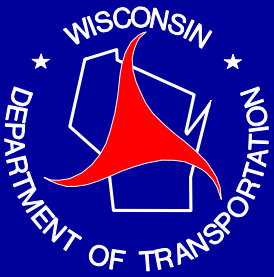
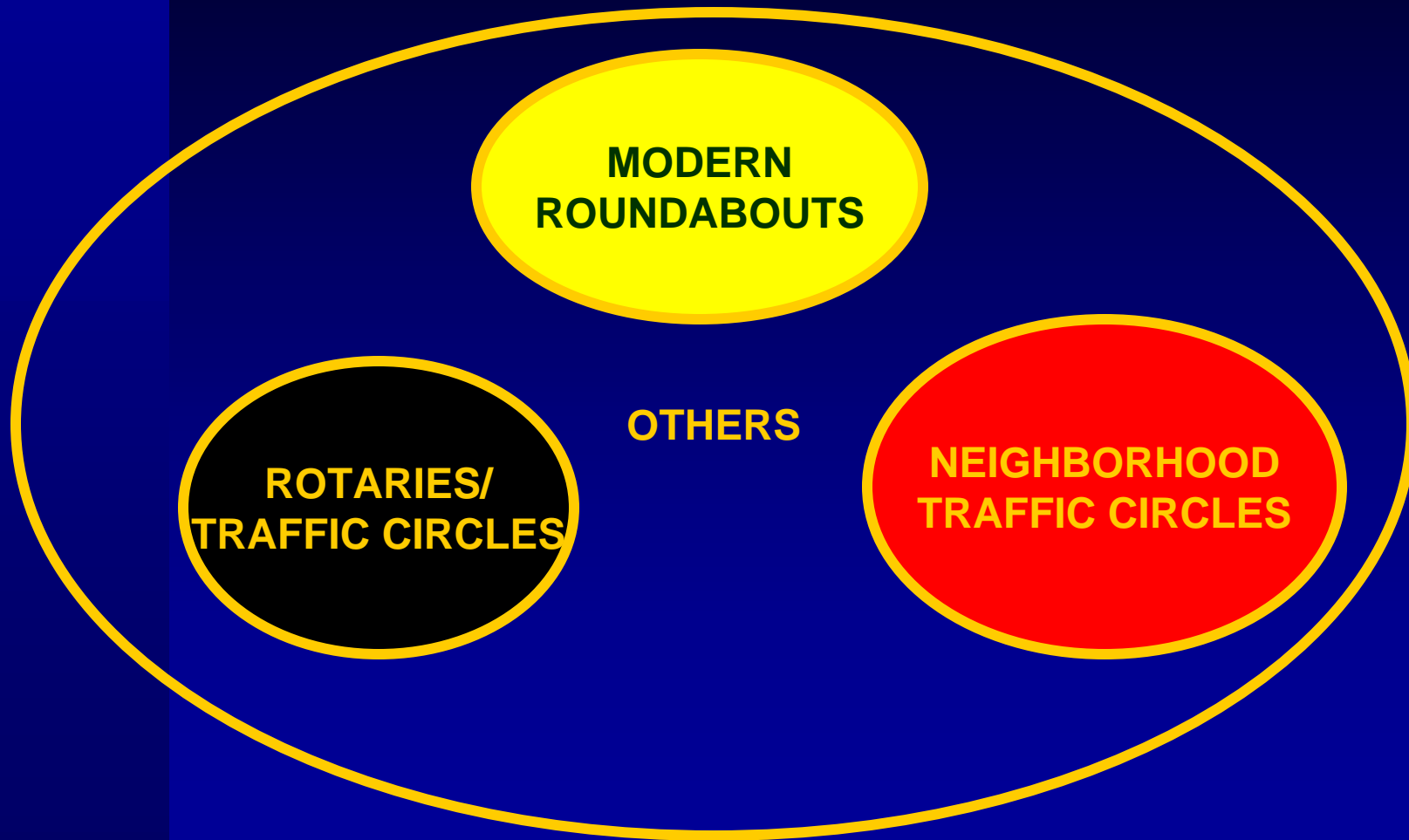
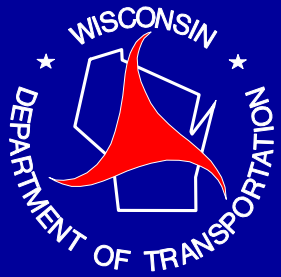


INTRODUCTION TO MODERN ROUNDAABOUTS



ROUNDBABOUTS ARE A SUBSET OF CIRCULAR INTERSECTIONS





MANY ROTARIES BUILT- 1920'S TO 1950'S



Many new roundabouts constructed and old sites rehabilitated
KINGSTON, NEW YORK STATE

The Modern Roundabout



- Very low entry speed
- Very low circulating speeds
- Controlled - yield at entry
- No weaving in circle
- Comfortable to drive
- High Capacity
- Very few low speed minor crashes
- OPPOSITE OF TRAFFIC CIRCLE

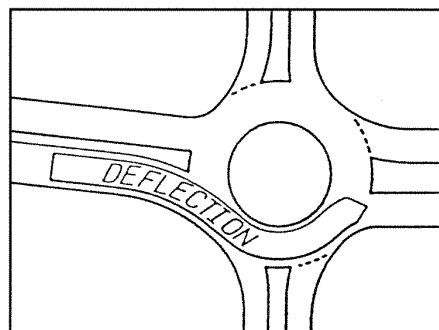
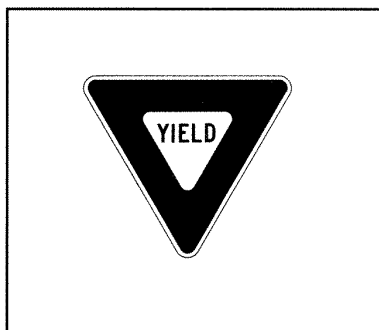
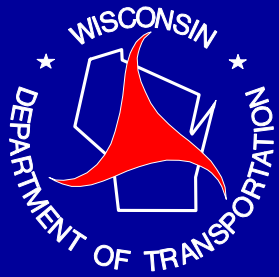
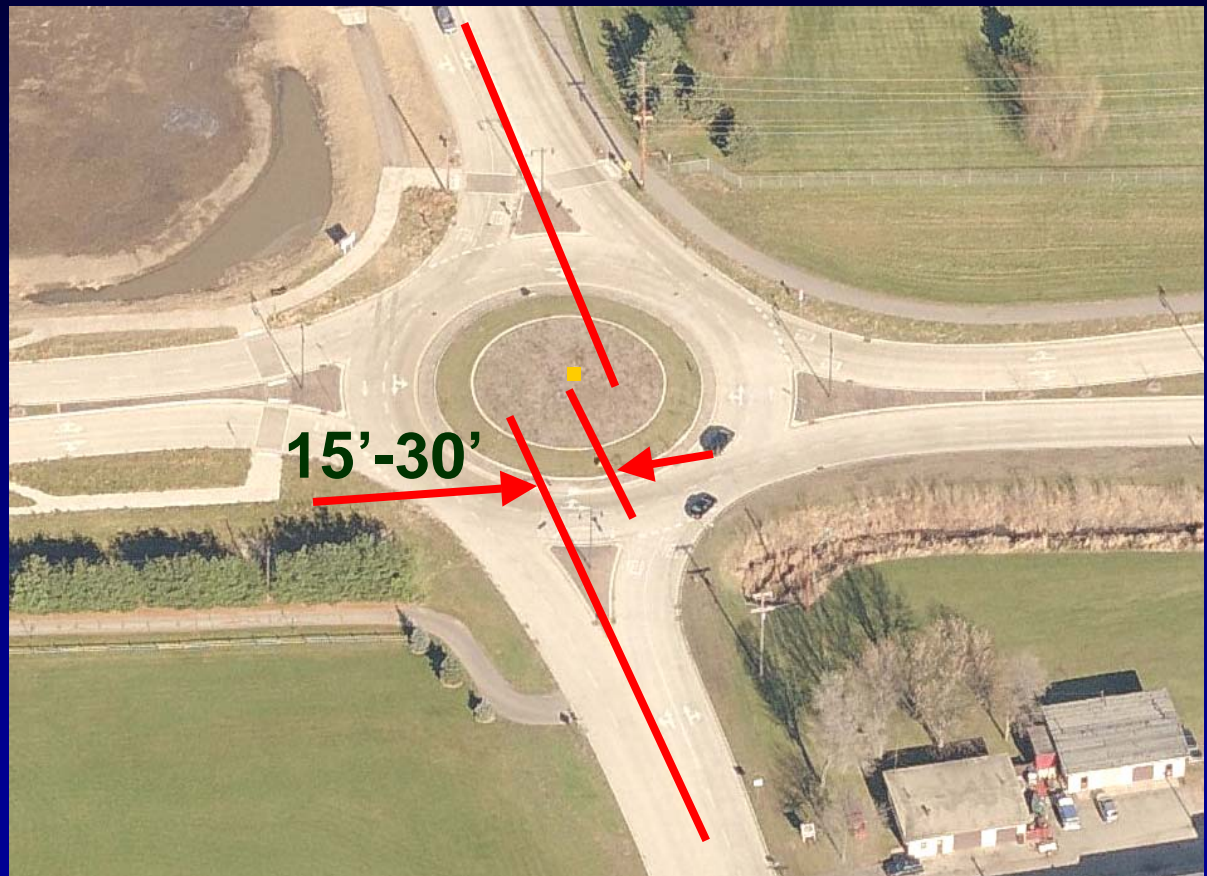


FIGURE 2 Yield-at-entry and deflection of entering traffic.



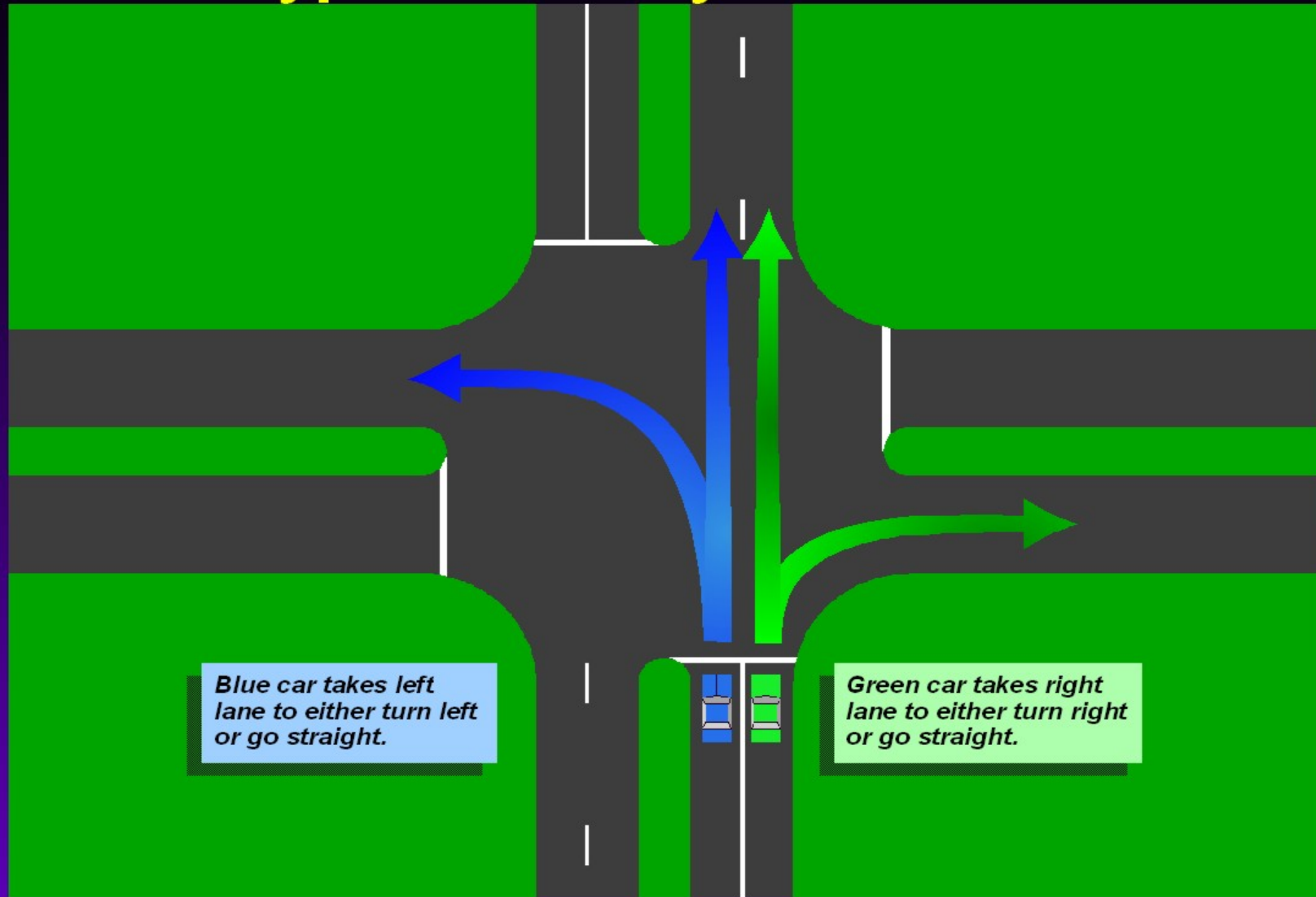
Entry Deflection

- Deflect approaching lanes left of circle's center
 - Helps to reduce speed of entry
- Too much deflection can lead to poor entry

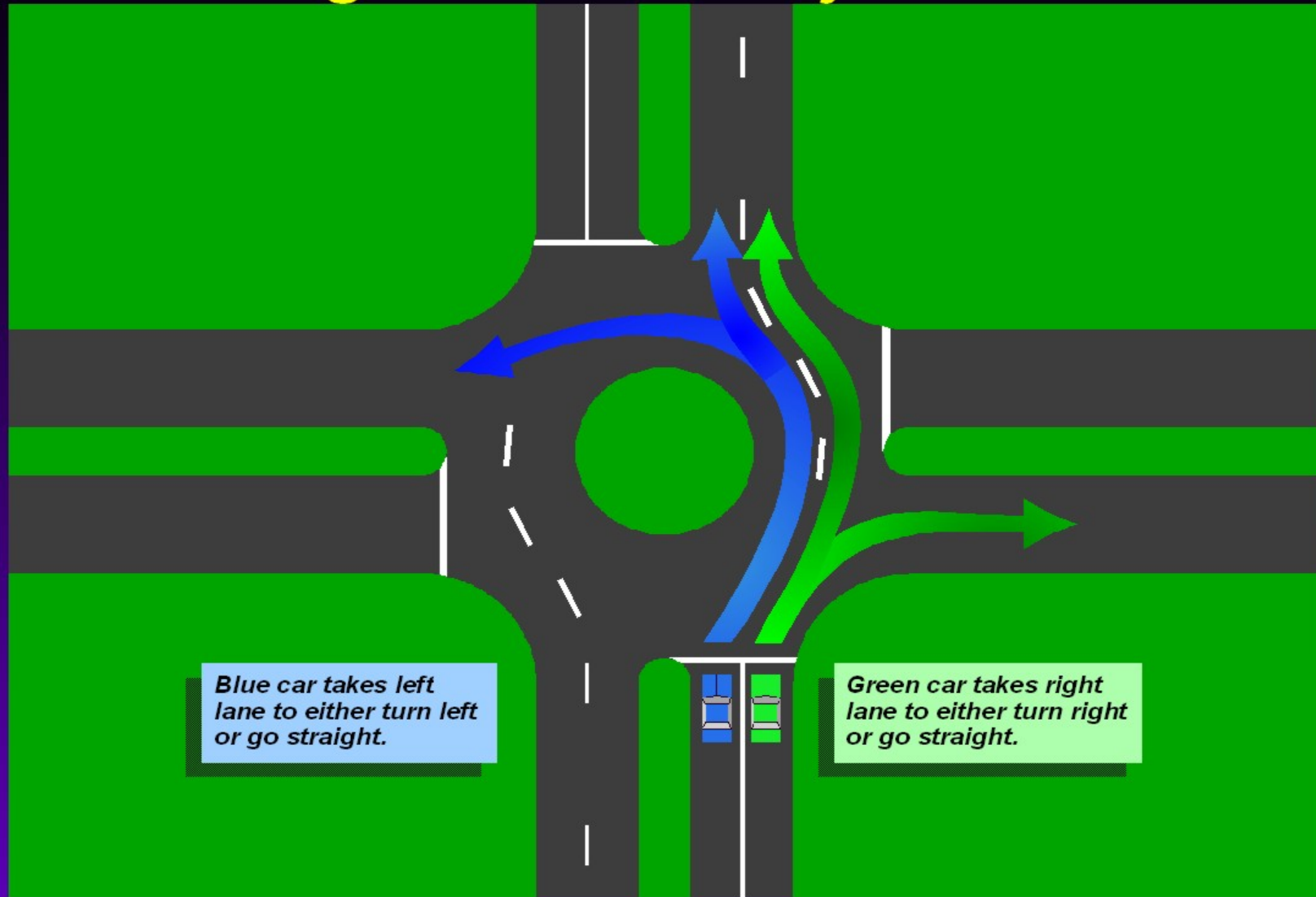


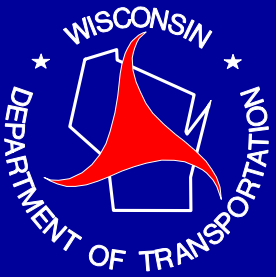
Sun Prairie, WI

“Typical” 4 Way Intersection



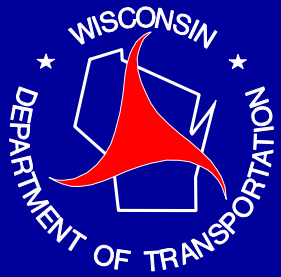
Slight Circular Adjustment



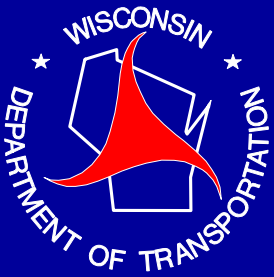


Types of Roundabouts and Typical Volumes

Type	Typical ICD	Typical Entering Volumes
Mini-Roundabout	45-80'	10,000 ADT
Urban Compact	80-100'	15,000 ADT
Urban Single Lane	100-130'	25,000 ADT
Urban Multi-Lane	150-180'	50,000 - 70,000 ADT
Rural Single Lane	115-130'	25,000 ADT
Rural Multi-Lane	180-200'	50,000 – 70,000 ADT



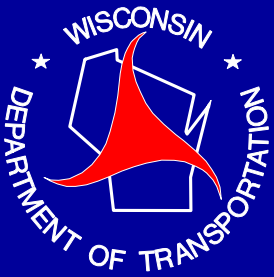
Why Modern Roundabouts



Intersection Safety In Wisconsin

- Wisconsin intersection safety facts & figures
 - ~ 49,000 intersection crashes/year
 - 39% of all reported crashes occur at intersections
 - 26% of all fatalities occur at intersections
 - 52% of all injuries occur at intersections



