

Pedestrians and Bicyclists at Roundabouts

TRB National Roundabout Conference
Introduction to Roundabouts Workshop

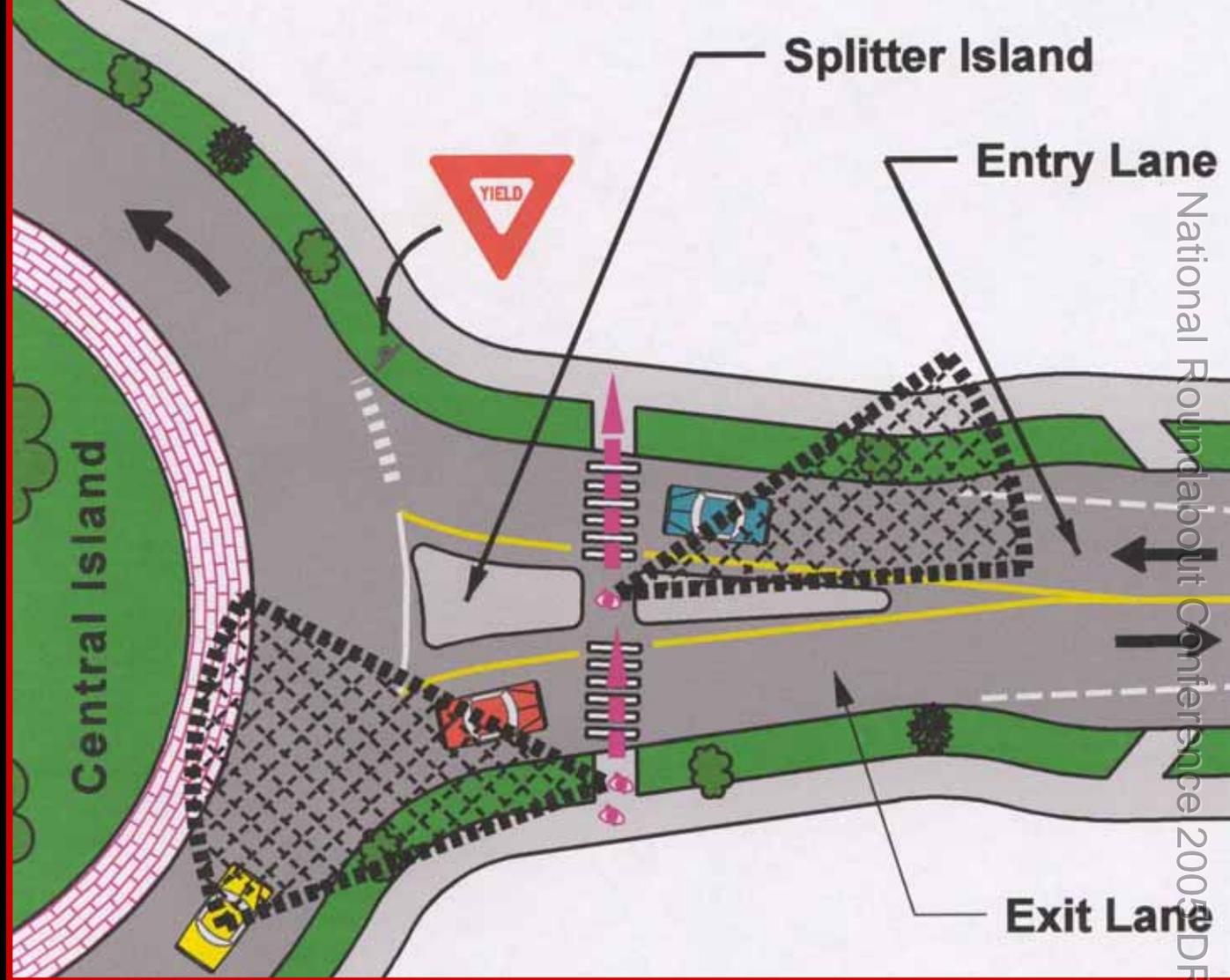
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Special thanks for slide contributions:
Michael Ronkin and John Ciccarelli

