

# SCHOOL ACCESS

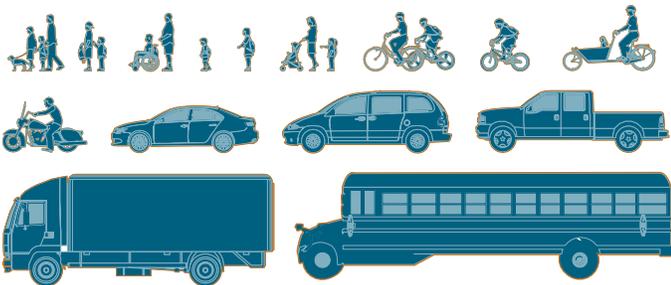


Families and staff traveling to and from school generate significant weekday traffic—whether by foot, bike, school bus, public transit, and private vehicle—for concentrated periods (typically within a 20-minute timeframe). As community gathering spaces, schools may also generate evening and weekend travel.

As multiple travel modes intersect around the school zone, conflicts often occur on the school site and at intersection or driveway crossings nearby. Children walking or biking to school are particularly vulnerable. Designers should give consideration to vehicle speeds, intersection geometry, crossing treatments, and pedestrian and bicycle facilities along key routes to school. Education and enforcement should encourage proper driver, pedestrian, and bicyclist behavior.

Compared to new schools, which are typically located farther from neighborhoods on larger sites, constraints at older schools may limit the the ability to provide separate space for all modes. However, careful planning and design of transportation networks around both older and newer schools can encourage pedestrian and bicycle travel, reduce multimodal conflicts, and make travel more efficient. Encouraging walking and bicycling to school can improve academic performance (**Active Living Research 2015**), community health, and reduce vehicle traffic. In practice, schools with infrastructure improvements prioritizing bicyclists and pedestrians had an 18-percent increase in travel by those modes (**McDonald et al. 2014**).

## COMMON USERS IN CONFLICT AND TYPICAL CRASH TYPES



Poor roadway and intersection design around schools can contribute to crashes involving children walking or biking to school.

## GUIDING PRINCIPLES TO REDUCE CONFLICTS

### SAFETY

Facilities around schools should minimize conflicting movements for different modes and slow speeds to mitigate the impacts of conflicts where they may occur.

### ACCOMMODATION AND COMFORT

The unique needs of children, as well as their parents, who are traveling by different modes to school should be considered.

### COHERENCE

Facilities should clearly delineate a path of travel that is recognizable and highly visible to children.

### PREDICTABILITY

Children's walking and bicycling travel patterns may be less predictable than those of adults, so school areas must be designed to encourage predictable behavior.

### CONTEXT-SENSITIVITY

Children's smaller size should be considered to ensure clear sight lines in any land use, environment, or traffic context.

### EXPERIMENTATION

Design schools to prioritize access by walking and biking and use creative methods to encourage children, as well as staff, to walk or bike.

## DESIGN STRATEGIES

Many school sites are designed primarily for ease of access by motor vehicles. As a result, conflicts often occur on school sites between people who walk or bicycle to school and those who drive. This is a particular problem considering that many school systems do not offer bus service to students who live in close proximity to the school, creating a great need to address walking and bicycling issues along routes that lead to schools, as well as in school zones (streets that directly abut school sites).

### ON-SITE IMPROVEMENTS

To reduce conflicts among modes, separate space should be provided on the school site for pedestrians and bicyclists **1**, bus riders **2**, staff parking **3**, and those picked up or dropped off by private vehicles **4** to safely access school entrances.

