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

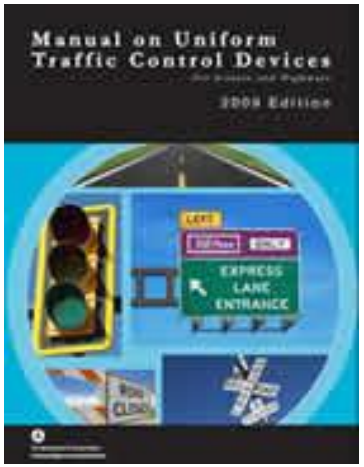
- Positive Guidance
  - If drivers are given enough information when needed in a useable form, they can perform more safely and efficiently.

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

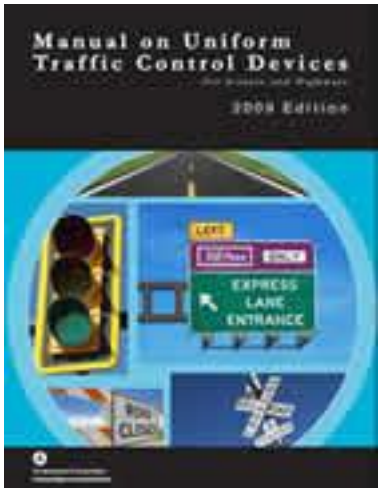
- Principles of the MUTCD
  - Fulfill a need
  - Command attention
  - Convey a clear, simple message
  - Command respect of road users
  - Give adequate time for a proper response

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

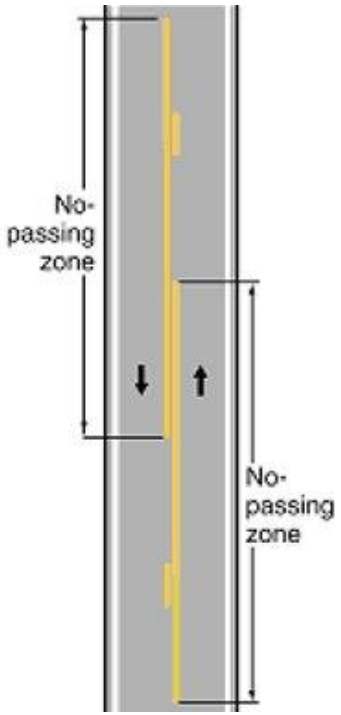
Traffic Control Devices

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



Traffic Control Devices

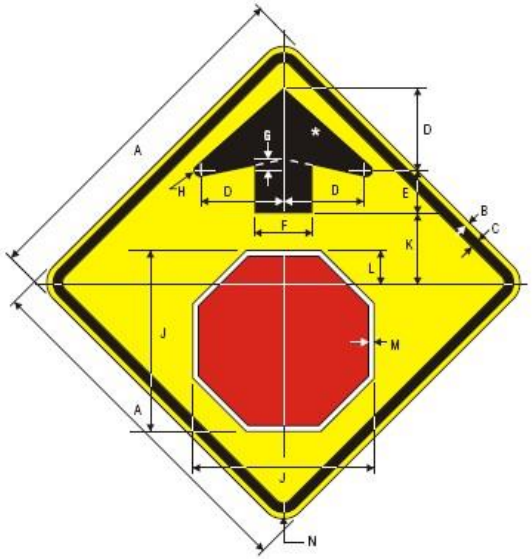
- Communicating with the driver
  - Color
  - Shape
  - Pattern
  - Legend