Pedestrians at roundabouts

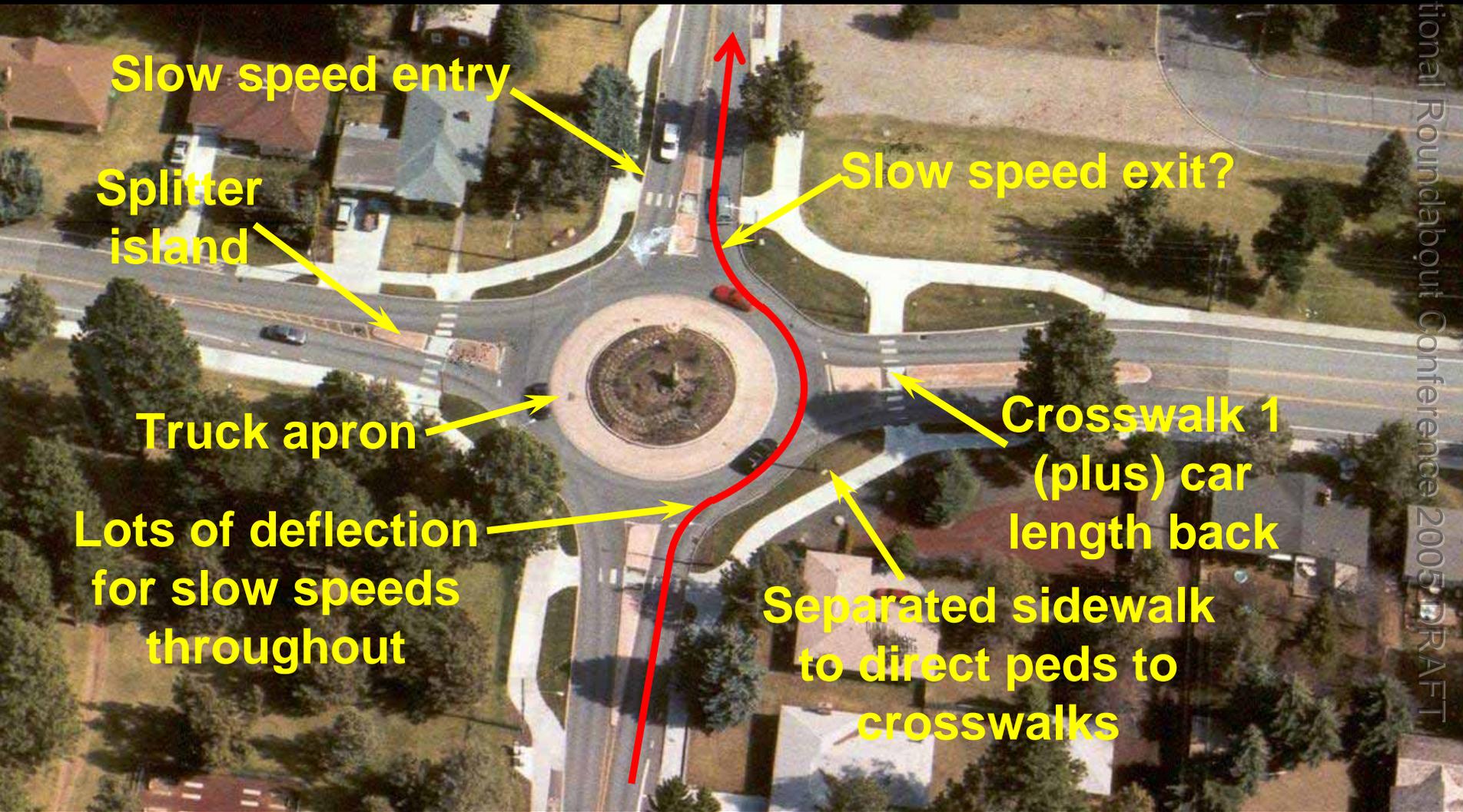


Two-step crossing – Slow Speed

What does it take to make roundabouts work for pedestrians?

- Slow speeds – adequate deflection
- Single lane preferred
- Well-defined crossings
- Splitter islands
- No ped access to central island

