

Costs and Effectiveness of Roundabout Accessibility Crossing Treatments

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This poster summarizes Appendix B of NCHRP Report 834: *Crossing Solutions at Roundabouts and Channelized Turn Lanes for Pedestrians with Vision Disabilities: A Guidebook*. This report was prepared under **NCHRP Project 3-78b**. The author thanks the other members of the project team: **Kittelso & Associates, Inc.** — Bastian Schroeder, Lee Rodegerdts, and Ed Myers; **Institute for Transportation Research and Education, North Carolina State University** — Nagui Roupail, Christopher Cunningham, Katy Salamati, Sarah Searcy, Sarah O’Brien, Jeff Chang; and **Accessible Design for the Blind** — Janet Barlow, and Billie Louise (Beezy) Bentzen. — All photos from NCHRP Report 834.

Pedestrian Hybrid Beacon (PHB)



Formerly known as HAWK signals, these devices provide a series of indications to drivers when activated, including a steady red indication.

Effectiveness:
O&M Interventions* (5 sites)

BEFORE	AFTER
1.9% - 9.6%	0.0% - 1.7%

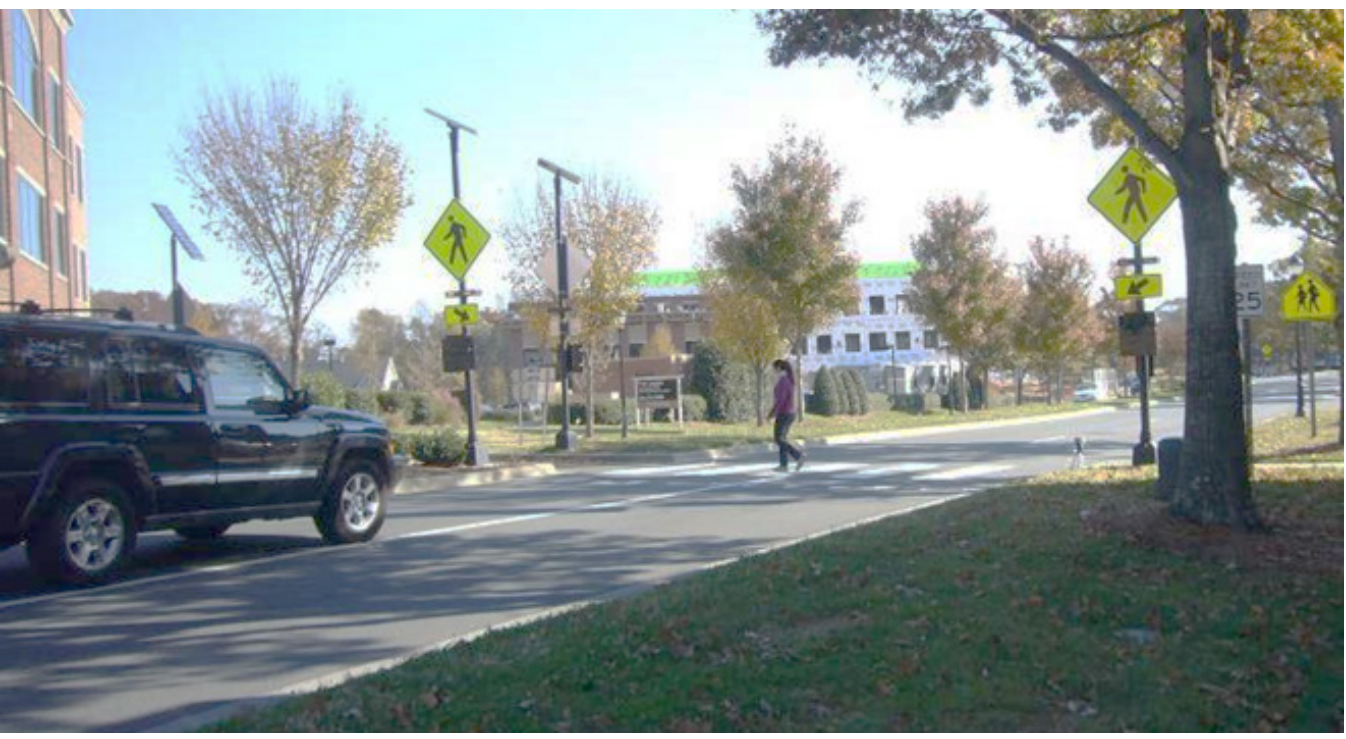
Mix of entries and exits, 2- and 3-lane crossings

Cost:

Infrastructure	Cost Range
PHB with Mast Arms (Initial Leg)	\$98,000 - 133,000
PHB with Mast Arms (Subsequent Legs)	\$59,000 - 80,000
PHB with Pedestal Poles (Initial Leg)	\$68,000 - 93,000
PHB with Pedestal Poles (Subsequent Legs)	\$29,000 - 40,000

Assessment:
Most effective of the five treatments

Rectangular Rapid Flash Beacon (RRFB)



These devices provide an irregular, LED flashing indication when activated.

Effectiveness:
O&M Interventions* (5 sites)

ENTRIES	EXITS
0.0% - 13.6%	0.0% - 21.7%

Only “after” condition studied

Cost:

Infrastructure	Cost Range
RRFB – Direct Power (Initial Leg)	\$31,000 - \$42,000
RRFB– Direct Power (Subsequent Legs)	\$26,000 - \$36,000
RRFB – Solar Power (Any Leg)	\$36,000 - \$49,000

Assessment:
Less effective as speed and/or ambient noise increase

Raised Crosswalk



A crosswalk at the elevation of the sidewalk rather than the elevation of the roadway.

Effectiveness:
O&M Interventions* (2 sites)

BEFORE	AFTER
2.4%	0.0%

One entry and one exit (on same roundabout leg)

Cost:

Infrastructure	Cost Range
Asphalt Raised Crosswalk (One Leg)	\$8,000-\$15,000
Brick Paver Raised Crosswalk (One Leg)	\$16,000-\$39,000

Assessment:
Effective but not appropriate on all roadways

Sound Strips



Transverse raised strips that produced a sound pattern when driven over.

Effectiveness:
Inconclusive tests at 2 channelized turn lane (at signalized intersection) sites. No known roundabout tests to date.

Cost:
Highly dependent on materials used

Assessment:
Less sound produced when vehicles slow, which may limit overall effectiveness

Flashing Beacons (FB)



Typical beacons that flash when activated.

Effectiveness:
O&M interventions* decreased at 1 channelized turn lane (at signalized intersection) site. No known roundabout tests to date.

Cost:

Infrastructure	Cost Range
FB– Direct Power (Initial Leg)	\$34,000 - \$46,000
FB – Direct Power (Subsequent Legs)	\$30,000 - \$40,000
FB – Solar Power (All Legs)	\$25,000 - \$33,000

Assessment:
Less effective than RRFBs at similar cost

* O&M Interventions are events where an Orientation and Mobility Specialist accompanying a blind study participant stopped the blind participant from crossing out of concern the blind participant would be struck by a vehicle.