

Common Roundabout Challenges

2010 Traffic and Safety Summit

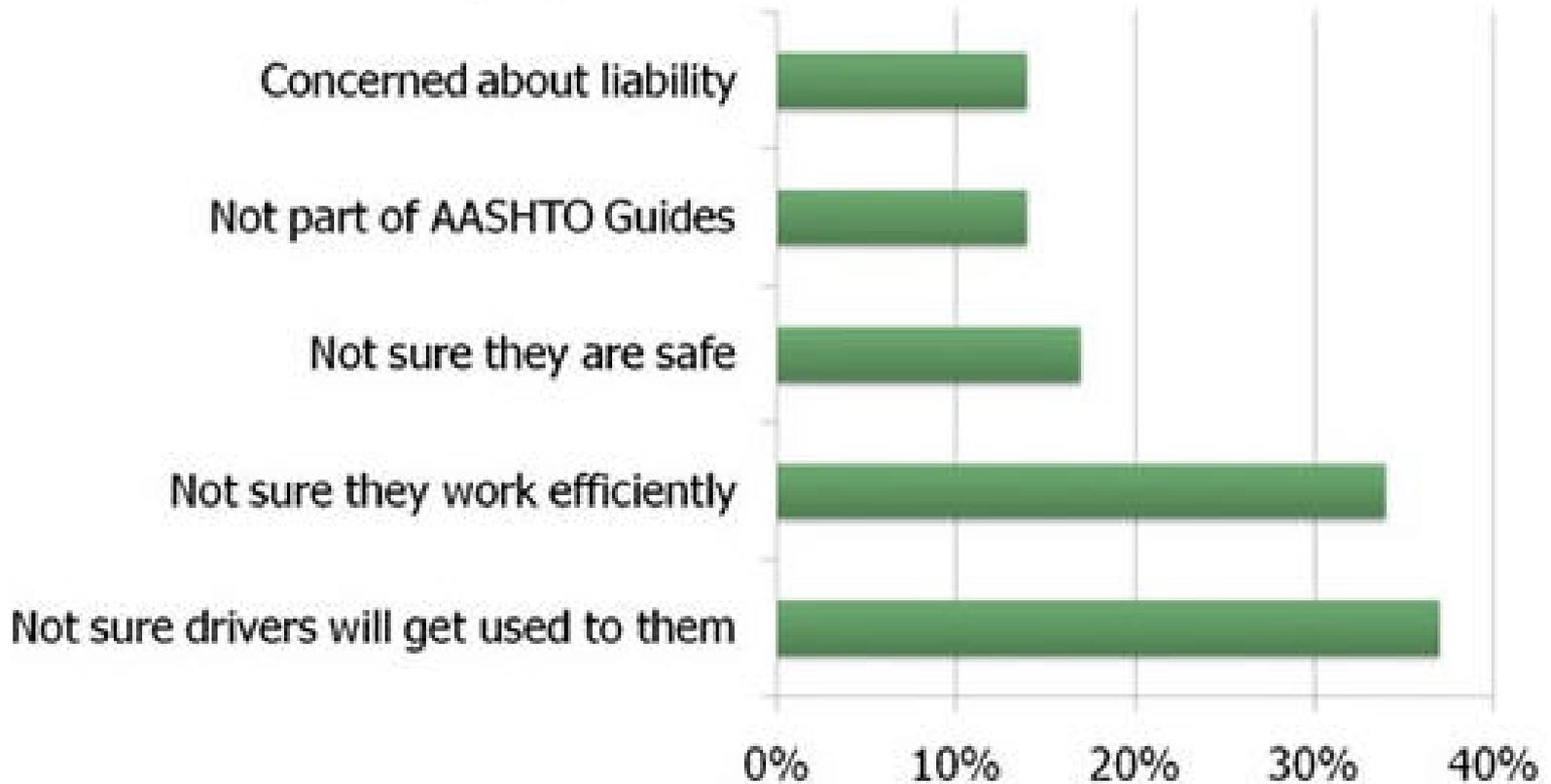
Jason Ealy

Geometrics and Operations Unit

General Challenges

■ Public Opposition

