

Modern Roundabout Myths

Presented by:

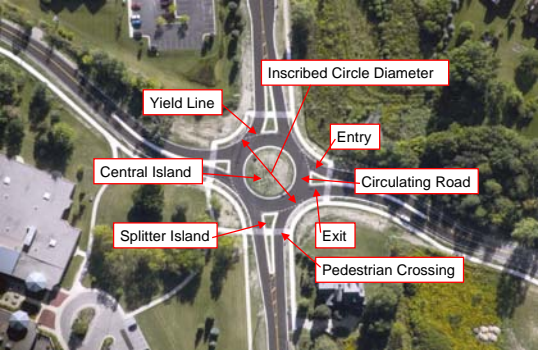
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Traffic Engineering Associates, Inc.

Wes Butch
Manager – Transportation Planning
DLZ Michigan, Inc.

Time Management

- Terminology (1 minute)
- Dispelling the Myths (30 minutes)

Roundabout Terminology



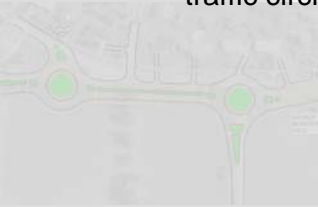
What is a Roundabout?

- Yield at entry
- Deflection at entry
- Tailored to turning patterns at each intersection



Myth #1

Roundabouts are the same as traffic circles.

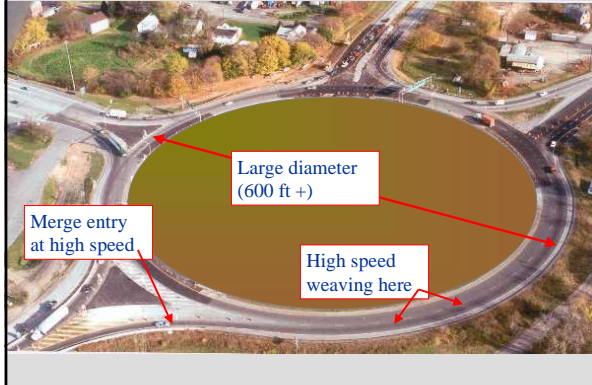


Major Differences

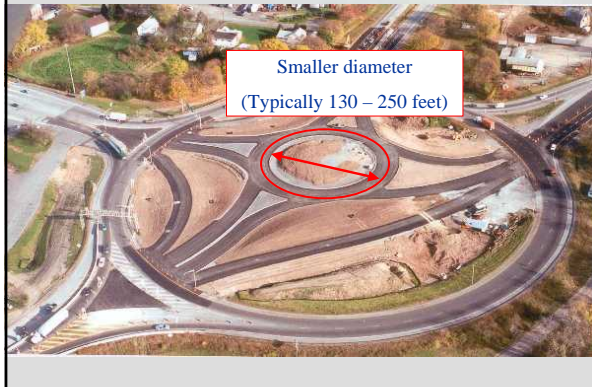
Characteristic	Traffic Circle	Roundabout
Diameter	600 feet +	20 - 100 feet
Entry Control	High speed merge	Yield
Speeds	High (40 - 55 mph)	Low (15 - 25 mph)
Lane Utilization	Left turn in same lane	Left turn in separate lane
Traffic	Can be blocked	Determined by geometry and gaps - very high if designed properly
Crash	Can be high	Safest type of at-grade intersection in the world
Public Opinion	Dislike	Favorable after implementation

EXACT OPPOSITES IN ALL IMPORTANT RESPECTS

Kingston, NY – Traffic Circle



Kingston, NY – Traffic Circle Conversion to Roundabout




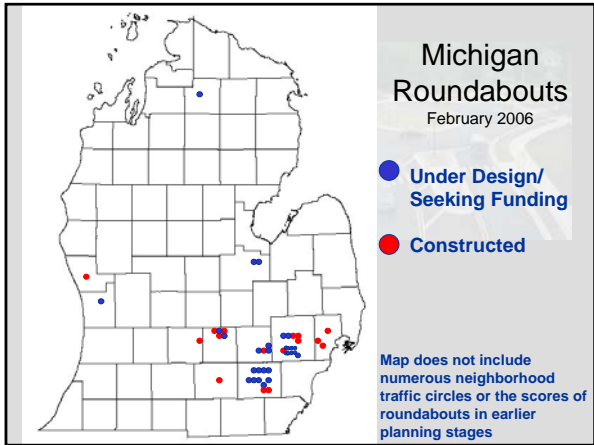
Roundabout or Traffic Circle?



