

# SIGN INSTALLATION PROCEDURES MANUAL

## INTRODUCTION

**PURPOSE:** This policy picks up after the decision is made as to what signs are to be installed. This policy is intended to fulfill the following:

1. To insure a safe, consistent and economical system for the installation of traffic signs.
2. To provide an understanding between the Sign and Road Marking staff and the office staff concerning the execution of work orders.
3. To establish clear communications between the Office staff and the Sign and Road Marking staff; specifically a) information the office staff expects the shop staff to know and b) instructions the shop staff expects of the office staff.
4. To provide a common reference for the installation of signs at the junctions of County roadways with roadways of other jurisdictions.
5. To provide a reference for the installation of traffic signs for anyone contracted to perform such work on Baltimore County roadways.

### DEFINITIONS:

- \* SNS - Street Name Sign
- \* State, MSHA, and Maryland State Highway Administration are synonymous
- \* MUTCD, 2009 Edition of Manual on Uniform Traffic Control Devices for Streets and Highways

### REFERENCES:

1. MUTCD, 2009 Edition of Manual on Uniform Traffic Control Devices for Streets and Highways
2. Maryland MUTCD, 2006 Edition (Revised July, 2009)

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## PART I WORK ORDER AND PREPARATION AND EXECUTION

The Traffic Engineering office staff generally prepares the Sign, Street Name Sign and Road Marking Work Orders and the Sign and Road Marking Personnel executes the work orders. The purpose of providing sign specifications is to establish guidelines, procedures and policies for the installation and maintenance of traffic control devices within Baltimore County jurisdiction. We must reach an agreement on the amount of information that each group is expected to provide and to know about the other unit's operations so that misunderstandings and unnecessary work can be avoided.

### A. Information to Be Supplied by the Office Staff

Many entries required on the work order form are self-explanatory. The following is a clarification of the requirements of those items that may not be as obvious:

1. Priority (if applicable) shall be a date and not an "ASAP".
2. All work orders that require multiple signs to be installed should include a sketch (generally) of sign locations with north arrow and reference points (house or block numbers, utility pole numbers, fire hydrants, trees, sidewalks, etc.). Work orders for new installations shall have locations marked in the field or clearly described locations marked on work orders.
3. Work order directions shall be precise and accurate. An abbreviation may be used only if it conforms to the list of approved abbreviations (see Part VIII - Acceptable Abbreviations).
4. The signs and actions on front of the work order shall match the signs and actions on the sketch.
5. Size of Signs:
  - a) If the size of a sign is a standard size, no dimensions are necessary. If other than the standard size, the dimension shall be indicated on the work order.
  - b) Special sign sizes will generally be determined by the sign fabricator. The work order will normally specify the letter size or sizes and the fabricator will determine the size of the sign.
  - c) In some cases the office staff will determine the size and legend of special signs. Determining the letter size will be the responsibility of the sign fabricator.
6. The quantity and type of posts shall be specified. The lengths of the posts need not be specified; however, the sign shop staff shall be aware of the required minimum vertical clearance when combining signs.

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7. "Hilti gun" and/or "Drill Needed" shall be indicated on the work order if a sign is to be installed on a concrete wall, or if a hole may need to be drilled in a sidewalk or concrete island. If the work order instructs the removal of a post leaving a hole, work order shall specify the need to fill the hole with the appropriate material.
8. If the office staff is requesting an exception to standard practices, those shall be clearly explained on the work order (e.g., installing a parking sign lower than normal clearance requirements). Failure to do this would often result in the interpretation that a mistake or error was made by the office and therefore the work may be done in a manner inconsistent with the intent of the work order. This may also result in the failure to complete the work order in a timely manner.
9. For some work orders, it is desirable that the person writing the work order should contact the fabricator or installer prior to the writing of the work order to better communicate the intent of the work order.
10. Office staff shall be required to determine and include on work orders whether a roadway is to be classified as rural or urban when there is a possibility of doubt. This will ensure that the work order is completed properly the first time.