Reasons Why Agencies Have Not Built Roundabouts



Design Challenges

■ 'Cookie Cutter' Design



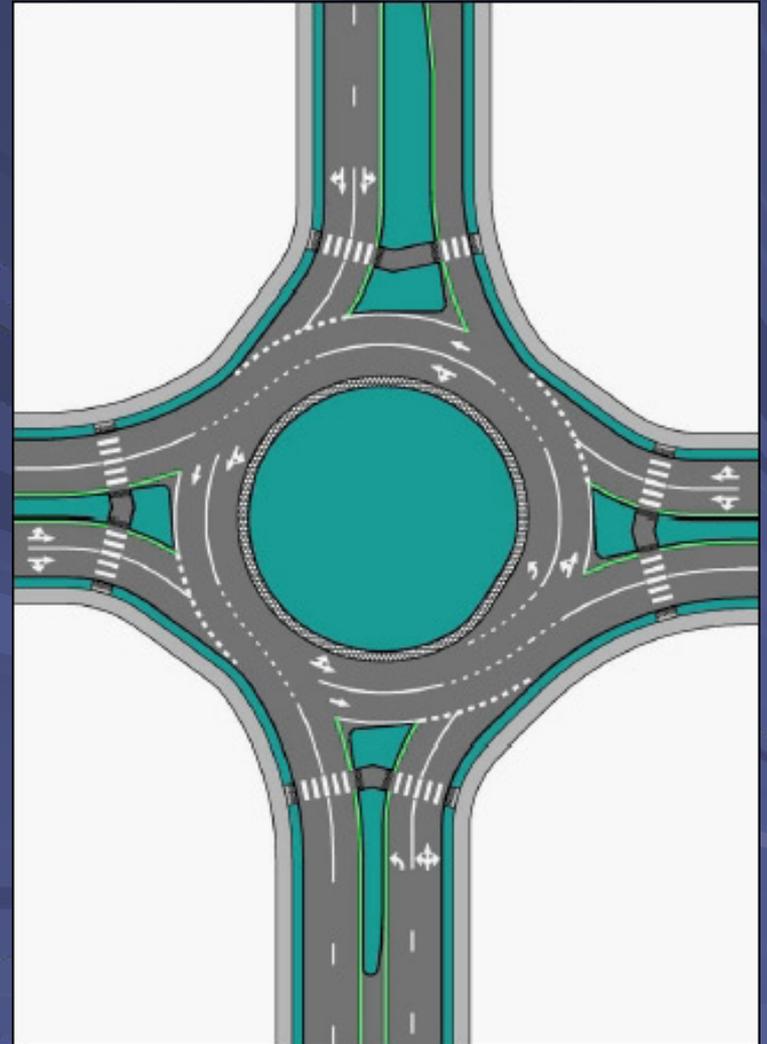
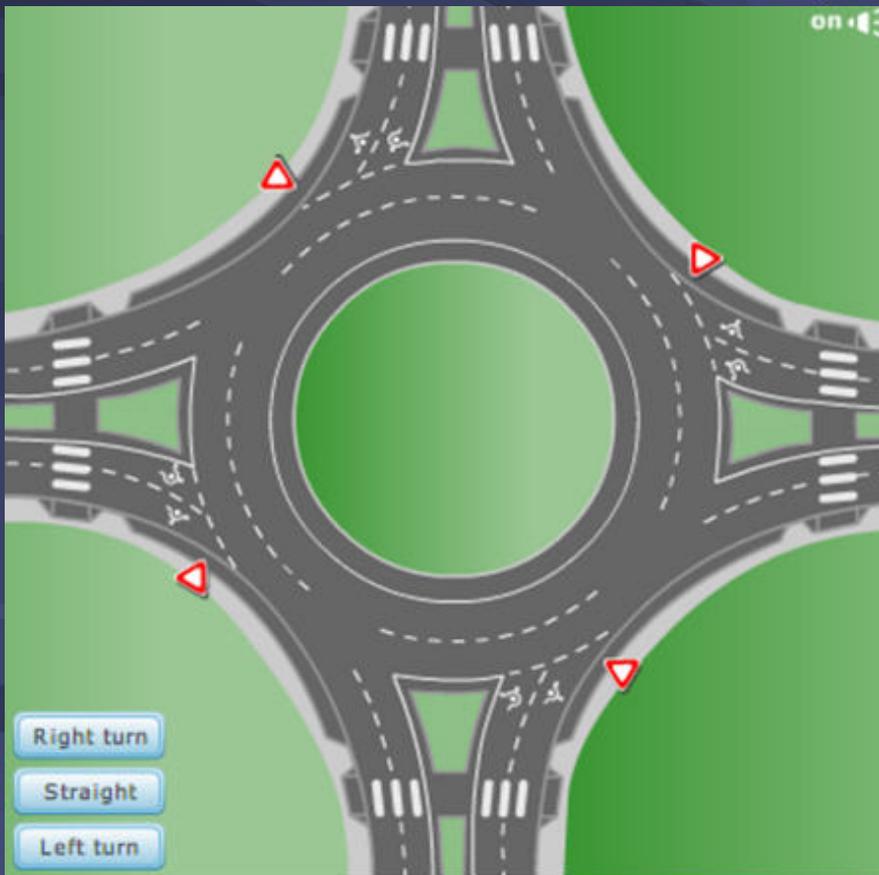
Design Challenges

