12 The School Site and School Grounds

There are two elements related to school location: the school site and the school grounds. The school site refers to the school's location within the community, while the school grounds refer to the placement of buildings, facilities, and circulation areas on the school property. Both the location of the school within the community and the design of the school grounds should support the safe arrival and departure of all students. Everyone should remember that even children arriving by school bus, transit, or private automobile will be entering the school building on foot. Safety treatments can also function as both green infrastructure and safety infrastructure, offering stormwater management benefits while improving transportation safety.

School Site

Schools are centers of their communities in addition to being educational facilities, providing neighborhood playgrounds and meeting space for all residents. Site selection is critical if these community functions are to be served. Ideally, schools should be centrally located in a community. Important elements of a school location identified by the American Association of State Highway Transportation Officials (AASHTO) Guide for the Planning, Design, and Operation of Pedestrian Facilities, 5th Edition include:

- The school site is centrally located in the community; most children live within one mile.
- Pedestrian and bicycle access is available from all directions.
- Sidewalks, bicycle lanes, and trails on adjacent streets or through neighborhoods connect to the school property.

The NJ School Development Authority (NJ SDA) Real Estate Practices Manual

Developed in 2009, the Real Estate Practices Manual represents a culmination of lessons learned in addressing many of the land acquisition and development challenges faced by New Jersey in its school construction program. The manual explains the typical site planning, site selection, preconstruction and land acquisition steps and processes that the NJ SDA follows before a project is funded for design and construction by the State. It describes the roles and responsibilities of the various stakeholders in school site selection and development, and the interdependent decisions required of them. The manual is available for download at www.njsda.gov/Content/Business/forms/RE_Manual.pdf

U.S. EPA SCHOOL SITING GUIDELINES

U.S. EPA's school siting guidelines can help local school districts and community members evaluate environmental factors to make the best possible school siting decisions. Go to https://www.epa.gov/sites/default/files/2015-06/documents/school_siting_guidelines-2.pdf, for more information.

Key Considerations in School Site Selection

There are no minimum acreage criteria for schools in New Jersey. In many of New Jersey's older cities, land parcels are small, and it usually requires the assemblage of numerous parcels to accumulate sufficient land to build a school. New Jersey law only requires that the land be of sufficient size to meet the educational needs of the student enrollment and the faculty.

According to the NJ SDA Manual, specific land requirements for building size, outdoor physical recreation space and parking need to accommodate the school's educational model and unique circumstances. This is best managed through a partnership between the school district, design professionals and the local community that the school serves. Some of the site-specific factors that are considered by the SDA in site selection and that also affect safe pedestrian and bicyclist accessibility are listed to the right.

Selection Criteria Evaluated by NJ SDA for Proposed School Sites

Location Considerations

- Sustainability is considered in site selection
- Site encourages safe pedestrian access for the community
- Centrally located to balance transportation options
- Compatible with current and probable future zoning regulations
- Close to libraries, parks, and other community services
- Favorable orientation to wind and natural light
- Sensitive to open space needs of the community

Accessibility Considerations

- Access and dispersal roads
- Natural obstacles, such as creeks and rivers
- Access for emergency response vehicles, sanitation vehicles
- Road widening and traffic improvements are minimized

Safety Considerations

- Highway proximity, in particular highway ramps (see page 112)
- Railroad proximity
- Airport proximity
- High-voltage power line proximity
- High-pressure utility lines
- Proximity to dumps, junkyards, landfills, chemical plants, refineries, fuel storage tanks, nuclear plants
- Proximity to gasoline stations, automobile repair shops, dry cleaners, nail salons
- Proximity to metal manufacturers, hazardous air pollution emitters, incinerators, prisons
- Social hazards in the neighborhood, such as bars or areas with high crime rates



The entrance to the Belleville School #7 in Belleville, NJ. Image: VTC



The entrance to the Collingswood Middle and High School complex in Collingswood, NJ.

Evaluating Adaptive Reuse Options

Older school buildings located in established neighborhoods often offer easy accessibility for students walking or bicycling to school and can serve to sustain established neighborhoods by providing a center for community activity. Because of these health and community benefits, the NJ SDA Manual recommends careful consideration of refurbishing existing school properties before deciding to demolish and build a new school elsewhere.



