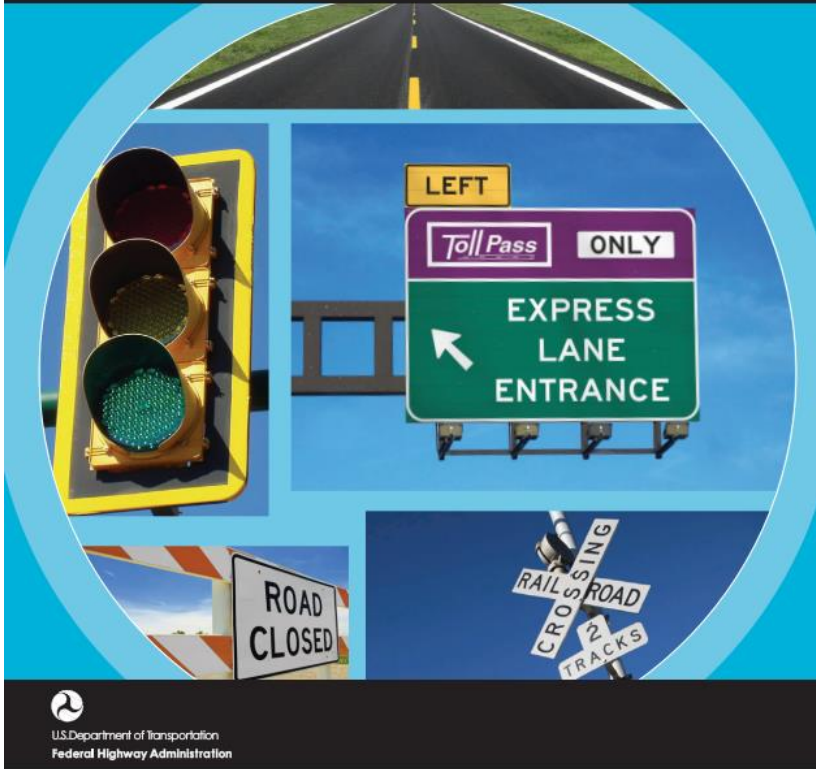


Manual on Uniform Traffic Control Devices

for Streets and Highways

2009 Edition

Including Revision 1 dated May 2012
and Revision 2 dated May 2012



Manual of Uniform Traffic Control Devices

MUTCD

Key messages

- Contains national **standards** governing all traffic control devices
- MUTCD is the **law** governing all traffic control devices
- **Uniformity** of traffic control devices is critical in highway safety and mobility
- FHWA has established a sound **process** to incorporate new devices and applications in MUTCD
- Process encourages **innovation and flexibility** while maintaining **uniformity**
- Success of MUTCD depends on nationwide **acceptance** and **application** of MUTCD
- **Input** from practitioners and all other stakeholders is critical in keeping MUTCD current and relevant

Source: Gene Hawkins, Texas A&M University, and Chair, National Committee on Uniform Traffic Control Devices

Language of MUTCD

- Standard
 - “shall”
 - Required, mandatory, or specifically prohibitive practice
- Guidance
 - “should”
 - Recommended, but not mandatory, practice
 - Deviations allowed if appropriate
- Option
 - “may”
 - Permissive condition
 - No requirement or recommendation
- Support
 - Information and explanation