Traffic Signs

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

Traffic Signs



W3-1
STOP AHEAD

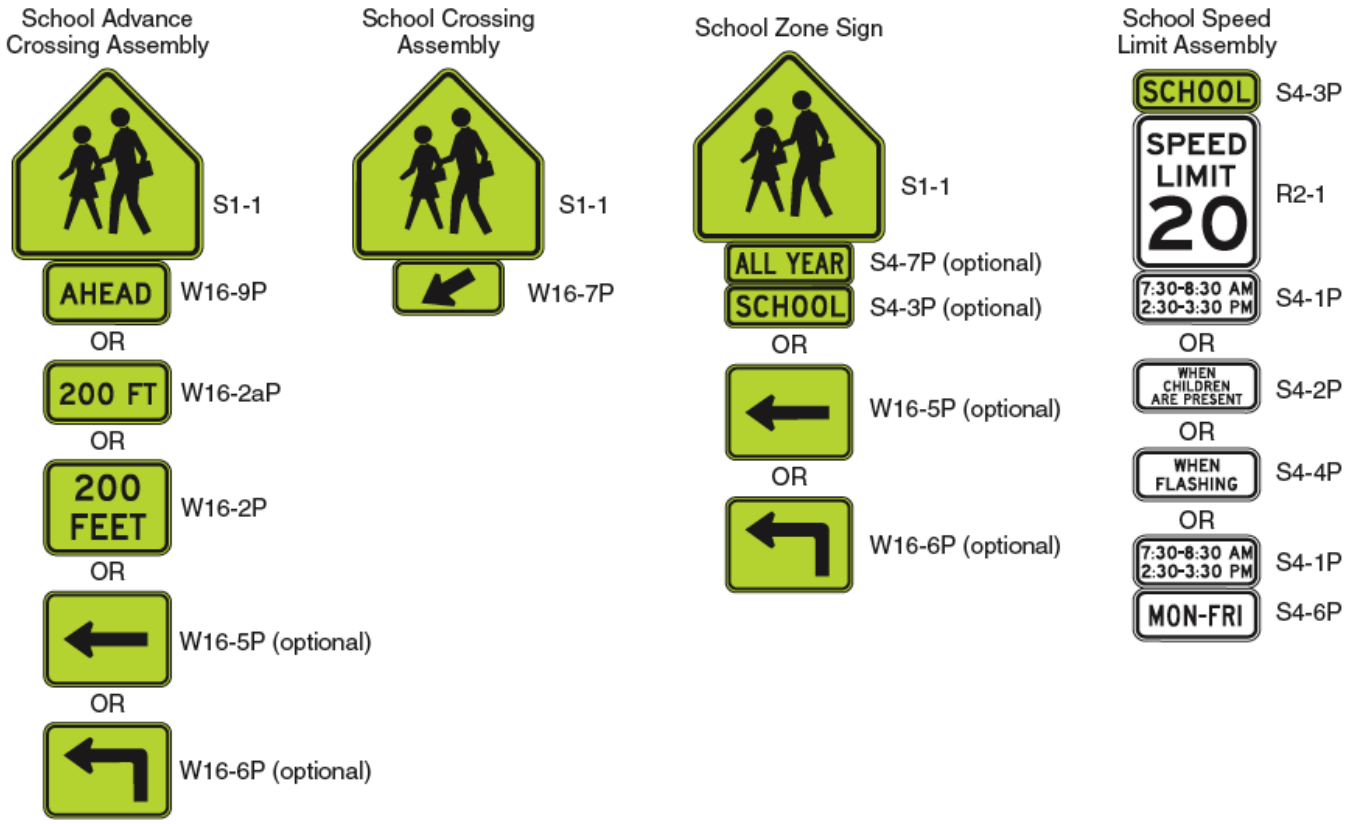
*See page 6-3 for symbol design.