Since 1928, neighborhood children have walked to Cochran Elementary School in Williamsport, PA, which was renovated and expanded in 2001. It is generally less expensive to renovate an existing school than build a new one, especially considering the cost of land acquisition and development. Image: Renovate or Replace? by the Pennsylvania Dept. of Education

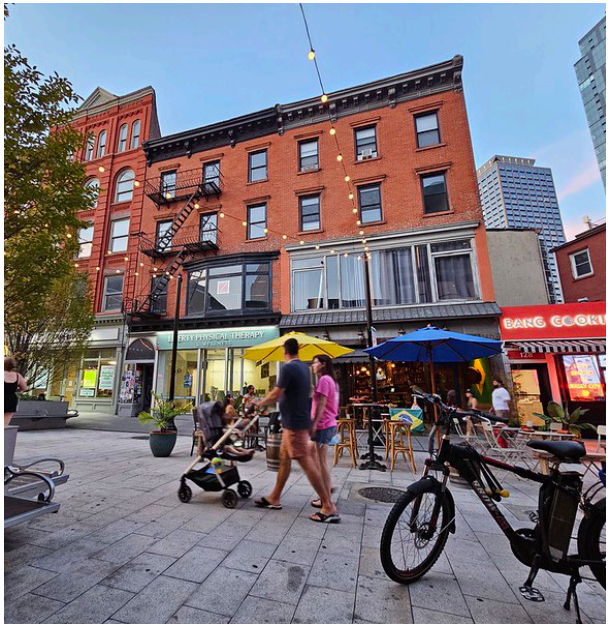
The APA identifies Smart Growth as that which supports choice and opportunity by promoting efficient and sustainable land development, incorporates redevelopment patterns that optimize prior infrastructure investments, and consumes less land that is otherwise available for agriculture, open space, natural systems, and rural lifestyles.

American Planning Association (APA)

Smart Growth

The NJ SDA Manual recommends the integration of Smart Growth principles into educational facility planning. Smart Growth is defined by the United States Environmental Protection Agency (U.S. EPA) as a development that serves the economy, the community and the environment. The U.S. EPA recognizes a number of key attributes of Smart Growth, including:

- Mixed land uses,
- Compact building designs,
- Walkable neighborhoods,
- Development of communities with a strong sense of place,
- Integration of open space,
- Use of infill development strategies, and
- Consideration of balanced transportation options.



Walkable neighborhood in Jersey City. Image: VTC



Bicycle storage at Hoboken PATH station. Image: VTC

School Grounds

The following information has been adapted from the Safe Routes to School Briefing Sheet 6 – School On-Site Design by the Institute of Transportation Engineers (ITE). The briefing sheet is available at www.pedbikeinfo.org/pdf/SRTSlocal_ITEbriefingsheetsALL.pdf

A well-designed school site should support the safe arrival and departure of all students, including pedestrians and bicyclists. According to ITE, some of the key elements that should be considered to promote the safety of bicyclists and pedestrians are:

- Separation of pedestrians, bicycles, parent cars, and buses
- Bicycle access and storage
- Location of school entrances
- Design and operation of drop-off/pick-up zones
- Design and operation of bus zones
- Driveways and internal roadway networks
- Parking
- Traffic control devices.

Separation of Pedestrians, Bicyclists, Parent Cars, and Buses

Separating or eliminating conflicts between students arriving on foot or bicycle from those arriving by buses and motor vehicles is necessary to reduce a student's exposure to traffic. Adequate physical space should be provided for each mode by which students arrive at school.

Bicycle Access and Storage (See Bicycle Storage at Schools in Chapter 9 as a reference)

Secure and effective bicycle parking is a crucial factor in encouraging children to bicycle to and from school. Bicycle racks should be designed to enable both wheels to be secured with a U-lock or padlock and cable. Racks should be covered by shelters when possible to protect bicycles from the elements. All bicycle parking areas should be easily accessible and conveniently located in well-lit areas near school building entrances. It is advantageous to provide secure bicycle parking at more than one location, especially if there are multiple entrances or exits, so that bicyclists do not have to cross campus to access a bicycle rack.