Figure 9B-2. Regulatory Signs and Plaques for Bicycle Facilities

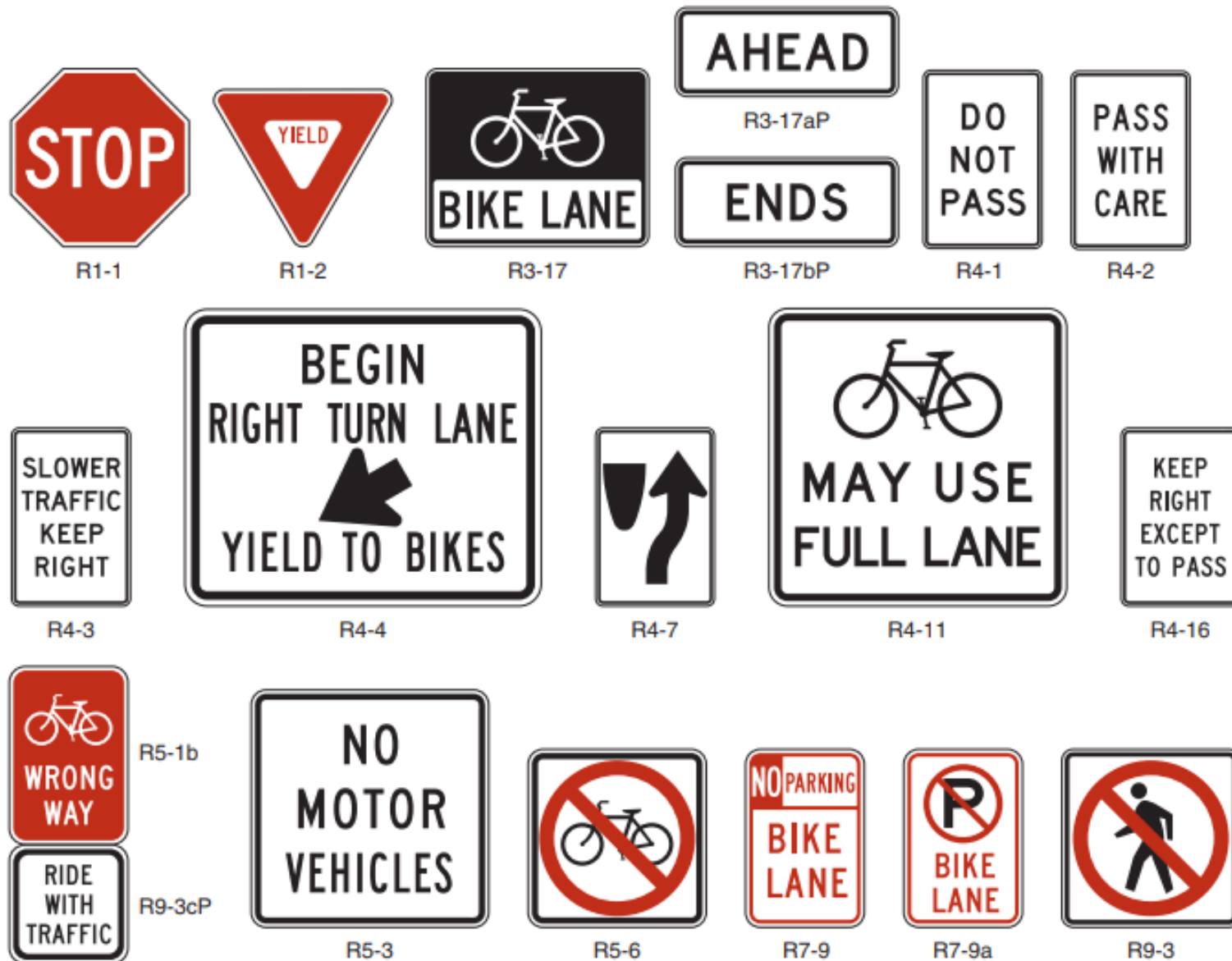


Figure 2B-22. Example of Regulatory and Warning