# Traffic Engineering 101 - The Basics

*Understanding the basic principles and how these drive the decisions regarding traffic management in Louisiana*

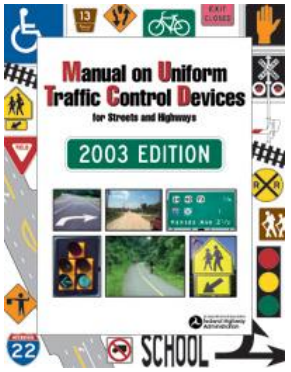
# Traffic Engineering 101

- Purpose:
  - To provide an overview of engineering principles; guidelines & laws which govern traffic management in Louisiana
  - Discuss how DOTD's decisions impact local communities
  - Facilitate feedback & questions from local agencies on state and local traffic engineering issues

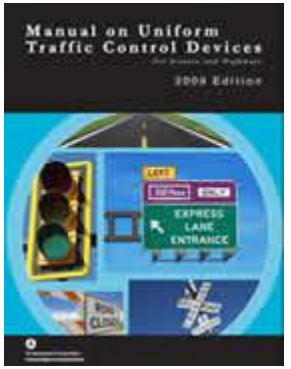
# Make the Most of These Webinars

- Pick topics of interest & notify others
- Invite community to participate
  - Elected officials
  - Planners & engineers
  - Law enforcement
  - Road managers
  - Economic development
- Provide feedback & ask questions

# Manual on Uniform Traffic Control Devices

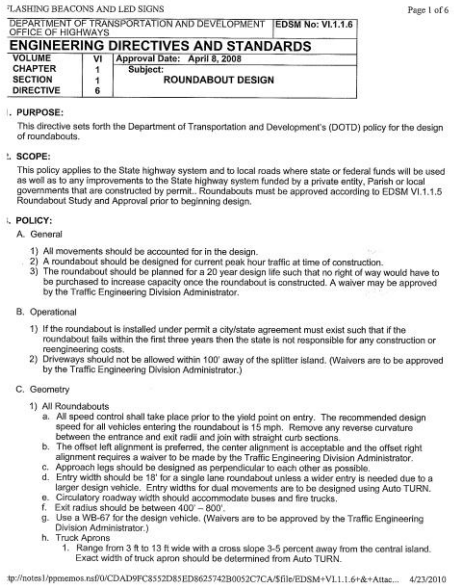



- Federal policy
- All states must adopt
- Set minimums for traffic control devices such as
  - Signs
  - Pavement marking
  - And signals



# Engineering Directive and Standard Manual (EDSM)

- DOTD policy
- Signed by Chief Engineer
- Provides additional requirements



'LASHING BEACONS AND LED SIGNS Page 1 of 6

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
OFFICE OF HIGHWAYS

EDSM No: VI.1.1.6

**ENGINEERING DIRECTIVES AND STANDARDS**

| | | |
|---|---|---|
| VOLUME | VI | Approval Date: April 8, 2008 |
| CHAPTER | 1 | Subject: |
| SECTION | 1 | ROUNDABOUT DESIGN |
| DIRECTIVE | 6 | |

**. PURPOSE:**

This directive sets forth the Department of Transportation and Development's (DOTD) policy for the design of roundabouts.

**. SCOPE:**

This policy applies to the State highway system and to local roads where state or federal funds will be used as well as to any improvements to the State highway system funded by a private entity, Parish or local governments that are constructed by permit.. Roundabouts must be approved according to EDSM VI.1.1.5 Roundabout Study and Approval prior to beginning design.

**. POLICY:**

A. General

1) All movements should be accounted for in the design.
2) A roundabout should be designed for current peak hour traffic at time of construction.
3) The roundabout should be planned for a 20 year design life such that no right of way would have to be purchased to increase capacity once the roundabout is constructed. A waiver may be approved by the Traffic Engineering Division Administrator.

B. Operational

1) If the roundabout is installed under permit a city/state agreement must exist such that if the roundabout fails within the first three years then the state is not responsible for any construction or reengineering costs.
2) Driveways should not be allowed within 100' away of the splitter island. (Waivers are to be approved by the Traffic Engineering Division Administrator.)

C. Geometry

1) All Roundabouts
   a. All speed control shall take place prior to the yield point on entry. The recommended design speed for all vehicles entering the roundabout is 15 mph. Remove any reverse curvature between the entrance and exit radii and join with straight curb sections.
   b. The offset left alignment is preferred, the center alignment is acceptable and the offset right alignment requires a waiver to be made by the Traffic Engineering Division Administrator.
   c. Approach legs should be designed as perpendicular to each other as possible.
   d. Entry width should be 18' for a single lane roundabout unless a wider entry is needed due to a larger design vehicle. Entry widths for dual movements are to be designed using Auto TURN.
   e. Circulatory roadway width should accommodate buses and fire trucks.
   f. Exit radius should be between 400' – 800'.
   g. Use a WB-67 for the design vehicle. (Waivers are to be approved by the Traffic Engineering Division Administrator.)
   h. Truck Aprons
      1. Range from 3 ft to 13 ft wide with a cross slope 3-5 percent away from the central island. Exact width of truck apron should be determined from Auto TURN.

tp://notes1/ppnsmos.nsf/0/CDAD9FC8552D85ED8625742B0052C7CA/$file/EDSM+VI.1.1.6+&+Attac... 4/23/2010

# Basic Principle of Traffic Engineering

"*Everything is designed to meet Driver Expectancy*"


# TR Engineering 101

- Module:
  1. Introduction & Overview (3/22/10)
  2. **Speed Management Overview (4/26/10)**
  3. **School Zones (4/26/10)**
  4. Intersection Traffic Control (5/24/10)
  5. Traffic Signal (5/24/10)
  6. Roundabouts (5/24/10)
  7. Sign Selection & Installation (6/28/10)
  8. Work Zones (6/28/10)
  9. Access Management (7/26/10)

# Speed Limits

- Theory of speed limits
- State Laws
- DOTD's policy on speed limits
- How to do a speed study
- What signs do we use?

# Terrebonne Speed Study

- The Federally funded project was conducted in 2004 and 2005
- Included a review of speed limits from the engineering and enforcement perspectives

*- Discussion of results brought to light by study*

# Enforcement of Speeds

- Discuss LSP organization
- How the State Police Enforce Speed Limits
- Aggressive Driving Task Force

# School Zones

- When to set a school speed zone
- DOTD's policy
- MUTCD guidance
- How to sign
- Flashing school sign

# Safe Routes to School

- What is this program?
- How can you get involved?

Safe Routes to School program - Walk to School Day

# Intersection Traffic Control & Management

- Different intersection types
- Control options
  - Stop control
  - Traffic signals
  - Roundabouts
  - Innovative designs
- Evaluation & selection of control device/method

# Suggestions & Feedback

- Specific questions you have regarding the major topics:
  - DOTD's traffic engineering staff & general program
  - Speed management decisions
  - Intersections
  - Traffic signals
  - Roundabouts
  - Signs
  - Access management

# More Suggestions?

Other traffic issues or questions?

Contact:

Jody Colvin at **Jody.Colvin@la.gov**

or:

Marie B. Walsh at
**mbwalsh@ltrc.lsu.edu**

# Speed Limits

# How do we control driving speeds?


- By setting reasonable speed limits.

# Speed Limits

- What does state law require?
- State Highways/Local Roads?
- What is a reasonable and safe speed limit?
- Who sets speed limits?
- How they are set?
- Speed limit signing?

# What does State law say?

- Louisiana Revised Statute 32:61
  - Sets statutory Speed Limits for “any highway of this state”
  - 55 mph max speed on all roads, except:
    - 70 mph on Interstate
    - 65 mph on divided highways

# State Highway Speed Zones

RS 32:61

- DOTD to develop criteria to set lower speed limits

RS 32:63

- Lower speed limits must be based on an engineering study
- Limits become effective upon posting

# Local Roads Speed Zones

RS 32:41

- Local municipal authorities may adopt ordinances establishing speed limits

RS 33:1236

- Parishes may adopt ordinances establishing speed limits

# State and Local Roads

RS 32:235

- DOTD shall adopt a manual and specifications for a uniform system of traffic control devices for use upon highways within this state
- Traffic control devices erected by local municipal and parish authorities shall conform to the department's manual

# What are reasonable and safe speed limits?

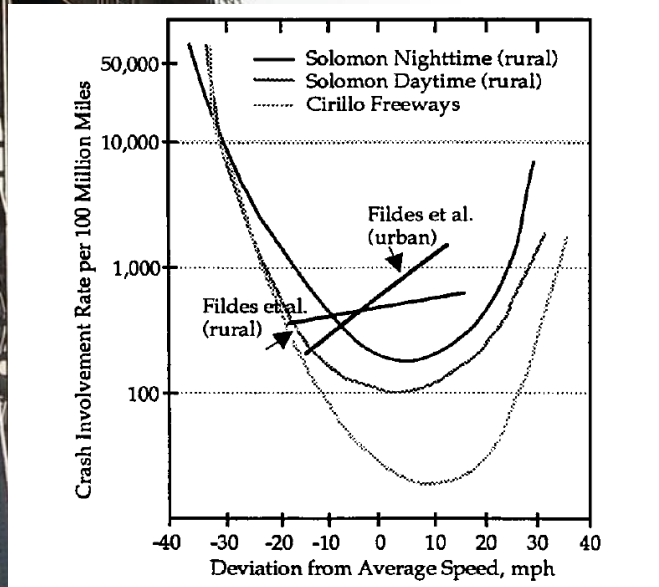
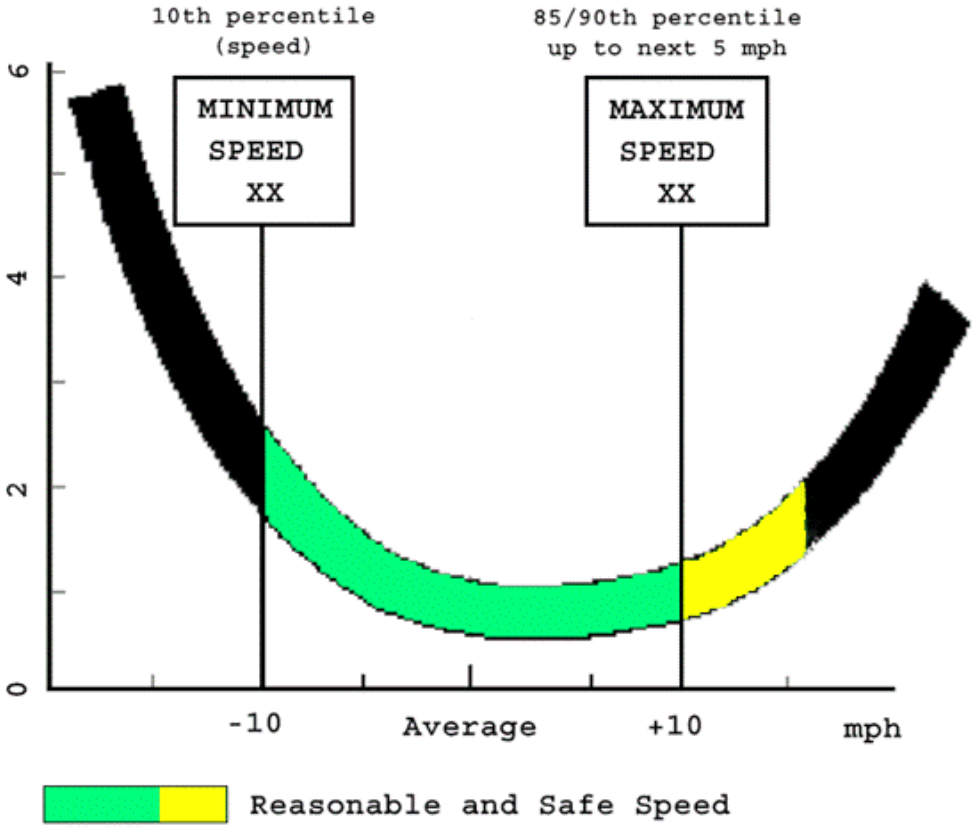



Figure 2-1 Vehicle crash involvement rates as a function of deviation from average traffic speeds (Solomon 1964; Cirillo 1968; Fildes et al. 1991 in Stuster and Coffman 1997, 6). 1 mph = 1.609 km/h.




*FHWA Synthesis of Speed Zoning Practice Report FHWA/RD-85/096*

# The safest speed is:

- Not necessarily the lowest speed.
- Its when everyone drives the same speed
  - Few vehicles pass and are passed.
  - Less tailgating and congestion
- The best speed limit is one which most people will follow.
- This requires measuring existing speeds.

# Statistics of Speeds

**What is the 85th Percentile & why is it important?**

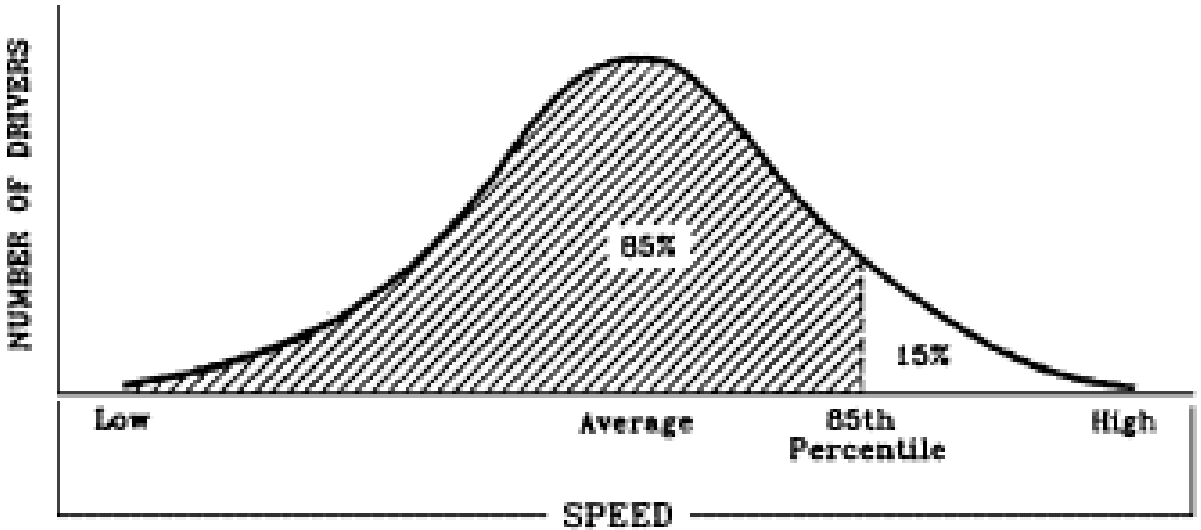
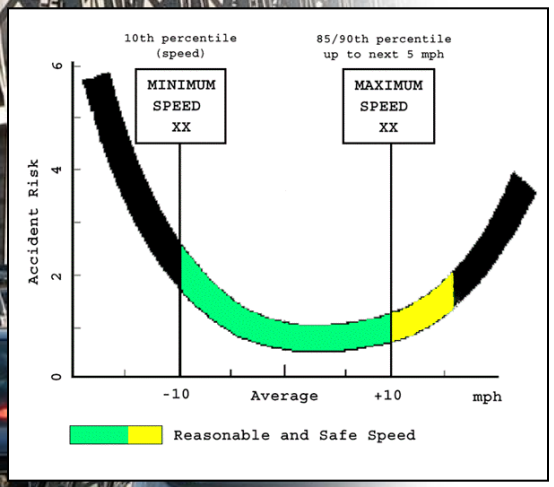



Figure 3-2 Speed distribution showing the 85th percentile speed (Krammes et al. 1996).

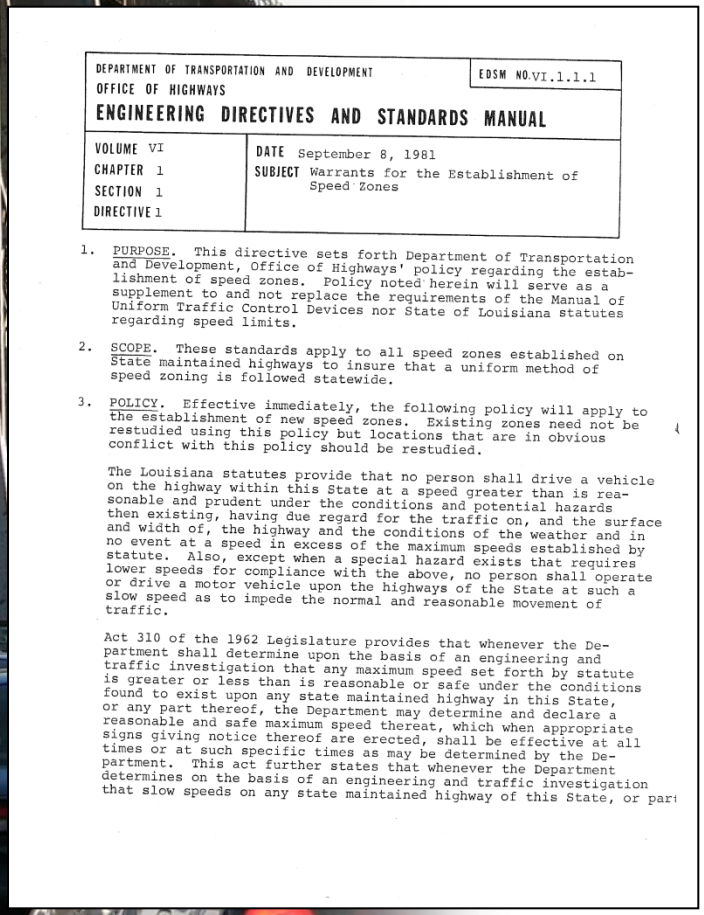
# 85th Percentile Speed

- Advantages of setting the speed limit at the 85th
  - Police are enabled to focus their enforcement efforts on the most dangerous speed outliers
  - Crash involvements are lowest near the 85th



# DOTD's Speed Limit Policy

- Engineering Directives and Standards Manual (EDSM) VI.1.1.1
- States criteria for developing lower speed limits
- Requires an engineering study commonly known as a Speed Study.



DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
OFFICE OF HIGHWAYS
EDSM NO.VI.1.1.1

**ENGINEERING DIRECTIVES AND STANDARDS MANUAL**

| | |
|---|---|
| VOLUME VI | DATE September 8, 1981 |
| CHAPTER 1 | SUBJECT Warrants for the Establishment of Speed Zones |
| SECTION 1 | |
| DIRECTIVE 1 | |

1. PURPOSE. This directive sets forth Department of Transportation and Development, Office of Highways' policy regarding the establishment of speed zones. Policy noted herein will serve as a supplement to and not replace the requirements of the Manual of Uniform Traffic Control Devices nor State of Louisiana statutes regarding speed limits.

2. SCOPE. These standards apply to all speed zones established on State maintained highways to insure that a uniform method of speed zoning is followed statewide.

3. POLICY. Effective immediately, the following policy will apply to the establishment of new speed zones. Existing zones need not be restudied using this policy but locations that are in obvious conflict with this policy should be restudied.

The Louisiana statutes provide that no person shall drive a vehicle on the highway within this State at a speed greater than is reasonable and prudent under the conditions and potential hazards then existing, having due regard for the traffic on, and the surface and width of, the highway and the conditions of the weather and in no event at a speed in excess of the maximum speeds established by statute. Also, except when a special hazard exists that requires lower speeds for compliance with the above, no person shall operate or drive a motor vehicle upon the highways of the State at such a slow speed as to impede the normal and reasonable movement of traffic.