### CONSIDERATIONS

- Pedestrian and bicycle routes should be continuous and lead directly to school entrances.
- Conflict points between modes should be minimized by moving bus stops or relocating pickup and dropoff loops to maintain separation.
- Sidewalks on-site should be a minimum of 8 feet wide to accommodate high pedestrian volumes (**FHWA 2006**).
- Shared use paths on-site should be a minimum of 11 feet wide to reduce conflicts between pedestrians and bicyclists. For more information, refer to the design topic on **Shared Use Paths**.
- Driveways should prioritize pedestrians and bicyclists by maintaining the grade of an intersecting sidewalk or shared use path and altering the grade of the motorist's path of travel.
- Driveway flare radii should be minimized to ensure slow vehicle turning speeds and to reduce the exposure time for pedestrians.
- School bus loading zones should be designated clearly with signs and pavement markings. Children should be dropped off curbside, directly onto the sidewalk.
- Private vehicle pickup and dropoff zones should be designated clearly with signs and pavement markings. The pickup and dropoff area should not require children to walk between vehicles or have vehicles straddle a pedestrian crossing.
- Bicycle parking racks **5** should be provided as close as possible to school entrances, without creating conflicts with pedestrians.

## SCHOOL ZONES

School zones may be designated and identified with signs and pavement markings as outlined in the **MUTCD**. School zones may specify a reduced speed limit during school hours or when children are present. Periodic school zone enforcement is a common and effective method for reducing speeds in school zones. (**MUTCD 2009, Sec. 7B.08–7B.10**)

### STREET CROSSINGS

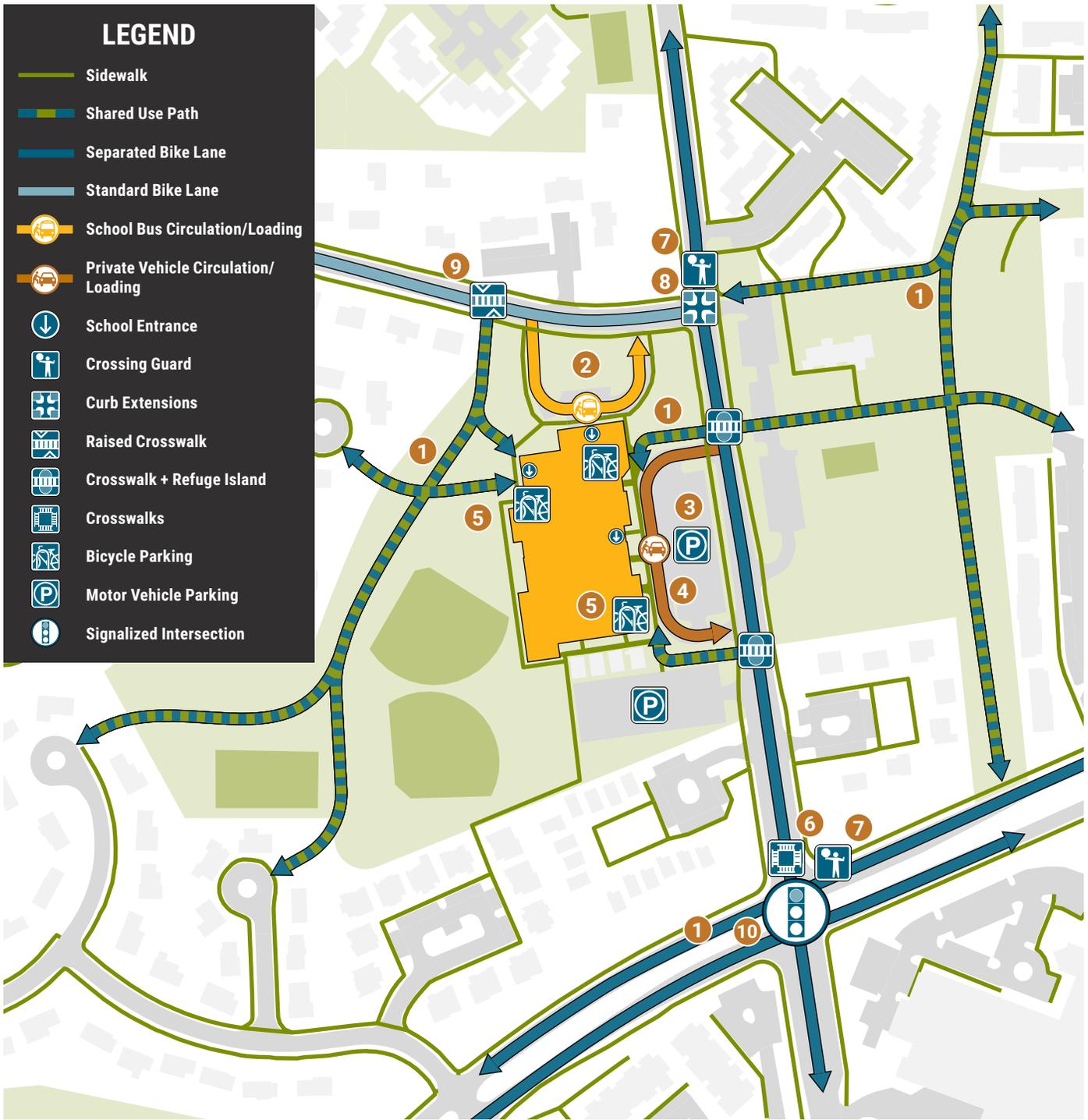
Street crossings, whether controlled or uncontrolled, are the areas of common conflict between modes in school zones.