■ Over Design



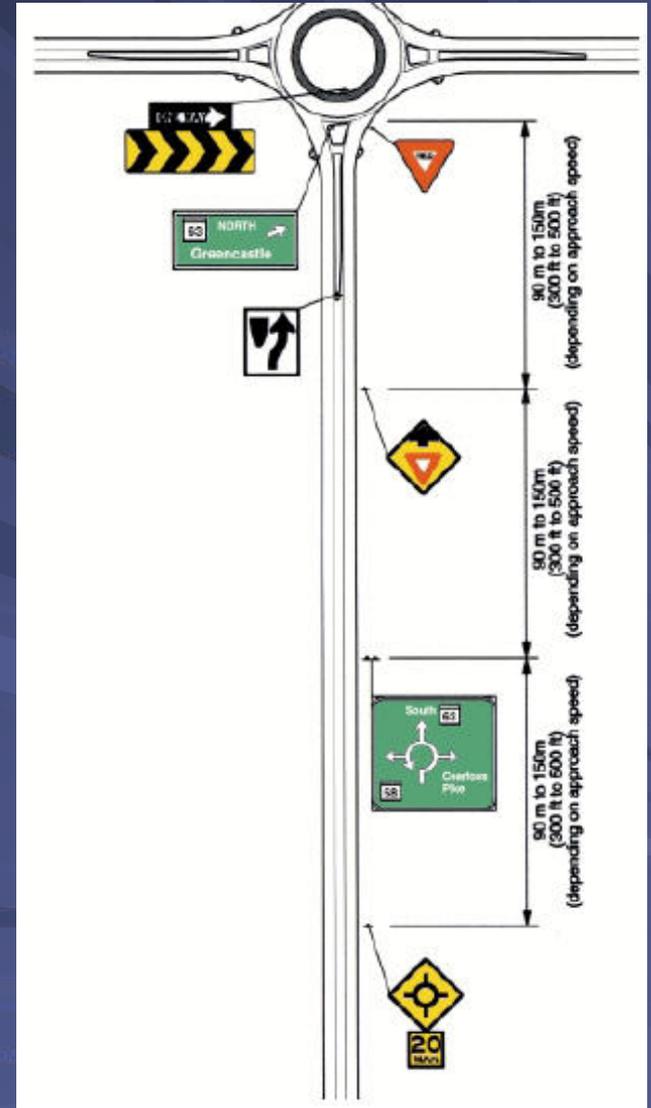
Design Challenges

■ Pavement Markings



Design Challenges

■ Signs



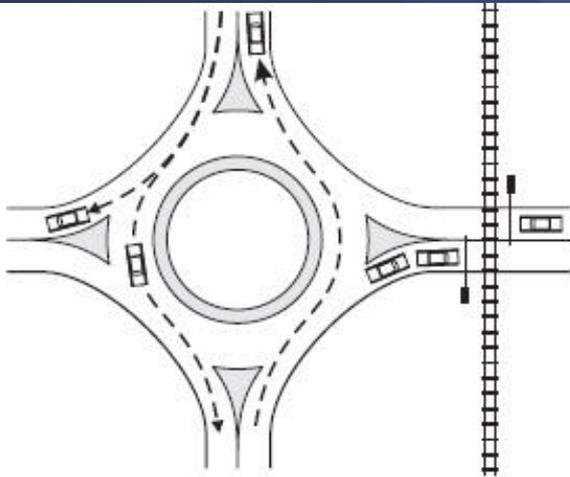
Design Challenges

- Too Much Visual Clutter



Signal Challenges

- Nearby Signals
- Railroads (queuing)