Act 310 of the 1962 Legislature provides that whenever the Department shall determine upon the basis of an engineering and traffic investigation that any maximum speed set forth by statute is greater or less than is reasonable or safe under the conditions found to exist upon any state maintained highway in this State, or any part thereof, the Department may determine and declare a reasonable and safe maximum speed thereat, which when appropriate signs giving notice thereof are erected, shall be effective at all times or at such specific times as may be determined by the Department. This act further states that whenever the Department determines on the basis of an engineering and traffic investigation that slow speeds on any state maintained highway of this State, or part

# What is a Speed Study?

- Measure free flow speeds
  - Determine speed statistics
- Inventory roadway
- Recommends speed
- Recommends length

# How to measure free-flow speeds?

- Equipment:
  - Stopwatch
  - Radar/Laser
  - Loops/tubes/video
- 100 vehicles or 1 hour max

# Statistics of Speeds

MOTOR VEHICLE SPEED STUDY

Date 7-29-81 Location La. 964 STA. 1 Direction NORTH & SOUTH

Time 8:15-8:45AM Weather clear Road Surface Condition Good

| Sec. | MPH for 88' | AUTOMOBILES | LIGHT COMMERCIAL | HEAVY COMMERCIAL | BUSSES | CUM. TOTAL | CUM. % |
|---|---|---|---|---|---|---|---|
| 0.8 | 75.0 | | | | | | |
| 0.9 | 66.5 | | | | | | |
| 1.0 | 60.0 | | | | | | |
| 1.1 | 54.5 | // | | | | | 100 |
| 1.2 | 50.0 | 𝍸 - 𝍸 - /// | | | | | 98 |
| 1.3 | 46.0 | 𝍸 - 𝍸 - 𝍸 - // | /// | / | | | 85 |
| 1.4 | 42.9 | 𝍸 - 𝍸 - / | 𝍸 - | | | | 64 |
| 1.5 | 40.0 | 𝍸 - //// | // | / | | | 48 |
| 1.6 | 37.8 | 𝍸 - /// | 𝍸 - | / | | | 36 |
| 1.7 | 35.0 | //// | /// | | | | 22 |
| 1.8 | 33.3 | 𝍸 - /// | | | | | 15 |
| 1.9 | 31.4 | //// | | | | | 7 |
| 2.0 | 30.0 | /// | | | | | 3 |
| 2.1 | 28.5 | | | | | | |
| 2.2 | 27.3 | | | | | | |
| 2.3 | 26.0 | | | | | | |
| 2.4 | 25.0 | | | | | | |
| 2.5 | 23.8 | | | | | | |
| 2.6 | 23.1 | | | | | | |
| 2.7 | 22.1 | | | | | | |
| 2.8 | 21.4 | | | | | | |
| 2.9 | 20.7 | | | | | | |
| 3.0 | 20.0 | | | | | | |
| 3.1 | 19.3 | | | | | | |
| 3.2 | 18.8 | | | | | | |
| 3.3 | 18.2 | | | | | | |
| 3.4 | 17.6 | | | | | | |
| 3.5 | 17.1 | | | | | | |
| 3.6 | 16.7 | | | | | | |
| 3.7 | 16.1 | | | | | | |
| 3.8 | 15.8 | | | | | | |
| 3.9 | 15.3 | | | | | | |
| 4.0 | 15.0 | | | | | | |
| Totals | | | | | | | |

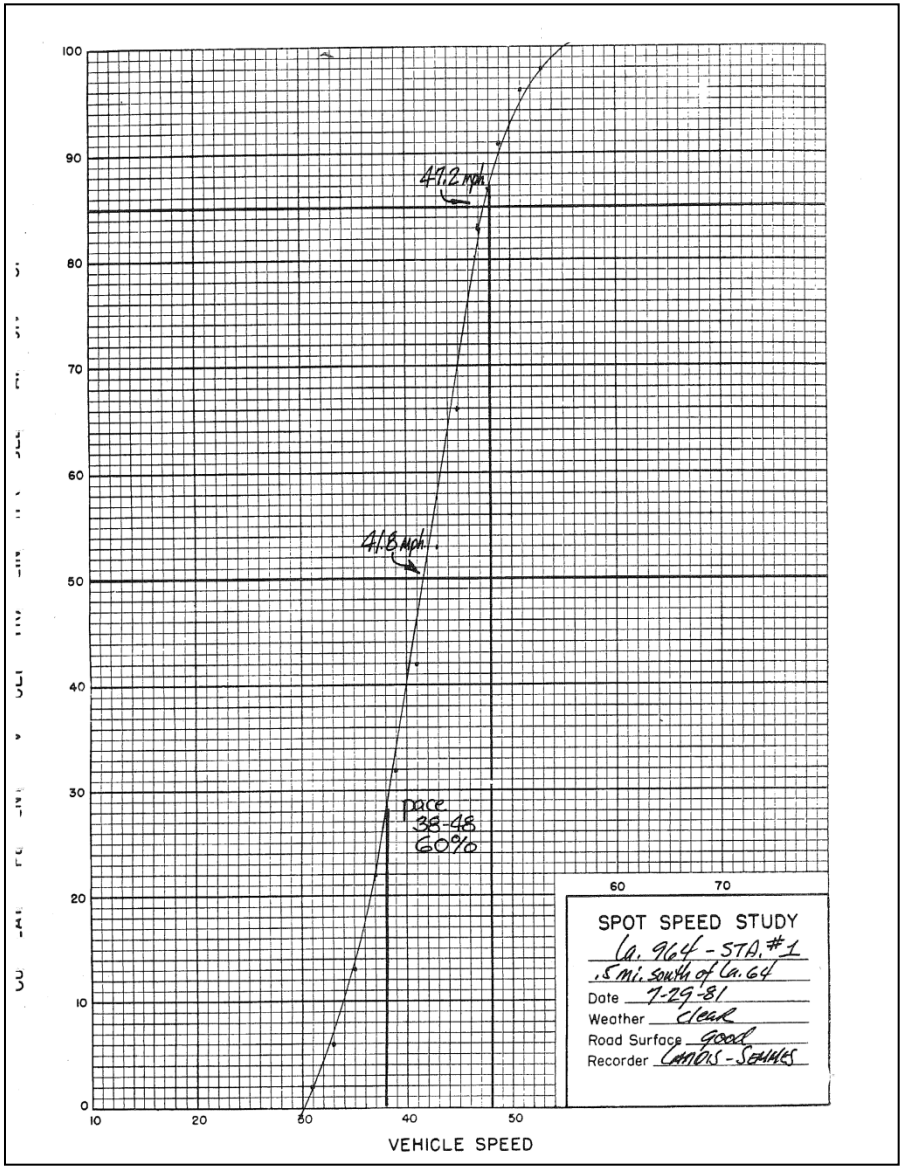
85% Speed 47.2

50% Speed 41.8

Mode STOPWATCH

Av. Speed

CANDIS-SEMMES



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| 0.9 | 66.5 | | | | | | |
| 1.0 | 60.0 | | | | | | |
| 1.1 | 54.5 | // | | | | | 100 |
| 1.2 | 50.0 | 𝍸 - 𝍸 - /// | | | | | 98 |
| 1.3 | 46.0 | 𝍸 - 𝍸 - 𝍸 - // | /// | / | | | 85 |
| 1.4 | 42.9 | 𝍸 - 𝍸 - / | 𝍸 | | | | 64 |
| 1.5 | 40.0 | 𝍸 - //// | // | / | | | 48 |
| 1.6 | 37.8 | 𝍸 - /// | 𝍸 | / | | | 36 |
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| 1.8 | 33.3 | 𝍸 - /// | | | | | 15 |
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| 2.1 | 28.5 | | | | | | |
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| 3.1 | 19.3 | | | | | | |
| 3.2 | 18.8 | | | | | | |
| 3.3 | 18.2 | | | | | | |
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| 3.5 | 17.1 | | | | | | |
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| 3.9 | 15.3 | | | | | | |
| 4.0 | 15.0 | | | | | | |
| Totals | | | | | | | |