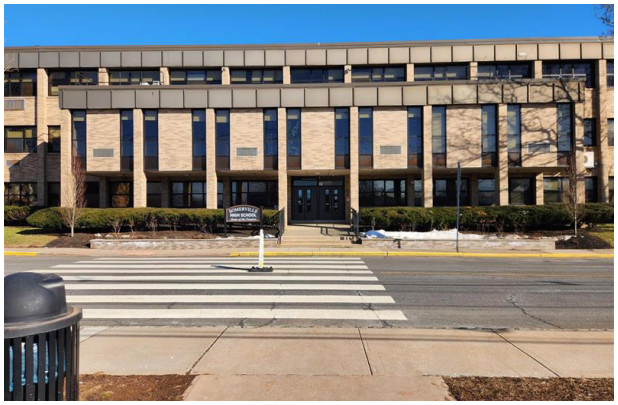
Bicycle parking at the Orchard School in Ridgewood, NJ is easily accessible but low security and unprotected from the weather.

NJ DEFINITION OF SCHOOL GROUNDS

The definition of "school grounds" as described in N.J.A.C. 6A:16-1.3 includes land, portions of land, structures, buildings, and vehicles, when used for the provision of academic or extracurricular programs sponsored by the school district or community provider and structures that support these buildings, such as school district wastewater treatment facilities, and other central service facilities including, but not limited to, kitchens and maintenance shops. School grounds also includes other facilities as defined in N.J.A.C. 6A:26-1.2, such as playgrounds, and recreational areas owned by local municipalities, private entities, or other individuals during those times when the school district has exclusive use of a portion of such land.

Location of School Entrances

Building entrances should be located with consideration for pedestrian desire lines. This entails determining the directions and points from which pedestrians are likely to approach the building and then identifying whether the design has inadvertently placed any unacceptable traffic conflicts or obstacles in the pedestrians' routes. For safety, the location of the front door to the school should face a traffic-calmed street. However, this is not always possible. An example of such an undesirable conflict is a school entrance that funnels pedestrians toward an uncontrolled midblock location, a road with sidewalk gaps, a roadway with nearby ramps or jughandles, or across a busy driveway. The location of school entrances should be adjusted to direct pedestrians towards preferred street crossings and avoid unnecessary driveway crossings.



Somerville High School's main entrance is clearly marked by a wide, visible crosswalk leading from the opposing sidewalk.

Location of School Automobile Entrances

Students arriving and departing in private motor vehicles should exit and enter cars in designated zones to minimize pedestrian/vehicle conflicts.

Well-designed drop-off and pick-up zones can minimize illegal standing or parking near schools and help prevent problems such as blocking bus driveways and traffic flow on adjacent roadways. Drop-off/pick-up zones should be one-way in a counter-clockwise direction so that students are loaded and unloaded directly to the curb/sidewalk.



Signage for motor vehicle drop-off at Collingswood Middle School.

Design and Operation of Bus Zones

School bus operations function best when they are separated from all other transportation activities. Signs, pavement markings, gates, and/or orange cones may be used to provide this separation, but some education and enforcement will also be needed. Enforcement of drop-off and pick-up policies and procedures can be performed by a variety of people. Schools around the country have had success utilizing law enforcement officers, school personnel or parent volunteers.

When new drop-off and pick-up plans are implemented, assistance may be requested from law enforcement officers to make sure traffic flows smoothly during the first few days.

Implementing a new plan may also require more volunteers or monitors to regulate parent activity in the first few days. Drivers who are not following proper procedure can receive warnings from school personnel, parents or law enforcement officers.



A designated school bus stop location for drop-off in front of Thomas Sharp Elementary School in Collingswood, NJ.

Driveways and Internal Roadway Networks

School driveways should conform to local design and access management guidelines for number, spacing, location, and layout. According to the ITE School On-site Design Guidelines, directives specific to schools include the following:

- Separate driveways should be used for bus traffic and other motor vehicle traffic.
- The predominant direction of traffic and student origins should be considered when selecting the location of driveways so that most drivers will turn right when exiting the school grounds.
- Students should not be required to cross busy driveways to access the school building.
- The roads within the school site should have a maximum grade of five percent to avoid configurations that could impair a motorist's vision.
- Buildings, landscaping, fences, block walls, and school signs should always permit adequate sight distances for drivers and pedestrians.
- Driveways should be located so as to avoid interlocking left turns with other streets or bus driveways.