Roundabouts Components for Pedestrian Safety





Key elements for pedestrians:
Deflection on entry to slow drivers



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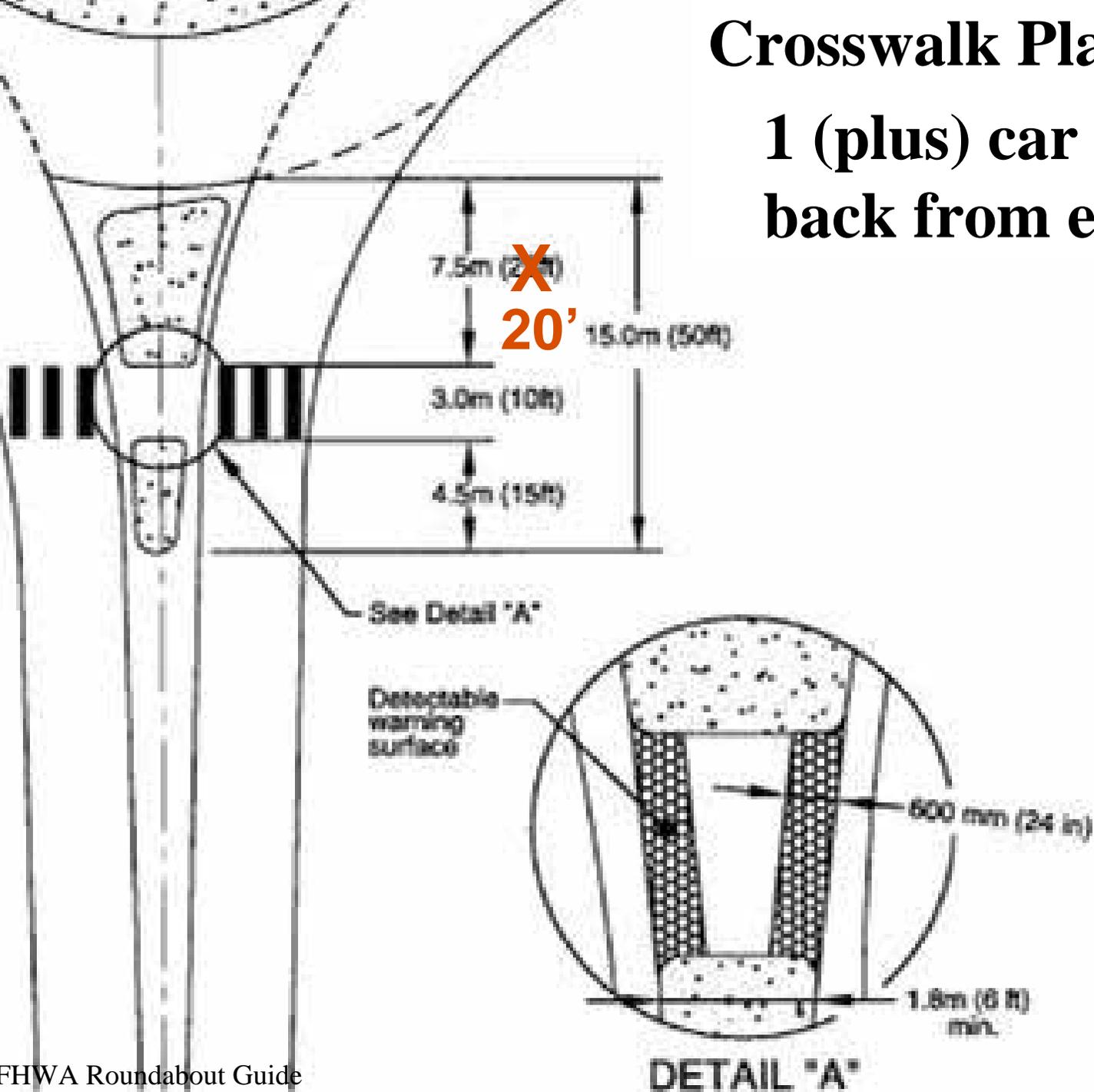
**Key elements for pedestrians:
Well-defined crossings and splitter islands**



Key elements for pedestrians:
Well-defined crossings and splitter islands

Crosswalk Placement:

1 (plus) car length
back from edge line





**Crosswalk Placement – 20’ back from edge line –
provides gap between queued vehicles**



20' allows at least one exiting vehicle to yield to peds without blocking circulating traffic



Crosswalk set too far back



Crosswalk left off of this leg – people cross anyway



Key elements for pedestrians: Deflection at exit to slow drivers? (may conflict with other goals)