Signs for a One-Lane Roundabout

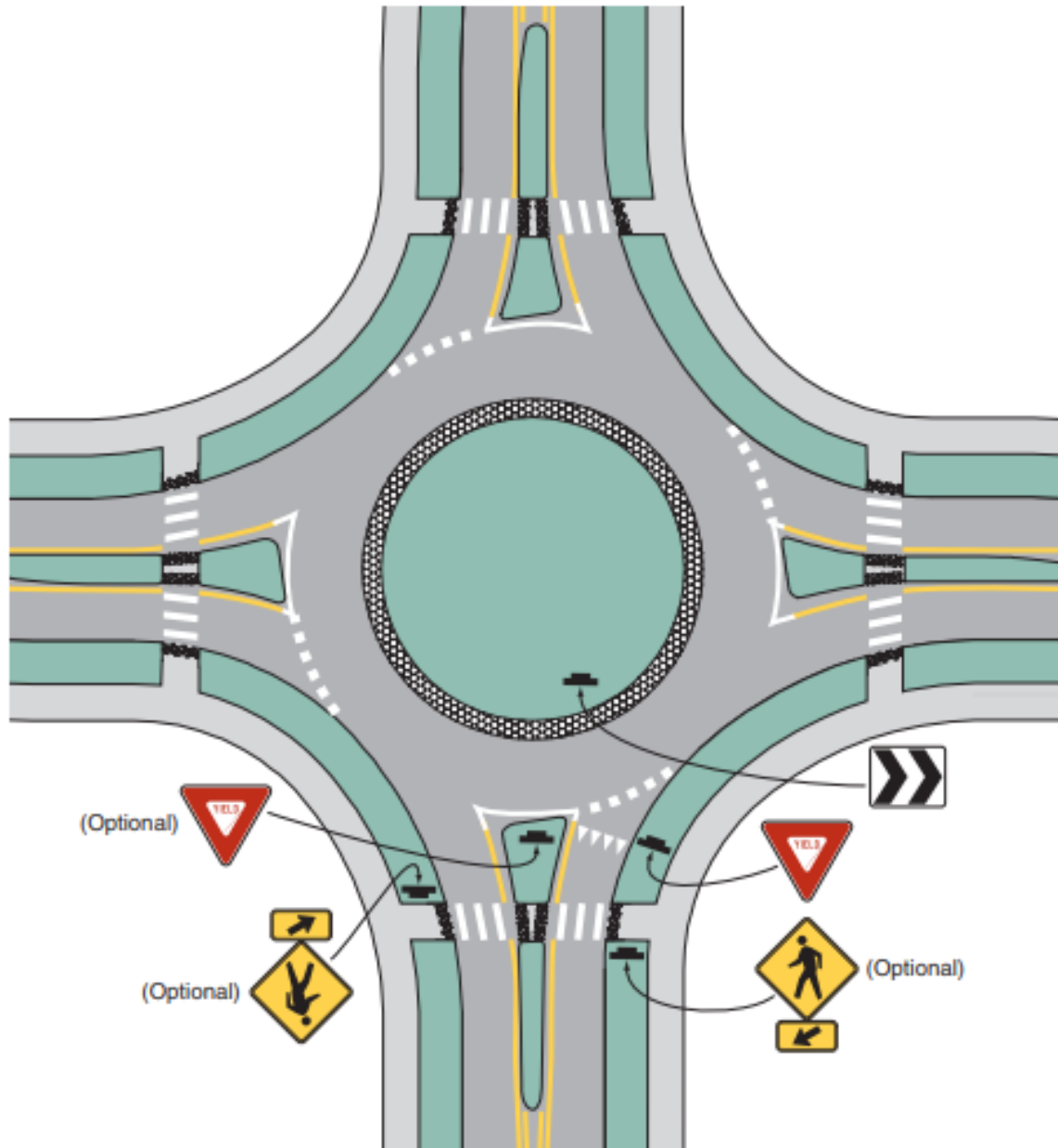
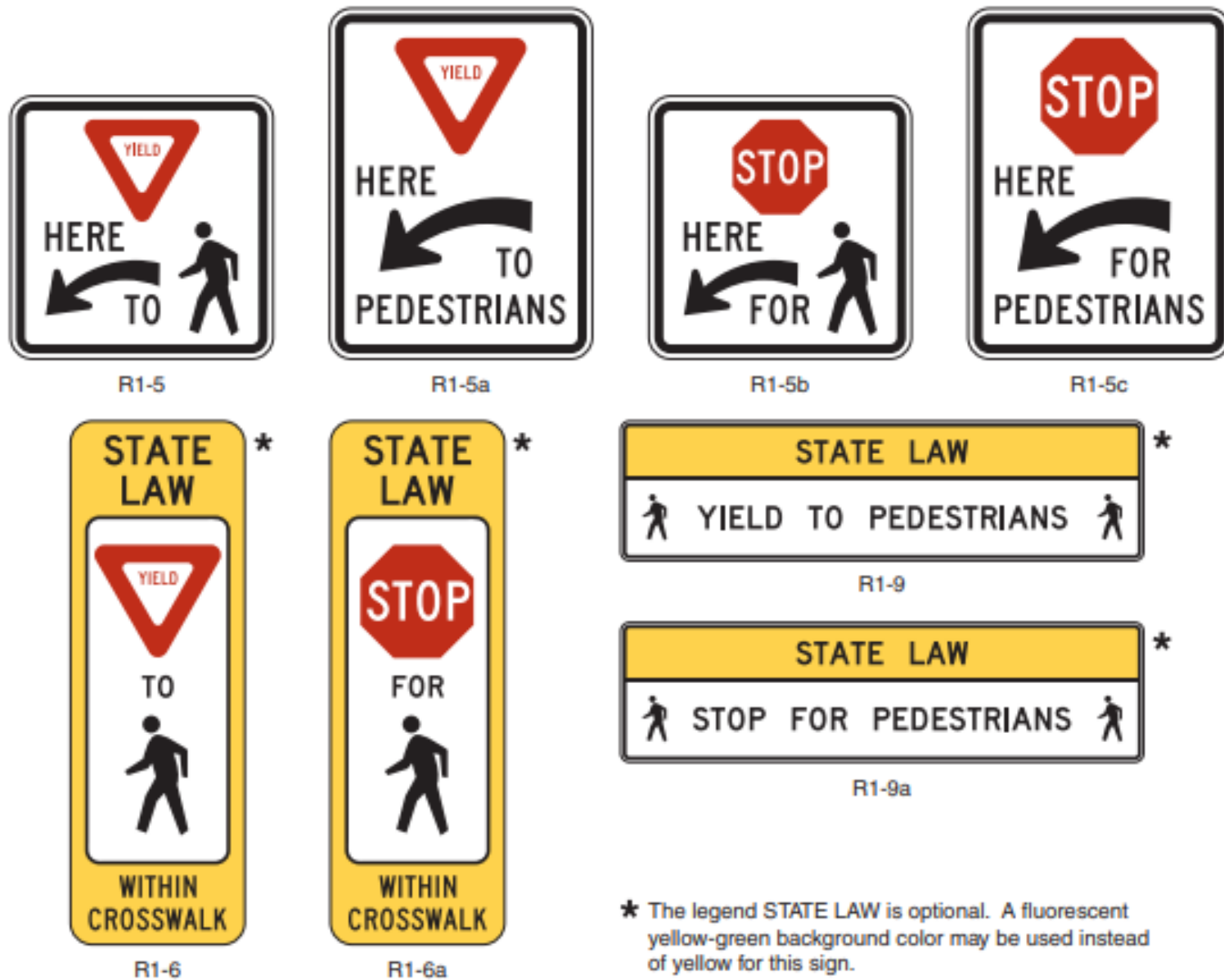
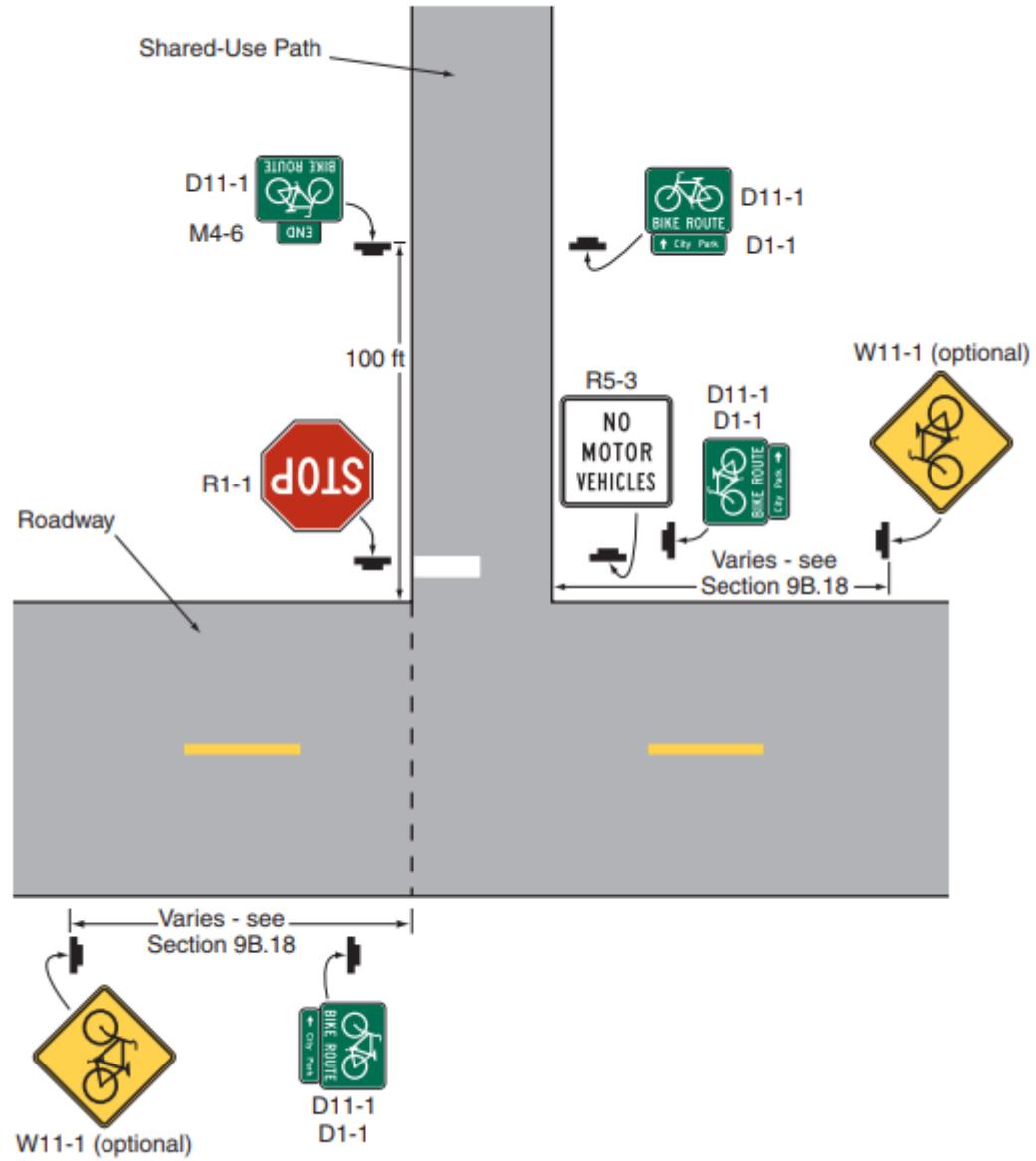


Figure 2B-2. Unsignalized Pedestrian Crosswalk Signs



* The legend STATE LAW is optional. A fluorescent yellow-green background color may be used instead of yellow for this sign.

Figure 9B-5. Example of Signing for the Beginning and End of a Designated Bicycle Route on a Shared-Use Path



Warrant

- Describes a **threshold condition** based upon average or normal conditions that, if found to be satisfied as part of an engineering study, shall result in analysis of other traffic conditions or factors to determine whether a traffic control device or other improvement is justified
- Not a substitute for **engineering judgment**
- The fact that warrant for a particular traffic control device is met is **not conclusive justification** for installation of device

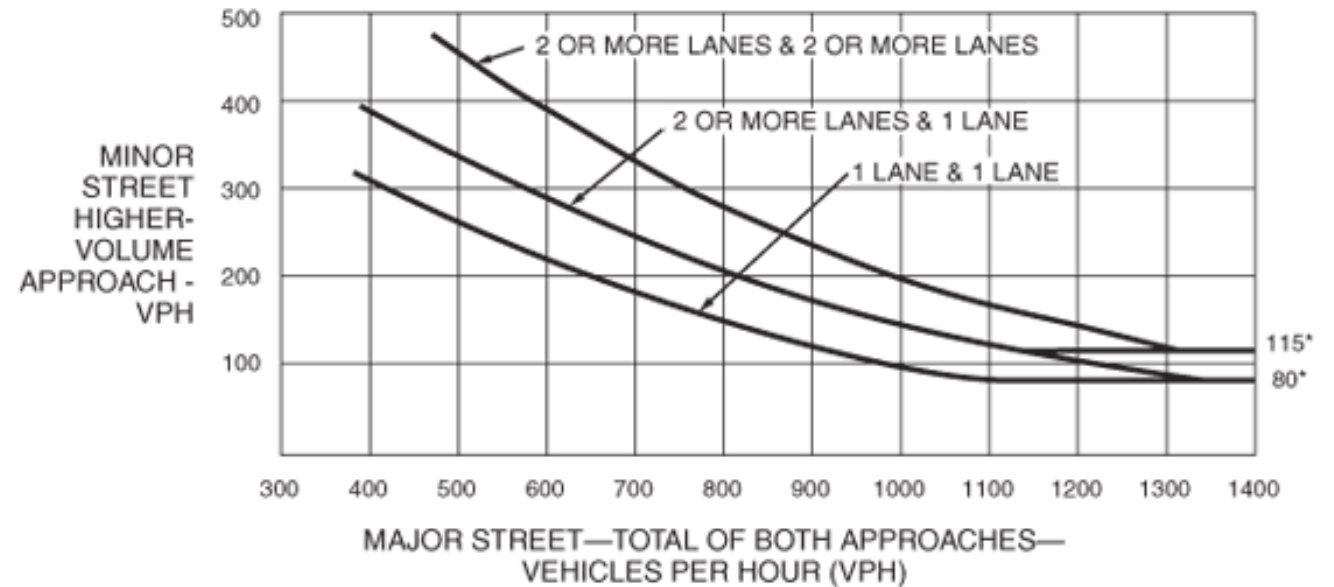
Traffic Signal Warrants

Standard:

- An **engineering study** of traffic conditions, pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic control signal is justified at a particular location.
- The investigation of the need for a traffic control signal shall include an **analysis of factors** related to the existing operation and safety at the study location and the potential to improve these conditions, and the applicable factors contained in the following traffic signal warrants:

Warrant	Description
1	Eight-Hour Vehicular Volume
2	Four-Hour Vehicular Volume
3	Peak Hour
4	Pedestrian Volume
5	School Crossing
6	Coordinated Signal System
7	Crash Experience
8	Roadway Network
9	Intersection Near a Grade Crossing

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Multi-Way (Four-Way) Stop Warrants

- Useful as safety measure at intersections if certain traffic conditions exist
- Safety concerns associated with multi-way stops include pedestrians, bicyclists, and all road users expecting other road users to stop
- Used where volume of traffic on intersecting roads is approximately equal

Guidance/Criteria:

- Multi-way stop is interim measure
- Five or more crashes in 12-month period that are susceptible to correction by multi-way stop
- Minimum volumes:
 - Vehicular volume entering intersection from major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and
 - Combined vehicular, pedestrian, and bicycle volume entering intersection from minor street approaches (total of both approaches) averages at least 200 units per hour for same 8 hours, with average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during highest hour; but
 - If 85th-percentile approach speed of major-street traffic exceeds 40 mph, minimum vehicular volume warrants are 70 percent of values provided in bullets 1 and 2