ROUNDABOUTS: HOW THEY WORK FOR PEDESTRIANS
Roundabouts:
Learning Objectives:

- At the end of this module, you will be able to:
  - Explain why roundabouts reduce crashes
  - Describe the safety benefits for pedestrians and motor vehicles of roundabouts
  - Describe how roundabout safety depends on correct design
Slow speed entry = yield
Slow speed exit
Truck apron
Crosswalk 1 car length back
Lots of deflection = slow speeds throughout
Separated sidewalks direct peds to crosswalks
Slow speed entry = yield
Essential roundabout characteristics
Roundabouts are a type (or subset) of circular intersections

Bottom Line: Not all circular intersections are roundabouts!!
A roundabout is not:

1. A rotary, with large size & high speeds
Problems with Existing Rotary

Kingston NY

- No control of entry
- High speed
- Large diameter (600 ft +)
- High speed weaving here
Rotary Reconstructed to Roundabout

Smaller diameter
(Typically 120 – 250 feet)
A roundabout is not:
2. A Washington DC style circle, with traffic signal controls
A roundabout is not:
3. A traffic-calming mini circle
A roundabout is not:
4. Paris
Before and After Example
Before and After Example

Asheville NC
Advantages for Pedestrians

- Reduced vehicle speeds
- Reduced number of conflict points
- Shorter crossing distances
- Splitter island provides a refuge – ped crosses one direction of traffic at a time
- Crosswalk is placed one car length back
Vehicle-Pedestrian Conflict Points

Conventional Intersection
16 Conflict Points

Roundabout
8 Conflict Points
Roundabout are Safer for All Users

Pedestrian crashes:
- CMF = 0.73 (CRF = 27%)

All crashes:
- Conversion from Two-way stop control:
  - All crashes: CMF = 0.56 (CRF = 44%)
  - Injury crashes: CMF = 0.18 (CRF = 82%)
- Conversion from signal control:
  - All crashes: CMF = 0.52 (CRF = 48%)
  - Injury crashes: CMF = 0.22 (CRF = 78%)
Observational Pedestrian Safety Findings

Figure 59. Pedestrian crossing behaviors when a vehicle was present and the crossing began on the entry side.

Figure 60. Pedestrian crossing behaviors when a vehicle was present and the crossing began on the exit side.
Observational Pedestrian Safety Findings

Figure 62. Yielding behavior of motorists when the pedestrian crossing begins on the entry side.

Figure 63. Yielding behavior of motorists when the pedestrian crossing begins on the exit side.
Pedestrian Movements at Roundabouts

- Splitter Island
- Stop For Pedestrians
- Look To The Left
- Look Towards Entry Lane
- Stop For Pedestrians
- Look Towards Roundabout
Narrow entry slows drivers
1. At entry lane

Well defined crossings & splitter islands
2. At exit lane

Well defined crossings & splitter islands
Roundabout near Schools

- Slow speeds improve safety at schools
- There are 100-plus roundabouts at schools in the US
Lighting at Roundabouts

- Center Mounted Lighting:
  - Peds visible only as silhouettes
  - Signs not visible

Study Source: Hasson and Lutkevich
Lighting at Roundabouts

- Approach Mounted Lighting:
  - Peds illuminated
  - Signs illuminated

Study Source: Hasson and Lutkevich
Multi-lane roundabouts have potential for “multiple threat” and higher speeds
Drivers may take a straighter, faster path on entry and exit, resulting in higher speeds – lane markings are recommended to minimize this.
Roundabout concerns for peds with vision impairments:

- Circulating traffic masks the sound cues used to identify gaps and masks the sound of yielding vehicles
- Problems are much worse at multi-lane roundabouts
Possible Mitigation Measures for Blind Pedestrians at Multi-Lane Roundabouts

- Public Right-of-Way Accessibility Guidelines (PROWAG, proposed rule July 26, 2011) require signals at multi-lane roundabout approaches:
  - Pedestrian Hybrid Beacon (HAWK)
  - Regular Red-Yellow-Green Signal

- Research — other solutions may work:
  - Raised Crosswalk
  - Rectangular Rapid Flash Beacon
    - Ped signal may rest in dark (optional use by peds)
Pedestrian Hybrid Beacon at Two-lane Roundabout
Pedestrian Signal at Roundabout with Heavy Pedestrian and Vehicle Volumes

Signalized Pedestrian Crossing

Spring Break Statistics (2000)
- 8,000 peds/day
- 58,000 vehicles/day
Raised Crosswalk at Two-lane Roundabout
Rectangular Rapid Flash Beacon at Two-lane Roundabout

8-32 Olympia WA
Roundabout: Learning Outcomes

- You should now be able to:
  - Explain why roundabouts reduce crashes
  - Describe the safety benefits for pedestrians and motor vehicles of roundabouts
  - Describe how roundabout safety depends on correct design
Questions?