Bus traffic should have separate driveways from other motor vehicle traffic.

Parking

General parking guidance for schools is to separate parking areas (student, staff, visitors, and buses) from student loading/unloading areas and delivery loading zones, and to separate student pedestrians and bicyclists from both.

The NJ SDA Real Estate Practices Manual considers adequate parking for teachers, staff, and visitors as part of the site selection, but generally parking is regarded as subordinate to the need for adequate outdoor educational space where constraints in available land do not allow for the optimal creation of both play space and parking. When this situation arises, the Manual recommends creative parking alternatives such as cooperative agreements with the municipality for on-street parking, off-site parking, or the use of underground parking options.

Traffic Control Devices

In addition to physical layout, schools can use traffic cones and other channelizing devices to control on-site traffic patterns. Examples of practices include the following:

- Placing traffic cones for traffic control or access restriction. Cones can be used to create a single-lane queue in the drop-off/pick-up zone. This practice is desirable because it minimizes the potential for pedestrian/vehicle conflicts; however, it can be used only if there is enough capacity to process the queue efficiently using only one through lane.
- Placing cones or a traffic gate to restrict vehicles, typically parent vehicles, from accessing a zone designated for other uses (for example, parking, bus loading, pedestrian/bicycle zone).
- Replacing faded or discolored traffic cones with new orange cones.



Cones are used to create a single-lane queue in the car drop-off/pick-up zone at Kilmer School in Trenton, NJ.

Other Safety Considerations on School Grounds

Student Safety Patrols

Student safety patrols enhance enforcement of drop-off and pick-up procedures at school by increasing safety for students and traffic flow efficiency for parents. Such efforts allow students to participate in promoting traffic safety where they learn skills they can use in their everyday lives. Having a student safety patrol program at a school requires approval by the school and a committed teacher or parent volunteer to coordinate the student trainings and patrols. Before beginning a program, school officials should be contacted for approval of the program and to determine how liability issues will be addressed. Safety patrol members are typically selected by teachers and principals and are usually students in the fourth, fifth and sixth grades.



Student safety patrol members provide crossing assistance at an intersection near Audubon school. Image: Cross County Connection TMA

AAA Mid-Atlantic and the Mid-Atlantic Foundation for Safety and Education support the program by providing safety patrol materials and equipment worn by all AAA School Safety Patrols. In addition, the Mid-Atlantic Foundation for Safety and Education sponsors five AAA School Safety Patrol Officers' Training Camps in conjunction with local police departments each summer.

Each year, AAA School Safety Patrols are recognized with an Outstanding AAA School Safety Patrol Awards Luncheon throughout the AAA Mid-Atlantic territory. Selection criteria for choosing an Outstanding AAA School Safety Patrol include leadership, sound academics, promptness, neatness and industriousness. Recent New Jersey honorees have included students from Lafayette Township School, Ogdensburg School, Wenonah Elementary School, and McFarland Intermediate School (Bordentown).



Audubon walking shuttle ponchos. Image: Cross County Connection TMA



Audubon walking shuttle. Image: Cross County Connection TMA

No Idling Zones

Diesel emissions include fine particles commonly called soot. These pollutants are known to cause asthma, bronchitis, lung cancer, heart disease, and premature death. Diesel exhaust ranks among the air pollutants that pose the greatest risk to public health. Research has shown that fine particles are harmful because they bypass the body's natural defense mechanisms and penetrate deep into the lungs.

The "Stop the Soot" campaign (www.stopthesoot.org) was started by the New Jersey Department of Environmental Protection's (NJ DEP) Bureau of Mobile Sources to bring attention to the problem of poor air quality caused by the idling of motor vehicles (i.e., automobiles, trucks, buses, school buses, construction vehicles, and equipment, etc.). **New Jersey regulation (N.J.A.C. 7:27-14) prohibits engines, including those in cars, vans and school buses, from idling for more than three minutes in most instances;** however, NJ DEP is urging school districts and school bus drivers to go beyond the minimum and implement best practices to reduce harmful diesel emissions. These best practices include turning off engines when waiting to load and unload students, replacing old buses in the fleet first as they often release the most emissions, and using new buses for long routes.

