

1 **SIGNING FOR RIGHT-OF-WAY AT INTERSECTIONS**

2 **Section 2B.06 General Considerations**

3 Support:

4 Unsignalized intersections represent the most common form of intersection right-of-way control.
5 Selection of control type might be impacted by specific requirements of state law or local ordinances.

6 Roundabouts and traffic circles are intersection designs and are not traffic control devices. The decision to
7 convert an intersection from a conventional intersection to a circular intersection is an engineering design
8 decision and not a traffic control device decision. As such, criteria for conversion from a conventional
9 intersection to a circular intersection are not included in the MUTCD.

10 *Guidance:*

11 *The type of traffic control used at an unsignalized intersection should be the least restrictive that provides*
12 *appropriate levels of safety and efficiency.*

13 Support:

14 Some types of right-of-way control that can exist at an unsignalized intersection are listed below in order
15 from the least restrictive to the most restrictive.

- 16 A. No intersection control: There are no right-of-way traffic control devices on any of the approaches to
17 the intersection (See Section 2B.04c for guidance).
- 18 B. Yield Control: YIELD signs are placed on all approaches (for a roundabout), on opposing approaches
19 for a 4-leg intersection, on a single approach for a 2-leg intersection, or in the median of a divided
20 highway. The YIELD signs are placed on the minor road. (See Section 2B.04b for guidance)
- 21 C. Minor road stop control: STOP signs are typically placed on opposing approaches (for a 4-leg
22 intersection) or on a single approach (for a 3-leg intersection). The STOP signs are normally placed
23 on the minor road. (See Section 2B.04a for guidance on selecting the minor road.)
- 24 D. All-way stop control: STOP signs are placed on all approaches to the intersection. (See Section
25 2B.04f for guidance.)

26 *Guidance:*

27 *When selecting a form of intersection control, the following factors should be considered:*

- 28 A. *Vehicular, bicycle, and pedestrian traffic volumes on all approaches. Where the term units/day or*
29 *units/hour is indicated, it should be the total of vehicular, bicycle, and pedestrian volume.*
- 30 B. *Driver yielding behavior with regard to bicyclists and pedestrians;*
- 31 B. *Number and angle of approaches;*
- 32 C. *Approach speeds;*
- 33 D. *Sight distance available on each approach; and*
- 34 F. *Reported crash experience.*
- 35 G. *The presence of a grade crossing near the intersection.*

36 Support:

37 Appropriate traffic calming or other speed-control measures are available to control vehicle speeds, such
38 as those that do not have the potential to diminish the effectiveness of traffic control devices when used for
39 their specified purpose.

40 **Standard:**

41 **Yield or Stop signs shall not be used for speed control.**

42 **Because the potential for conflicting commands could create driver confusion, Yield or Stop signs**
43 **shall not be used in conjunction with any traffic control signal operation, except in the following cases:**

- 44 **A. If the signal indication for an approach is a flashing red at all times;**
- 45 **B. If a minor street or driveway is located within or adjacent to the area controlled by the traffic**
46 **control signal, but does not require separate traffic signal control because an extremely low**
47 **potential for conflict exists; or**
- 48 **C. If a channelized turn lane is separated from the adjacent travel lanes by an island and the**
49 **channelized turn lane is not controlled by a traffic control signal.**

1 Except as provided in Section 2B. 11, STOP signs and YIELD signs shall not be installed on
2 different approaches to the same unsignalized intersection if those approaches conflict with or oppose
3 each other.

4 Portable or part-time STOP or YIELD signs shall not be used except for emergency and temporary
5 traffic control zone purposes.

6 A portable or part-time (folding) STOP sign that is manually placed into view and manually
7 removed from view shall not be used during a power outage to control a signalized approach unless the
8 maintaining agency establishes that the signal indication that will first be displayed to that approach
9 upon restoration of power is a flashing red signal indication and that the portable STOP sign will be
10 manually removed from view prior to stop-and-go operation of the traffic control signal.