**Existing speed limit : 45 mph**

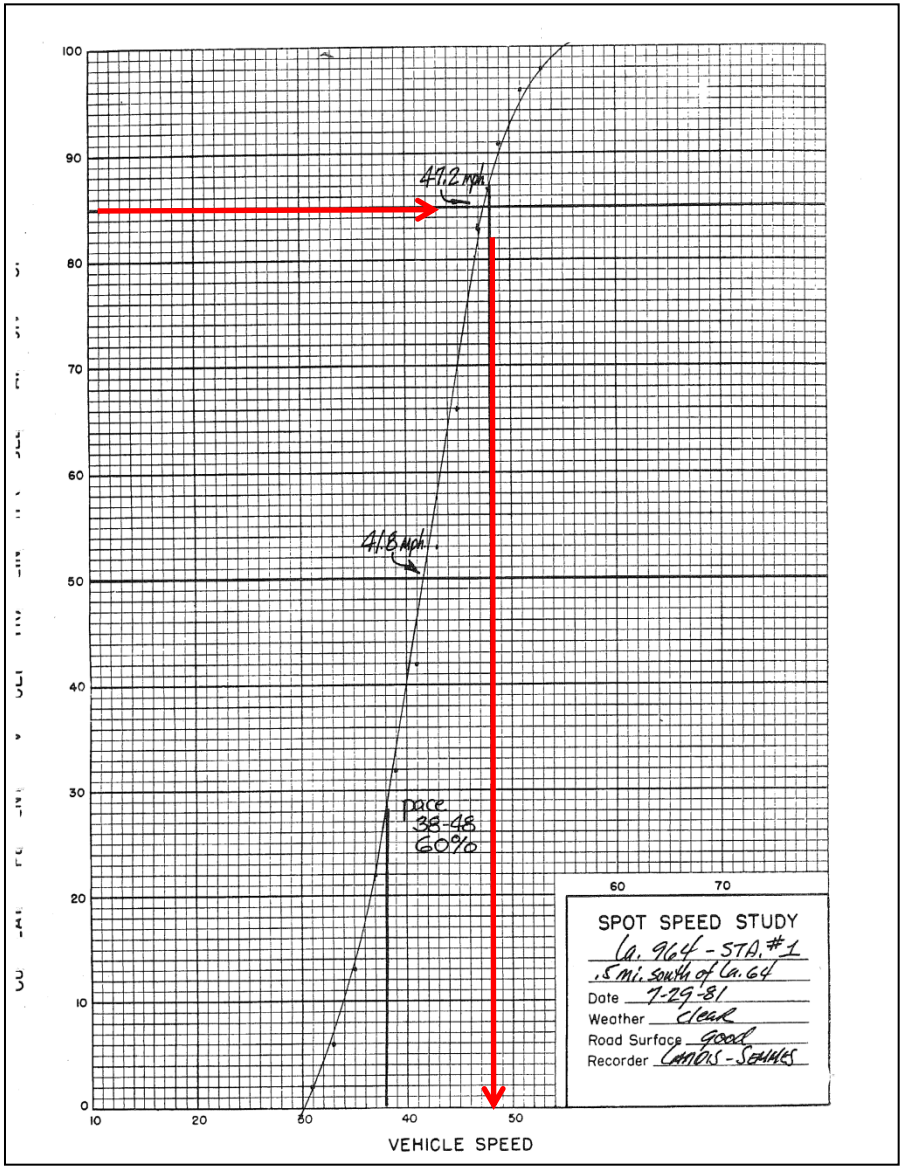
85% Speed 47.2

50% Speed 41.8

Mode STOPWATCH

Av. Speed

CANDIS-SEMMES



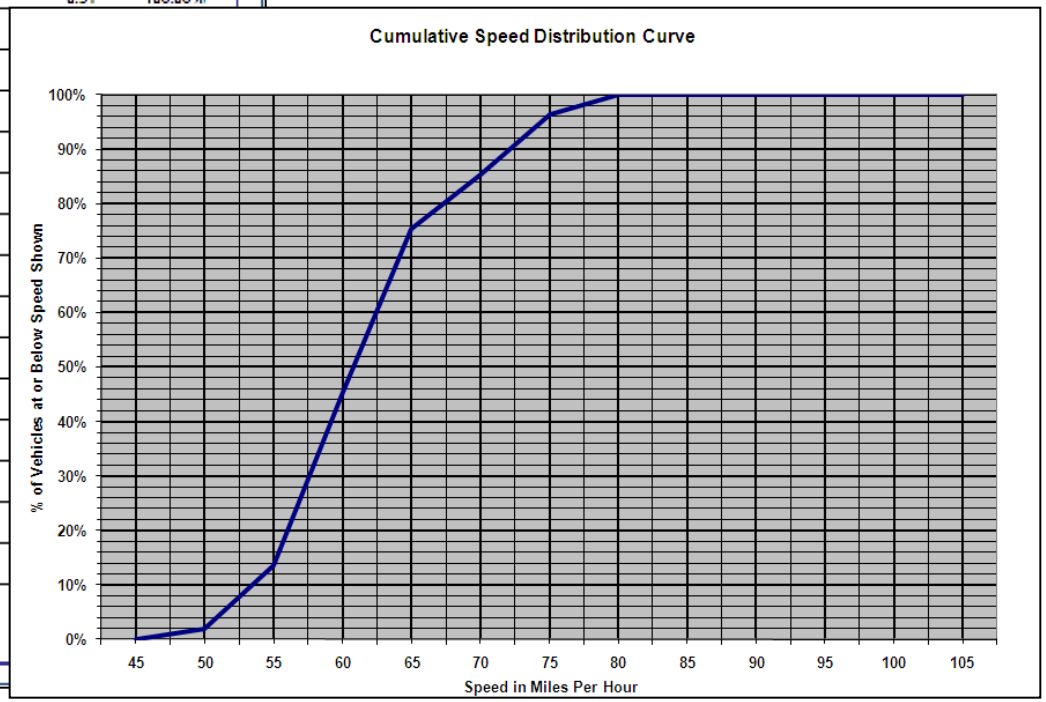
# Statistics of Speeds

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
DISTRICT 61 TRAFFIC SECTION
SPOT SPEED STUDY

| | | | |
|---|---|---|---|
| LOCATION: | LA 641 ~ 1.8 MILES SOUTH OF I - 10 EAST BOUND OFF RAMP | | |
| REPORT #: | | TIME OF STUDY: | 10:54 - 11:33 am |
| DATE: | 05/02/06 | WEATHER: | CLOUDY & WARM |
| DIRECTION OF TRAVEL: | NORTH & SOUTHBOUND | ROAD CONDITIONS: | GOOD |
| ROUTE: | LA 641 | PARISH: | ST. JAMES |
| CONTROL SECTION: | 847 - 02 | POSTED SPEED LIMIT: | 55 |

| | | | |
|---|---|---|---|
| MEAN (AVERAGE): | 82.1 | 15 TH PERCENTILE: | 66 |
| MODE: | 82 | 50 TH PERCENTILE: | 70 |
| MEDIAN: | 82 | 85 TH PERCENTILE: | 76 |
| BOTTOM OF 10 MPH PACE SPEED: | 56 | NO. OF OBSERVATIONS: | 110 |
| TOP OF 10 MPH PACE SPEED: | 85 | % OF VEHICLES IN PACE RANGE: | 81.8% |

| SPEED | FREQ. | Percent | Cumlative Percent | SPEED | FREQ. | Percent | Cumlative Percent |
|---|---|---|---|---|---|---|---|
| 40 | | | | 74 | | | |
| 41 | | | | 75 | 3 | 2.73 | 96.36% |
| 42 | | | | 76 | 1 | 0.91 | 97.27% |
| 43 | | | | 77 | | | |
| 44 | | | | 78 | 2 | 1.82 | 99.09% |
| 45 | | | | 79 | 1 | 0.91 | 100.00% |
| 46 | 1 | 0.91 | 0.91% | 80 | | | |
| 47 | | | | 81 | | | |
| 48 | | | | 82 | | | |
| 49 | | | | 83 | | | |
| 50 | 1 | 0.91 | 1.82% | 84 | | | |
| 51 | 2 | 1.82 | 3.64% | 85 | | | |
| 52 | | | | 86 | | | |
| 53 | 6 | 5.45 | 9.09% | 87 | | | |
| 54 | 1 | 0.91 | 10.00% | 88 | | | |
| 55 | 4 | 3.64 | 13.64% | 89 | | | |
| 56 | 5 | 4.55 | 18.18% | 90 | | | |
| 57 | 7 | 6.36 | 24.55% | 91 | | | |
| 58 | 7 | 6.36 | 30.91% | 92 | | | |
| 59 | 7 | 6.36 | 37.27% | 93 | | | |
| 60 | 9 | 8.18 | 45.45% | 94 | | | |
| 61 | 6 | 4.55 | 50.00% | 95 | | | |
| 62 | 11 | 10.00 | 60.00% | 96 | | | |
| 63 | 4 | 3.64 | 63.64% | 97 | | | |
| 64 | 7 | 6.36 | 70.00% | 98 | | | |
| 65 | 6 | 5.45 | 75.45% | 99 | | | |
| 66 | 3 | 2.73 | 78.18% | 100 | | | |
| 67 | 2 | 1.82 | 80.00% | 101 | | | |
| 68 | 3 | 2.73 | 82.73% | 102 | | | |
| 69 | | | | 103 | | | |
| 70 | 3 | 2.73 | 85.45% | 104 | | | |
| 71 | 4 | 3.64 | 89.09% | 105 | | | |
| 72 | 3 | 2.73 | 91.82% | | | | |
| 73 | 2 | 1.82 | 93.64% | | | | |



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| 47 | | | | 81 | | | |
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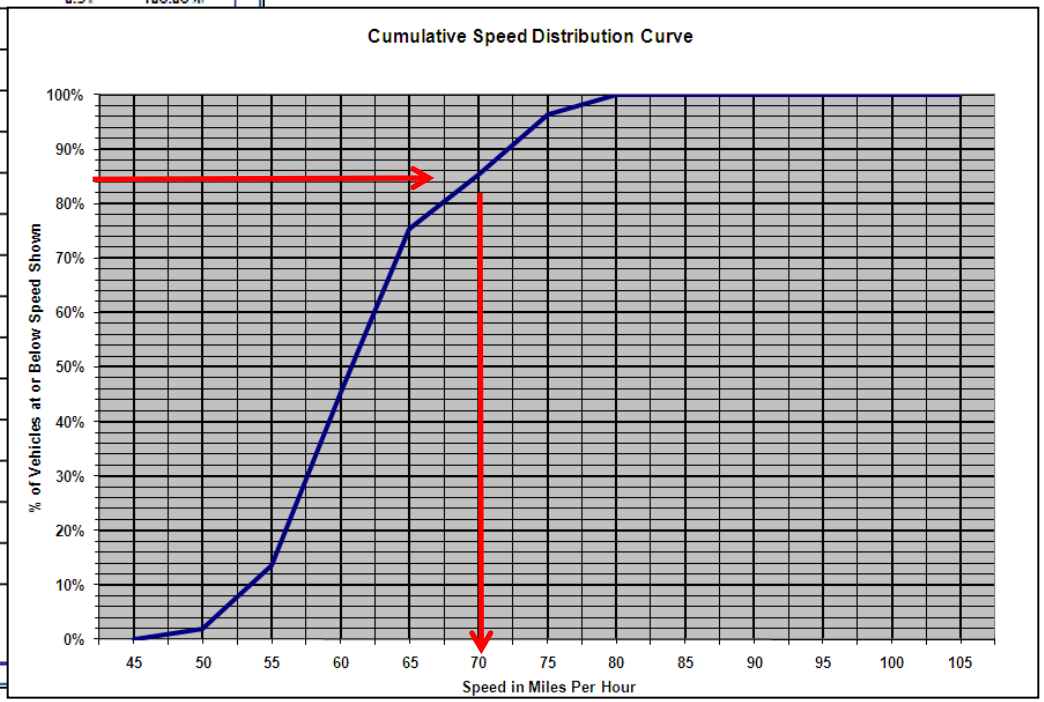
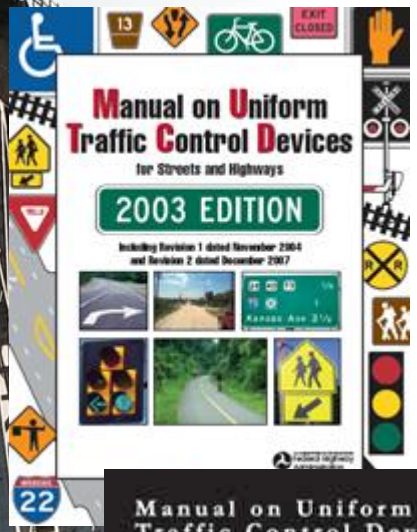
| 73 | 2 | 1.82 | 93.64% | | | | |