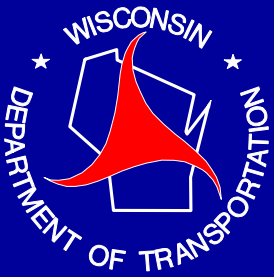


Safety Comparison

	Traffic Signal	Roundabout
Crash Frequency	↑	↓
Crash Severity	↑	↓
Number of Driver Decisions	↑	↓
Severity of Driver Errors	↑	↓
Traffic Calming	Not Effective	Geometrics ensure lower speeds

↑ Higher

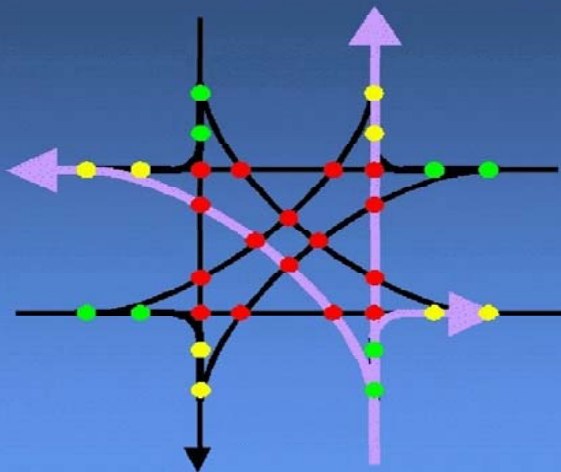
↓ Lower



Safety Comparison

Signals vs. Roundabouts

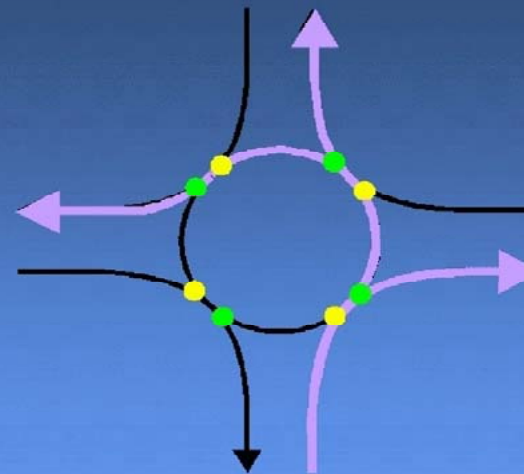
Vehicle conflict points: Conventional intersection



Conflict Types

● Diverge:	8
● Merge:	8
● Crossing:	16
Total:	32

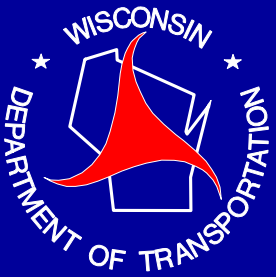
Vehicle conflict points: Roundabout



Conflict Types

● Diverge:	4
● Merge:	4
● Crossing:	0
Total:	8

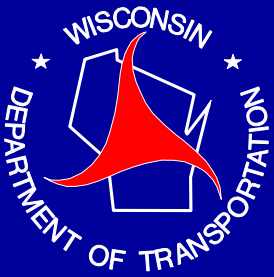
- Crashes of this type are more severe
 - Reduced conflict points (8 vs 32)



Crash Reduction of U.S. Roundabouts

- At locations where roundabouts have replaced stop signs and/or traffic signals
 - Crashes decreased 39%
 - Injuries decreased 76%
 - Fatalities and/or incapacitating injuries decreased 90%

Source: Insurance Institute for Highway Safety (www.iihs.org)



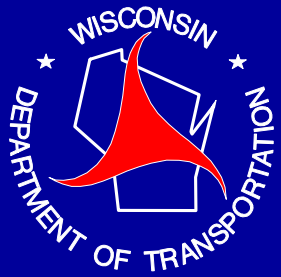
Compare Traffic Operations

	Traffic Signal	Roundabout
Capacity	↓	↑
Level of Service	↓	↑
Traffic Speed	Not limited by geometrics	Restrained to 18 – 30 mph by geometrics
Operational Benefits	More delay to all vehicles	Less delay

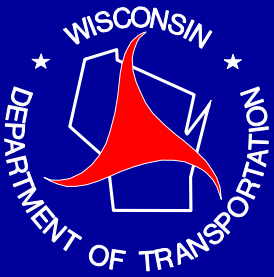
* Higher LOS has environmental benefits as well.*

↑ Higher

↓ Lower



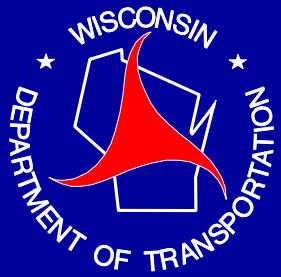
Public Acceptance



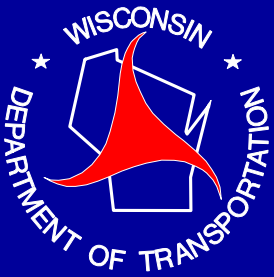
Shifting Public Opinion

Public Opinion on Roundabout	Before Construction	After Construction
Strongly Favor	17%	40%
Somewhat Favor	17%	29%
Total in Favor	34%	69%
Somewhat Oppose	16%	10%
Strongly Oppose	38%	14%
Total Opposed	54%	24%
Don't Know	12%	7%

Source: Insurance Institute for Highway Safety (www.iihs.org)

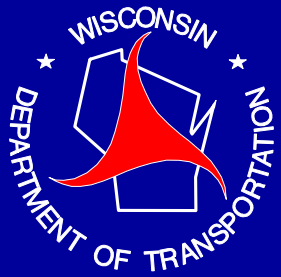


Where and When are Modern Roundabouts Used



WisDOT Roundabout Status

- ~ 175 roundabouts planned on STH system
- State Highway System & oversight projects
 - 16 constructed & operating
 - ◆ 7 single lane, 9 multi-lane (2 have high speed approaches)
 - 125 proposed
 - ◆ 15 single lane, 110 multi-lane
- Known Local System
 - 27 constructed & operating
 - ◆ Most single lane some multi lane



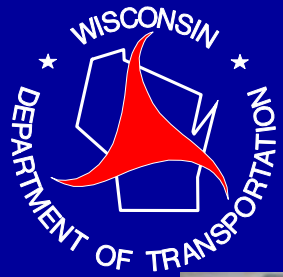
Wisconsin Rapids

(Second Ave/Gaynor/Seventeenth St)



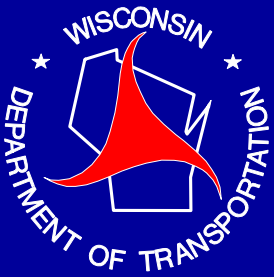
Mount Horeb opened 4/27/04





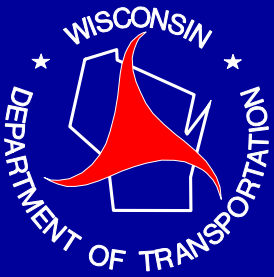
Space for large trucks...