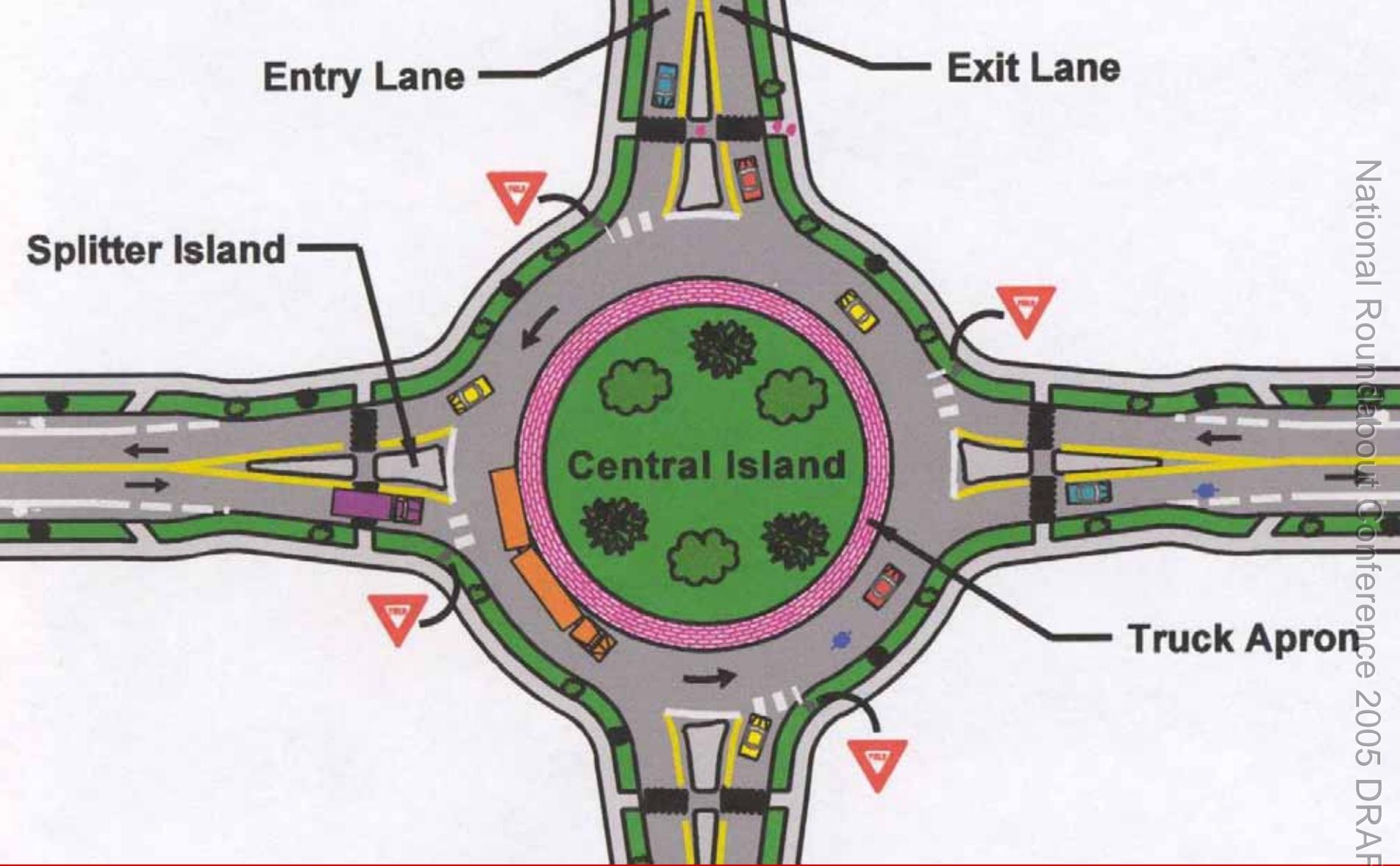
Key elements for pedestrians: Single lane is best