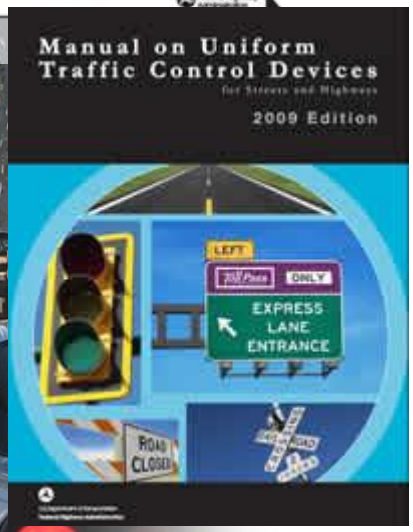


# Inventory Roadway

- Type of roadway
- Geometric features
- Spacing of intersections/driveways
- Sight distance
- Horizontal/vertical alignment
- Crash data
- On street parking/Pedestrians

# Determine 85th




- Manual on Uniform Traffic Control Devices (MUTCD)

*"When a speed limit within a speed zone is posted, it should be within 5 mph of the 85th% of free-flowing traffic."*

# When not to use the 85th

- Above the statutory
- Road inventory issues
  - Features
  - Geometry
  - Crashes
  - Parking/pedestrians
- Schools

# Chief Engineers Order

- Engineering report that states speed limit and the length of the zone
- Signed & Stamped by a licensed Professional Engineer
- Approval of Chief Engineer
- Filed in the local courthouse
- Signs are installed

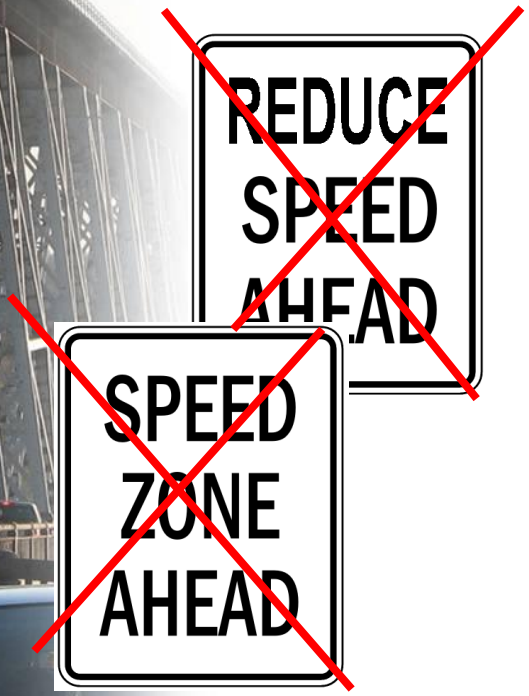

# Where Do You Place Signs?

MUTCD requirements

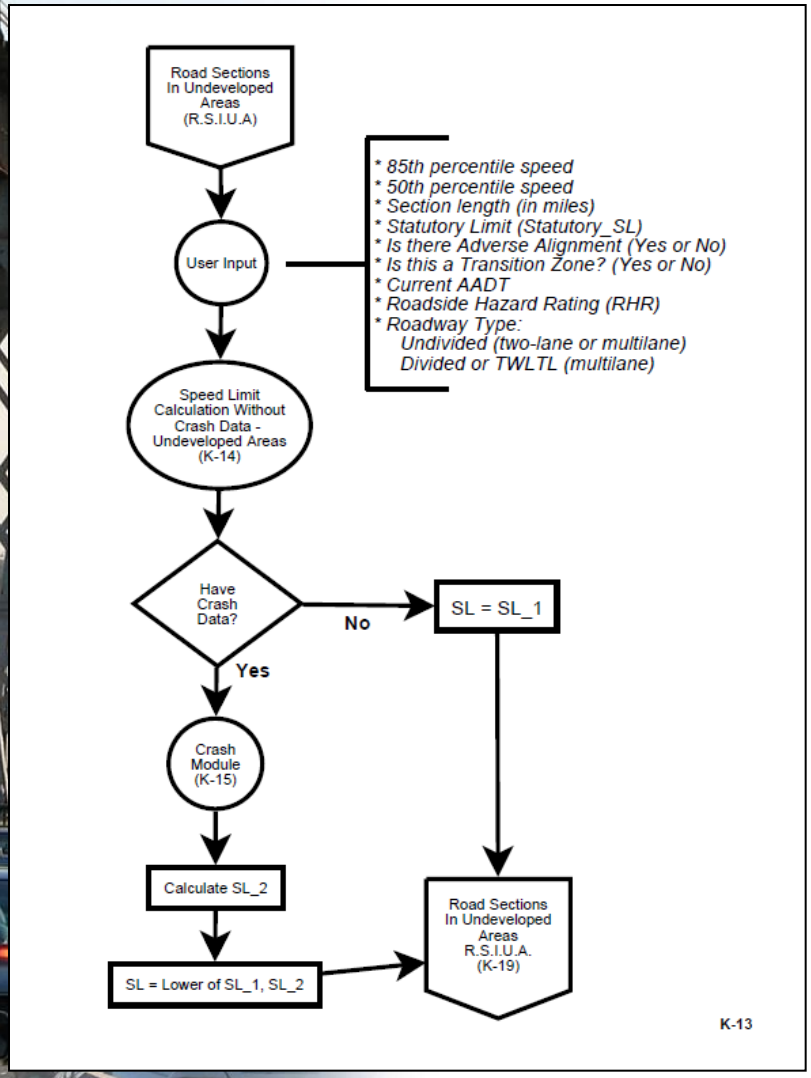
- Where speed limits change
- Beyond major intersections
- Where necessary to remind road users

# Warning Signs

- Place prior to each speed zone




# Future Tools




## US LIMITS

- A web based expert system for recommending speed limits in speed zones.

- uslimits.com

# Radar speed displays


# Questions?


Contact Information:

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(225) 242-4631

peter.allain@la.gov


References:

www.legis.state.la.us

www.mutcd.fhwa.dot.gov

www.dotd.la.gov/highways/traffic/home.aspx

Terrebonne Parish Consolidated Government

# Department of Public Safety

Ralph D. Mitchell Jr. - Director

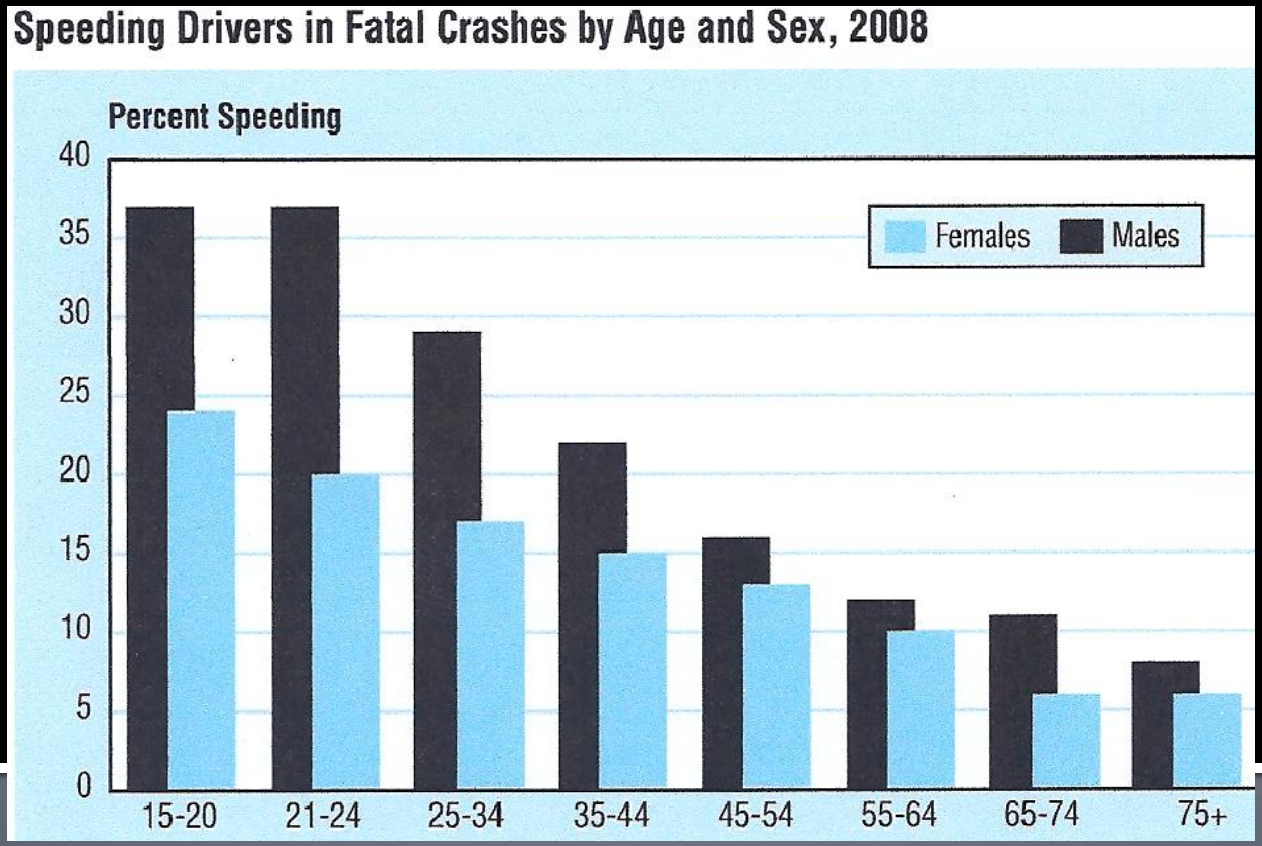
# Department of Public Safety

Terrebonne Parish Consolidated Government

# "Rational Speed Limits"


# Department of Public Safety

Terrebonne Parish Consolidated Government




## Problem Statement

# Department of Public Safety

Terrebonne Parish Consolidated Government

## NHTSA and FHWA Policy on Speeding

1. Speed Limits are Reasonable and Appropriate for Conditions
2. Public Information and Education on Risks Associated with Speeding
3. Understanding Who, Where, When, and Why of Speeding
4. Using a Variety of Techniques and Technologies for Speed Management
5. Targeted Enforcement

# Department of Public Safety

Terrebonne Parish Consolidated Government


## Key Elements of a Balanced Speed Management Program

# Department of Public Safety

Terrebonne Parish Consolidated Government

- Speed Limits
- Education and Public Information
- Enforcement
- Research and Demonstration

Key Elements of a Balanced Speed Management Program

# Department of Public Safety

Terrebonne Parish Consolidated Government

## SCPDC Speed Demonstration Program

- FHWA Grant
- 85th Percentile Method
- Survey of Streets in Region
- Re-Posting of Speed Limits
- Enforcement
- Evaluation

