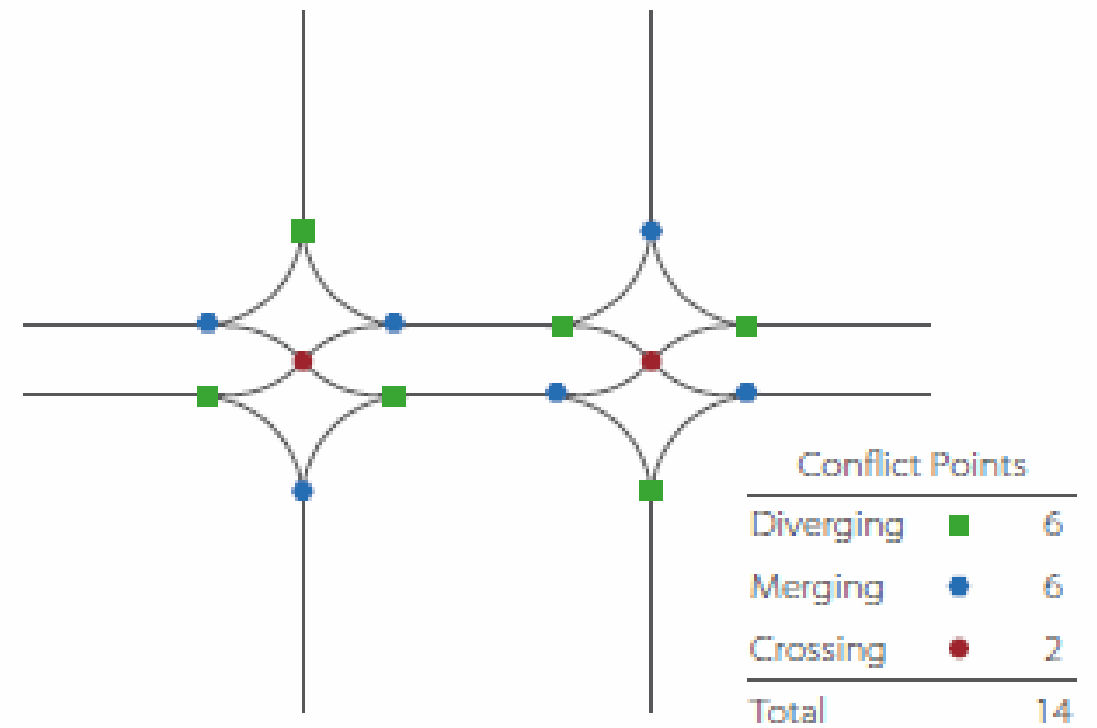


Conflict Points Comparison

Diamond interchange



DDI interchange









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