



5. Engineering (& Operations)

Engineering improvements to the physical environment around schools are integral to a comprehensive Safe Routes to School Program that ensures walking, biking, and other “green” forms of travel are easy and safe. They are also, typically, the most costly to implement and require traffic engineering expertise and approval. Before seeking to invest in infrastructure, a thorough site evaluation and discussion with community stakeholders are needed to determine the highest priority issues and appropriate range of potential solutions.

This section discusses the all important initial step toward engineering improvements - the walk about, or walk audit - together with related school travel operations and policies. For more information on specific engineering improvements and relevant design guidelines, please contact your local planning or public works department or use the online resource links as a start.

Focus on Easy to Implement Improvements First

Signing and striping are low cost improvements that can greatly improve pedestrian and bicyclist access to school. In California, yellow crosswalks and school specific signage also identify a location as a school zone and warn motorists of potential pedestrian and bicyclist activity. Such improvements are relatively easy to install and will create momentum and support for more intensive infrastructure projects.

Operations & Policy

In tandem with or independent from engineering improvements, certain operational strategies and policies can help reduce conflict between vehicle traffic, buses, and students walking and bicycling to school. This section describes various policies with regard to pick-up and drop-off activities that are incredibly important and can often be very low cost. Keep in mind, however, that these activities may involve a greater outlay of staff resources and new procedures often take time and outreach to gain acceptance.

Develop a School Travel Plan

School travel plans are living documents that collect, organize, and share walk audit notes, improvement concepts, travel procedures and policies, and other school information relevant to a Safe Routes to School program. These plans are important tools to assist local task forces and city staff, and to compete for outside grant funding. Ideally, they are also made available to new and returning parents, either online, in a back-to-school packet, or by request. Without a travel plan, good work and effort toward identifying physical school improvements may go unnoticed.

Overview

One primary purpose of this program guide is to provide a resource for local groups to conduct a “school site audit” of their school. A school site audit, sometimes called a walking audit or walkabout, is an assessment of the pedestrian and bicycling conditions around the school area. Typically school site audits are conducted by the local school group or task force on foot, by walking the routes that the students use to get to school. A site audit could also be conducted on bicycle in order to better evaluate bicycling conditions.

The goal of a site audit is to document conditions that may discourage walking and bicycling to school, and to identify solutions to improve those conditions. The audit should involve identification of the built environment around a school (e.g. streets, sidewalks, pathways, crosswalks and intersections, bike routes, traffic controls), the drop-off and pick-up operations (e.g. presence of designated loading areas), as well as behaviors of students, parents, and motorists that could contribute to unsafe conditions for bicyclists or pedestrians (e.g. speeding, jaywalking, failure to yield to pedestrians).

Steps to Take

A School Site Audit Checklist form is provided in Appendix A of this Program Guide. The checklist ensures detailed information is collected for each of the following topics:

- Student Drop-Off and Pick-Up Areas
- Bus Loading Zones
- Sidewalks and Bicycle Routes
- Intersections Near the School Property
- Sight Distances
- Traffic Signs, Speed Controls & Pavement Markings

The local school task force and/or SR2S coordinator should use the School Site Audit Checklist (or a similar form) as a basis for conducting or planning their walkabouts.

Along with the checklist, an aerial base map of the school area is an essential part of the site audit. These should be handed out to school groups and marked up with



Designated students assist with the drop-off process.

identified issues and suggested improvements. These maps, along with the information from the checklist form, can be forwarded to a school community task force, public works staff, or consultant for use in pinpointing and prioritizing improvements in the school area. Audit notes should also be documented within school travel plans.

Benefits

- Provides an “on the ground” assessment and set of recommendations to improve school access and safety
- Facilitates local input to identify important issues and engages stakeholders on a range of potential solutions
- Helps document the public planning process for a specific improvement, which is critical to compete for grants and obtain decision-maker approval

Resources

- National Safe Routes to School Partnership
http://guide.saferoutesinfo.org/engineering/neighborhood_walkabouts_and_bikeabouts.cfm
- The ABC’s of MTC (handbook for navigating the Metropolitan Transportation Commission and other regional agencies/potential funding sources)
http://www.mtc.ca.gov/library/abcs_of_mtc/MTC-ABCs.pdf
- SRTS Online Guide: Engineering
<http://guide.saferoutesinfo.org/engineering/>

Overview

School traffic safety begins at the front doorstep - or more accurately, the parking lot and pick-up/drop-off zones. Unlike most public facilities or office buildings, school traffic movements are heavily synchronized around a specific schedule. Left to organize itself, school traffic can easily overburden local roadway facilities and pose unique safety hazards to students. Inefficient drop-offs and pick-ups can also increase local air pollution and strain relationships with adjacent residents and community members.

Types of Operational Strategies

Valet Drop-off

"Valet" is a technique to improve traffic flow within the drop-off and pick-up loop by assisting students into and out of vehicles. This technique eliminates the need for parents to get out of the vehicle to open the door for a child or remove bags and other items, thereby reducing delays and unnecessary idling. The valet system is typically staffed by school teachers, staff, or parent volunteers. Some schools use older students as valets, for example 5th or 6th graders helping younger students in a K-6 school. However, student volunteers must get out of class early to prepare for pickup.

Platooning Drop-off/Pick-up System

In a platooning system, all vehicles unload/load simultaneously, then proceed to the exit. If a vehicle unloads or loads more efficiently than the vehicle in front of it, the rear vehicle must wait for the lead vehicle to finish unloading/loading, then follow it out of the loop. This tool is best used to control the parent inclination to always drop-off and pick-up the student directly in front of the school. Often, additional curb loading available downstream of the school can go underutilized, creating excess congestion and delay prior to entering the lot. At least two monitors are needed to effectively operate the vehicle platoon – one at the loop entrance to direct the maximum number of vehicles into the lot for a single cycle, and a second to ensure that the lead vehicle proceeds to the frontmost loading stall.



With a valet drop-off process, designated (usually older) students assist arriving students and their belongings out of the car, which helps keep parents in their vehicles and lines moving, and reduces idling.

Carpool Priority Parking and Load Zones

Policies that successfully encourage carpooling help limit demand on school facilities and on the local roadways. For older students and faculty/staff, priority parking permits can be awarded to those who commit to carpooling. For elementary school families, express loading can be used as an incentive if picking up more than one child.

Dedicated Bus Zones

Establishing separate areas for vehicular and bus traffic can help improve traffic flows in the pick-up/drop-off area. Conflicts can occur when private vehicles and buses arrive at the same time and in the same location. Separating traffic often necessitates establishing an off-street bus zone, dedicated solely to buses. Private vehicles should not be allowed to load/unload in the bus zone. Bus zones need to be large enough to accommodate all the buses that might be parking there at one time. Sometimes it is possible to stagger the arrival times of the buses, thus requiring less space. The zones must be clearly marked and there should be adequate sidewalk space for students to wait for the bus.

Resources

- School Zone Safety Supplies

<http://schoolzonesafety.com/index1.html>