15 Schools Near Highway Ramps

Highway ramps are locations where motor vehicles enter or exit a limited-access roadway from a secondary roadway. Ramps are often designed to encourage high-speed, free-flow turning movements and can be a major barrier to providing safe pedestrian and bicycle access along the secondary or local roadway. Other types of roadway approaches that present challenges to pedestrians and bicyclists similar to those posed by ramps include traffic circles, right-turn slip lanes or triangular "pork-chop islands" and "jug handles." The design treatments presented in this chapter can be utilized to address safety hazards associated with ramps as well as other types of roadway links that carry traffic, often at higher speeds, between intersecting roadways.

Common Issues at Highway Ramps

Ramps are in effect intersections that pose threats to pedestrians and cyclists similar to 'at-grade' intersections. They can be dangerous places for pedestrians and bicyclists to travel, especially in places where the motorized traffic travels at high speeds or when the crossing is wide and unprotected. Even highly skilled pedestrians and bicyclists can find that negotiating high-speed, free-flow jug handle locations and ramps is challenging. Less experienced pedestrians and bicyclists, such as children, may face particular difficulty. More than 10% of New Jersey schools are located within 1,000 feet of a highway entrance or exit ramp.



The crosswalks are unmarked and curb ramps absent at this ramp, located one block from an elementary school in Camden. Image: Cambridge Systematics

TERRELL JAMES' LAW

A856, signed into law on January 13, 2008, as P.L. 2007, Chapter 308, prohibits construction of a highway entry or exit ramp within 1,000 feet of a school, grades kindergarten through 12, or construction of a school within 1,000 feet of a highway ramp, unless there is no "feasible or prudent alternative." The regulation is named "Terrell James' Law," in memory of an 8-year-old who was hit and killed by a motor vehicle in 1997 in front of his elementary school which was located near a playground and two highway ramps in Newark, NJ.

Common issues at highway on- and off-ramps include:[2]

1. Poor sight distance often exists due to an acute intersecting angle that leads drivers to focus primarily on other motor vehicle traffic, as well as other factors such as the placement of guide rails, poles and signal boxes and overgrown vegetation.
2. Crosswalks are not usually marked across ramps.
3. Ramp traffic is not controlled, and motorists traveling at high speed are not likely to yield to bicyclists or pedestrians.
4. If the outside lane or shoulder is not wide enough, bicycle facilities are often not provided through an interchange area.
5. Bicyclists may not use the best travel path when navigating through the intersection.
6. Bicyclists must weave through free-flow turning traffic traveling at a much higher speed. This interaction is exacerbated with multi-lane ramps.
7. Sidewalks are sometimes not provided or only provided on one side of a crossroad.
8. Common issues associated with multi-lane free-flow on- and off-ramps:
   - Motor vehicles travel at high speeds, resulting in a large speed differential with pedestrians and bicyclists.
   - With multi-lane ramps and lanes with dual destinations, pedestrians and bicyclists have difficulty judging when a vehicle in the inside lane will be turning or traveling straight.

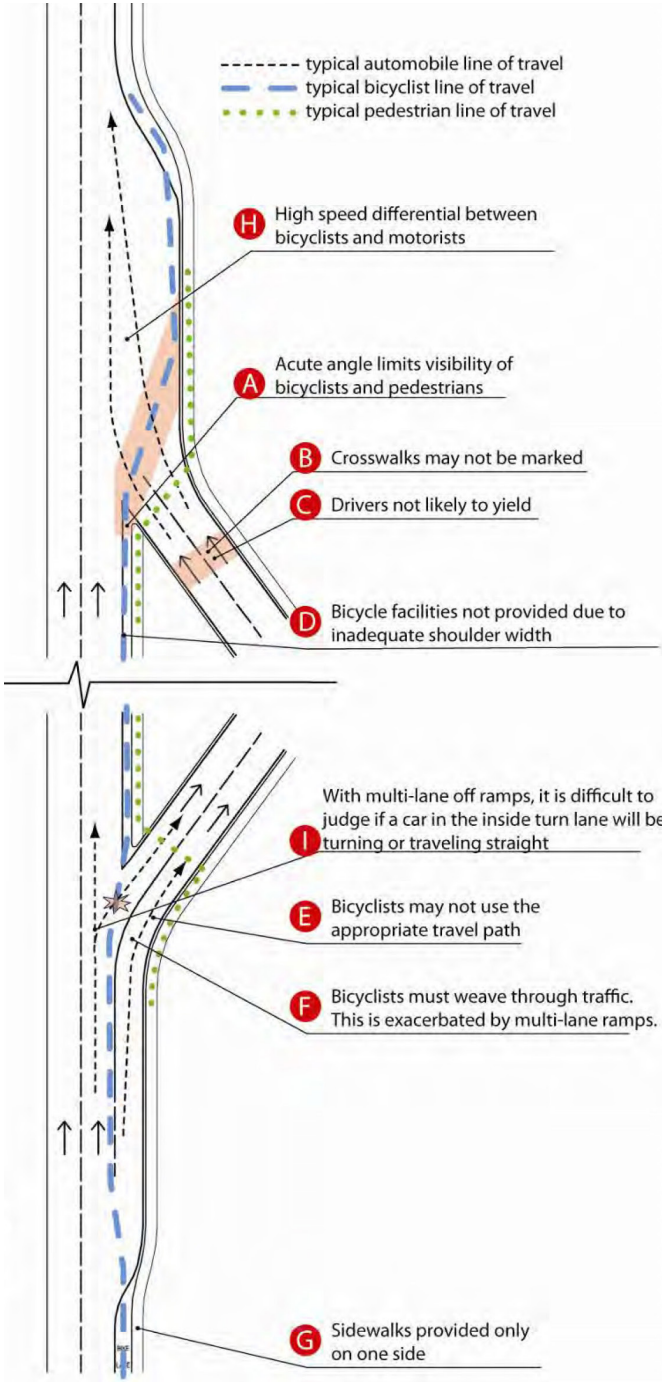


Image: Caltrans

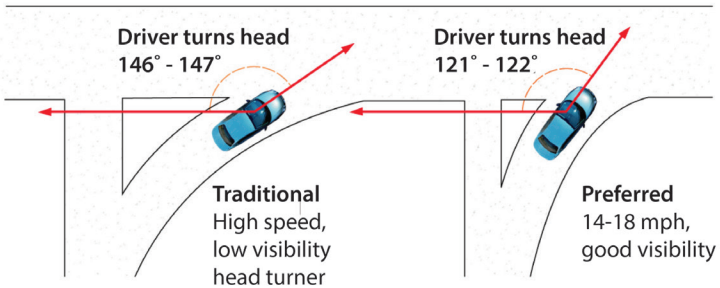
[2] Common issues based on Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians, 2010 by Caltrans. https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/ped-bike/f0018151-intersection-guide-bicycles-pedestrians-a11y.pdf

Design Features that Improve Safety at Highway Ramps

Many of the safety issues in the vicinity of highway ramps and schools in New Jersey can be resolved or lessened by implementing design features that reduce vehicular travel speeds, improve visibility and reduce pedestrian exposure to vehicular traffic.

Methods to reduce vehicular travel speeds include:

- reconfiguring the ramp intersection (eliminating free-flow ramps or modifying the ramps to intersect the crossroad at or close to a 90-degree angle);
- designing the exits for 20 mph at the ramp and street intersection in urban situations;
- adding traffic-calming configurations, such as reduced curb radii and adding landscaping features; and
- adding rumble strips on the off-ramp reminds drivers through sound and physical vibration how fast they are traveling and the need to slow down.



Designing right turn slip lanes with tighter angles reduces vehicular travel speeds and improves visibility.

Design features that improve visibility include:

- striping high-visibility crosswalks where ramps intersect with local roads;
- utilizing reflective or illuminated pavement markings;
- installing pedestrian scale lighting, warning signs and pedestrian-actuated beacons;
- placing a crossing guard at the location during school hours; and
- at traffic signals, restrict right turns on red (RTOR), and implement leading "head start" intervals for pedestrians and bicycles

Reduce potential for conflicts between pedestrians/bicyclists and vehicles:

- constructing physically separated facilities such as sidewalks, raised medians, refuge islands, and off-road paths and trails; and
- reducing the width of the traveled way (narrow lanes, use only single right-turn lanes).



