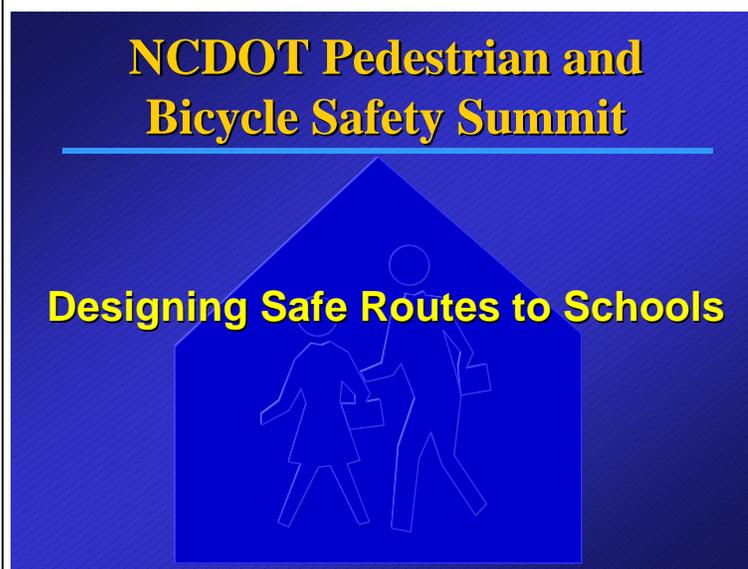


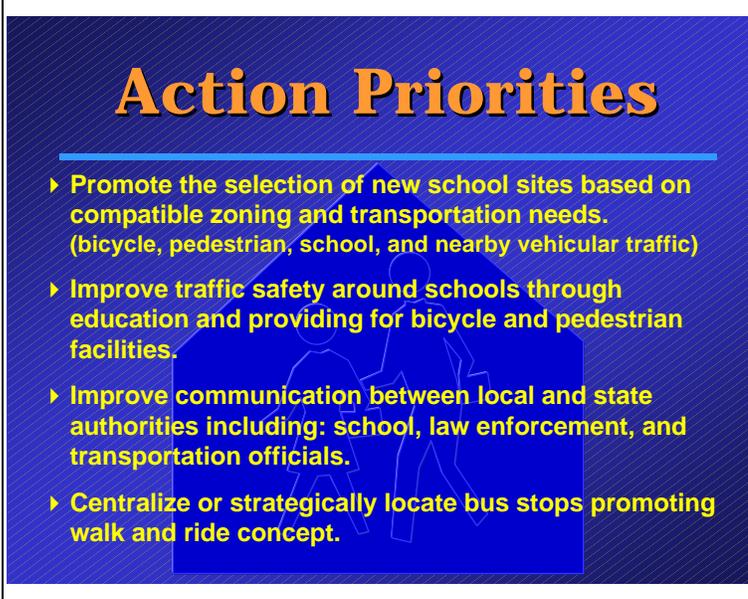


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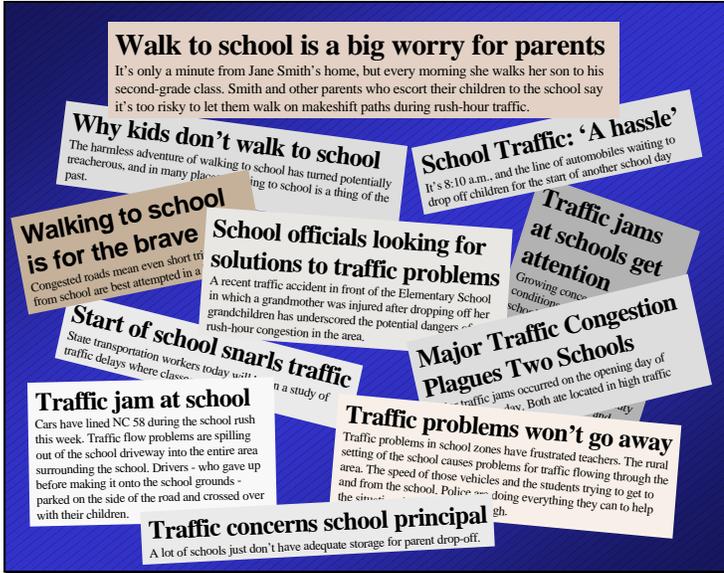


The NC Department of Transportation held a Pedestrian and Bicycle Safety Summit during the fall of 2000. This presentation will reflect the outcome from the Designing Safe Routes to Schools section.



