Traffic Control Devices

CIVL 4162/6162
Traffic Control Devices

• Why are traffic control devices needed?

• What are information needs of drivers?

• How is information transfer accomplished?
Traffic Control Devices

- Three levels of driver information
  - Navigation - planning and execution (guide signs)
  - Guidance - selecting a safe speed and path (pavement markings, regulatory and warning signs)
  - Control - physical manipulation of vehicle (primarily from vehicle itself)
Traffic Control Devices

• Positive Guidance
  - If drivers are given enough information when needed in a useable form, they can perform more safely and efficiently.
Traffic Control Devices

- Avoid:
  - Information overload
  - Defective information display
  - Missing information
  - Deficient traffic control device
Traffic Control Devices

- Traffic Signs
- Pavement Markings
- Traffic Signals

Manual on Uniform Traffic Control Devices (MUTCD)
http://mutcd.fhwa.dot.gov/

Promotes *uniformity* in design and application.
Traffic Control Devices

• Principles of the MUTCD
  - Fulfill a need
  - Command attention
  - Convey a clear, simple message
  - Command respect of road users
  - Give adequate time for a proper response
Traffic Control Devices

• Contents of the MUTCD
  - Detailed standards for physical design of device
  - Detailed standards and guidelines for placement of device
  - Warrants that justify use of a particular device
Traffic Control Devices

- Legal wording in the MUTCD
  - Shall (mandatory)
  - Should (advisory)
  - May (permissive)
Traffic Control Devices

- Communicating with the driver
  - Color
  - Shape
  - Pattern
  - Legend
Traffic Signs

- Regulatory - inform users of a law
- Warning - inform users of hazards
- Guide - navigation information
Traffic Signs

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<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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**WARNING SIGN COLORS:**
- BORDER & ARROW—BLACK
- SYMBOL—WHITE BORDER / RED BACKGROUND (RETROREFLECTIVE)
- BACKGROUND—YELLOW (RETROREFLECTIVE)

**TTC COLORS:**
- BORDER & ARROW—BLACK
- SYMBOL—WHITE BORDER / RED BACKGROUND (RETROREFLECTIVE)
- BACKGROUND—ORANGE (RETROREFLECTIVE)
Figure 7B-1. School Area Signs

- School Advance Crossing Assembly
  - S1-1
  - W16-9P
  - OR
  - W16-2aP
  - OR
  - W16-2P
  - OR
  - W16-5P (optional)
  - OR
  - W16-6P (optional)

- School Crossing Assembly
  - S1-1
  - W16-7P
  - OR

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

- School Speed Limit Assembly
  - S4-3P
  - R2-1
  - SPEED LIMIT 20
  - OR
  - S4-1P
  - WHEN CHILDREN ARE PRESENT
  - OR
  - S4-2P
  - WHEN FLASHING
  - OR
  - S4-4P
  - 7:30-8:30 AM
  - 2:30-3:30 PM
  - S4-1P
  - MON-FRI
  - S4-6P
Pavement Markings

- Longitudinal lines (white or yellow)
- Transverse lines (white)
- Arrows, words, symbols
- Special markings
Figure 9C-3. Word, Symbol, and Arrow Pavement Markings for Bicycle Lanes

Figure 9C-9. Shared Lane Marking

A - Bike Symbol
B - Helmeted Bicyclist Symbol
C - Word Legends

Legend
* Optional
Figure 7C-1. Two-Lane Pavement Marking of “SCHOOL”

10 ft

19.3 ft
Traffic Signals

- Traffic signals must operate at all times
- If properly designed signals will:
  - Provide for orderly flow of traffic
  - Reduce frequency of some crashes
  - Increase capacity
  - Provide gaps for minor movements
- If improperly designed may:
  - Result in excessive delay
  - Increase frequency of some crashes
  - Cause disregard for the signal
  - Encourage drivers to use less appropriate routes
Traffic Signals

- Warrants
  - Warrant 1, Eight-Hour Vehicular Volume.
  - Warrant 2, Four-Hour Vehicular Volume.
  - Warrant 3, Peak Hour.
  - Warrant 4, Pedestrian Volume.
  - Warrant 5, School Crossing.
  - Warrant 6, Coordinated Signal System.
  - Warrant 7, Crash Experience.
  - Warrant 8, Roadway Network.
Traffic Signals

Signal faces and visibility
- Generally 3 to 5 lenses
- 8 in or 12 in diameter
- Minimum sight distance
- Must operate continuously
Pedestrian Signals

Figure 4E-1. Typical Pedestrian Signal Indications

One Section

Two Section
Other Traffic Signals

- Beacons
- Lane-use control
- Ramp meters

http://www.youtube.com/watch?v=rsvaGXW6moA
(FHWA Ramp Metering: Signal for Success)
Traffic Control in School Zones

http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm