State Best Practice Policy for Medians

FHWA Safety Program

Introduction

Safety is the number one priority for the U.S. Department of Transportation (USDOT) and it's the agency's policy to provide safe and effective pedestrian accommodation wherever possible. The Federal Highway Administration (FHWA) encourages the use of specific proven pedestrian safety countermeasures that can help achieve local, State and National safety goals. One of those countermeasures is the inclusion of raised medians. FHWA's Safety Office has promoted the evidence-based safety benefits of raised medians (or refuge areas). This flyer highlights three agencies that have implemented policies and plans that promote the inclusion of raised medians: the New York State Department of Transportation (NYSDOT), the Oregon Department of Transportation (ODOT), and the Florida Department of Transportation (FDOT).

All State and local agencies are encouraged to consider raised medians in curbed sections of multi-lane roadways in urban and suburban areas, particularly in areas where there are mixtures of a significant number of pedestrians, high volumes of traffic (more than 12,000 Average Daily Trips (ADT)) and intermediate or high travel speeds.[1]

A **median** is the area between opposing lanes of traffic – a median can either be open (pavement markings only) or they can be channelized (raised medians or islands) to separate various road users.

State DOT Example

NYSDOT

As part of its *Highway Design Manual*, NYSDOT included a chapter on pedestrian facility design to help minimize pedestrian exposure issues as well as to conform to the American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Planning, Design, and Operation of Pedestrian Facilities*.[2] Below is an excerpt from the pedestrian facility design chapter that addresses refuge islands and medians:

Photo Credit: Various sources from New York Sate Dept. of Transportation

A pedestrian refuge island is located in or near a pedestrian crossing to aid and protect pedestrians crossing a roadway. On wide streets, a median refuge can provide a safe location for those who begin crossing too late or are only capable of walking exceptionally slow… Pedestrian refuge islands or medians can also be used at intersections or midblock locations with shorter crossing distances, where a need has been recognized.

Medians that are intended as pedestrian refuge islands must be accessible to all pedestrians, including those with disabilities. The dimensions of a pedestrian refuge island should be determined by the expected pedestrian storage and crosswalk level of service criteria.[3]

U.S. Department of Transportation
Federal Highway Administration

Safe Roads for a Safer Future
Investment in roadway safety saves lives

http://safety.fhwa.dot.gov

State DOT Example

ODOT

Photo Credit: Oregon Dept. of Transportation

In response to the FHWA report, *Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Intersections,*[4] which supported the efficacy of mid-block crossings to enhance pedestrian safety, ODOT developed the *Oregon Bicycle and Pedestrian Plan*[5] which included recommendations for raised medians. In this report, it was found that the presence of a raised median provided significantly greater protection on both marked and unmarked crossings on multi-lane roads compared to no median, reducing pedestrian crashes almost 50% on roadways with 15,000 ADT. Below is an excerpt from the *Oregon Bicycle and Pedestrian Plan:*

> These [raised medians] benefit pedestrians on two-way, multilane streets: it takes much longer to cross four lanes of traffic than two. Where raised medians are used for access management, they should be constructed so they provide a pedestrian refuge. Where it is not possible to provide a continuous raised median, island refuges can be created between intersections and other accesses.
>
> These should be located across from high pedestrian generators such as schools, park entrances, libraries, parking lots, etc. In most instances, the width of the raised median is the width of the center turn-lane, minus the necessary shy distance on each side. Ideally, raised medians should be constructed with a smooth, traversable surface, such as brick pavers. If a median is landscaped, the plants should be low enough so they do not obstruct visibility, and spaced far enough apart to allow passage by pedestrians.[6]

State DOT Example

FDOT

In response to research conducted on access management by the University of Florida[7] and Georgia DOT (GDOT)[8], FDOT promoted the use of raised medians. The University of Florida study showed that in an evaluation of urban multilane highways in Florida, the crash rates where there were restrictive medians was 25% lower than those with center turn lanes. The GDOT study confirmed the safety advantage of raised medians over two-way left turn lanes – it reviewed crash statistics for all of the divided highways on the State Highway System and found that overall (intersections plus mid-block locations) raised medians had 78 percent fewer pedestrian fatalities per 100 miles of road.[9] Below is an excerpt from the FDOT *Multilane Facility Median Policy*:

> All multilane facilities shall be designed with a raised or restrictive median except four-lane sections with design speeds of 40 mph or less. Facilities having design speeds of 40 mph or less are to include sections of raised or restrictive median for enhancing vehicular and pedestrian safety, improving traffic efficiency, and attainment of the standards of the Access Management Classification of that highway system.[10]

Photo Credit: Florida Dept. of Transportation

Overcoming Implementation Challenges

The implementation of these policies has encountered some resistance for reasons ranging from budget concerns to maintenance in the field. Each state has addressed these concerns in order to facilitate the inclusion of medians in roadway projects.