### CONSIDERATIONS

- Crossings should promote predictable movements and be accessible for all pedestrians. For more information, refer to the design topic on **Accessibility**.
- Crosswalks **6** should be marked with high-visibility ladder-style crosswalks (**MUTCD 2009, Sec. 3B.18**). Consider crossing guards **7** to maximize safety at locations with challenging pedestrian and bicycle conditions.
- Crossing distances should be shortened by narrowing travel lanes, adding a pedestrian crossing island, or adding curb extensions **8** to allow for slower moving children and adults to cross safely.
- Uncontrolled crossings should be identified clearly with well-painted pavement markings, warning signs, or other enhanced treatments such as Rectangular Rapid Flash Beacons or raised crosswalks **9** that alert drivers to the crossing location. For more information, refer to the design topic on **Enhanced Crossing Treatments** and **Midblock Path Intersections**.
- At signalized crossings, signal timings **10** need to accommodate children who tend to walk slower and in large groups. Pedestrian phases should be protected from turning vehicles and set to pedestrian recall, such that the pedestrian phase comes up every cycle. For more information, refer to the design topics on **Turning Vehicles** and **Signalized Intersections**.

## EDUCATION AND OUTREACH

Infrastructure improvements should be supplemented with education to encourage proper behavior by drivers, pedestrians, and bicyclists. Everyone who accesses the school site—students, parents, staff, bus drivers—should receive clear direction on how to access the school campus at arrival and dismissal. When new walking and biking infrastructure is constructed near the school, outreach should be conducted to the school community through pamphlets and social media to familiarize all users with its intent and proper use.



### CROSSING GUARDS

Adult school crossing guards play an important role for children and families who walk or bicycle to school. Young children may lack the motor and cognitive skills required to safely navigate street crossings. By helping students cross the street safely at key locations, crossing guards can help parents feel comfortable about their children walking or bicycling to school. Crossing guards provide a visual cue to drivers that children are present and, by example, help children to develop the skills necessary to cross streets safely.

### INTER-JURISDICTIONAL COORDINATION

While streets and sidewalks adjacent to school sites are typically designed and controlled by city or State transportation agencies, school sites themselves may be controlled by a separate jurisdiction or school district. Cooperation between school districts and other governmental agencies, including both infrastructure and programmatic strategies, is key to decreasing harmful conflicts in school areas.

