

VISION ZERO SAFETY PROCEDURES

A research team with the University of North Carolina Highway Safety Research Center developed the following safety procedures for professionals and stakeholders invested in implementing Vision Zero in their communities. This resource presents descriptions of safety countermeasures and approaches and offers tips for integrating each measure into practice. It is worth noting that the procedures presented here satisfy two criteria:

- 1. they have been shown to significantly improve road user safety in well-designed studies; and**
- 2. transportation professionals in North Carolina consider them to be both politically and socially viable.**

This means that although some safety countermeasures are effective at improving road users' safety, they are not politically tenable. For example, automated speed enforcement (ASE) has been shown to reduce crashes by 30%ⁱ, yet ASE is not included in this resource, as it has been known to incite significant public pushback. Instead, the Vision Zero Safety Procedures provided here are both politically and technically effective means of improving road user safety.

LIGHTING AT PEDESTRIAN CROSSINGS

Description Pedestrian-level street lighting at crossing locations focuses light onto the sidewalk rather than onto the roadway to illuminate pedestrians entering the crosswalk. Though no crash modification factors are yet available for lighting at pedestrian crossings, such lighting has been shown to enhance visibility and driver yielding in some applications.ⁱⁱ

Considerations for integrating with other processes Pedestrian-focused lighting should be integrated into any process involving roadway lighting, and where pedestrians tend to cross the street.

Resources [PEDSAFE Lighting and Illumination Evaluation of Pedestrian-Related Roadway Measures](#)



PHOTO: PEDBIKEIMAGES.ORG / DAN BURDEN

IMPROVING SIGHT DISTANCE AT PEDESTRIAN CROSSINGS

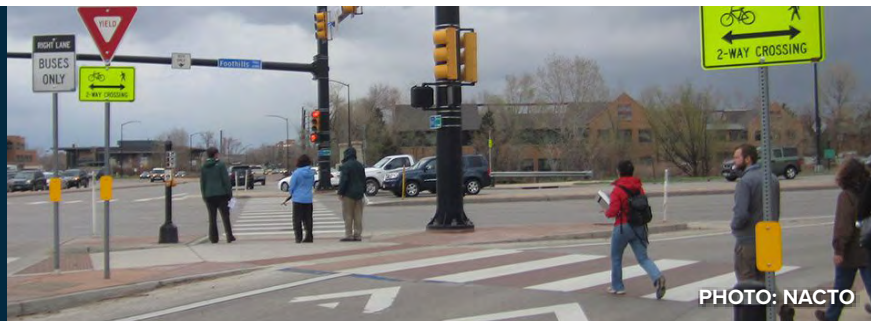


PHOTO: NACTO

Description Sight distance at pedestrian crossings refers to the amount of roadway which is visible to a motor vehicle or a pedestrian at a pedestrian crossing location. In general, curves and other vertical objects (e.g., buildings, trees, street art) can block drivers' and pedestrians' view of one another. In these cases, obstructions should either be removed, or pedestrians' crossing distances should be shortened, typically with the use of median refuge islands, raised crossings, or other traffic calming measures.ⁱⁱⁱ

Considerations for integrating with other processes It is important to assess sight distance at intersections and mid-block crossings.

Resources [NACTO Visibility and Sight Distance](#)
[City of Charlotte Sight Distance Policy](#)
[ITE Toolbox on Intersection Safety and Design](#)
[PEDSAFE Improve Sight Distance and Visibility Performance Objective](#)

DIRECT ENGAGEMENT AND OUTREACH



PHOTO: CITY OF CHARLOTTE

Description

Direct community engagement is an essential means of ascertaining the assets and needs of communities while also building trust and mutual understanding. “Direct” refers to in-person, bi-directional means of communicating around road safety conditions, concerns, and aspirations. Information gathered using direct community engagement methods should be integrated into planning processes and progress updates.^{iv}

Considerations for integrating with other processes

Authentic public outreach should be integrated at all stages of transportation planning processes, from goal setting and visioning, to planning and design, to construction and close out, and to reporting on progress made toward realizing safety goals.