(a) Closure only at rail crossing

Signal Challenges

- Signal Progression



Pedestrian Challenges

■ Peds



Pedestrian Challenges

■ Bi



Operational Challenges

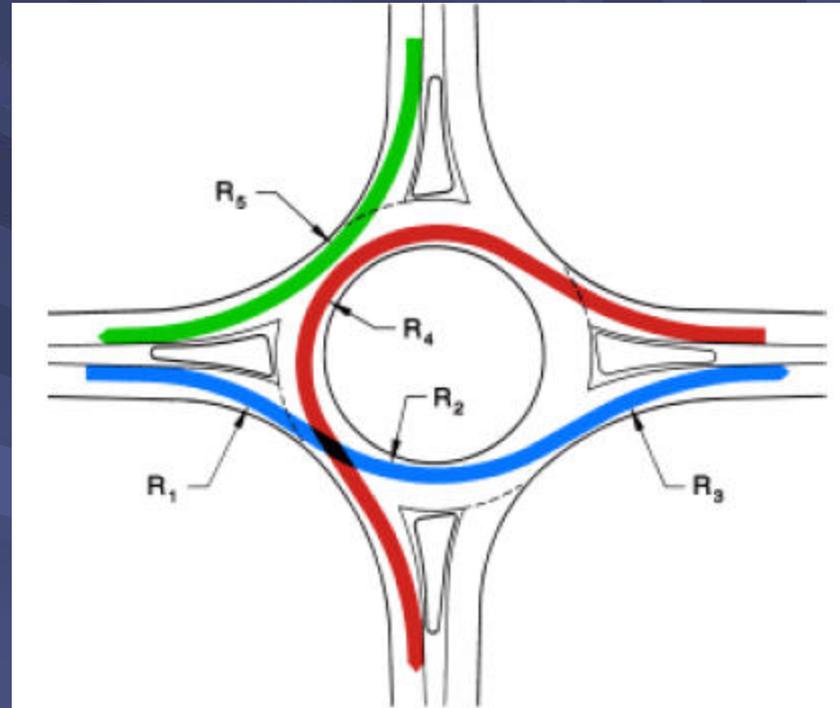
- Unbalanced Flows
- Heavy Through Volumes



