



Pedestrian Access to Modern Roundabouts

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FHWA – Roundabout: An Informational Guide (2000)

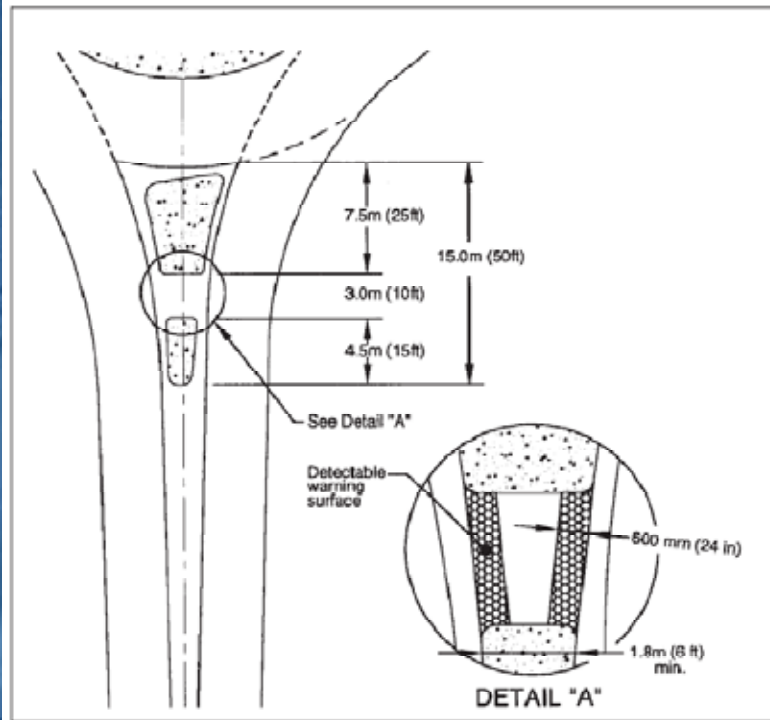
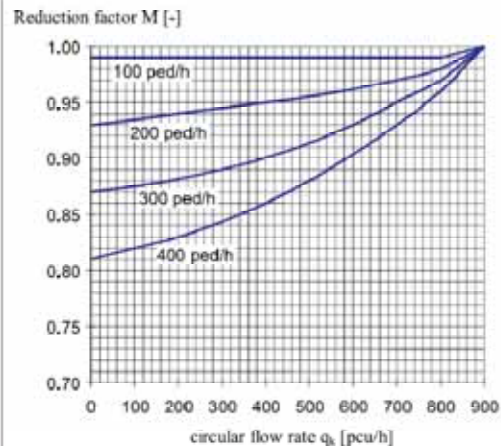


Exhibit 4-7. Capacity reduction factor M for a single-lane roundabout assuming pedestrian priority.

The effects of conflicting pedestrians on approach capacity decrease as conflicting vehicular volumes increase, as entering vehicles become more likely to have to stop regardless of whether pedestrians are present.



- “Pedestrian crossing locations must balance pedestrian **convenience**, pedestrian **safety**, and roundabout **operations**.” (Section 6.3.7)

- Vehicle Storage Downstream of Crosswalk

- Low Vehicle Speeds at Crossings (small entry & exit radii)

- Splitter Islands for Pedestrian Refuge

- Detectable warning surfaces at crosswalks

- Reduction in Vehicle Capacity from Conflicting Pedestrian Volume

- No Pedestrian Capacity Procedure

- No Discussion of Signalized Crossings

NCHRP 3-65:

Roundabouts in the United States

- Purpose: Updated Capacity Models for Vehicle Traffic at US Roundabouts
- Analyzed Ped./Bike observations for yielding and gap acceptance behavior
 - ⇒ 17% crossing outside of crosswalk (12% at 2-lane RBTs)
 - ⇒ 38% to 85% Yielding (Exit 2-lane vs. Entry 1-lane)
 - ⇒ Frequent ‘running’ behavior on exit side
 - ⇒ 4 conflicts in 769 observations (0.5%)
- Not enough data for pedestrian gap acceptance analysis
- No pedestrian capacity procedure



Crossing Challenges for Blind Pedestrians



- **The Crossing Task**

- Finding the Crosswalk
- Aligning to Cross
- Deciding when it is safe to cross
- Maintaining Alignment during crossing

- **Challenges at RBTs**

- Uninterrupted Flow (no signal)
- Unassisted Crossing (no signal)
- Potentially High Speeds
- Ambient Noise
- Non-straight geometry (vehicle trajectories)