Multi-lane = less deflection, higher speed



Multiple threat at roundabout crossing

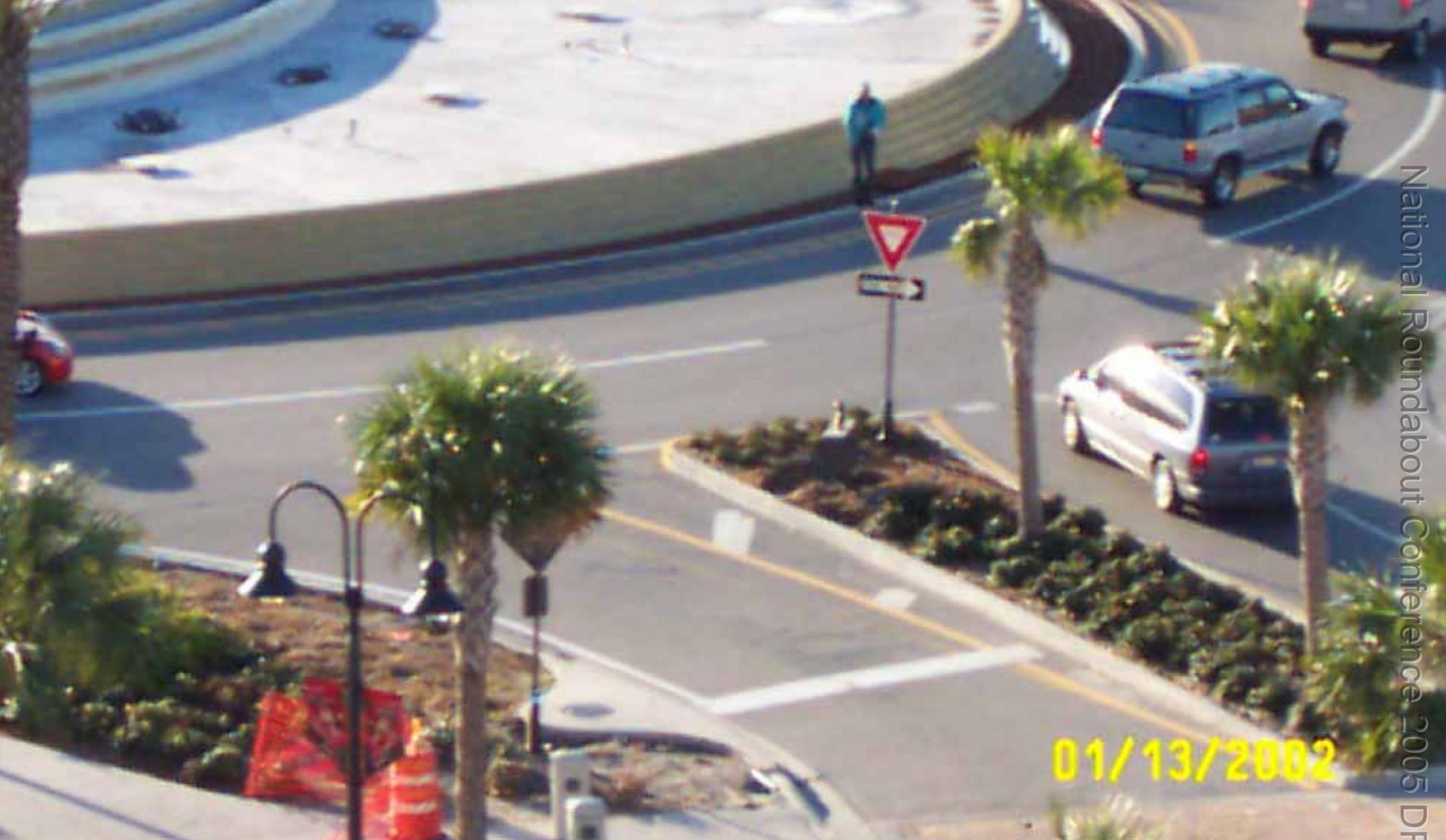


Elements for pedestrian:
No pedestrian access to central island

05/23/2000



Landscaping discourages access to central island



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People will still take the shortest route
early on Sunday morning



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People will still take the shortest route
early on Sunday morning

Problem areas for travelers who are blind

- Locating the crosswalk
 - Preventing crossing into the circulatory roadway
- Aligning to cross
- Detecting a gap in traffic