Existing Wisconsin Roundabout Locations

Madison, 30/Thompson Dr -Int	Sun Prairie, 3 – W Main St
Mt Horeb, 78/92 & 4 on ID	S of Kaukauna, 55/KK
Milwaukee, 6 th St/W Florida St	West Bend, Paradise Dr/G
Milwaukee, 25 th St/Canal St	Howard, 5-Lineville, Wooddale, Belmont
Neenah, Breezewood/Tullar Rd	DePere, 5- Chicago, S Ninth, Swan,
Wis Rapids, 2 nd /17 th /Gaynor	Bellevue, Cottage Rd/JJ
Chippewa Falls, 124/S	Ledgeview, E River/G
Hudson, 35/Hanley Rd -Int	Eau Claire, Hendricks/Heights
Rice Lake, Kern Ave/Orchard	Middleton, Parmenter/old 12
Rice Lake, 53/O Interchange	Sheboygan Falls, 32/28



2007 Northwest Region Proposed Roundabout Locations

USH 2 / STH 13 (N) Intersection – Bayfield County

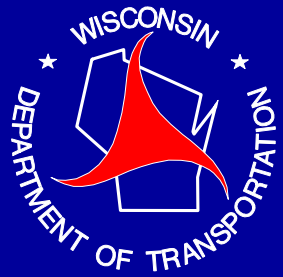
STH 35 / STH 70 (E) Intersection – Village of Siren