Myth #2

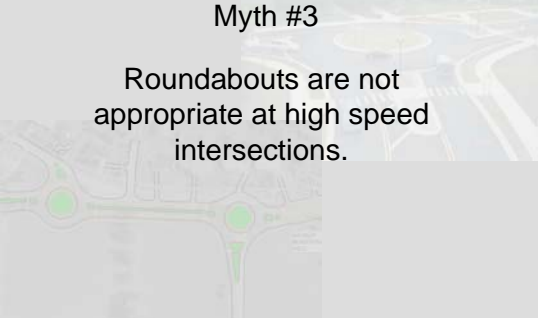
Roundabouts won't catch on in this state.





Myth #3

Roundabouts are not appropriate at high speed intersections.



High Speed Rural Intersection - KS

Before

- Serious crash problem as 2-way stop (25 injuries '93-'97)
- Good safety, fair traffic operations as 4-way stop ('98-'01)



65 mph approach speed

High Speed Rural Intersection - KS

After

- Excellent safety – Only 3 PDO crashes ('01 – '03)



65 mph approach speed

Myth #4

Roundabouts are more costly and require more right-of-way than traffic signals.



Comparison

- DLZ Corporation: Planning/design level cost estimates comparing roundabouts vs. traffic signal
- Comparison for more than 70 intersections 1998 – 2006
- Roundabouts cheaper at more than half of the intersections

When are Roundabouts Cheaper?



Roundabouts with Narrow Bridge



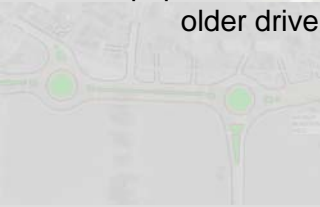
Mini Roundabout in Dimondale



Low Approach Speed (30 mph or less)

Myth #5

Roundabouts are confusing,
unpopular, and unsafe for
older drivers.



Older Driver Video



Roundabouts in France

- Bretagne / Pays de la Loire
 - 6 M people
 - 1.5 M > 65
- 4,000 roundabouts



% of Total INJURY Crashes by Driver Age (1999 – 2003):

Driver Age	Roundabouts (1,169 Crashes)	Other Intersections (14,173 crashes)
61+	12.4%	15.5%

Roundabouts in America



Maryland
40+ modern roundabouts

Clearwater Beach, FL

32% of residents are age 65 +
2.6 x the national average



Acacia roundabout:

- By petition of residents and store owners
- Petition included \$3000

Myth #6

Roundabouts are confusing for young and inexperienced drivers.



Before - Looking South, Hulett Road



Before Video

High numbers of high school drivers in AM peak




1 week before school ends - May, 2004

18 crashes (10 injury) 2001-2003



After Video



1 week after school opens – August, 2004

2 non-injury crashes in first year of operation

A street-level photograph of a roundabout. A white car is driving through the roundabout. The background shows trees and a clear sky. The image is framed within a larger grey box that also contains text and a small inset map of the roundabout.

Myth #7

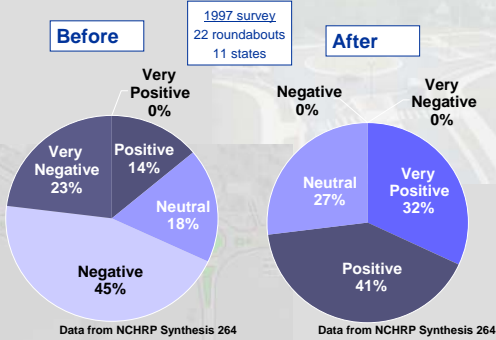
The public will not accept roundabouts.

A diagrammatic or architectural rendering of a roundabout intersection. It shows the circular layout of the roundabout, the surrounding roads, and some greenery. The diagram is presented in a light, semi-transparent style within a grey box.

Opposition: How Bad Can It Get?



180 Degree Change



Opponents Become Proponents

Letter to the Editor:

"I must admit it! I was wrong. The roundabout at Marsh and Hamilton roads appears to be working. Congrats to the Ingham County Road Commission and to Meridian Township"



Myth #8

Roundabouts will make traffic congestion worse than it already is.