Seattle DOT installed a refuge median and curb extension at this right turn lane which narrows the travel way and forces motorists to slow down. Image: SeattleBikeBlog.com

SPOTLIGHT: SPEEDWAY ELEMENTARY SCHOOL IN NEWARK, NJ

Opened in 2010, the new Speedway Elementary School (named after its former home on Speedway Avenue) was built at the intersection of two busy roads, South Orange Avenue and Oraton Parkway, near ramps for the Garden State Parkway. Initial plans for the school included a pedestrian bridge across South Orange Avenue to help students safely cross to Vailsburg Park for recess, but the cost of the bridge, as well as Green Acres regulations, prevented the bridge from being built.

In the long run, more active traffic-calming measures are the ideal solution. In the short term, parents and members of the Safe Streets, Safe Kids coalition worked with: Speedway administrators to develop a safety plan; with the City to ensure that crossing guards will be present; and with county freeholders on basic infrastructure improvements, such as additional signage and high-visibility crosswalks.



The aerial shows the location of the Speedway School in relation to South Orange Avenue, Oraton Parkway and the Garden State Parkway. Image: Google



High-visibility crosswalks have been installed in the area. In addition, there is no right turn on red (RTOR) allowed from South Orange Avenue to Oraton Parkway. Image: Google Street View



A crossing guard has been stationed at the intersection of South Orange Avenue and Oraton Parkway.



New signs have been installed along South Orange Avenue.

Best Practice: Right Angle Intersections

Unless unusual circumstances exist, in urban and suburban environments, and other areas where significant numbers of pedestrians are expected or desired, free-flow turning movements should be avoided. Instead, right-angled intersections should be constructed where the exit or entrance ramp meets the cross street. The intersection should also be controlled by a stop sign or signal.

These characteristics cause motorists to at least slow down before turning, increasing the likelihood that they will see and stop for pedestrians and bicyclists. If an impact occurs, severity is lessened because of slower vehicular speeds.



This high-speed ramp has been replaced with a 90-degree intersection. Image: California Department of Transportation

In addition, perpendicular intersections usually result in shorter crosswalks, helping reduce the amount of time pedestrians need to cross active travel lanes.

NJDOT Roadway Design Manual

The NJDOT Roadway Design Manual sets the standard for state roadway design, and is frequently adopted as the de facto standard by county and local governments. Section 7 of the Manual addresses interchanges. The guidelines for interchange ramps (Sec. 7.04.5) include recommendations that consider the needs of pedestrians.

In the Ramps subsection titled "Location of Ramp Intersection on Cross Road," the Manual recommends avoiding sharp curves where an off ramp terminal intersects the local street and recommends that it "is often better to provide a near 90 degree intersection with stop sign control."

This recommendation agrees with the best practice to use stop signs or signals at ramp terminals and for ramp terminals to intersect local roads at right angles.

The NJDOT Roadway Design Manual is available at https://dot.nj.gov transportation/eng/documents/RDM/

RESOURCES

AASHTO's 2024, *Guide for the Development of Bicycle Facilities, 5th Edition, and 2004, Guide for the Planning, Design, and Operation of Pedestrian Facilities, 5th Edition*

FHWA, 2023, *Manual on Uniform Traffic Control Devices for Streets and Highways 11th Edition* https://mutcd.fhwa.dot.gov/kno_11th_Edition.htm

FHWA, 2006, *Federal Highway Administration University Course on Bicycle and Pedestrian Transportation.* https://www.fhwa.dot.gov/publications/research/safety/pedbike/05085/

TCRP, 2006, I*mproving Pedestrian Safety at Unsignalized Crossings*, TCRP Report 112/ National Cooperative Highway Research Program (NCHRP) Report 562, https://walkinginfo.org/onlinepubs/nchrp/nchrp_rpt_562.pdf

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