Resources

[Strategies for Engaging Communities](#)
[SFMTA Public Outreach Notification Standards](#)
[NCHRP Report 710 Practical Approaches for Involving Traditionally Underserved Populations in Transportation Decisionmaking](#)

COLLABORATION WITH OTHER AGENCIES



PHOTO: CITY OF CHARLOTTE

Description

True collaboration involves working locally or regionally with partner agencies to align goals so that all partners’ work supports one another to efficiently and effectively improve road user safety. Municipal agencies bring together diverse partners, which can include those less commonly at the table during transportation planning (e.g., land use planners, public health departments, school districts). Conveners provide information on traffic safety, levels of biking, walking, and transit use, and planned infrastructure improvements that support street safety. Through mapping activities, partner agencies present their agencies’ goals and processes to one another and identify places of interagency overlap. The convened agencies then work together to align their goals and processes to collaboratively improve road user safety.^v

Considerations for integrating with other processes

- Robust interagency collaboration is the first step in implementing systemic safety in a community. It is also a recurring step, something which should take place on a regular basis—i.e., monthly or quarterly.
- Collaboration can occur around broader long-term goals, or as agencies are working toward more targeted approaches to improving safety.

Resources

[Guidebook for Communications between Transportation and Public Health Communities](#)
[Collaborating Across Departments to Achieve Vision Zero](#)



PHOTO: PEDBIKEIMAGES.ORG / DAN BURDEN

PROVIDING SAFE PEDESTRIAN CROSSINGS AT TRANSIT STOPS

Description

Providing safe and comfortable pedestrian access to all transit stops can be implemented as community wide policy.

Considerations for integrating with other processes

- Audits of pedestrian crossings at transit stops should be conducted whenever roadway and pedestrian facility improvements are planned. Transit stop pedestrian safety should be considered in relation to intersections, mid-block crossing locations and other roadway conditions. When crossings require walking across more than two travel lanes, median refuge islands should be provided, as they can to reduce vehicle-pedestrians crashes by 30%.^{vi}
- Always consider sight distance at transit crossings, i.e., can drivers and pedestrians see one another from a safe distance?
- Include transit agencies in collaboration and transit users in outreach.

Resources

[PEDSAFE Access to Transit](#)
[FTA Manual on Pedestrian and Bicycle Connections](#)

LEADING PEDESTRIAN INTERVALS (LPIs)

Description

Leading Pedestrian Intervals (LPIs) are pedestrian signals which allow those on foot to get a 'head start' crossing at signalized intersections. The walk signal activates for 3 to 7 seconds before a green light for vehicles. Leading pedestrian intervals (LPIs) can reduce crashes by nearly 60%.^{vii}

Considerations for integrating with other processes

- LPIs can be integrated into any process around signalization in a community, especially in heavy pedestrian areas like downtowns, near schools and college campuses, transit corridors, other commercial areas, and where there are high amounts of right- or left-turning motor vehicle traffic.
- Consider including LPIs with restrictions of right turns on red to avoid conflict during the early pedestrian phase.

Resources

[FHWA Proven Countermeasures - LPIs](#)
[NACTO Leading Pedestrian Intervals](#)