11 Option:

12 A portable or part-time (folding) Stop sign that is electrically or mechanically operated such that it only
13 displays the Stop message during a power outage and ceases to display the Stop message upon restoration of
14 power may be used during a power outage to control a signalized approach.

15 Support:

16 The use of STOP signs at grade crossings is described in Sections 8B.04 and 8B.05.

17 Section 9B.01 contains provisions regarding the assignment of priority at a shared-use path/roadway
18 intersection.

19 **Section 2B.07 Determining the Minor Road for Unsignalized Intersections**

20 *Guidance:*

21 *The selection of the minor road to be controlled by YIELD or STOP signs should be based on one or*
22 *more of the following criteria:*

- 23 *A. A roadway intersecting a designated through or numbered highway.*
- 24 *B. A roadway with the lower functional classification.*
- 25 *C. A roadway with the lower traffic volume.*
- 26 *D. A roadway with the lower speed limit*
- 27 *E. A roadway that intersects with a roadway that has a higher priority for one of more modes of travel.*

28 *When two roadways that have relatively equal volumes, speeds, and/or characteristics intersect, the*
29 *following factors should be considered in selecting the minor road for installation of YIELD or STOP signs:*

- 30 *A. Controlling the direction that conflicts the most with established pedestrian crossing activity or*
31 *school walking routes;*
- 32 *B. Controlling the direction that has obscured vision, dips, or bumps that already require drivers to use*
33 *lower operating speeds; and*
- 34 *C. Controlling the direction that has the best sight distance from a controlled position to observe*
35 *conflicting traffic.*

36 **Section 2B.08 Right-of-Way Intersection Control Considerations**

37 *Guidance:*

38 *Before converting to a more restrictive form of right-of-way control at an unsignalized intersection,*
39 *consideration should be given, but not limited, to the following alternative treatments to address safety,*
40 *operational, or other concerns.*

- 41 *A. Where Yield or Stop controlled, installing Stop Ahead or Yield Ahead signs on the appropriate*
42 *approaches to the intersection.*
- 43 *B. Removing parking on one or more approaches.*
- 44 *C. Removing sight distance restrictions.*
- 45 *D. Installing signs along the major street to warn road users approaching the intersection;*
- 46 *E. Relocating the stop line(s) and making other changes to improve the sight distance at the*
47 *intersection;*
- 48 *F. Installing measures designed to reduce speeds on the approaches;*
- 49 *G. Installing an intersection control beacon (see Section 4S.02) or stop beacon (see Section 4S.05) at*
50 *the intersection to supplement STOP sign control;*

- H. *Installing a warning beacon (see Section 4S.03) on warning signs in advance of a STOP sign controlled intersection on major- and/or minor-street approaches;*
- I. *Adding one or more lanes on a minor-street approach to reduce the number of vehicles per lane on the approach;*
- J. *Revising the geometrics at the intersection to channelize vehicular movements and reduce the time required for a vehicle to complete a movement, which could also assist pedestrians;*
- K. *Revising the geometrics at the intersection to add pedestrian median refuge islands and/or curb extensions;*
- L. *Installing roadway lighting if a disproportionate number of crashes occur at night;*
- M. *Restricting one or more turning movements on a full- or part-time basis if alternate routes are available;*
- N. *Installing on the major street a pedestrian-actuated device: warning beacon (see Section 4S.03), rectangular rapid-flashing beacon (see Section 4L.01), or In-Roadway Warning Lights (see Chapter 4U), if pedestrian safety is the major concern;*
- O. *If the warrant is satisfied, installing multi-way STOP sign control;*
- P. *Installing on the major street a pedestrian hybrid beacon (see Chapter 4J) if pedestrian safety is the major concern;*
- Q. *Installing a roundabout; and*
- R. *Employing other alternatives, depending on conditions at the intersection.*

Section 2B.09 No Intersection Control

Guidance:

The decision not to use intersection control should be based on engineering judgment.

Option:

The following factors may be considered:

- A. Intersection sight distance is adequate on all approaches.
- B. All approaches to the intersection are a single lane and there are no separate turn lanes.
- C. The combined vehicular, bicycle, and pedestrian volume (existing or projected) entering the intersection from all approaches averages less than 1,000 units per day or 80 units in the peak hour.
- D. There are no marked crosswalks or bicycle lanes on any approach.
- E. None of the approaches to the intersection are for a through highway, main road, or higher functional classification.
- F. The angle of intersection is between 90 and 75 degrees.
- G. The functional classification of the intersecting streets is either the intersection of two local streets or the intersection of a local street with a collector street.

Section 2B.10 Yield Control

Guidance:

At intersections where a full stop is not necessary at all times, consideration should first be given to using less restrictive measures such as YIELD signs.

Yield control should be considered when engineering judgment indicates that all of the following conditions exist:

- A. *Intersection sight distance is adequate on the approaches to be controlled by YIELD signs.*
- B. *All approaches to the intersection are a single lane and there are no separate turn lanes.*
- C. *One of the following crash-related criteria applies:*
 - 1. *For changing from no intersection control to yield control, there have been two or more reported crashes that are susceptible to correction by installation of a YIELD sign in the previous 12 months.*
 - 2. *For changing from minor road stop control to yield control, there have been two or fewer reported crashes in the previous 12 months.*
- D. *Entering intersection volume of less than 1800 units per day or 140 units in the peak hour.*
- E. *The angle of intersection is between 90 and 75 degrees.*
- F. *The functional classification of the intersecting streets is either the intersection of two local streets or the intersection of a local street with a collector street.*

Option:

1 YIELD signs may be installed at an intersection when any of the following conditions apply:

- 2 A. At the second intersection of a divided highway crossing or median break functioning as two
- 3 separate intersections (see Figures 2B-12 and 2B-15). In this case, a YIELD sign may be installed at
- 4 the entrance to the second intersection.
- 5 B. For a channelized turn lane that is separated from the adjacent travel lanes by an island, even if the
- 6 adjacent lanes at the intersection are controlled by a highway traffic control signal or by a Stop sign.
- 7 C. At an intersection where a special problem exists and where engineering judgment indicates the
- 8 problem to be susceptible to correction by the use of the YIELD sign.
- 9 D. Facing the entering roadway for a merge-type movement if engineering judgment indicates that
- 10 control is needed because acceleration geometry and/or sight distance is not adequate for merging
- 11 traffic operation.
- 12 E. On low-volume rural roads if engineering judgment indicates that the YIELD would provide
- 13 adequate control.
- 14 F. On an approach to an intersection where the only permissible movement is a right turn movement
- 15 with an intersection geometry similar to a channelized right turn lane or an approach to a
- 16 roundabout.

17 *Guidance:*

18 *The YIELD signs should be installed on opposing minor street approaches (for a 4-leg intersection) or on*

19 *the minor approach (for a 3-leg intersection). (See Section 2B-X3) for information to identify the minor road).*

20 *When two intersection roadways have relatively equal volumes, speeds and other characteristics, yield control*

21 *should be installed on the approach that conflicts the most with established pedestrian crossing activity or*

22 *school walking routes or bicycle crossing activity.*

23 **Standard:**

24 **A YIELD sign shall be used to require road users to yield the right-of-way to other traffic at the**

25 **entrance to a roundabout. Yield signs at roundabouts shall be used to control the approach roadways**

26 **and shall not be used to control the circulatory roadway.**

27 **YIELD signs shall not be placed on all of the approaches to an intersection, except at roundabouts.**

28 **Section 2B.11 Minor Road Stop Control**

29 *Guidance:*

30 *Stop control on the minor road approach or approaches to an intersection should be considered when*

31 *engineering judgment indicates that one or more of the following conditions exist:*

- 32 *A. A restricted view exists that requires road users to stop in order to adequately observe conflicting*
- 33 *traffic on the through street or highway;*
- 34 *B. Crash records indicate that:*
 - 35 *1. For a four-leg intersection, there are three or more reported crashes in a 12-month period or*
 - 36 *six or more reported crashes in a 36-month period. The crashes should be susceptible to*
 - 37 *correction by installation of two-way stop control.*
 - 38 *2. For a three-leg intersection, there are three or more reported crashes in a 12-month period or*
 - 39 *five or more reported crashes in a 36-month period. The crashes should be susceptible to*
 - 40 *correction by installation of two-way stop control.*
- 41 *C. The intersection is of a lower functional classification road with a higher functional classification*
- 42 *road*
- 43 *D. Conditions that previously supported installation of an all-way stop control under all-way stop*
- 44 *control criteria no longer exist.*

45 *On low-volume rural roads, a STOP sign should be considered at an intersection where engineering*

46 *judgment indicates that Item C above is applicable or where the intersection has inadequate sight distance*

47 *for the operating vehicle speeds.*

48 **Section 2B.12 All-Way Stop Control**

49 *Guidance:*

50

1 The decision to establish all-way stop control at an unsignalized intersection should be based on an
2 engineering study. The engineering study for all-way stop control should include an analysis of factors
3 related to the existing operation and safety at the intersection, the potential to improve these conditions, and
4 the applicable factors contained in the following all-way stop control warrants:

- 5 A. All-Way Stop Control Warrant A: Crash Experience (Section 2B.13)
- 6 B. All-Way Stop Control Warrant B: Sight Distance (Section 2B.14)
- 7 C. All-Way Stop Control Warrant C: Transition to Signal Control or YIELD Control at a Roundabout
8 (Section 2B.15)
- 9 D. All-Way Stop Control Warrant D: Peak Hour Volume (Vehicle, Pedestrians, Bicycles) (Section 2B.16)
- 10 E. All-Way Stop Control Warrant E: Other Factors (Section 2B.17)

11 **Standard:**

12 **The satisfaction of an all-way stop control warrant or warrants shall not in itself require the**
13 **installation of all-way stop control at an unsignalized intersection.**

14 **Section 2B.13 All-Way Stop Control Warrant A: Crash Experience**

15 Option:

16 All-way stop control may be installed at an intersection where an engineering study indicates that:

- 17 A. For a four-leg intersection, there are five or more reported crashes in a 12-month period or six or
18 more reported crashes in a 36-month period that were of a type susceptible to correction by the
19 installation of all-way stop control.
- 20 B. For a three-leg intersection, there are four or more reported crashes in a 12-month period or
21 five or more reported crashes in a 36-month period that were of a type susceptible to
22 correction by the installation of all-way stop control.
- 23 C. The sight distance on the minor road approaches controlled by a Stop sign is not adequate for a
24 vehicle to turn onto or cross the major (uncontrolled) road.

25 **Section 2B.14 All-Way Stop Control Warrant B: Sight Distance**

26 Option:

27 All-way stop control may be installed at an intersection where an engineering study indicates that sight
28 distance on the minor road approaches controlled by a Stop sign is not adequate for a vehicle to turn onto or
29 cross the major (uncontrolled) road.

30 Support:

31 At such a location, a road user, after stopping, cannot see conflicting traffic and is not able to negotiate
32 the intersection unless conflicting cross traffic is also required to stop.

33 **Section 2B.15 All-Way Stop Control Warrant C: Transition to Signal Control or YIELD**
34 **Control at a Roundabout**

35 Option:

36 All-way stop control may be installed at locations where all-way stop control is an interim measure that
37 can be installed to control traffic while arrangements are being made for the installation of the traffic control
38 signals at the intersection or YIELD control at a roundabout.

39 **Section 2B.16 All-Way Stop Control Warrant D: 8-Hour Volume (Vehicle, Pedestrians,**
40 **Bicycles)**

41 Option:

42 All-way stop control may be installed at an intersection where an engineering study indicates:

- 43 A. The volume entering the intersection from the major street approaches (total of both approaches)
44 averages at least 300 units per hour for each of any 8 hours of an average day; and
- 45 B. The volume entering the intersection from the minor street approaches (total of both approaches)
46 averages at least 200 units per hour for each of any of the same 8 hours; and
- 47 C. If the 85th percentile approach speed of the major-street traffic exceeds 40mph, the minimum
48 vehicular volume warrants are 70 percent of the values in Items A and B.

49 **Section 2B.17 All-Way Stop Control Warrant E: Other Factors**

1 Option:

2 All-way stop control may be installed at an intersection where an engineering study indicates that all-way
3 stop control is needed due to other factors not addressed in the other all-way stop control warrants. Such other
4 factors may include, but are not limited to, the following:

- 5 A. The need to control left-turn conflicts;
- 6 B. An intersection of two residential neighborhood collector (through) streets of similar design and
7 operating characteristics where all-way stop control would improve traffic operational
8 characteristics of the intersection; or
- 9 C. Where pedestrian and/or bicycle movements justify the installation of all-way stop control.

10 **Section 2B.18 STOP Sign or YIELD Sign Placement**

11 **Standard:**

12 **The STOP or YIELD sign shall be installed on the near side of the intersection on the right-hand**
13 **side of the approach to which it applies. When the STOP or YIELD sign is installed at this required**
14 **location and the sign visibility is restricted, a Stop Ahead sign (see Section 2C.37) shall be installed in**
15 **advance of the STOP sign or a Yield Ahead sign (see Section 2C.37) shall be installed in advance of the**
16 **YIELD sign.**

17 **The STOP or YIELD sign shall be located as close as practical to the intersection it regulates, while**
18 **optimizing its visibility to the road user it is intended to regulate.**

19 **STOP signs and YIELD signs shall not be mounted on the same post.**

20 *Guidance:*

21 *STOP or YIELD signs should not be placed farther than 50 feet from the edge of the pavement of the*
22 *intersected roadway (see Drawing F in Figure 2A-3).*

23 *A sign that is mounted back-to-back with a STOP or YIELD sign should stay within the edges of the STOP*
24 *or YIELD sign. If necessary, the size of the STOP or YIELD sign should be increased so that any other sign*
25 *installed back-to-back with a STOP or YIELD sign remains within the edges of the STOP or YIELD sign*

26 *Supplemental plaques used in conjunction with a STOP or YIELD sign should be limited to those specified*
27 *for such use in this Manual.*

28 Option:

29 Where drivers proceeding straight ahead must yield to traffic approaching from the opposite direction,
30 such as at a one-lane bridge, a TO ONCOMING TRAFFIC (R1-2aP) plaque may be mounted below the
31 YIELD sign.

32 Where drivers must yield to traffic in a multi-lane roundabout, a TO TRAFFIC IN CIRCLE (R1-2bP) or
33 TO ALL LANES (R1-2cP) plaque may be mounted below the YIELD sign.

34 Support:

35 Figure 2A-3 shows examples of some typical placements of STOP signs and YIELD signs.

36 Section 2A.12 contains additional information about separate and combined mounting of other signs with
37 STOP or YIELD signs.

38 *Guidance:*

39 *Stop lines that are used to supplement a STOP sign should be located as described in Section 3B.19.*

40 *Yield lines that are used to supplement a YIELD sign should be located as described in Section 3B.19.*

41 *Where there is a marked crosswalk at the intersection, the STOP sign should be installed in advance of*
42 *the crosswalk line nearest to the approaching traffic.*

43 *Except at roundabouts, where there is a marked crosswalk at the intersection, the YIELD sign should be*
44 *installed in advance of the crosswalk line nearest to the approaching traffic.*

45 *Where two roads intersect at an acute angle, the STOP or YIELD sign should be positioned at an angle,*
46 *or shielded, so that the legend is out of view of traffic to which it does not apply.*

47 *If a raised splitter island is available on the left-hand side of a multi-lane roundabout approach, an*
48 *additional YIELD sign should be placed on the left-hand side of the approach.*

49 Option:

1 If a raised splitter island is available on the left-hand side of a single lane roundabout approach, an
2 additional YIELD sign may be placed on the left-hand side of the approach.

3 At wide-throat intersections or where two or more approach lanes of traffic exist on the signed approach,
4 observance of the right-of-way control may be improved by the installation of an additional STOP or YIELD
5 sign on the left-hand side of the road and/or the use of a stop or yield line. At channelized intersections or at
6 divided roadways separated by a median, the additional STOP or YIELD sign may be placed on a
7 channelizing island or in the median. An additional STOP or YIELD sign may also be placed overhead facing
8 the approach at the intersection to improve observance of the right-of-way control.

9 **Standard:**

10 **More than one STOP sign or more than one YIELD sign shall not be placed on the same support**
11 **facing in the same direction.**

12 **Option:**

13 For a yield-controlled channelized right-turn movement onto a roadway without an acceleration lane and
14 for an entrance ramp onto a freeway or expressway without an acceleration lane, a NO MERGE AREA (W4-
15 5P) supplemental plaque (see Section 2C.47) may be mounted below a Yield Ahead (W3-2) sign and/or below
16 a YIELD (R1-2) sign when engineering judgment indicates that road users would expect an acceleration lane
17 to be present.

18 **Section 2B.19 Yield Here To Pedestrians Signs and Stop Here For Pedestrians Signs (R1-5**
19 **Series)**

20 **Support:**

21 The R1-5 series signs are intended to mitigate the scenario that can place pedestrians at risk by blocking
22 other drivers' view of pedestrians and by blocking the pedestrians' view of the vehicles approaching in the
23 adjacent lanes.

24 **Standard:**

25 **Yield Here To (Stop Here For) Pedestrians (R1-5, R1-5a, R1-5b, or R1-5c) signs shall only be used if**
26 **yield (stop) lines are used in advance of a marked crosswalk that crosses an uncontrolled multi-lane**
27 **approach. The Stop Here for Pedestrians signs shall only be used where the law specifically requires**
28 **that a driver must stop for a pedestrian in a crosswalk. The legend STATE LAW shall not be displayed**
29 **on the R1-5 series signs.**

30 **If yield (stop) lines and Yield Here To (Stop Here For) Pedestrians signs are used in advance of a**
31 **crosswalk that crosses an uncontrolled multi-lane approach, the signs shall be placed 20 to 50 feet in**
32 **advance of the nearest crosswalk line (see Section 3B.19 and Figure 3B-16).**

33 **Option:**

34 The R1-5a and R1-5c signs may be used in place of the R1-5 and R1-5b signs provided that the signs are
35 only used in advance of a marked crosswalk that crosses an uncontrolled multi-lane approach within school
36 zones (see Part 7).

37 *Guidance:*

38 *When Yield Here To (Stop Here For) Pedestrians signs are provided in advance of a crosswalk across an*
39 *multi-lane approach, parking should be prohibited in the area between the yield (stop) line and the crosswalk.*

40 *Yield (stop) lines and Yield Here To (Stop Here For) Pedestrians signs should not be used in advance of*
41 *crosswalks that cross an approach to or departure from a roundabout.*

42 **Option:**

43 Yield Here To (Stop Here For) Pedestrians signs may be used in accordance with Paragraphs 2 through 4
44 of this Section even if yield (stop) lines are not used.

45 A Pedestrian Crossing (W11-2) warning sign may be placed overhead or may be post-mounted with a
46 diagonal downward pointing arrow (W16-7P) plaque at the crosswalk location where Yield Here To (Stop
47 Here For) Pedestrians signs have been installed in advance of the crosswalk.

48 **Standard:**

49 **If a W11-2 sign has been post-mounted at the crosswalk location where a Yield Here To (Stop Here**
50 **For) Pedestrians sign is used on the approach, the Yield Here To (Stop Here For) Pedestrians sign shall**
51 **not be placed on the same post as the W11-2 sign.**