### B. Work Orders Take Precedence

Due to the many variables that cannot be anticipated, the signs and locations on the work orders take precedence over the standards presented in the policies. Exceptions to standards should be noted on the work orders as "exceptions" so they will not be interpreted as "mistakes". Any significant change on a work order should be noted.

### C. When to Return Work Orders to the Office

1. Completed work orders shall be returned to the office with all required information on the work order. The completion date, time, who completed the work order and material used shall be included. These work orders will be filed without review unless some special need is identified. Completed work orders are public documents and may be and have been used in court.
2. Work orders are not considered complete until all the authorized work has been completed. If a work order cannot be completed as written or if the installer feels strongly that a mistake has been made, one of the following should occur:

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- a. If there is an obvious minor mistake that can be corrected, then the work order should be completed and the appropriate action taken. Examples of minor mistakes would be the incorrect size of sign (24" x 30" specified when standard size is 30" x 30"), obvious misspellings, slight location error that does not change the work order. Return work order in the normal manner.
- b. For other than obvious minor mistakes, the installer or fabricator should first attempt to contact the person directly who wrote the work order. Both parties should attempt to communicate and resolve the problem in a manner that will result in the best interest of our customers. The communications can be by means of the telephone, two-way radio or personal contact in the office, field or shop, or whatever means that can best give the desired results. Any agreed changes must be noted on the work order and processed in the usual manner.

## PART II MOUNTING HEIGHT AND LATERAL CLEARANCE

The following clearances are general in their application. Exceptions to these clearances and details concerning positioning of specific signs are contained in Parts IV and V herein.

### A. Mounting Height

Definition - Mounting Height is the vertical distance measured from the bottom of the mounted sign to the near edge of the pavement (Fig. 1) or, in the cases of roadways with curbs and/or sidewalks, to the top of the curb grade (Fig. 2) or sidewalk grade (Fig. 3).

In **rural districts**, signs erected at the side of the roadway should be mounted at a minimum height of six (6) feet (Fig.1).

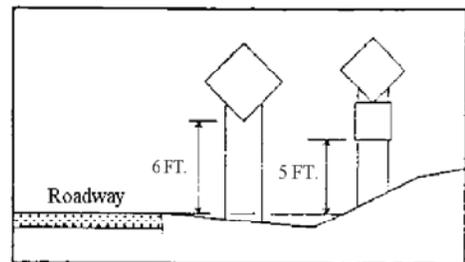


Figure 1 - Rural Open Section

In **urban districts** (business, commercial and residential districts) where parking and/or pedestrian movement (head bumping) is likely to occur or where there are other sight distance obstructions, the clearance to the bottom of the sign should be a minimum of seven (7) feet (Figs. 2 & 3).

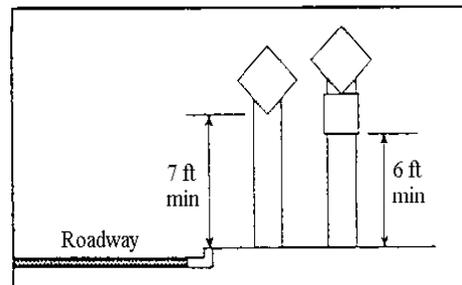


Figure 2 – Urban Curb Section

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In cases where a roadway cannot be classified as either rural or urban, the work order should be referred to the office as indicated in Part I, Section C, page 6 of the policy. The vertical clearance to the bottom of a secondary sign mounted below another sign may be one foot less than the clearances specified above (Figs. 1, 2 & 3).

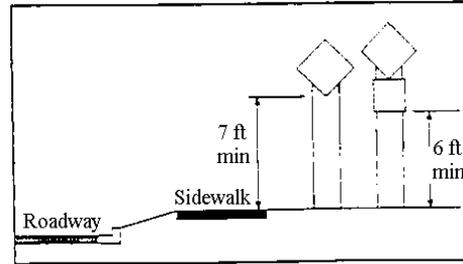


Figure 3 – Sidewalk Section

Mounting height for signs installed on bicycle trails should be a maximum of five feet and a minimum of four feet. If signs are intended to be read by both bicyclists and motorists, standard mounting heights for motorists shall be used.