A	B	C	D	E	F	G	H	J	K	L	M	N
18	.375	.625	4.5	2.25	3	.375	.187	9.5	3	1.75	.313	1.5
24	.375	.625	6	3	4	.5	.25	12.562	5	2.25	.375	1.5
30	.5	.75	7.5	3.75	5	.625	.313	15.75	6.25	2.875	.5	1.875
36	.625	.875	9	4.5	6	.75	.375	19	7.5	3.5	.625	2.25
48	.75	1.25	12	6	8	1	.5	25.125	10	4.5	.75	3

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



Pavement Markings

- Longitudinal lines (white or yellow)
- Transverse lines (white)
- Arrows, words, symbols
- Special markings

Figure 9C-9. Shared Lane Marking

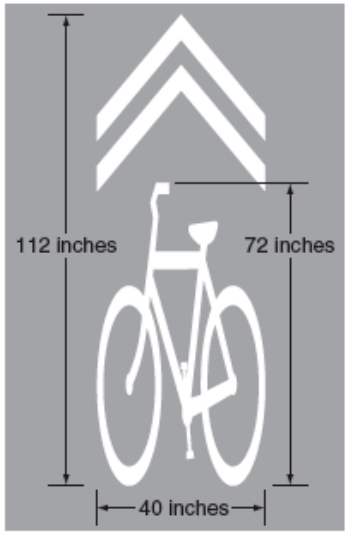
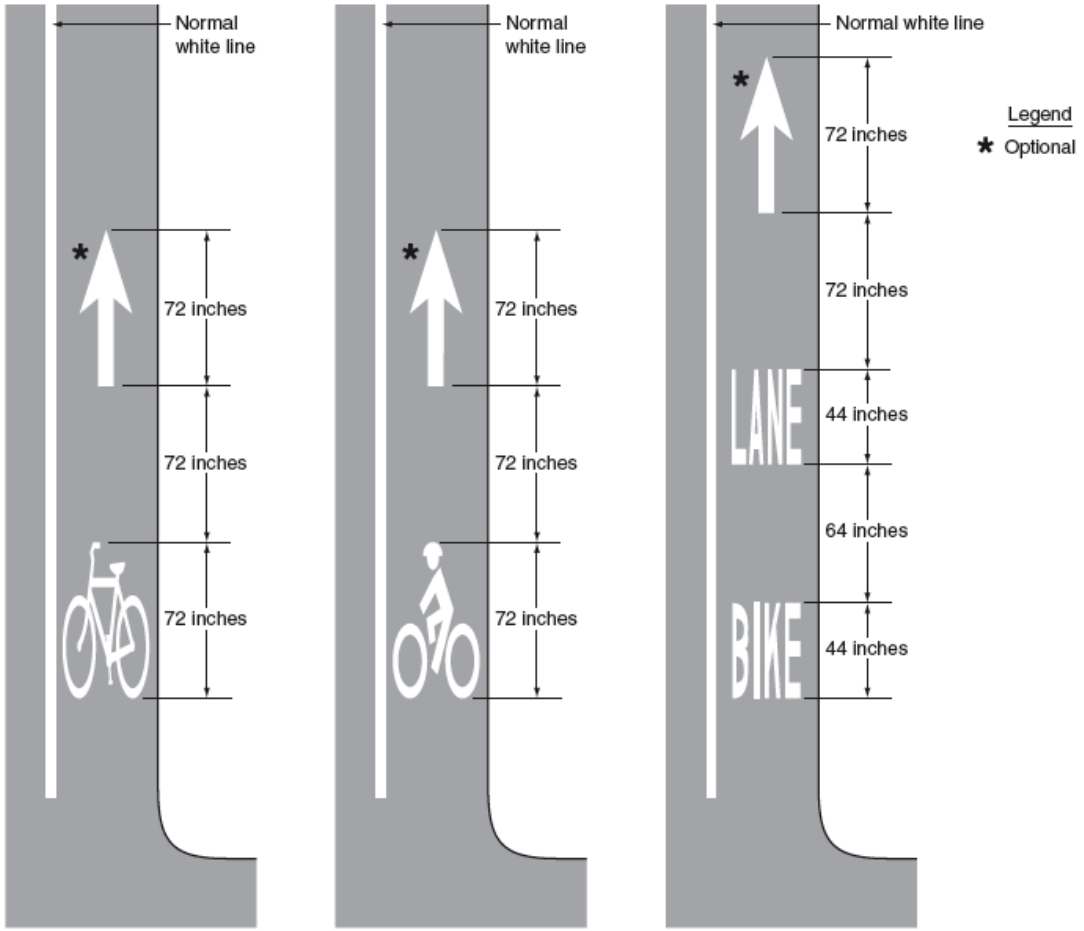