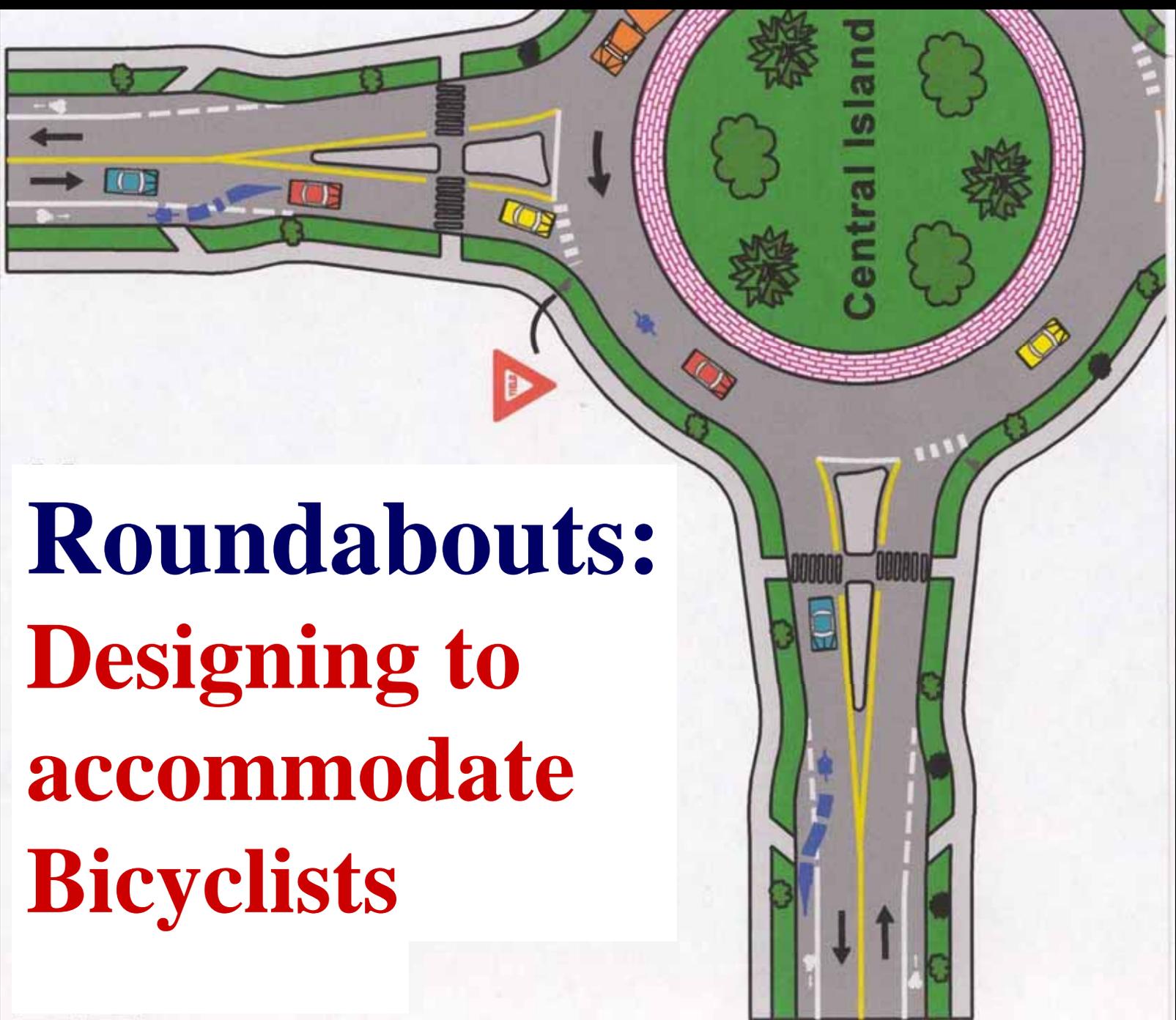


**Signalized
pedestrian crossing**

**Passive detection or
other methods could
be used to limit
vehicle delay**



Signalized pedestrian crossing at
multi-lane roundabout



**Roundabouts:
Designing to
accommodate
Bicyclists**

Single lane vs. Multilane

	Single lane	Multilane
Circulating speed	Can be designed to be bike-compatible (12-20 mph)	Typically faster than bike speeds (20-30 mph)
Cyclist travel	In line with cars No lane changes (ring is through-right option)	May be passed Must change lanes if making left turns

Single lane: Bike-compatible speeds



Multilane: Higher speeds, need to choose a lane



Pavement Markings

- a) **Drop bike lane on entry with dashes,**
before crosswalk or bike-bypass ramp
(indicates that merging is expected)
- b) **Resume bike lane on exit,**
after crosswalk or bike-bypass ramp
- c) **No bike lane on the circulatory roadway**
(would put through cyclist to right of exiting traffic)



Entering single lane roundabout: “single up”



**Drop bike lane on entry, before crosswalk
(indicates that merging is expected)**



Circulating: “Take the lane” in single lane



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No bike lane on the circulatory roadway



Resume bike lane on exit, after crosswalk



What if a cyclist doesn't want to enter the roundabout? Provide a ramp at busy roundabouts



Using the splitter island like a pedestrian



No detectable warning!