USH 8 / STH 27 - City of Ladysmith

Others being considered

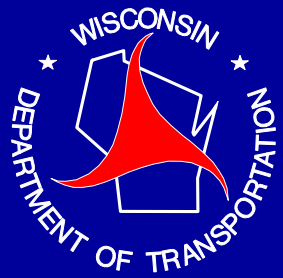
USH 63 / STH 48 City of Cumberland

STH 27 / CTH B Intersection – City of Hayward

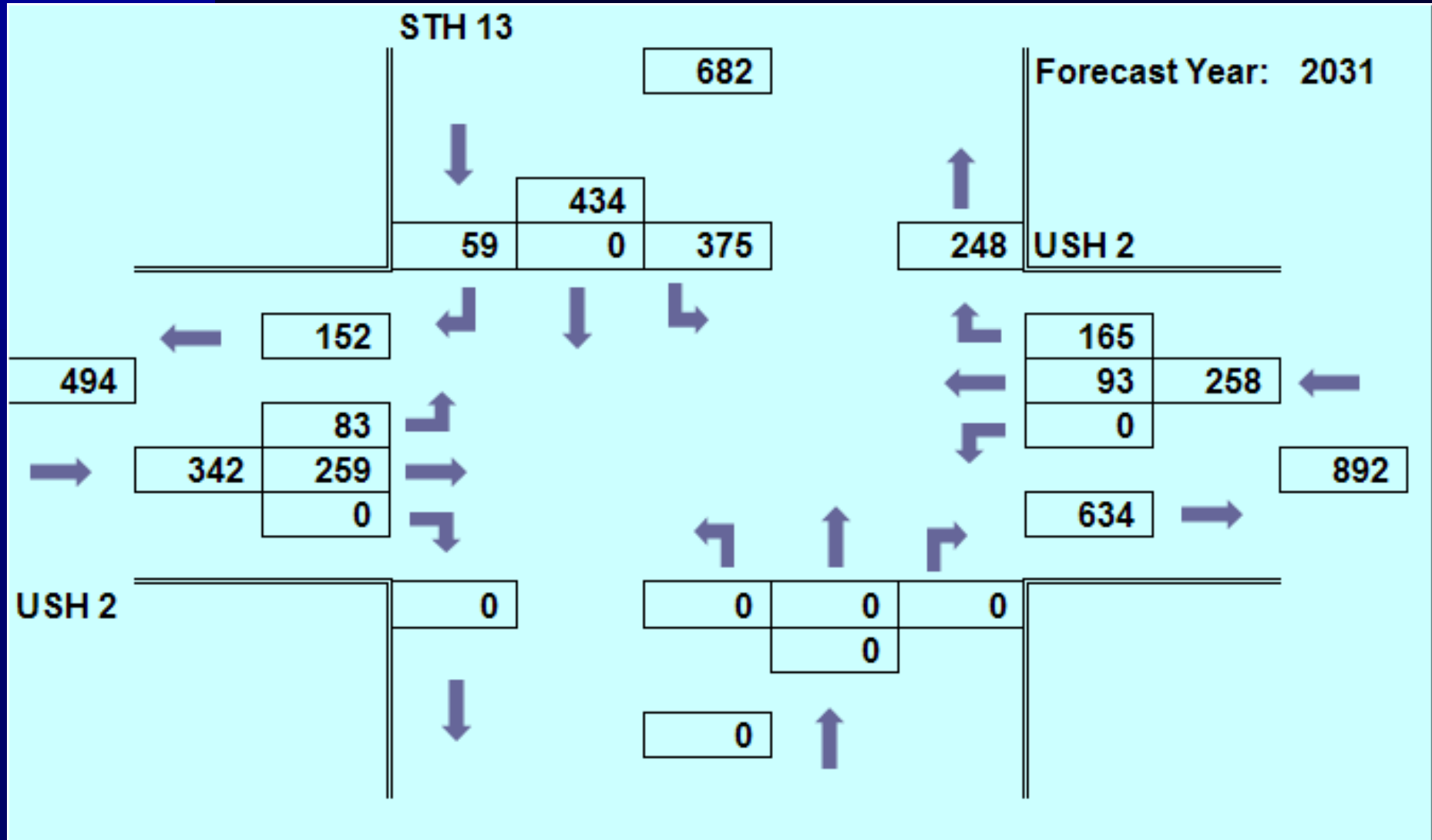


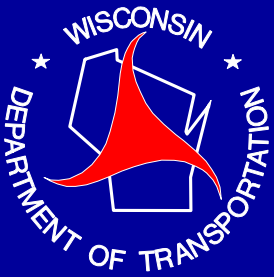
Junction 2/13, West of Ashland



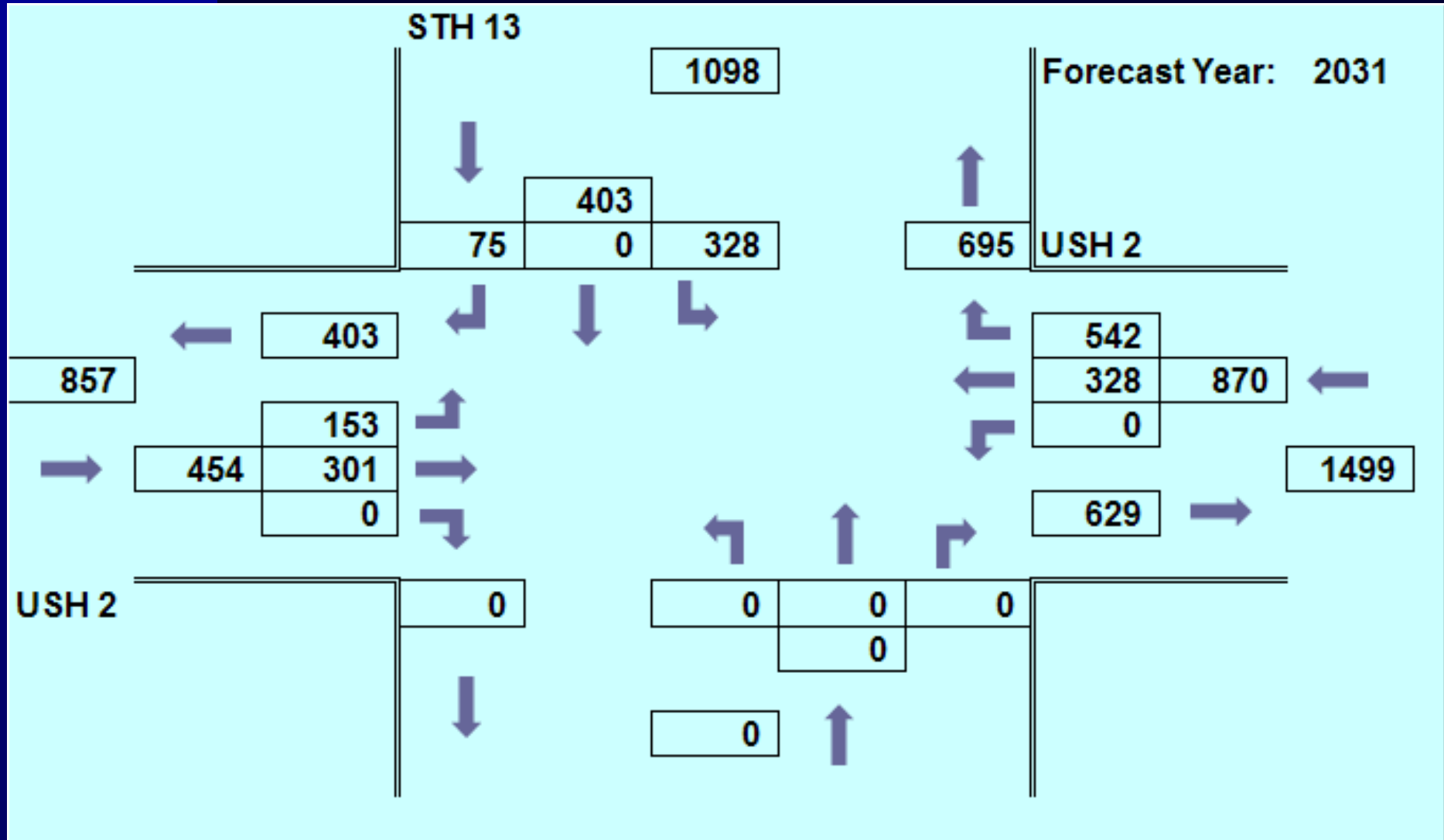


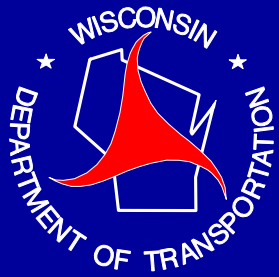
2/13 Future Traffic in 2031 a.m.



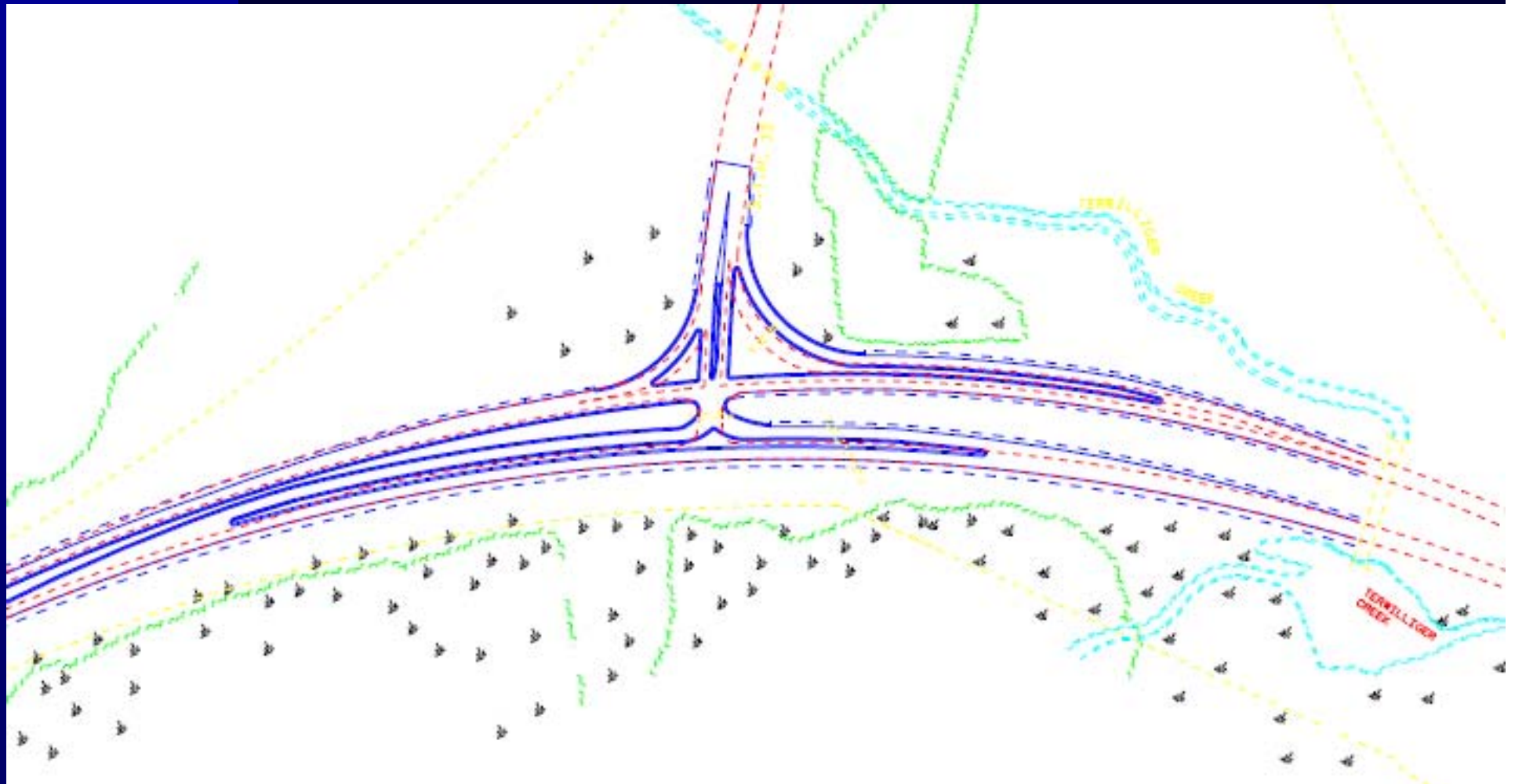


2/13 Future Traffic in 2031 p.m.