Addressing the Access Problem

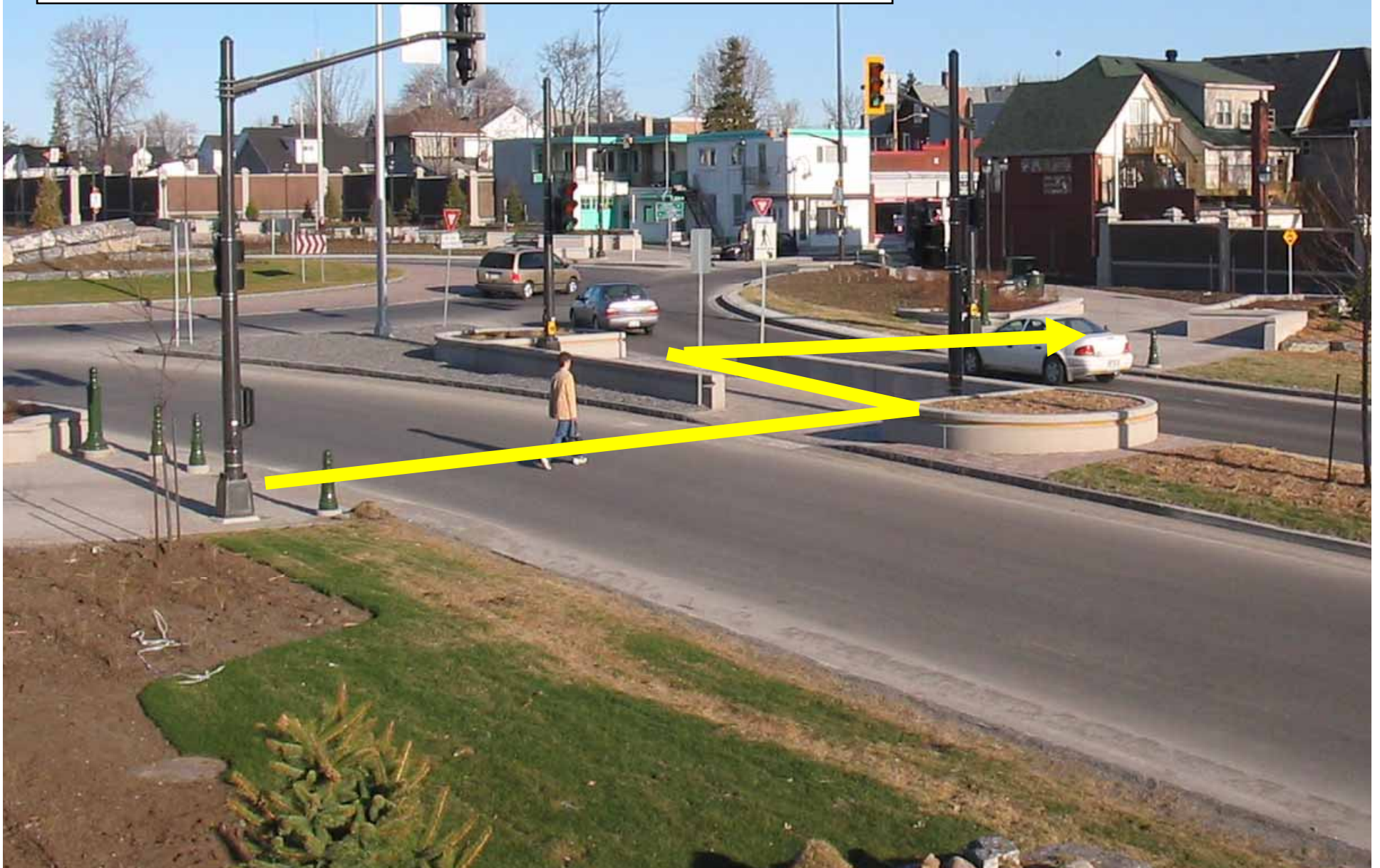
- US Access Board: Revised Draft Guidelines for Accessible Public Rights-of-Way
 - ⇒ *R305.6.2 Signals. At roundabouts with multi-lane crossings, a pedestrian activated signal complying with R306 shall be provided for each segment of each crosswalk, including the splitter island.*
- NCHRP 3-78 investigates crossing treatments
 - ⇒ Increasing Driver Awareness
 - ⇒ Promoting Driver Yielding
 - ⇒ Amplifying Vehicle Sounds
 - ⇒ Slowing Approaching Vehicles
 - ⇒ Interrupting Traffic Flow

Proposed Treatments to be evaluated in NCHRP 3-78: Ped.-Actuated Beacons, Noise Strips, HAWK Signal, and Raised Crosswalk



Visualizations by Tom Fisher, NYDOT

Two-Lane Roundabout in Gatineau, Canada
with 'Zig-Zag' Signalized Crossing



Roundabout in Bad Aibling, Germany with
Ped./Bike Tunnel and 'Distal' Crosswalks



Some Links of Interest

- *Review of Literature Relevant to Roundabout Signalization to Provide Pedestrian Accessibility* (Inman & Davis, 2007)
 - <http://www.access-board.gov/research/roundabouts-signals/report.pdf>
- *Pedestrian Access to Modern Roundabouts* (Access Board Bulletin)
 - <http://www.access-board.gov/research/roundabouts/bulletin.htm>
- *Revised Draft Guidelines for Accessible Public Rights-of-Way* (Access Board, 2005)
 - <http://www.access-board.gov/prowac/draft.htm>
- NCHRP Report 572: *Roundabouts in the United States* (2007)
 - http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_572.pdf
 - http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w94.pdf
- NCHRP Report 562: *Improving Pedestrian Safety at Unsignalized Crossings* (2006)
 - http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_562.pdf
 - http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w91.pdf



Contact and Future Presentations

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- TRB Human Factors Workshop - G:
 - ⇒ *Roundabouts: Shared Use by Pedestrians and Drivers*
 - ⇒ Sunday, January 13, 9:00am-5:00pm
- National Roundabout Conference
 - ⇒ Kansas City, May 18-21, 2008