Ramp back to the bike lane

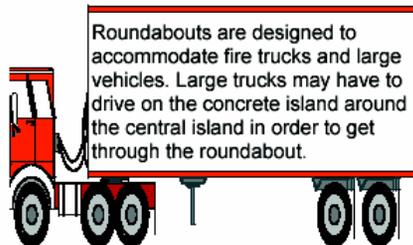
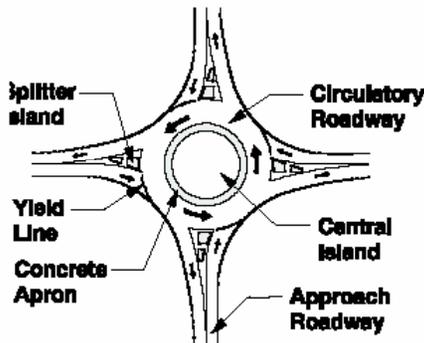
Oregon DOT user guide (all modes)

What is a roundabout?

A modern roundabout is a type of intersection that has safety, operational and aesthetic benefits for many different road users.

Roundabouts are characterized by:

- ▶ A fairly large central island
- ▶ A circular roadway on which all vehicles travel counterclockwise
- ▶ Drivers entering the roundabout yield to traffic already in the circular roadway
- ▶ Design elements that cause drivers to use the roundabout at slow speeds, including splitter islands at all approaches



What are the general principles behind using a roundabout?

Think of roundabouts as a series of "T" intersections, where entering vehicles yield to one-way traffic coming from the left. A driver approaching a roundabout must slow down or stop for vehicles stopped ahead, yield to pedestrians in the crosswalk, and yield to traffic already in the roundabout. Then it's a simple matter of a right turn onto a one-way street. Once in the roundabout, the driver proceeds around the central island, then takes the necessary right hand exit.

What are the advantages of roundabouts?

A well-designed roundabout can improve safety, operations and aesthetics of an intersection:

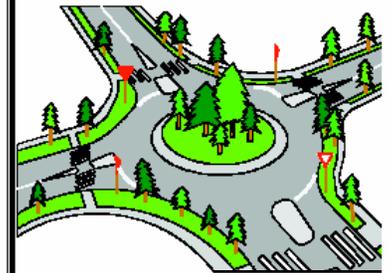
- ◆ **Greater safety** is achieved primarily by slower speeds and elimination of left turns
- ◆ **Operation** is improved by smooth flowing traffic (with less stop and go than a signalized intersection)
- ◆ **Aesthetics** are enhanced by landscaping and less pavement

Are there any disadvantages? What about costs?

Drivers must pay attention; pedestrians don't have a signal to help them cross and bicyclists must merge with motor vehicles to enter the roundabout.

Construction costs are generally comparable to a traffic signal. Additional landscaping requires a long-term maintenance commitment, but normally costs less in the long run than signal maintenance.

Roundabout



General Information & Step-by-Step Instructions



 Oregon
Department of
Transportation

Oregon DOT user guide (all modes)

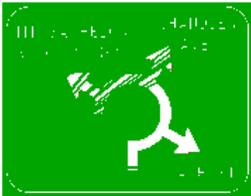
Step-By-Step Instructions For Drivers & Bicyclists

NOTE TO BICYCLISTS: If you're riding a bicycle, ride as if you were driving a car. Roundabouts are designed so motorists will drive at about 15-25 MPH, close to your bicycling speed. Be assertive, so cars see you and respect your right to be on the road.

The first cue that you are approaching a roundabout is the following sign, telling you here is a roundabout ahead:



You should start slowing down. Next you will see a directional sign that shows where the exits are located on the roundabout:



Now the roundabout will be clearly visible. Slow down to 10-15 MPH as you approach. Stay in your lane, to the right of the splitter island.

Be sure to look for bicyclists merging into the travel lane, or pedestrians wanting to cross. Be considerate, and let the bicyclists merge. If you see a person in or about to enter the crosswalk, let them cross; it's the LAW.

NOTE TO BICYCLISTS: If you are riding on the shoulder or bike lane, merge into the travel lane before the shoulder ends. Prepare for this move early, look over your shoulder, and signal your intent to move into traffic. Don't be intimidated; assert your position upon entering the roundabout.

If you do not want to ride your bicycle in the roundabout, you may enter the sidewalk using the ramps, and proceed as a pedestrian. Refer to the step-by-step instructions for pedestrians for more details.

Then move slowly to the yield line, looking left. A YIELD sign will tell you to yield to traffic in the roundabout:



You may have to stop to yield to cars on your left. If the road is clear, simply enter the roundabout, turning right. You don't have to stop, just enter.

Proceed around the roundabout slowly. Don't pass bicyclists ahead of you within the roundabout, as your speeds should be nearly equal. Continue until you get to your exit. Do not stop in the roundabout.