SCPDC Speed Demonstration Program

# Department of Public Safety

Terrebonne Parish Consolidated Government

- Political Implications
- Costs
- Public Buy-In
- Environment of Location

## Things to Consider

# Department of Public Safety

Terrebonne Parish Consolidated Government

## SCPDC Demonstration Project

http://scpdc.org/?page_id=91

## Speed Concepts Information Guide

http://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa10001

# For More Information

**Ralph D. Mitchell Jr.**
**Director of Public Safety**

**985-873-6405**
**rmitchelljr@tpcg.org**

Terrebonne Parish Consolidated Government

# Department of Public Safety

Ralph D. Mitchell Jr. - Director

# Louisiana State Police Traffic Operations


Sgt. Robert A. Burns II

# Overview

- 675 troopers assigned to Patrol
- Assigned to nine Troop locations statewide
- Statewide jurisdiction
- Primary functions are traffic enforcement and crash investigation
- Provide support to all local police departments and sheriff's offices

# Troop Locations

# 2009 Enforcement Statistics

- 14,245,031 miles patrolled
- 35,508 crashes investigated
- 196,080 speeding citations
- 95,449 seatbelt and child restraint citations
- 143,285 other citations
- 13,966 DWI arrests
- 9,761 criminal arrests
- 10,568 insurance violations

# Speeding Citations

- Motivation is to promote public safety, not revenue
- LSP does not receive any funds generated from fines
- Vehicle speed directly influences many factors
  - Reaction time
  - Braking distance
  - Ability to navigate roadway surface conditions and/or alignment
  - Effectiveness of vehicle restraint systems to protect occupants
  - Effectiveness of roadway systems such as guardrails, impact attenuators and barriers to protect motorists

# 2007 NHTSA Report

- According to the National Highway Traffic Safety Administration, in 2007:
  - 31% of all fatal crashes were speeding-related
  - 13,040 resulting fatalities
  - Estimated economic cost to society…….

$40,400,000,000.00

# Identifying Areas of Concern

## TrafficStat Plan Analysis

- Provides concrete evidence of "problem areas"
- Effective tool for shift supervisors when determining staffing levels for Troop area
- All Troop personnel are issued a copy and utilize the information to identify areas in their area that warrant enhanced enforcement
- Not used as simply a "grant justification"

# Identifying Areas of Concern

## Citizens' Complaints

- www.lsp.org
- Each Troop has an email address that the public may voice their concerns
- All emails are reviewed by the Troop Commander
- Complaints are also received by telephone and in person

# LSP Speed Enforcement

- All LSP Patrol Vehicles are equipped with the most advanced radar units available
- Troopers also use handheld scoped LIDAR units that use laser technology to measure speed

# LSP Speed Enforcement

## Air Support Speed Details

- LSP Pilots coordinate with Troopers on the ground to measure vehicles' speeds
- Conducted on all major Federal and Interstate Highways
- Effective tool against radar detectors

# LSP Speed Enforcement

## Motorcycle Patrol

- Provides concentrated enforcement as directed by the Troop Commander
- Generally used in school zones, construction zones, and enforcement in response to citizens' complaints

# Aggressive Driving Task Force

- How do we define Aggressive Driving?
- How do we quantitatively measure the magnitude of the issue?
- How do we effectively analyze the data we currently have?
- What data should we work to capture in the future?
- What countermeasures can we develop?

# Thank You

Sgt. Robert A. Burns II

Office - (225) 925-6113 x218

Cell - (225) 754-2266

Robert.Burns@dps.la.gov

# SCHOOLS

- School Warning
- Pedestrian Signs
- Speed Zone
- Flashing Sign
- School Bus Stop Ahead
- Crossing Guards

# DOTD Policy

- Traffic Engineering Manual
  - Section 7A.2
  - Found on the LADOTD website under Transportation and Traffic Engineering
- MUTCD Chapter 7

# School Warning Sign

- 1 driveway on state route
- Enrollment >100 students
- Combination of K-12

# What Doesn't Qualify?

- Colleges
- Universities
- Preschools
  - Headstart
- Daycares

# School Crosswalks

- School warning sign installed
- Volume of children crossing >10

# Crosswalks are not justified if:

- Within 600 ft of another crosswalk
- Inadequate stopping sight distance
- Speeds > 50 mph
- For loading & unloading zones

# Reduced School Speed Zones

- School warning warrant
- School crosswalk warrant

# Time of Reduction

- Morning:
  - 45 minutes before school starts to 15 minutes after school starts
- Afternoon
  - 15 minutes before school ends to 45 minutes after school ends

# Speed Reductions

| Existing Speed | Reduction |
|---|---|
| 25 mph or less | 0 mph |
| 30 mph | 5 mph |
| 35 – 45 mph | 10 mph |
| 50 mph | 15 mph |
| 55 mph or above | 0* |

*Engineering study required for reduction

# Chief Engineers Order

- State limits of speed limit
- States time of reduction
- Signed by Chief Engineer
- Legal files in local courthouse
- Signs are installed

# SIGNS

- Fluorescent yellow-green background (2009 MUTCD)
- Sizes are in Table 7B-1

# SIGNS

**Figure 7B-1. School Area Signs**

School Advance Crossing Assembly

S1-1
AHEAD W16-9P
OR
200 FT W16-2aP
OR
200 FEET W16-2P
OR
W16-5P (optional)
OR
W16-6P (optional)

School Crossing Assembly

S1-1
W16-7P

School Zone Sign

S1-1
ALL YEAR S4-7P (optional)
SCHOOL S4-3P (optional)
OR
W16-5P (optional)
OR
W16-6P (optional)

School Speed Limit Assembly

SCHOOL S4-3P
SPEED LIMIT 20 R2-1
7:30-8:30 AM 2:30-3:30 PM S4-1P
OR
WHEN CHILDREN ARE PRESENT S4-2P
OR
WHEN FLASHING S4-4P
OR
7:30-8:30 AM 2:30-3:30 PM S4-1P
MON-FRI S4-6P

S3-1

SCHOOL BUS TURN AHEAD
S3-2

SCHOOL SPEED LIMIT 20
S4-5

20 MPH SCHOOL ZONE AHEAD
S4-5a

SCHOOL
SPEED LIMIT 20
WHEN FLASHING
S5-1
FINES HIGHER R2-6P (optional)