One way to help reduce soot is by eliminating all engine idling. NJ DEP's anti-idling awareness campaign encourages school districts, school bus companies, and parents to sign a no-idling pledge and to eliminate idling within designated school and no idling zones. To date, more than 100 individual schools, charter schools, and school districts throughout the state have signed the "No Idling Pledge" as a way of demonstrating that reducing idling is important to the health of their students, drivers, and school employees.



Signs can remind drivers to turn off their engines during pick-up and drop-off in Parsippany Hills High School, Morris Plains, NJ.

WHY IS IT BAD TO IDLE VEHICLES?

Idling vehicles contribute to air pollution and emit air toxins, which are pollutants known or suspected to cause cancer or other serious health effects. Monitoring at schools has shown elevated levels of benzene, formaldehyde, acetaldehyde and other air toxics during the afternoon hour coinciding with parents picking up their children. Children's lungs are still developing, and when they are exposed to elevated levels of these pollutants, children have an increased risk of developing asthma, respiratory problems and other adverse health effects. Limiting a vehicle's idling time can dramatically reduce these pollutants and children's exposure to them.

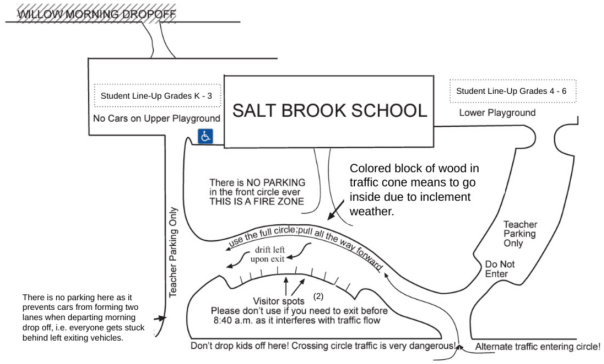
For more information visit https://www.epa.gov/schools/idle-free-schools-toolkit-healthy-school-environment

School Grounds Safety Strategies

Satellite Drop-Off

Satellite drop-offs encourage parents to drop off students at designated locations within walking distance of the school. This strategy helps redistribute congestion and pollution away from school entrances while allowing students to get physical activity as they walk from the drop-off location to the school.

Successful satellite drop-off programs require coordination among multiple stakeholders, including school staff, PTA members, parents, and transportation or planning professionals, to identify safe and appropriate drop-off locations. Depending on the school context, there may be multiple satellite drop-off locations. In general, satellite drop-offs can range from informal arrangements to more structured programs with defined schedules, multiple drop-off sites, and designated walking routes to school.



Salt Brook PTA DROP-n-GO satellite drop off program, Salt Brook PTA, NJ. Image: Salt Brook PTA

Street Closures

Street closures involve the temporary restriction of motor vehicle traffic to prioritize walking and bicycling during student arrival and departure times. Closures are typically implemented by installing physical barriers that block motor vehicle access. Depending on the school layout and operational needs, street closures may prohibit all vehicular traffic or allow access only for school buses while restricting private vehicles.

Street closures are often paired with complementary strategies such as satellite drop-offs. By reducing conflicts between vehicles, pedestrians, and bicyclists, street closures help make school drop-off and pick-up periods safer, more orderly, and more predictable.



Street closure in Bound Brook, NJ. Image: VTC

Temporary One-Ways

Temporary one-way operations restrict vehicle travel to a single direction during school arrival and departure periods. These configurations are established using barriers and typically require coordination among local residents, school administrators, and municipal officials. Limiting vehicle movement to one direction helps streamline traffic flow, improve predictability, and reduce unsafe drop-off maneuvers and street-crossing behaviors near schools.



Temporary one-ways. Image: School Zone Safety Strategies

ELECTRIC BUSES

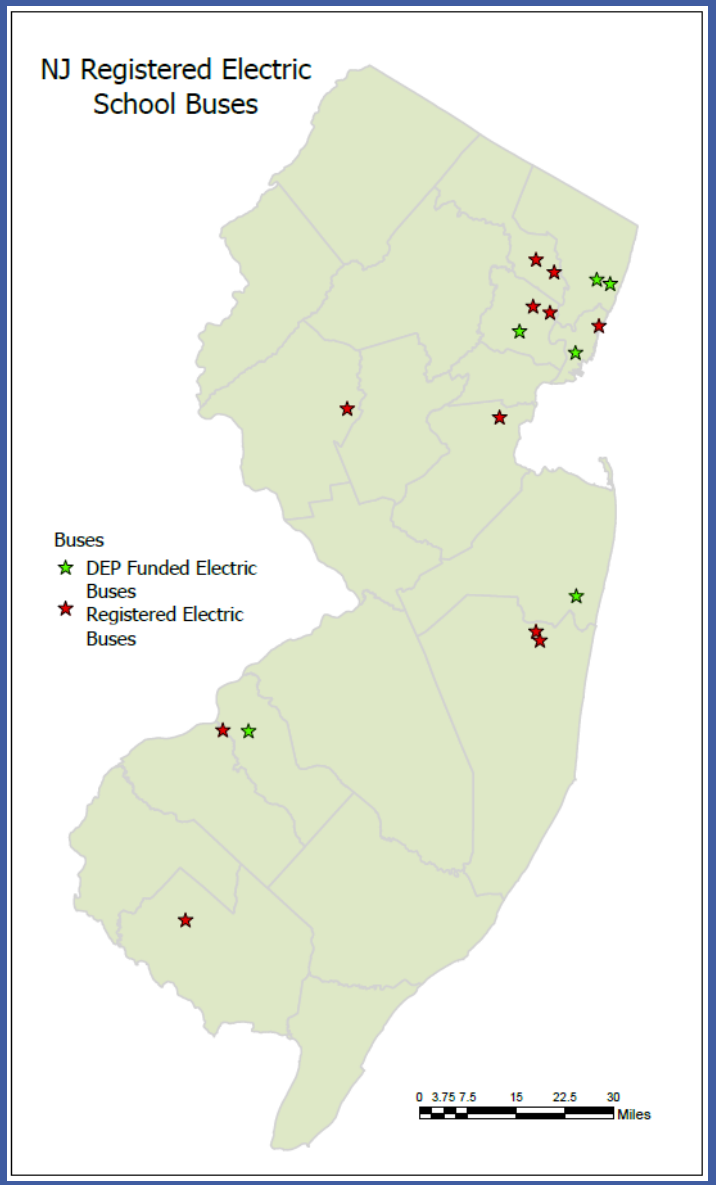
School transportation and the built environment around schools play a critical role in supporting safe, healthy, and sustainable travel for students. In New Jersey, public school districts are required to provide transportation for elementary students (grades K–8) who live more than 2 miles from school, and for high school students (grades 9–12) who live more than 2.5 miles from school. School buses therefore represent an essential part of the state's educational and transportation system.

Statewide, there are approximately 217,000 registered school buses, and more than 99% of them operate using fossil fuels. The predominance of diesel-powered buses negatively affects surrounding communities through air pollution, emissions, and noise.

To address these environmental and public-health impacts, the New Jersey Department of Environmental Protection (NJ DEP) created the Electric School Bus Grant Program, which funds the replacement of diesel school buses with battery-electric buses under P.L. 2022, c.86.



Electric bus charging, NJ. Image: NJ DEP



NJ Registered electric school buses. Image: NJ DEP

Sustainability and School Safety

What is green infrastructure?

Green infrastructure refers to treatments that use filtration, infiltration, and evaporation to absorb rainwater where it falls. Green infrastructure can create multiple benefits beyond stormwater management alone. When well-designed on site, these practices can provide cleaner water and air, protect against extreme weather, support diverse habitats, and create beautiful spaces for people to enjoy. Below are several ways green infrastructure can reduce environmental hazards [1]:

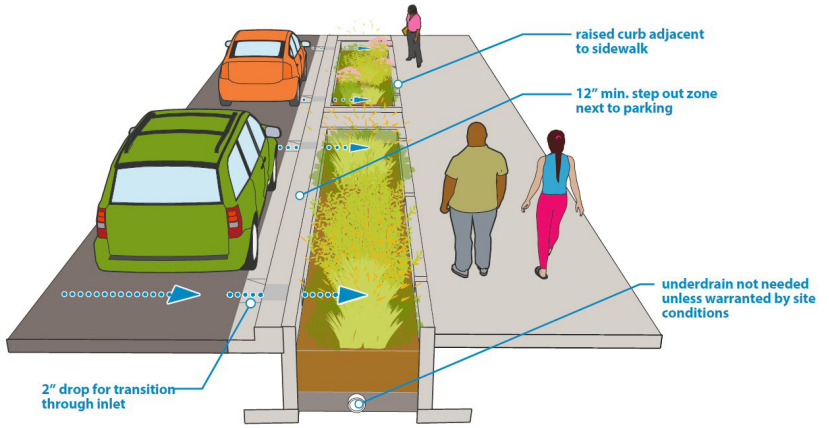
- Improves Water Quality: Green infrastructure can be designed to capture stormwater and filter out pollutants.
- Reduces Localized Flooding: These practices help stormwater infiltrate into the ground, slowing, capturing, and temporarily storing runoff.
- Improves Air Quality: Green infrastructure often includes trees and other vegetation, which help improve air quality by filtering air pollutants and fine particulate matter.
- Reduces the Heat Island Effect: Developed areas such as cities and towns generate more heat than rural areas. Green infrastructure can reduce these temperatures by providing shade, moisture, and reflective surfaces. [2]

Dual purpose sustainability infrastructure that doubles as safety infrastructure

One of the key features and benefits of green infrastructure is its ability to reduce stormwater runoff. Often, treatments reducing runoff are some of the physically larger treatments (e.g., pedestrian refuge island, roundabouts, or raised medians), which have space for foliage or natural environments. The list of treatments below can serve as both safety interventions and sustainability interventions:

- Pedestrian Refuge Islands
- Diverters
- Roundabouts
- Road Diets
- Complete and Green Streets
- Gateways and Landscaping
- Multi-Use Paths
- Roadway Closures

These treatments contribute to, or create opportunities to contribute to, an increase in green infrastructure in a community.



An example of green infrastructure that also serves as a safety treatment for pedestrians. Image: Minneapolis Street Guide

[1] https://www.epa.gov/green-infrastructure/about-green-infrastructure
[2] https://www.epa.gov/green-infrastructure/environmental-benefits-green-infrastructure

NEW JERSEY GREEN INFRASTRUCTURE PROGRAMS

Environmental challenges such as flooding, stormwater, and extreme heat are known barriers to walking and bicycling to school that increase risk during student travel. New Jersey offers several programs that support green infrastructure and provide opportunities to align sustainability efforts with roadway safety improvements around schools:

Green Streets and Stormwater Infrastructure Mapping Grant Program: Supports municipalities in developing green stormwater infrastructure (such as green streets) and in mapping stormwater systems to improve resilience and reduce runoff.

Safe Routes to School (SRTS) Infrastructure Grants: Funds safety projects that can integrate green design elements, including traffic-calming features, plantings, and stormwater-management components.

Sustainable Jersey for Schools



Awards points to schools for implementing green infrastructure initiatives such as rain gardens, tree planting, and sustainable landscaping.

Notably, municipalities and schools that meet the requirements of the NJ Safe Routes to School Recognition Program can also earn points toward Sustainable Jersey and Sustainable Jersey for Schools certification.

- NJ Stormwater Best Management Practices Manual: https://dep.nj.gov/stormwater/bmp-manual/
- Green Streets and Stormwater Infrastructure Mapping Grant Program: https://dep.nj.gov/grantandloanprograms/green-streets-stormwater-infrastructure-mapping-grant-program/
- Safe Routes to School (SRTS) Infrastructure Grants: https://www.saferoutesnj.org/safe-routes-to-school-grants/
- Sustainable Jersey for Schools: https://www.sustainablejerseyschools.com/
- Urban Street Stormwater Guide from NACTO: https://nacto.org/publication/urban-street-stormwater-guide/
- New Jersey Green Infrastructure Municipal Toolkit: https://gitoolkit.njfuture.org/