Operational Challenges

- Inconsistent Circulatory Roadway Speeds

R1 vs. R4 <12 mph



Operational Challenges

■ Lighting



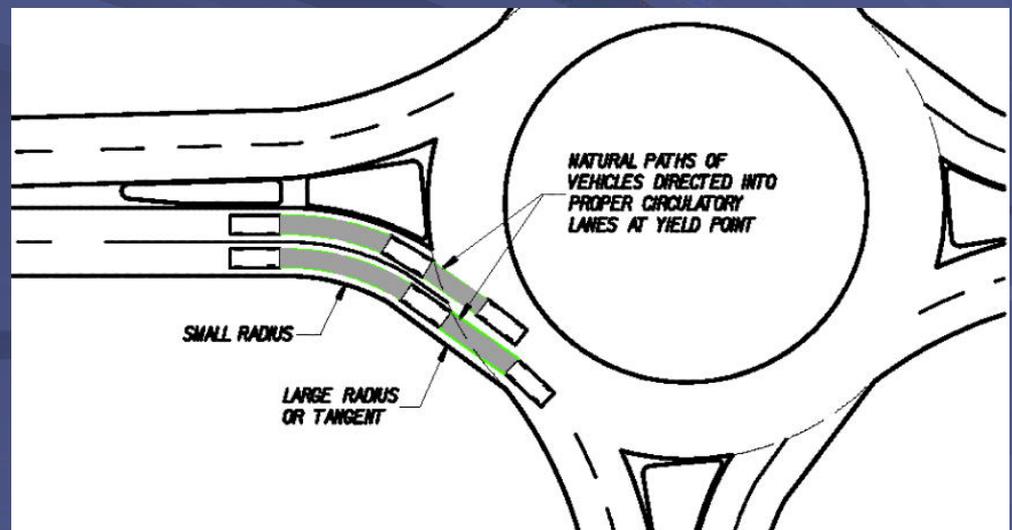
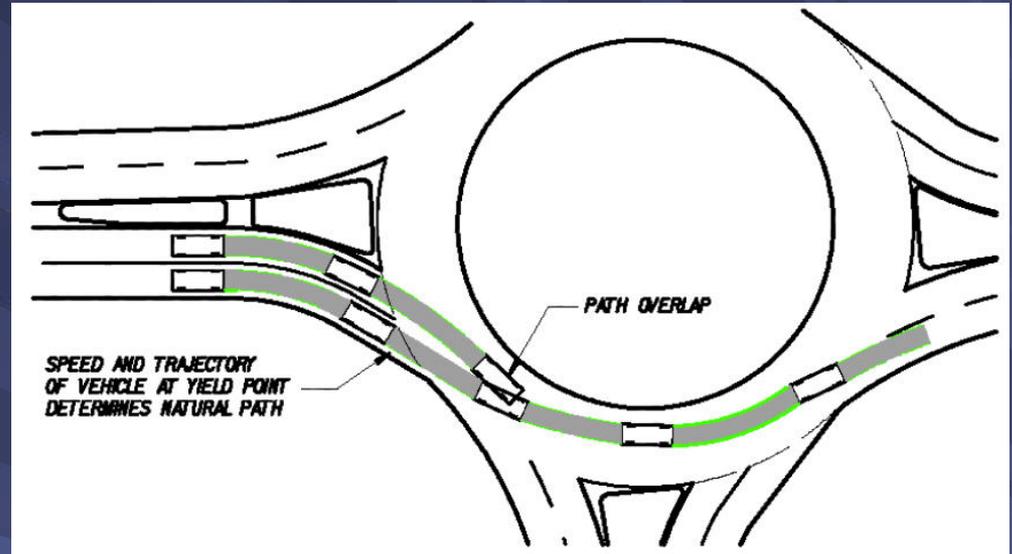
Geometric Challenges

- Nearby Drives and Lane Drops



Geometric Challenges

■ Path Overlap



Geometric Challenges

■ Grades (>4%)