END SCHOOL ZONE
S5-2

END SCHOOL SPEED LIMIT
S5-3

BEGIN HIGHER FINES ZONE
R2-10

END HIGHER FINES ZONE
R2-11

## Advanced School Sign

**S1-1**

**W16-9P**


## School Crosswalk Sign

**S1-1**

**W16-7P**

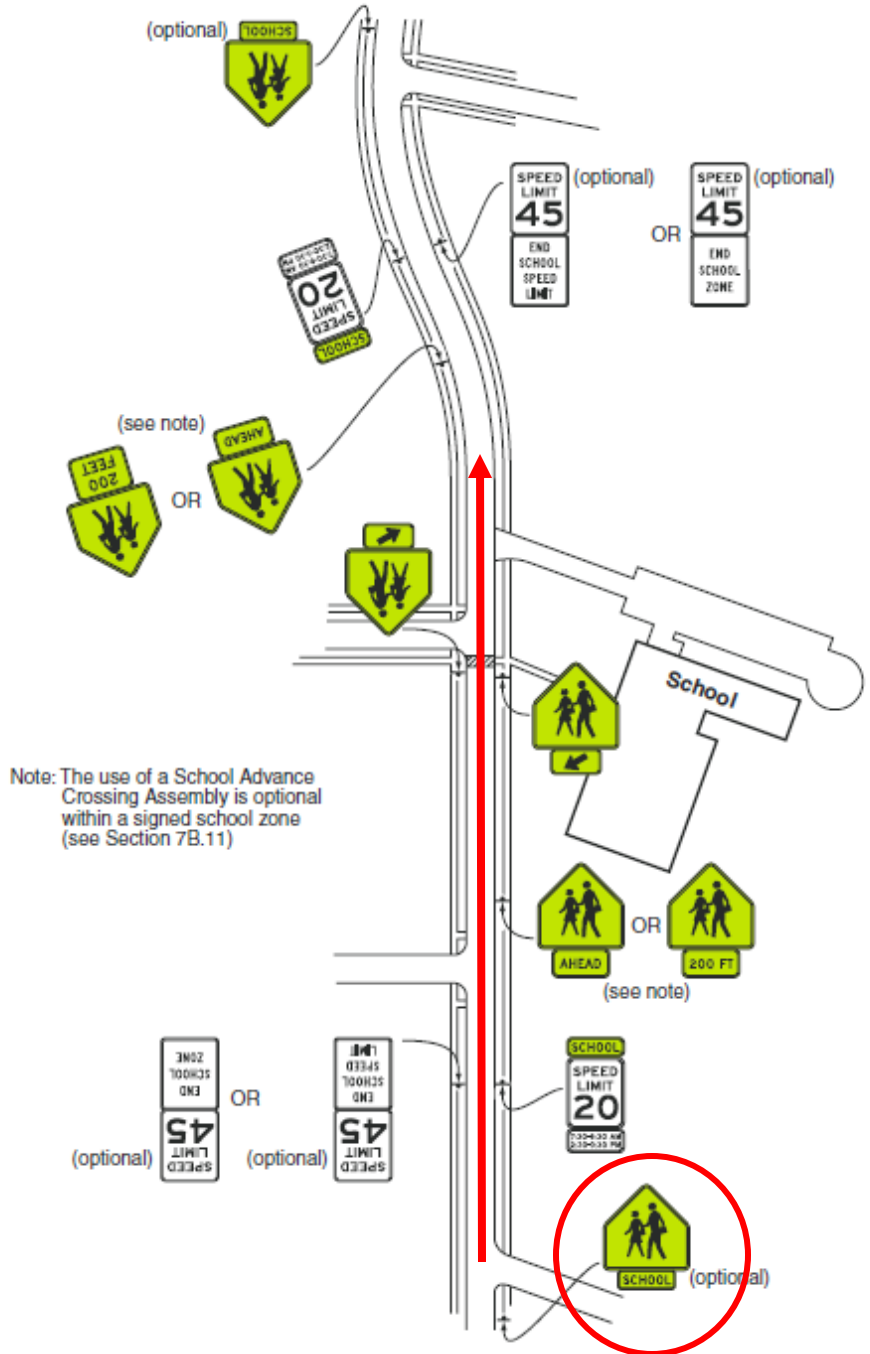
## School Speed Limit Warning


**S4-5**

## School Speed Limit Sign


**S5-1**


**Figure 7B-5. Example of Signing for a School Zone with a School Speed Limit and a School Crossing**

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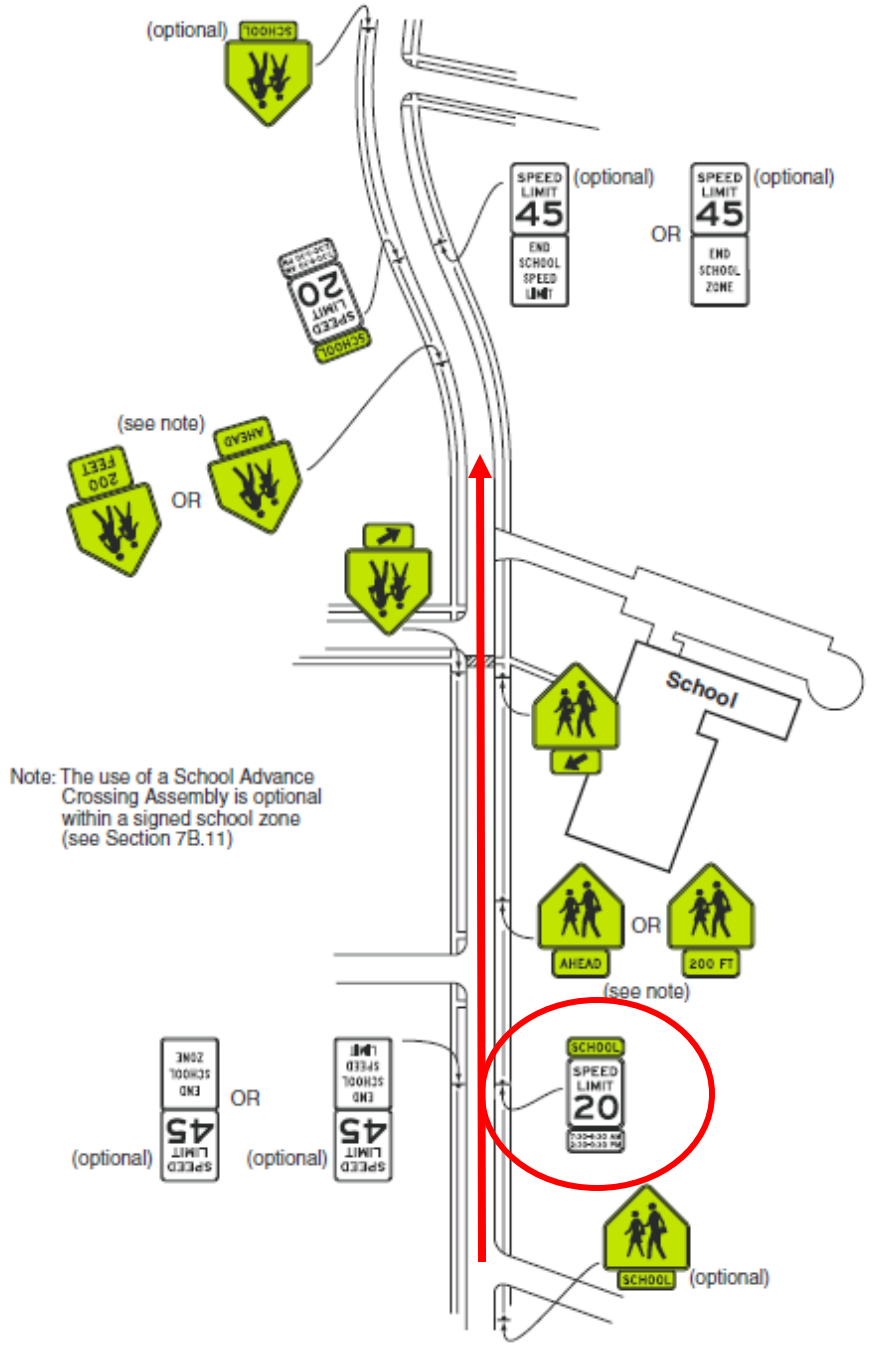


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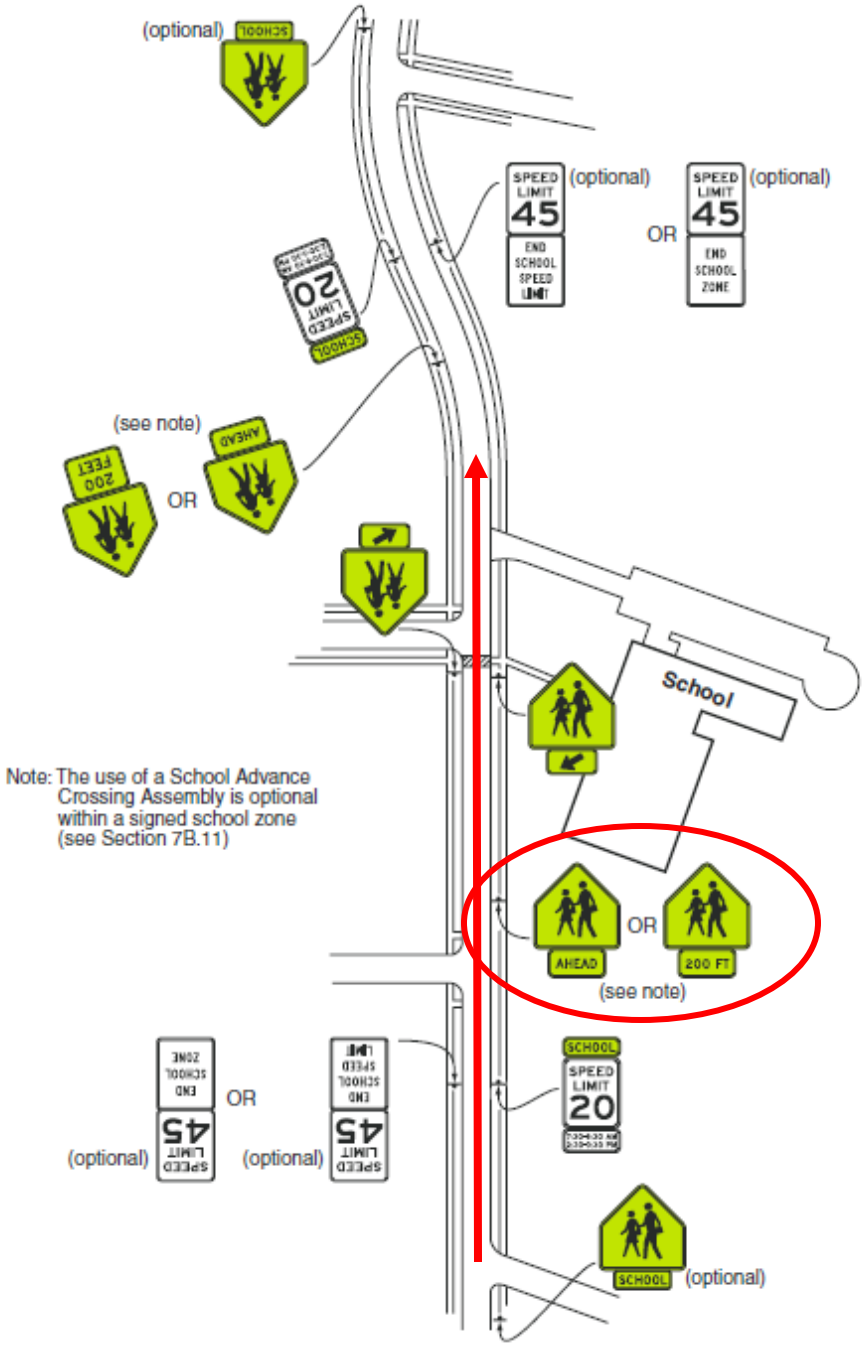


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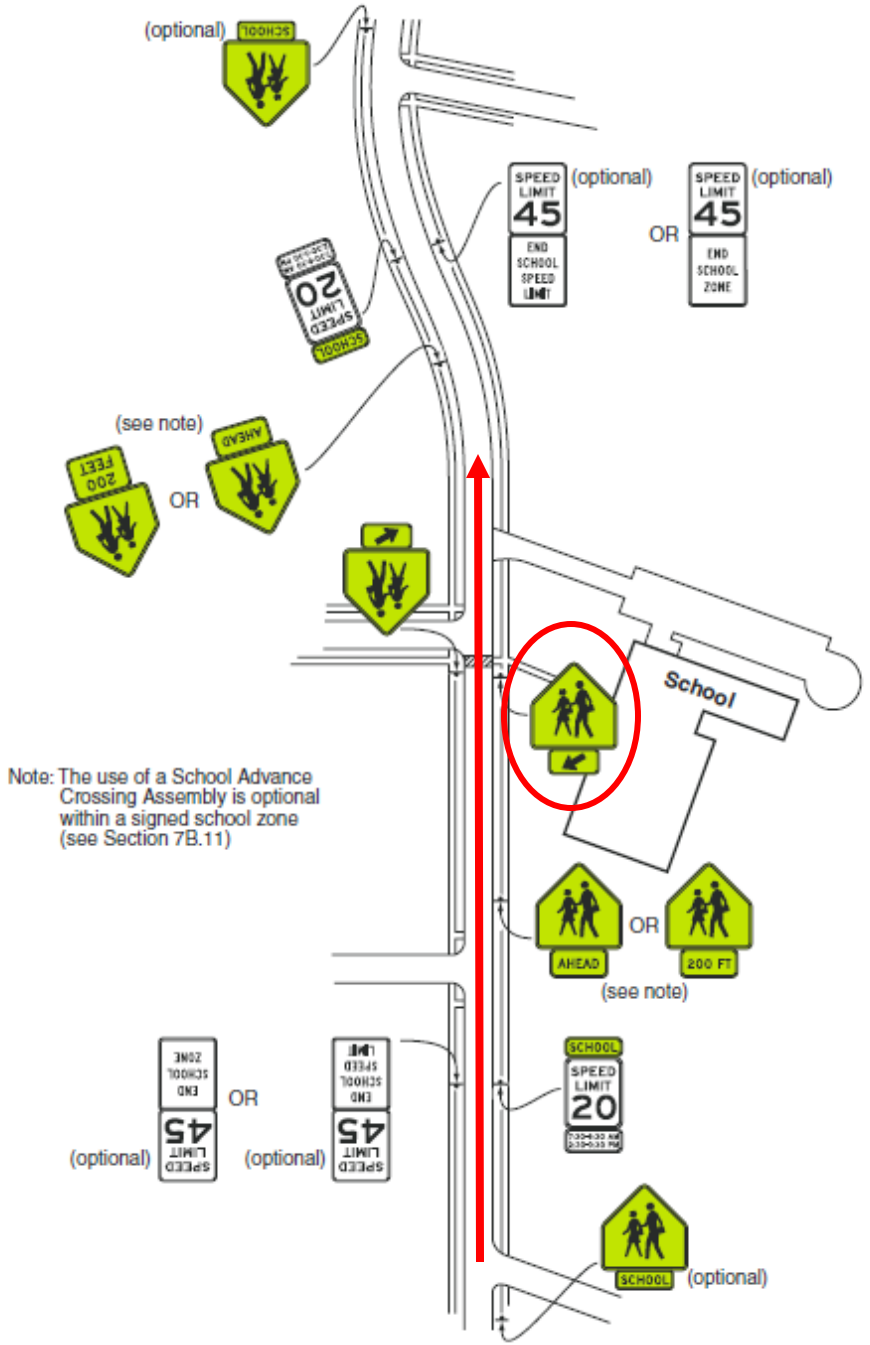