In Florida, as the policy was being created, there was concern that projects already in the pipeline would be impacted. The decision was made to implement the policy on future projects, not projects already in design.

In New York, concern over properly maintaining the roadways in winter with the newly installed medians was raised. The DOT addressed the concern by training and educating the snow plow drivers to ensure they felt confident in their ability to adapt to the new roadway design.

Benefits of Medians

FHWA is encouraging the addition of medians and refuge islands because they can increase both pedestrian and motor vehicle safety, helping to solve multiple challenges faced by DOTs. They do this by allowing pedestrians to cross one direction of traffic at a time, often allowing them to focus on just two to three lanes rather than having to anticipate traffic for the entire width of the road. Medians also provide a space to install improved lighting at pedestrian crossing locations. Improved lighting has been shown to reduce nighttime pedestrian fatalities at crossings by 78 percent.[11]

Raised medians provide additional benefits above and beyond reducing pedestrian crashes, including the following:

- Reducing motor vehicle crashes by 15 percent[12]
- Decreasing delays (>30%) for motorists
- Increasing capacity (>30%) of roadways[13]
- Reducing vehicle speeds on the roadway[14]
- Providing space for landscaping within the right-of-way

Endnotes

1 U.S. Department of Transportation, Federal Highway Administration, Guidance Memorandum on Consideration and Implementation of Proven Safety Countermeasures (Washington, DC: July 2008). http://safety.fhwa.dot.gov/policy/memo071008/

2 American Association of State Highway and Transportation Officials, AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, 5th Ed. (Washington, DC: 2004). https://bookstore.transportation.org/Item_details.aspx?id=119

3 New York State Department of Transportation, "18.7.6 Pedestrian Refuge Islands and Medians," in Highway Design Manual (Albany, NY: 2006) p. 18-49. https://www.nysdot.gov/divisions/engineering/design/dqab/hdm/hdm-repository/chapt_18.pdf

4 U.S. Department of Transportation, Federal Highway Administration, Safety Effects of Marked versus Unmarked Crosswalks at Uncontrolled Intersections, FHWA-HRT-04-100 (Washington, DC: 2005). http://www.fhwa.dot.gov/publications/research/safety/04100/

5 Oregon Department of Transportation, "Part 2: Facility Design and Standards, Section II.5.C.2.a Raised Medians," in 1995 Oregon Bicycle and Pedestrian Plan, (Salem, OR: 1995) p. 108. http://www.oregon.gov/ODOT/HWY/BIKEPED/docs/bp_plan_2_ii.pdf

6 Ibid.

7 G. Long, G. Cheng-Tin, and B. Morrison, Safety Impacts of Selected Median and Access Design Features (Gainsville, FL: University of Florida, 1993).

8 P. Parsonson, M. Waters III, and J. Fincher, "Georgia Study Confirms the Continuing Safety Advantage of Raised Medians Over Two-Way Left-Turn Lanes" (presented at the Fourth National Conference on Access Management, Portland, Oregon, August 13-16, 2000). http://www.accessmanagement.info/pdf/AM00PAPR.pdf

9 Ibid.

10 Florida Department of Transportation, "Median Opening Placement Principles," in Median Handbook Interim Version, pp. 26-28. (Tallahassee, FL: 2003). See also, Florida Department of Transportation, 2. Design Geometrics and Criteria," in Plans Preparation Manual, Volume 1," (Tallahassee, FL: 2006) pp.2-19-2-20. http://www.dot.state.fl.us/planning/systems/sm/accman/pdfs/mhb06b.pdf

11 U.S. Department of Transportation, Federal Highway Administration, Desktop Reference for Crash Reduction Factors, FHWA-SA-07-015 (Washington, DC, September 2007).

12 Ibid.

13 Ibid.

14 King, M. "Pedestrian Safety through a Raised Median and Redesigned Intersections," (paper presented at the TRB 2003 Annual Meeting held in Washington, DC, 2004).

For more information and resources on pedestrian and bicycle safety, please visit:

http://safety.fhwa.dot.gov/ped_bike/

FHWA-SA-11-019