Figure 9C-3. Word, Symbol, and Arrow Pavement Markings for Bicycle Lanes



A - Bike Symbol

B - Helmeted Bicyclist Symbol

C - Word Legends

Figure 7C-1. Two-Lane Pavement Marking of "SCHOOL"

Traffic Signals

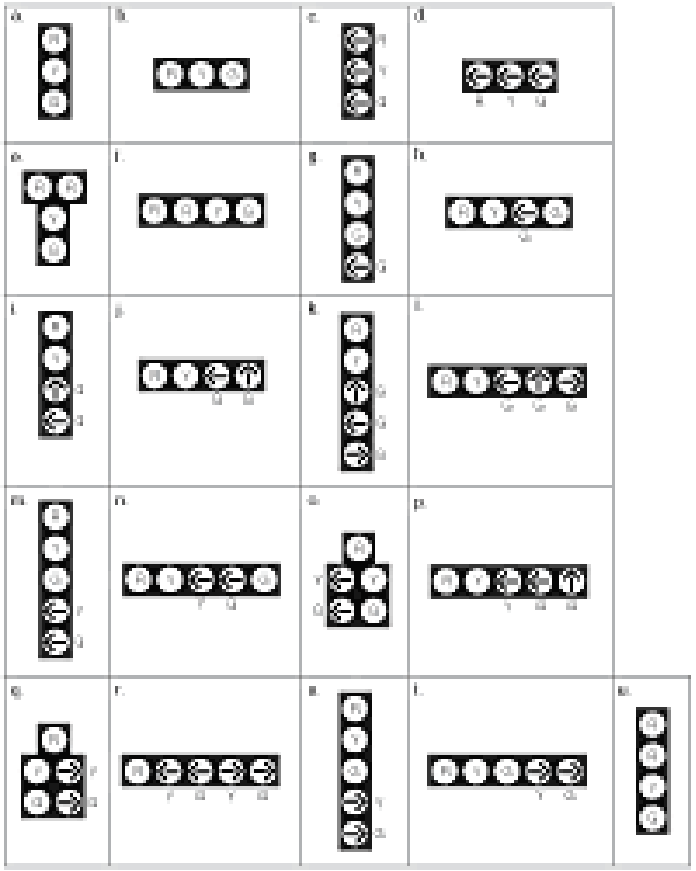
- Traffic signals must operate at all times
- If properly designed signals will:
  - Provide for orderly flow of traffic
  - Reduce frequency of some crashes
  - Increase capacity
  - Provide gaps for minor movements
- If improperly designed may:
  - Result in excessive delay
  - Increase frequency of 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

Figure 4D-3. Typical Arrangements of Signal Lenses in Signal Faces



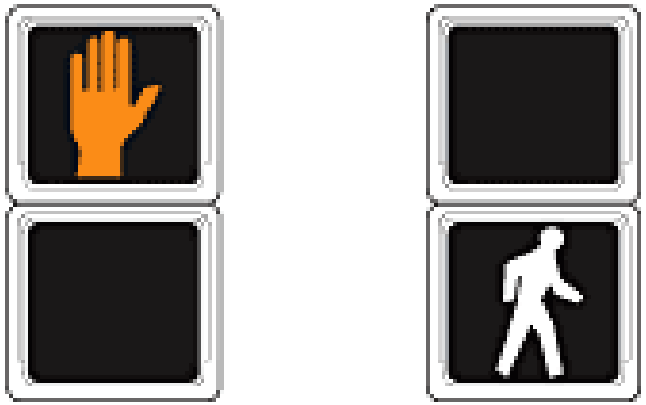
Signal faces and visibility

- 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