The participants identified four major Action Priorities.

- ▶ Promote the selection of new school sites based on compatible zoning and transportation needs. (bicycle, pedestrian, school, and nearby vehicular traffic)
- ▶ Improve traffic safety around schools through education and providing for bicycle and pedestrian facilities.
- ▶ Improve communication between local and state authorities including: school, law enforcement, and transportation officials.
- ▶ Centralize or strategically locate bus stops promoting walk and ride concept.



We have all read the news paper articles with headings like these.....



Things to consider to help increase pedestrian and bicycle safety.



This school had a development located across the street. Sidewalks and crosswalk were not provided.



This school was located beside a large sub-division. Pedestrian facilities were not included in the designs of either location.



A good example of how sidewalks, crosswalks, and a defined walking route can be very successful.

Utilize common areas in sub-divisions as a student pick-up point for buses.

- Encourages walking and biking,
- Prevents students from crossing high volume roads,
- Provides a more efficient bus service.

A concept that has good merit is to utilize common areas of a sub-division as a localized student loading area. This would promote:

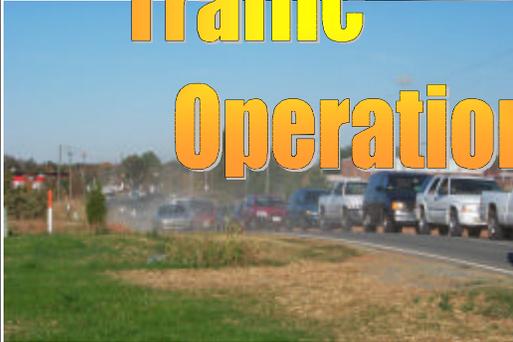
- Walking and biking along safer streets,
- Prevents students from crossing high volume or less safe intersections,
- Provides a more efficient bus service.

Can this work for your school?

School Traffic Operations



The traffic operations are often a major concern at existing and proposed schools.



In this photo vehicles queued more than 900 feet along the shoulder. Vehicles will even park along the opposite side of the road to enter a school driveway. Here vehicles parked in the roadway along a curve. When opposing through traffic meets in this curve, the inside vehicle is forced off the road.



This school has vehicles filling the left turn lane and continuing further down the road. Through vehicles are forced to drive along the shoulder to pass these vehicles. The safety issues are multiplied when you consider students walk to school along this shoulder from a nearby sub-division. Sidewalks are not provided.



Results of inadequate on-campus traffic storage

The high number of vehicle traffic will often fill the capacity of the campus driveway resulting in vehicles essentially parked along the shoulders or in the through lanes of nearby streets.



Inefficient student loading operations and under capacity of the campus.

At these locations, it is important that the student loading operations have a defined process that parents and students understand. Often the loading zones have children playing and parents having social conversations while their vehicles are parked on campus blocking accessibility for others.



This site is an example where inefficient student loading operations and inadequate vehicle storage on campus caused through traffic to be blocked during school admission and dismissal. Basically, no vehicles were able to enter the campus and forced vehicles to queue in and along a major thoroughfare.



Circumventing of the loading process can lead to safety concerns.

Here frustrated parents actually loaded students on the shoulder of the road next to the through traffic. This action greatly jeopardizes the safety of themselves and their child.



Darting out into traffic is the highest cause of a vehicle related fatality for a child this size. This type accident could easily happen when the child is hidden behind a large vehicle.



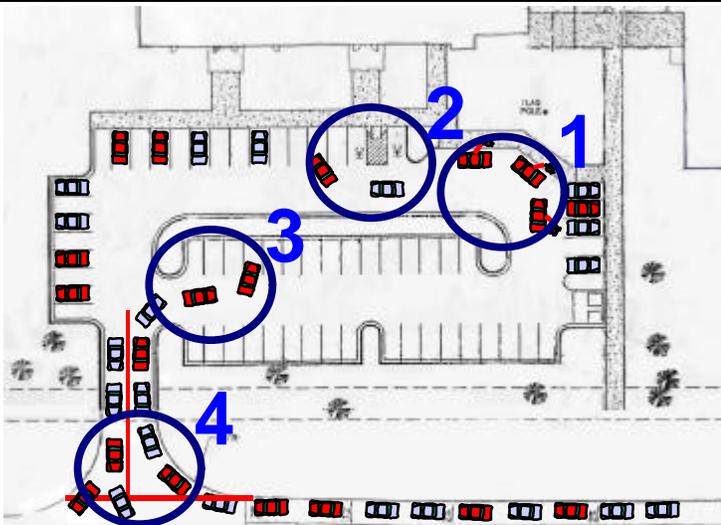
Circumventing the system can even lead to vehicles stopping in the road to load students.