Highways 2 and 13 – Signal Alternative

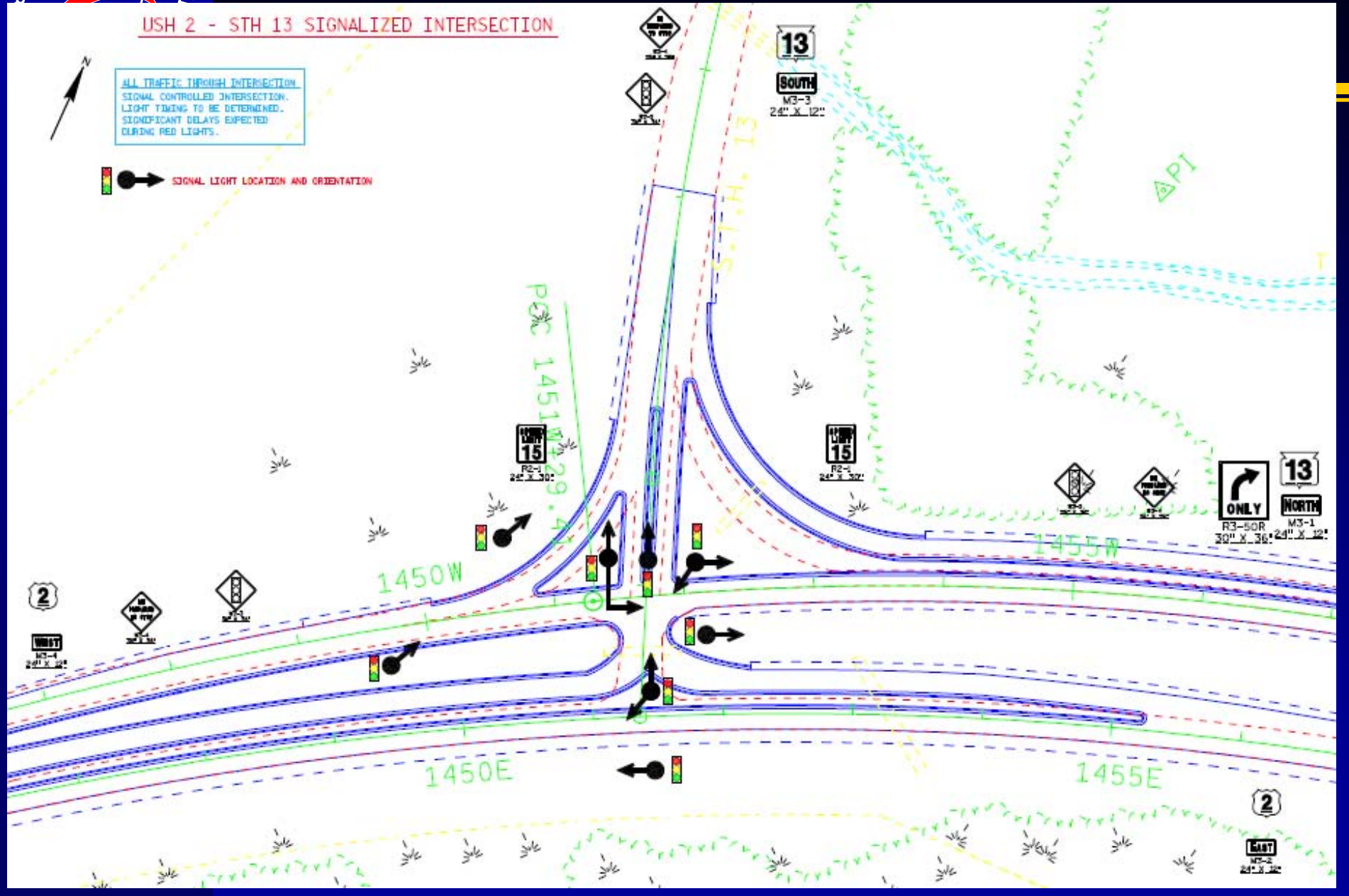


2/13 Signal Details

USH 2 - STH 13 SIGNALIZED INTERSECTION

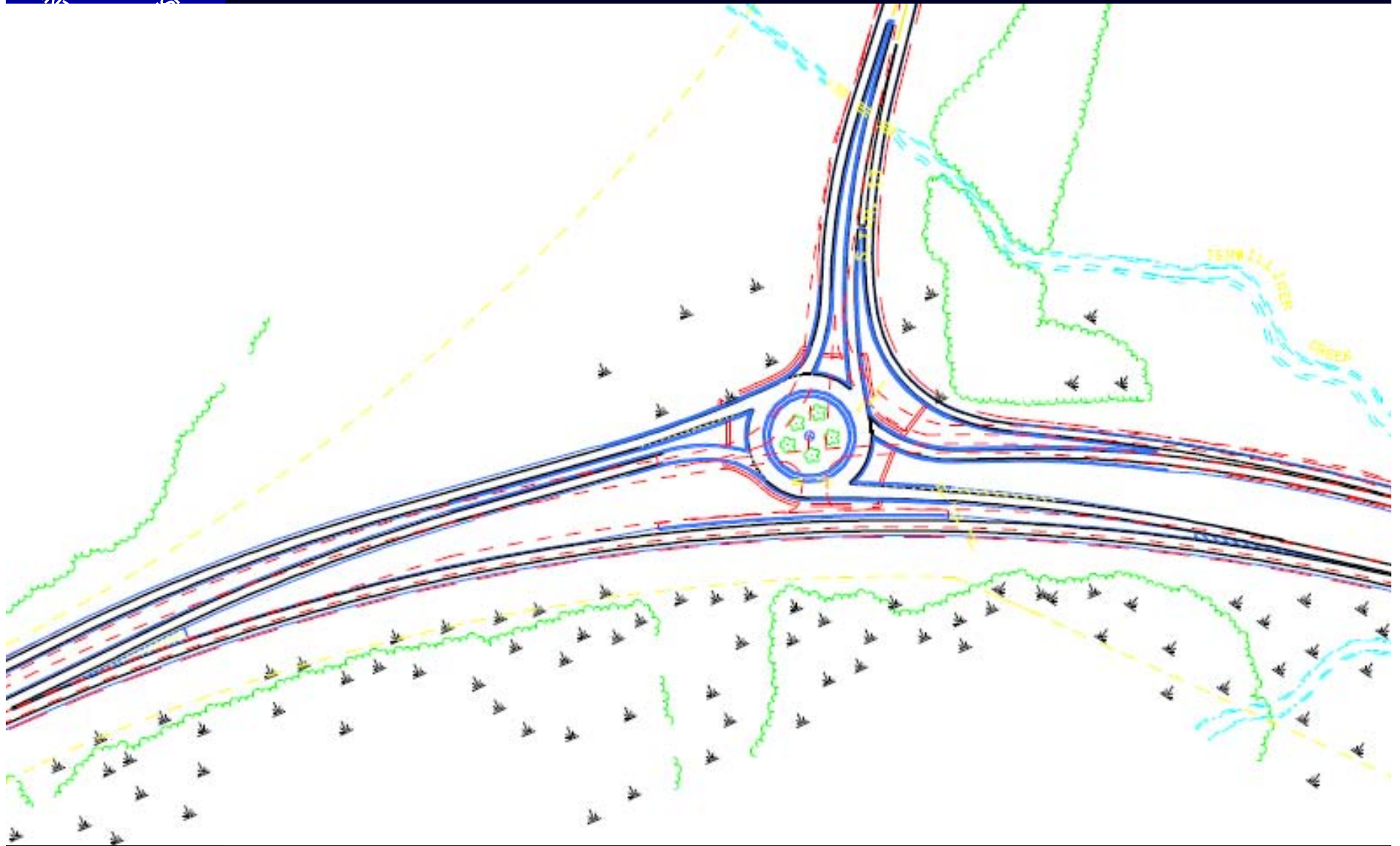
ALL TRAFFIC THROUGH INTERSECTION.
SIGNAL CONTROLLED INTERSECTION.
LIGHT TIMING TO BE DETERMINED.
SIGNIFICANT DELAYS EXPECTED
DURING RED LIGHTS.

SIGNAL LIGHT LOCATION AND ORIENTATION





2/13 Roundabout Alternative



2/13 Roundabout Details

USH 2 AND STH 13 INTERSECTION, BAYFIELD COUNTY

STH 13 SOUTH

EAST BOUND
ENTER THE CIRCLE WHEN AN OPENING EXISTS
PROCEED AROUND THE CIRCLE TO THE EAST
BOUND EXIT.

WEST BOUND
ENTER THE CIRCLE WHEN AN OPENING EXISTS.
PROCEED WITH AN IMMEDIATE RIGHT TURN
INTO THE WEST BOUND USH 2 MERGE LANE LANE.

USH 2 EAST BOUND TO STH 13 NORTH

MOVE TO LEFT LANE ROUNDABOUT APPROACH,
SLOW TO ENTRY SPEED AND ENTER WHEN AN
OPENING IS AVAILABLE. PROCEED AROUND
THE CIRCLE AND EXIT STH 13 NORTH.

DISABLED VEHICLES

APPROACHES ARE DESIGNED TO ALLOW VEHICLES
TO PASS A DISABLED VEHICLE. SLOW TO
ENTRY SPEED AND PROCEED AROUND THE
DISABLED VEHICLE WHEN YOU HAVE
DETERMINED IT IS SAFE.

LARGE VEHICLES

THE CIRCLE IS DESIGNED TO ACCOMMODATE
THE LARGEST TRACTOR TRAILER ON OUR
ROADS (80-85'). IN MOST CASES THE REAR
OF THE TRUCK WILL JUST TOUCH THE CURB.
FOR THE FEW UNUSUAL VEHICLES ON THE ROAD,
THE REAR WHEELS CAN RIDE UP ON THE
CENTRAL TRUCK APRON.

EMERGENCY VEHICLES

APPROACHES ARE DESIGNED TO ACCOMMODATE
EMERGENCY VEHICLES. WHEN AN EMERGENCY
VEHICLE APPROACHES PULL OVER AND
ALLOW THEM TO PASS. IF YOU ARE IN THE
ROUNDABOUT, PROCEED TO YOUR EXIT AND
THEN PULL OVER. NEVER STOP IN THE
ROUNDABOUT.

USH 2 WEST BOUND THROUGH TRAFFIC

MOVE TO LEFT LANE UPON APPROACH
TO THE ROUNDABOUT, SLOW TO ENTRY
SPEED AND ENTER THE ROUNDABOUT
WHEN AN OPPORTUNITY EXISTS.
TRAVEL AROUND THE CIRCLE AND EXIT
INTO THE WEST BOUND
LANE

USH 2 WEST BOUND TO STH 13 NORTH

BYPASS LANE ELIMINATES TRAVEL THROUGH
ROUNDABOUT INTERSECTION

USH 2 EAST BOUND

REMAIN IN RIGHT LANE BYPASS
NO CHANGE FROM THE EXISTING OPERATION.