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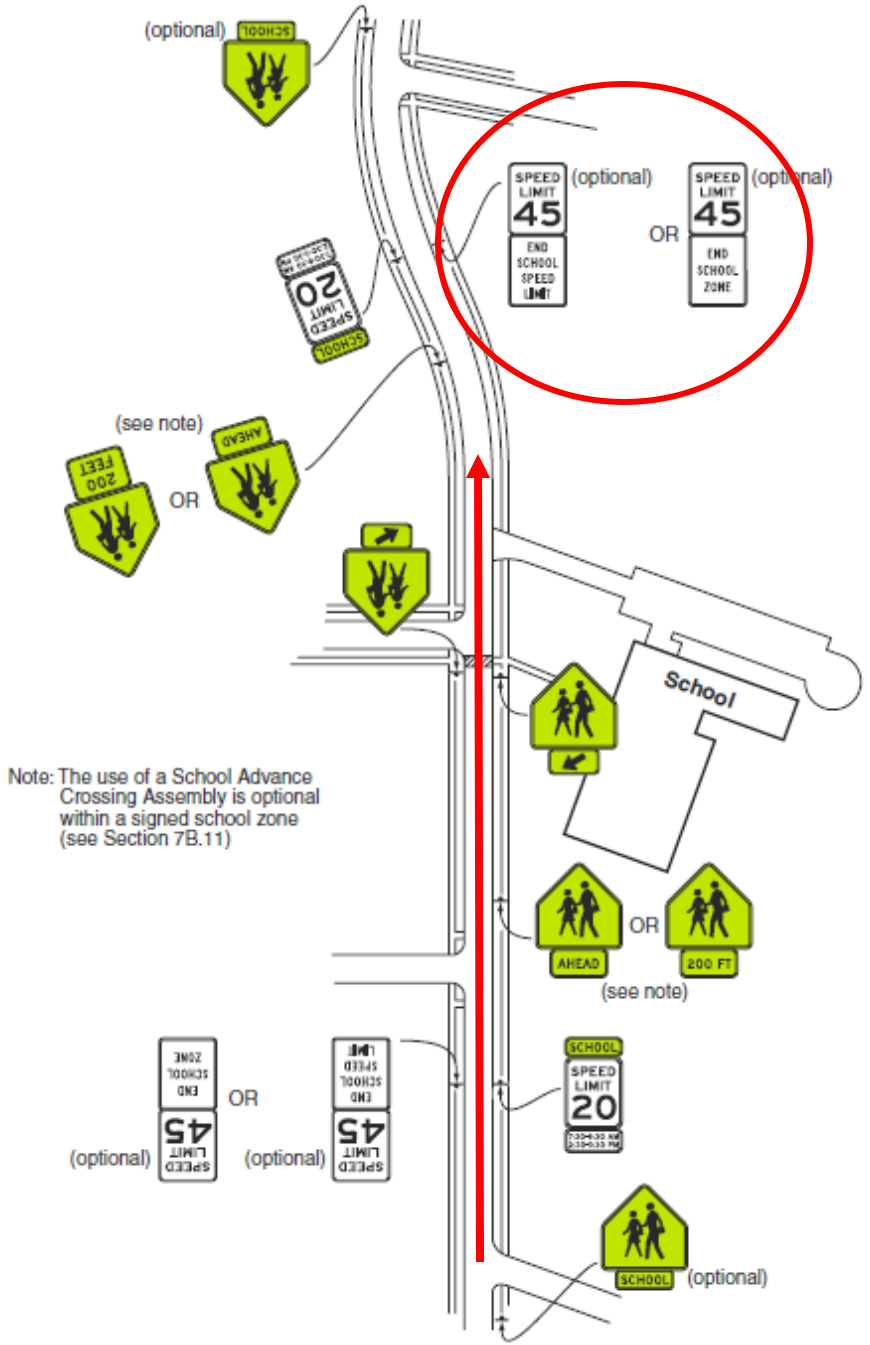

# Flashing Beacons

- Traffic control permit – maintenance by owner of sign (not DOTD)
- DOTD approval for state roads


# School Bus Stop Ahead Guidance

In the MUTCD (7B.13)

To be used when:

- There is inadequate stopping sight distance
- And the bus stop cannot be relocated

# Crossing Guard

- MUTCD
  - Type of Crossing Supervision
  - Uniform
    - Mandatory Reflective Vest
  - Operating Procedures

# Crossing Guard Qualifications

1. Average Intelligence
2. Good physical condition
3. Ability to control a STOP paddle
4. Ability to communicate specific instructions
5. Ability to recognize potentially dangerous situations

# Crossing Guard Qualifications

6. Mental Alertness
7. Neat Appearance
8. Good Character
9. Dependability
10. An overall sense of responsibility for the safety of students

# Questions?

## Contact

Jody Colvin
225-242-4635
jody.colvin@la.gov

# Louisiana Safe Routes to School

# Safe Routes to School goals

- Where it's safe, get kids walking and biking
- Where it's not safe, make it safe

# How did we get here?

| | FY 05 | FY 06 | FY07 | FY 08 | FY 09 | Total |
|---|---|---|---|---|---|---|
| Louisiana | $1,000,000 | $1,404,776 | $1,864,469 | $2,106,118 | $2,588,373 | $8,963,736 |

- The Safe Routes To School Program (SRTS) Was Created By Section 1404 Of SAFETEA-LU (HIGHWAY FUNDING BILL) - Signed into law in August, 2005
- Funded for 5 Federal fiscal years (FY 2005-2009)
- Funding level determined by each state's K-8$^{th}$ grade enrollment
- Administered by State Dept. of Transportation

# Community conditions make it hard to walk or bike

# Safe Routes to School Programs


**Make walking and bicycling safe ways to get to school**

**Encourage more children to walk or bike to school**

# Elements of Safe Routes to School programs

- Education
- Encouragement
- Enforcement
- Engineering
- Evaluation

# Education

- Teaches safety skills
- Creates safety awareness
- Fosters life-long safety habits
- Includes parents, neighbors and other drivers

# Encouragement

- Increases popularity of walking and biking
- Is an easy way to start SRTS programs
- Emphasizes fun of walking and biking

# Enforcement

- Increases awareness of pedestrians and bicyclists
- Improves driver behavior
- Helps children follow traffic rules
- Decreases parent perceptions of danger

# Evaluation

- SAFETY BENEFITS
- BEHAVIORAL CHANGES
- OTHER BENEFITS
- PRE and  POST DATA
- LONG TERM EVALUATION

Safe Routes to School program - Walk to School Day

# Engineering

# Louisiana Safe Routes to School Program

- 4rd application cycle opened 1/4/10
- 50 projects approved for funding between 2007 and 2010
- 3 statewide conferences

Safe Routes to School program - Walk to School Day

# Preparing To Apply

- Don’t Wait – Start Now
- Form A Team
- Collect Information
- Identify Problems
- Identify Solutions

# Project Funding

- Reimbursable Program – Not A Grant
  - Sponsor pays and is reimbursed
- Federal Share Is 100%
  - No match is required
  - Use of other sources encouraged
- Some Activities Will Not Be Funded
  - Right of Way
  - Utility Relocations

# Project Funding (Cont.)

- Maximum of $250,000 for infrastructure
- Maximum of $50,000 for non-infrastructure
- Maximum of $150,00 for large scale Non-infrastructure only projects

# Inappropriate Use Of Funds

- Projects that do not specifically serve the stated purpose of the SRTS program
- Funds for reoccurring costs
- Projects solely to accommodate drivers or bus transportation
- Projects not within 2 miles of elementary or middle school

# Project Selection

- Initial Review
  - Check Required Information
- Committee Review
  - Score Applications
  - Rank Application
- Select Projects To Be Funded
- Sponsor Notified

# For more information…

*Louisiana Safe Routes to School*
**www.dotd.louisiana.gov/planning/highwaysafety/saferoute**

***National Center for Safe Routes to School***
**www.saferoutesinfo.org**

***US DOT Federal Highway Administration***
**http://safety.fhwa.dot.gov/saferoutes/**

# LA-DOTD SRTS Contact information


***BRIAN PARSONS***
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SRTS Program Manager
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***SHALANDA COLE, MBA***
SRTS Coordinator
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***DENNIS BABIN, P.E.***
SRTS Engineer
Dennis.Babin@la.gov
(225) 242-4585


SafeRoutes
Louisiana Safe Routes to School

# Traffic Engineering 101

- Thank You!

- See you on May 24th at 2:00PM for Intersection Control and Management---All way stop, Traffic Signals, Roundabouts