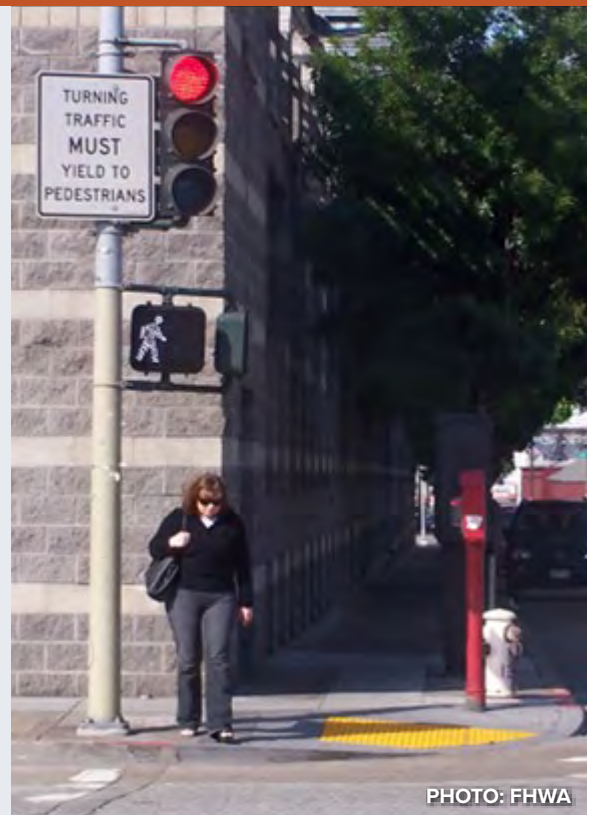


PHOTO: FHWA



TRAFFIC CALMING NEAR SCHOOLS

PHOTO: PEDBIKEIMAGES.ORG / DAN BURDEN

Description

Traffic calming refers to the slowing of motor vehicle speeds via built environment interventions. Traffic calming can be implemented near schools where feasible. Special attention should be placed on where students cross the street to access the school. Raised crossings should be considered in these locations, as they can reduce vehicle-pedestrian crashes by 45%. ^{viii}

Considerations for integrating with other processes

- Changes to the roadway infrastructure near schools can be integrated into maintenance, resurfacing, and planning processes.
- Collaboration should include school districts and other groups affiliated with schools.
- Direct outreach to parent groups and school neighborhoods helps identify specific safety and access needs.

Resources

[Traffic Calming to Slow Vehicle Speeds](#)
[Pedestrian Safety Relative to Traffic-Speed Management](#)
[ITE The Use of Traffic Calming Near Schools](#)

TRAVEL LANE RECONFIGURATION



PHOTO: FHWA

Description

Also called ‘road diets’, or 4 to 3 conversions, a travel lane reconfiguration involves restriping roadways to accommodate multi-modal users. These lane reconfigurations have been shown to reduce traffic crashes by up to 47%. ^{ix}

Considerations for integrating with other processes

- Travel lane reconfigurations should be considered whenever roads are scheduled to be resurfaced and when planning new projects.
- They are most appropriate on roads with (1) fewer than 20,000 vehicles per day, (2) along transit corridors, commercial areas, or near schools with a fair amount of foot traffic, and (3) where bicycling connections can be made.

Resources

[PEDSAFE Lane Reduction](#)
[Pedestrian Safety Relative to Traffic-Speed Management](#)

- i** Novoa, A., Pérez, K., Santamariña-Rubio, E., Marí-Dell’Olmo, M., & Tobías, A. (2009). Effectiveness of speed enforcement through fixed speed cameras: a time series study. *Injury Prevention*, 16, 12-16.
- ii** Bullough, J. D. & Skinner, N.P. (2017). Real-world demonstrations of novel pedestrian crosswalk lighting. *Transportation Research Record* 2661, 62-68.
- iii** Easa, S. M. (2016). Pedestrian crossing sight distance: Lateral clearance guidelines for roadways. *Transportation Research Record*, 2588(1), 32-42. doi:10.3141/2588-04.
- iv** Clinical and Translational Science Awards Consortium, Task Force on the Principles of Community Engagement, Community Engagement Key Function Committee, United States, Centers for Disease Control and Prevention (U.S.), & Agency for Toxic Substances and Disease Registry. (2011). *Principles of community engagement*. (). Washington, D.C.: Dept. of Health & Human Services, National Institutes of Health, Centers for Disease Control and Prevention, Agency for Toxic Substances and Disease Registry, Clinical and Translational Science Awards.
- v** DeGregory, S. T., Chaudhury, N., Kennedy, P., Noyes, P., & Maybank, A. (2016). Community vision and interagency alignment: A community planning process to promote active transportation. *American Journal of Public Health*, 106(4), 654-657. doi:10.2105/AJPH.2015.303024.
- vi** Zegeer, C. et al. (2017). Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments. *Transportation Research Record: Journal of the Transportation Research Board*, 2636, 1–8.
- vii** Fayish, A. C., & Gross, F. (2010). Safety effectiveness of leading pedestrian intervals evaluated by a before–after study with comparison groups. *Transportation Research Record: Journal of the Transportation Research Board*, 2198, 15–22.
- viii** Elvik, R., & Vaa T. (2004). *The handbook of road safety measures*. Elsevier, Oxford: United Kingdom.
- ix** Persaud, B., Lana, B., Lyon, C., & Bhim, R. (2010). Comparison of empirical Bayes and full Bayes approaches for before-after road safety evaluations. *Accident Analysis & Prevention*, 42, 38-43.