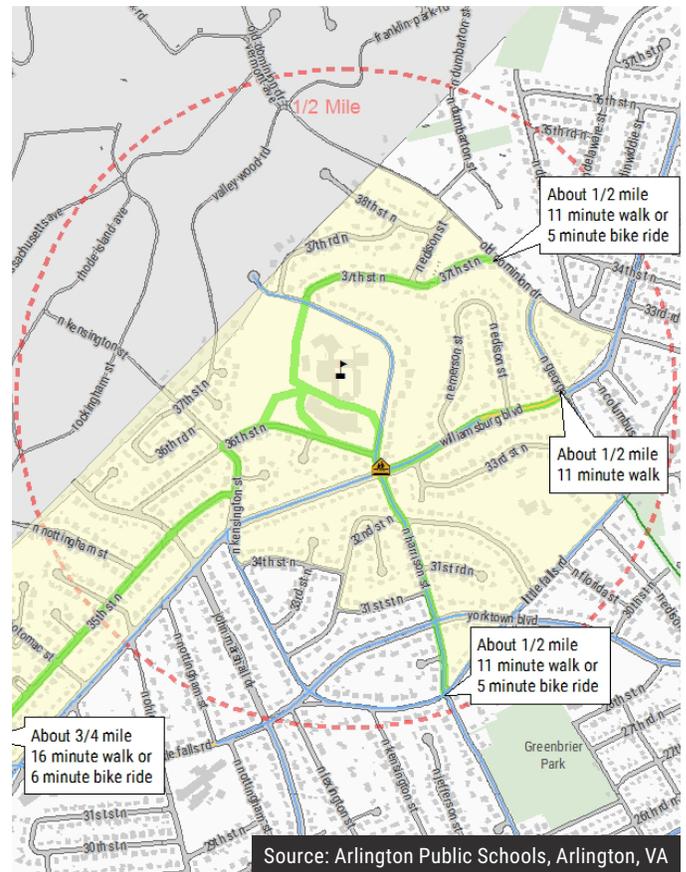
## CASE STUDIES

### DISCOVERY ELEMENTARY SCHOOL ARLINGTON, VA

In September 2015, Arlington Public Schools in Arlington, VA, opened the doors to Discovery Elementary School, a new school built on the same site as an existing middle school, Williamsburg Middle. Throughout the planning and design of the new school, Arlington Public Schools worked diligently to provide safe and efficient access for students and staff to walk or bike to school and to mitigate the traffic and parking impacts of the two schools on the surrounding neighborhood.

Key features of the combined campus include multiple sidewalk connections to the school site, an organized on-campus sidewalk network that provides efficient building access without driveway and parking lot crossings; a separate bicycle route for student bicyclists; a shared bus loop centered between the two schools, separate from the parent dropoff and pickup areas; and private vehicle student dropoff and pickup areas that contain pavement markings and directional signs to encourage proper procedures and behaviors.

In addition, Arlington Public Schools created a transportation demand management plan for the two schools, detailing programs to encourage active modes of travel to school by staff and students. The school provided parents with maps of example walking and bicycling routes to school, detailed written procedures for private vehicle dropoff and pickup, and a circulation map showing how all modes access the school site.



Example walking and biking routes to Discovery Elementary School

### FOR MORE INFORMATION

Active Living Research. *Active Education: Growing Evidence on Physical Activity and Academic Performance*. 2015.

American Association of State Highway and Transportation Officials. *A Policy on the Geometric Design of Highways and Streets*. 2011.

American Association of State Highway and Transportation Officials. *Guide for the Planning, Design, and Operation of Pedestrian Facilities*. 2004.

Federal Highway Administration. *Guidance Memorandum on Promoting the Implementation of Proven Safety Countermeasures*. 2012.

Federal Highway Administration. *University Course of Bicycle and Pedestrian Transportation*. Publication No. FHWA-HRT-05-133. 2006.

Federal Highway Administration. *Manual on Uniform Traffic Control Devices*. 2009.

Institute of Transportation Engineers Technical Committee. *School Site Planning, Design and Transportation*. 2013.

National Association of City Transportation Officials. *Urban Street Design Guide*. 2013.

North Carolina Highway Safety Research Center. *Safe Routes to School Online Guide*. Last updated July 2015.

McDonald et al. "Impact of the Safe Routes to School Program on Walking and Bicycling." *Journal of the American Planning Association*, Volume 80, Issue 2, 2014.