NOTE TO BICYCLISTS: Once in the roundabout, don't hug the curb. Ride close to the middle of the lane to prevent cars from passing and cutting you off. Watch for cars waiting to enter the roundabout, as they may not see you.

Directional signs will tell you where to exit



Exit carefully, using your right turn sign. Watch for pedestrians in or approaching the crosswalk and stop for them.

That's it, you're done! Go on to your destination and enjoy the rest of your trip.

If you have questions, contact the ODOT Preliminary Design Unit at (503) 986-3564.

Step-By-Step Instructions For Pedestrians

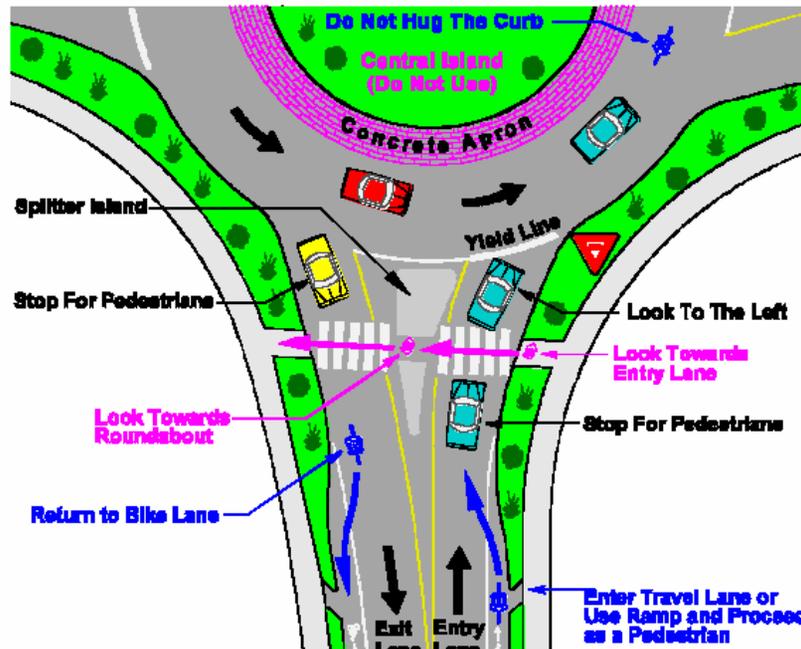
You can walk safely through a roundabout following these simple steps:

Proceed around the roundabout on the sidewalk and in the designated crosswalks. **Never walk in the roundabout or to the central island.**

Cross one lane at a time to the splitter island; it's there to provide you a refuge between lanes.

When crossing an entry lane, watch for cars coming at you down the entry lane. You have the right of way when you're in the crosswalk, but be careful - make sure drivers can see you and stop for you.

When crossing an exit lane, watch for cars leaving the roundabout. Some vehicles will use their right-turn signal some won't. You have the right of way but proceed carefully.



Crash Statistics - The Netherlands

Crash reductions by mode at intersections converted to roundabouts

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Mode	All Crashes	Injury Crashes
Passenger car	63%	95%
Moped	34%	63%
Bicycle	8%	30%
Pedestrian	73%	89%
Total	51%	72%

Pedestrian Crash Statistics Great Britain

Intersection Type	Pedestrian Crashes per Million Trips
Mini-roundabout	0.31
Conventional roundabout	0.45
Flared roundabout	0.33
Signals	0.67

Bicycle Crash Statistics

Great Britain

Crashes per million trips

Intersection Type

Bicyclists

Mini-roundabout

3.11

Conventional roundabout

2.91

Flared roundabout

7.85

Signals

1.75

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Crash Statistics - France

Source: FHWA Roundabout Guide

	Signalized Crossroads	Roundabouts
Number of crossroads	1,238	179
Number of personal injuries	794	59
Number of crashes involving 2-wheel vehicles	278	28
Personal injury crashes/year/crossroad	0.64	0.33
2-wheel vehicle crashes/year/crossroad	0.23	0.13
Crashes to 2-wheel vehicles per 100 crashes	35.0	40.7
Serious crashes/year/crossroad	0.14	0.089
Serious crashes to 2-wheel vehicles/year/crossroad	0.06	0.045
Serious crashes/100 crashes	21.9	27.1
Serious crashes to 2-wheel vehicles/100 crashes to a 2-wheel vehicle	27.0	33.3



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More information on these issues:

- Session 5A – 8 AM Tuesday – Roundabout Experience & Practice – Bicycles at Roundabouts**
- Session 7A – 1 PM Tuesday - Pedestrians**

Questions?



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