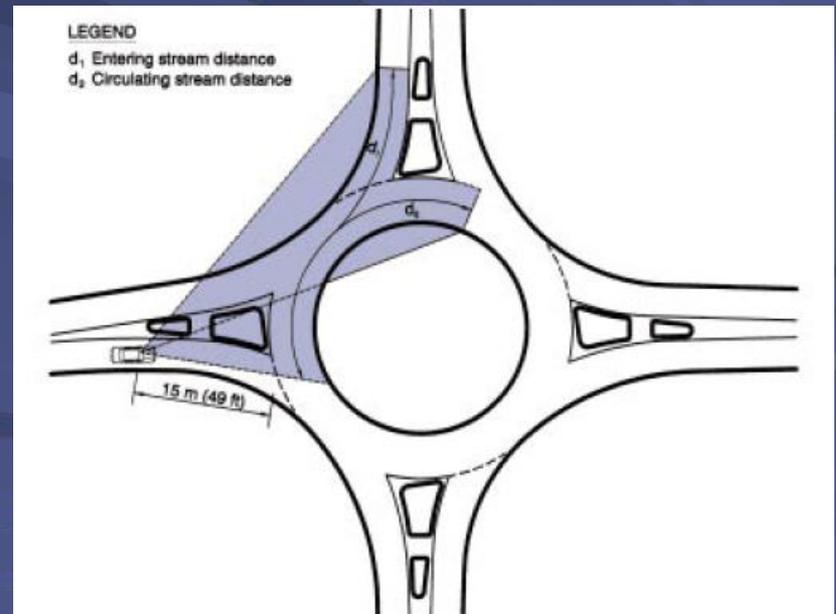
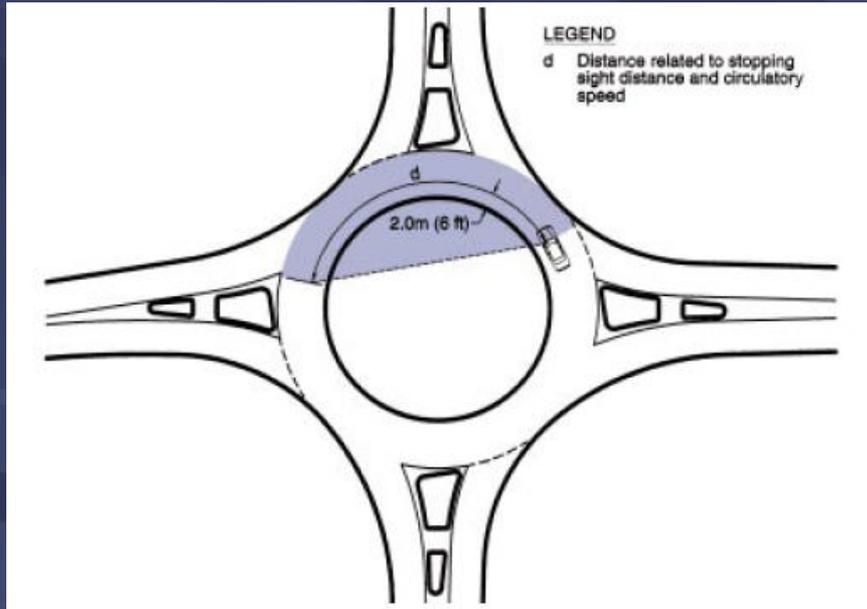
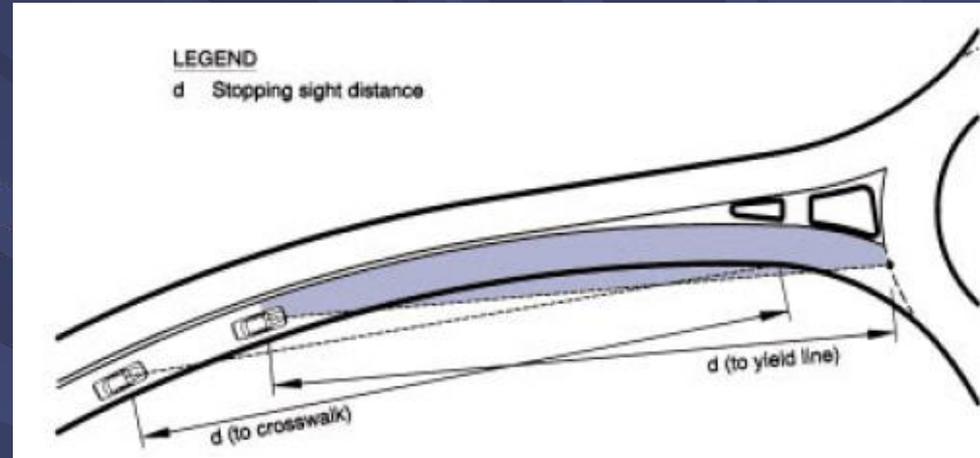
Geometric Challenges

- Trucks
- Appropriate Design Vehicle



Geometric Challenges

■ Unrestricted Sight Distance



Geometric Challenges

■ Pedestrian Attractants



Capacity Analysis

- Empirical
 - RODEL
 - ARCADY

- Gap Acceptance
 - SIDRA
 - Synchro
 - HCS
 - VISSIM

Study Requirements

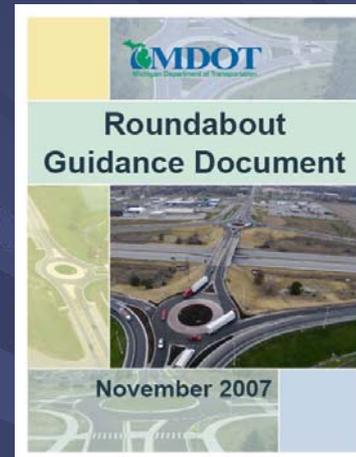
- Peak Hour Volumes
- Projected 20 yr Volumes
- Design Vehicle
- Truck Percentages
- Lane Configuration
- Crash Data
- Nearby Constraints (ROW, Utilities, Structures, etc.)
- Planned or Existing Ped/ Bicycle Facilities

Plan Requirements

- Inscribed Circle Diameter
- Entry Width
- Entry Radius
- Entry Angle
- Flare Length
- Half Width
- Fastest Path Speeds
- Central Island Width
- Splitter Island Width
- Circulating Roadway Width
- Exit Width
- Exit Radius
- Circulating Roadway Cross Slope

Further Guidance

- MDOT Roundabout Guide



- FHWA Guide