Careful planning can offer safe and efficient facilities for pedestrians, bicyclists, and motorists.

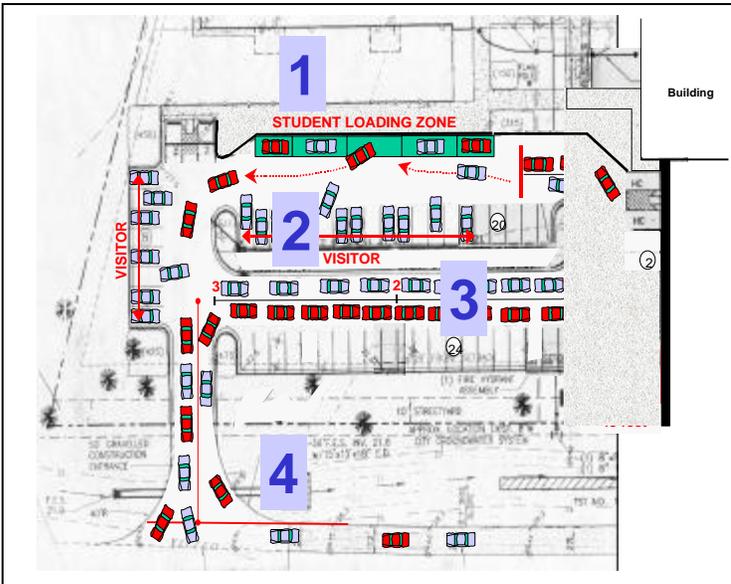
Parking Layout

The design and operation of the parking lot for a school is very critical in providing pedestrian and motorists safety.



This design shows four areas where a design can cause the loading operation to be inefficient and cause vehicles to back out onto the nearby roadway system.

- 1. – Student Loading Zone
- 2. – Short term “Visitor Parking”
- 3. – Circumventing of the loading process
- 4. – Entrance design.



1 – Student Loading Zone

Defining 4 to 5 loading bays along a sidewalk near the school building entrance and implementing an organized loading process can provide a more efficient loading process.

It is important that parents be informed of this process before the start of the school year.



1a – Organized Student Loading

A well built driveway design is only part of an efficient student loading zone.



1b – Efficient Student Loading

Here students are notified when their parent has arrived and are directed to wait at identified locations relating to where their parent is in the loading line. When the parent reaches this point their student is quickly loaded in approximately 5 to 10 seconds.



?? Organized ??

This school had a large parking lot where vehicles were loaded. It appeared organized with on campus student crossing guards.



?? Organized ??

The operations actually caused a lot of congestion in the parking lot due to parking and un-parking vehicles and pedestrians walking through the lot. The congestion in the lot not only caused vehicles to back-up along the roadway but jeopardized child safety as they walk through the parking lot and between moving vehicles.

2 - Visitor Parking



2 – Visitor Parking

If visitor parking is not defined, parents will park any place available including the lawn and even in the exiting driveway blocking others from leaving.

2 - Visitor Parking



2 – Visitor Parking

Short-term visitor parking should be identified with signs and/or pavement markings.