Marsh – Hamilton Intersection



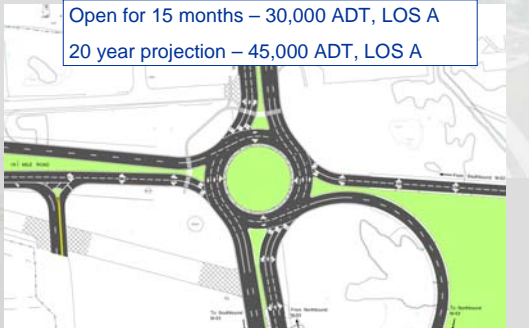
Before – Level of Service E with traffic signal



After – Level of Service A with roundabout

M-53 Roundabout Concept

Open for 15 months – 30,000 ADT, LOS A
20 year projection – 45,000 ADT, LOS A



M-53 Roundabout

- PM peak = 3000 entering/hr
- Video clip = 70/min = 4200/hr



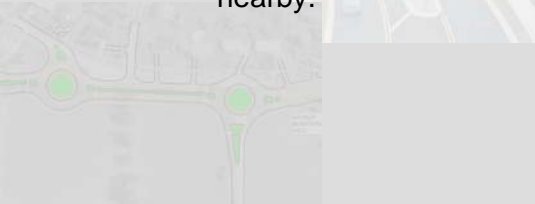
Jolly – Okemos Intersection

- Lunch peak = 3000 entering/hr



Myth #9

Roundabouts should not be constructed with signals nearby.



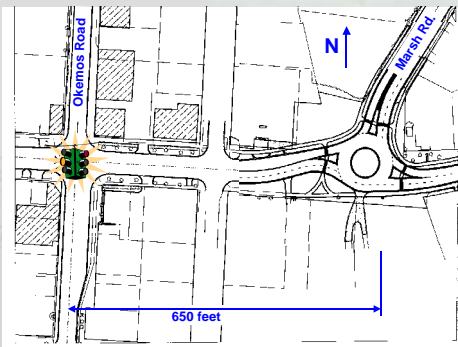
Colorado Roundabout

Note Signal platoon arrival on this leg



Use caution within signal progression systems

Marsh – Hamilton Intersection



Myth #10

Roundabouts cannot accommodate large trucks.



Marsh – Hamilton Intersection



Fire Trucks

John Gallic: Assistant Fire Chief, Town of Vail, CO

- Roundabouts are an improvement over stop signs or signals.
- Response times were reduced.
- Drivers do not stop in the circulating roadway when an emergency vehicle approaches (with siren) or can be coaxed.
- All of the fire department's equipment can negotiate the roundabouts, including the large ladder trucks.

Myth #11

It is difficult to remove snow at roundabouts.



Avon, Colorado

- Major ski resort area
 - 310" snow per year (26 feet!)
 - Many roundabouts
 - *"Snow removal has not been a major issue and we have had very few problems dealing with it in our roundabouts."*
- Norman Woods, Town Engineer, Avon, CO.



Marsh – Hamilton Intersection



"We plow from the inside lane toward the outside at our roundabouts" – Dave Sonnenberg, Ingham County Road Commission

Myth #12

Roundabouts interfere with driveway access.



Driveway Accessing Roundabout



Myth #13

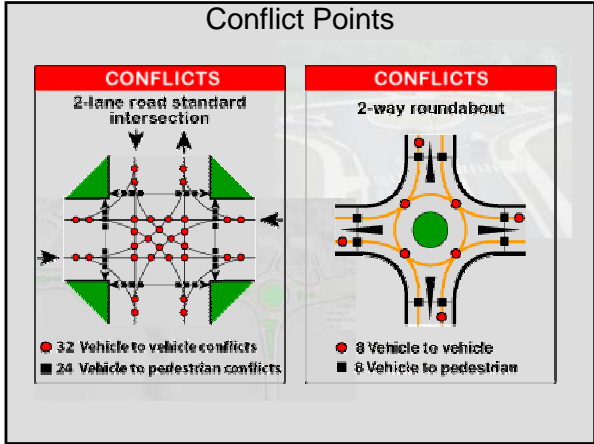
Roundabouts are unsafe for automobiles.



Safety Statistics

- Persaud et. al. (Insurance Institute for Highway Safety), 2000 (U.S.)
 - 23 U.S. intersections converted from stop/signal to roundabouts
 - 40% reduction in total crash frequency
 - 80% reduction in injury crash frequency
 - 90% reduction in fatal/incap. injury crash frequency
- Maryland DOT Accident Evaluation, 2004
 - ~15:1 benefit - cost ratio for installation of single lane roundabouts
- Many other studies with similar results
- Multi-lane roundabouts see crash rates approach those of signals, but severity is lower

Conflict Points



Myth #14

Roundabouts are unsafe for pedestrians.



Safety Statistics

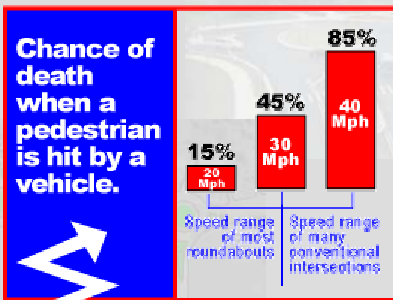
- US - minimal information – anecdotal
- Tumber, 1997 (Australia)
 - Severity of ped crashes lower than other intersection types
- Lalani, 1975 (U.K.)
 - 38 intersections converted to roundabouts
 - Ped crash frequency dropped 46% after conversion to roundabouts
 - Fatal and serious ped crash frequency dropped 70%

Reasons for Pedestrian Safety

- Pedestrian crossing and roundabout entrance are separated – drivers deal with potential conflicts separately, not at same time
- Refuge on splitter island – cross one direction at a time
- Exposure is limited because there are two shorter crossings
- Low speeds
- Reduced number of conflict points
- Pedestrians are more alert



Speed and Pedestrian Safety



MSU Campus

Several thousand pedestrians/hour – excellent safety record!



School Children

"It definitely has improved the flow of traffic and has not proved to be the safety concern that several parents feared." Jeri Mifflin, Principal, Bennett Woods Elementary School



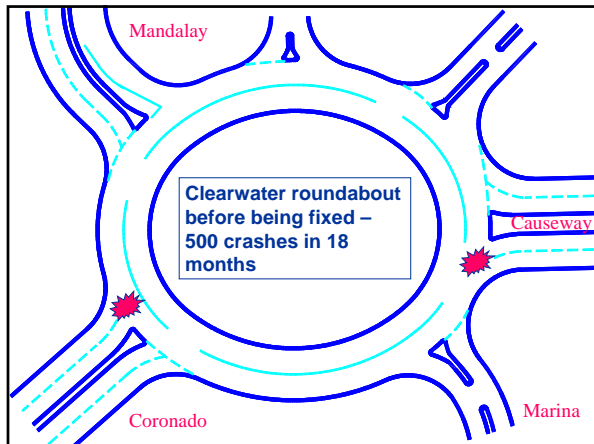
Myth #15

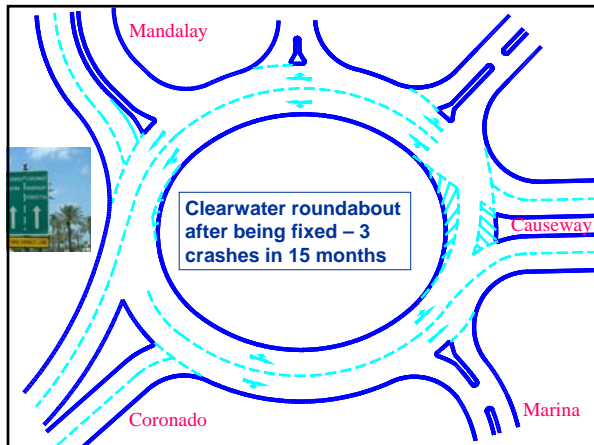
Roundabouts are simple to design.



Clearwater Roundabout







Credits

- R. Barry Crown (Rodel Software Limited) – miscellaneous information adapted for use in several slides, video of roundabout in CO
- NYDOT – photo of Kingston roundabout
- Dave Sonnenberg (Ingham County Road Commission) – photos of Okemos roundabouts
- Terry Palmer (MDOT)– photo of Maryland roundabout
- Edmund Waddell – photos of roundabouts in Avon, CO and Dimondale
- Dave Morena (FHWA) – Photo of roundabout in Maryland
- Tim Colling (Michigan LTAP) – Information related to fire trucks and public opinion
- Ken Sides (Clearwater, FL) – Information for elderly drivers in Clearwater
- Kansas DOT – Photos of roundabout in Kansas
- Bernard Guichet – data on older drivers at roundabouts in France
- ACE – photo of roundabouts in Fort Wayne, IN
- All other information, including video clips, copyright DLZ Michigan, Inc. 2005

Special Thanks....

To David Morena of FHWA's Michigan Division, a tireless advocate of roadway safety, who conceived the idea for this presentation and assisted in its preparation.