3 – Provide Adequate Vehicle Storage On Campus

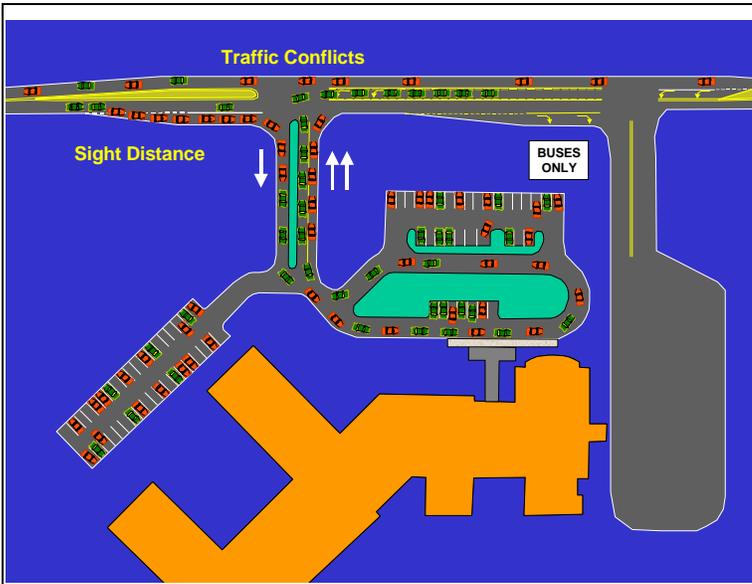
Provide adequate driveway length to contain all school-generated traffic. In some cases two lanes of traffic before the student loading zone must be implemented.

To provide maximum safety for pedestrian and motorists during peak demand days, the school is expected to have an alternative traffic flow plan that will prevent school related vehicles from creating a hazard along nearby public streets.



4 – Entrance Design

Often it is thought that school traffic congestion concerns could be solved by having an officer direct traffic or install turn lanes at the campus entrance. As shown in these photo's, this has proven to only create parking lanes for the vehicles crating additional pedestrian and traffic safety concerns.



Depending on the traffic volume along a major route, a single driveway entrance can cause several pedestrian and vehicular safety concerns. Entering vehicles can block through traffic, block the sight distance for exiting traffic, cause excessive traffic delays on and off campus, and cause heavy congestion where pedestrians may be crossing.

This school has a high number of traffic conflicts at the school entrance.



These safety concerns are eliminated by getting the generated traffic on campus, initializing an advanced student identification loading process, and creating a one-way entrance and one-way exit. Traffic conflicts at each of the school driveways are reduced.

The traffic conflicts are greatly reduced by creating a one-way entrance and a one-way exit. A lower number of conflicts equate to fewer chances for vehicle crashes.

Install Turn Lanes ?

Turn lanes must meet certain requirements based on traffic volumes and movement characteristics.

Turn Lanes have:

Advantages

- Allows through traffic to proceed along route

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- Increase distance to clear the roadway

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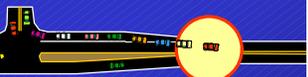
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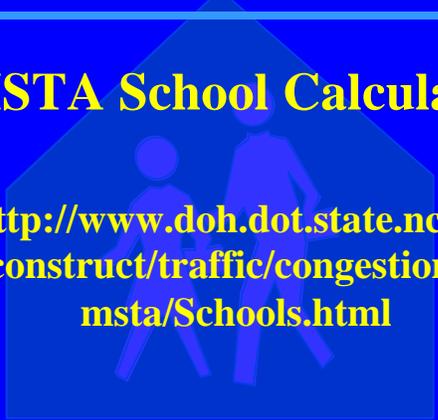
Disadvantages

- Increase traffic speeds
- Increase distance to clear the roadway
- Decreases the sight distance for oncoming traffic
- Turn lane may overflow, blocking through lane

Our Web Site

MSTA School Calculator

[http://www.doh.dot.state.nc.us/
preconstruct/traffic/congestion/CM/
msta/Schools.html](http://www.doh.dot.state.nc.us/preconstruct/traffic/congestion/CM/msta/Schools.html)



MSTA has developed a school traffic calculator to assist in the design of a student loading zone.

[http://www.doh.dot.state.nc.us/
preconstruct/traffic/congestion/CM/
msta/Schools.html](http://www.doh.dot.state.nc.us/preconstruct/traffic/congestion/CM/msta/Schools.html)

Purpose of the MSTA School Traffic Calculator

- Provide a conservative engineering analysis tool for estimating traffic volumes and storage lengths at public and private schools across North Carolina.

Based on the population of a school building, the calculator can determine the driveway length required on an average day. This data is based on similar schools across North Carolina and is considered a conservative estimate.

Each school should plan for, and expect higher traffic volumes during peak demand days and special events.

Results of the MSTA School Traffic Calculator

- Help determine safe and effective low cost traffic solutions by applying basic traffic engineering principals.

A conservative traffic volume is also provided to help determine traffic related requirements such as turn lanes.