## B. Lateral Clearance

Definition - Lateral clearance is the distance measured from the near edge of the roadway or the face of the curb to the near edge of the mounted sign and not the post.

Signs should be installed at the practical maximum lateral clearance from the edge of the traveled way for the safety of the motorist. Advantage should be taken of existing guardrail, over-crossing structures, and other conditions to minimize the exposure of sign supports to traffic. It is understood that all signs should be installed within the available right-of-way.

### 1. Signs Behind Guardrail or Concrete Barriers

Signs should be located two feet behind the guardrail or concrete barrier if possible. However, the probability of damage to the sign increases as the sign is installed closer to the guardrail.

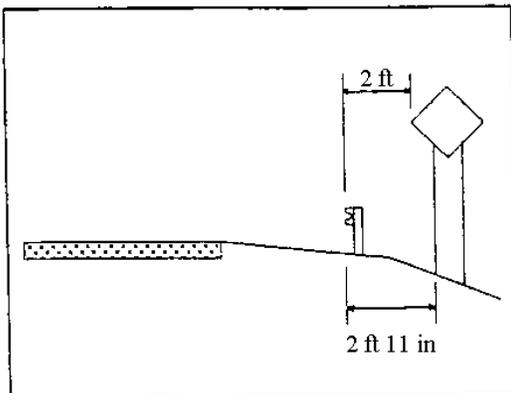


Figure 4 - Offset Behind Guardrail

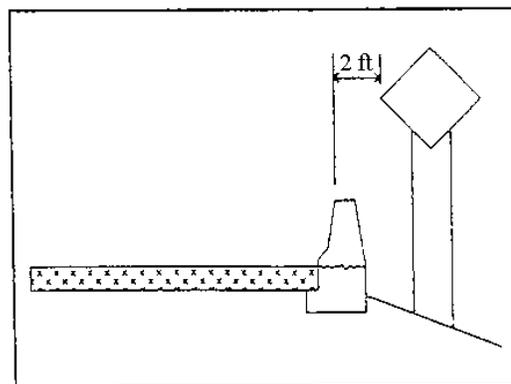


Figure 5 – Offset Behind Concrete Barrier

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## 2. Open Section Roadways (with or without shoulders)

The standard lateral clearance should be 6 (six) feet from the near edge of the traveled way if no shoulder exists. If a shoulder (paved or unpaved) exists, the near edge of the mounted sign (not the post) should not be closer than 6 (six) feet from the edge of the shoulder. Where it is impractical to maintain the desired clearance, a lesser clearance may be used up to a working minimum of two (2) feet.

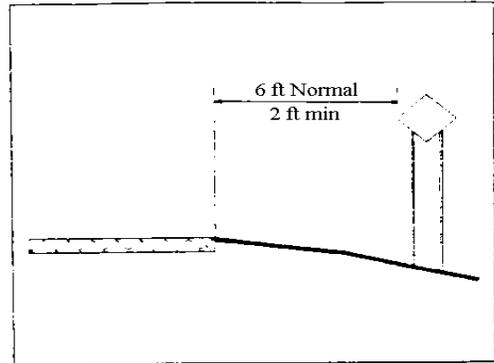


Figure 6 - Offset in Open Section

## 3. Roadways with Curb

- a. The **standard lateral clearance** is six (6) feet behind the face of an unmountable curb. In urban areas, a lesser clearance may be used where necessary with a working minimum of two (2) feet. See exceptions in section 3b to the standard lateral clearances.

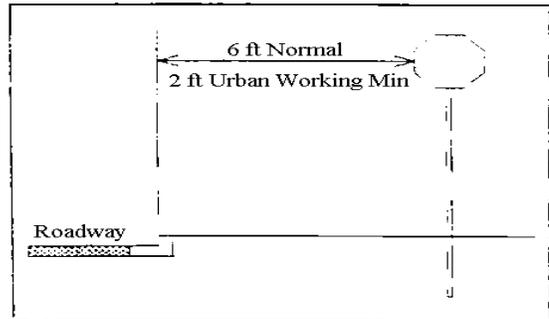


Figure 7 -Offset in Curb Section

### b. **Exceptions** to Standard Lateral Clearances

1. When utility poles are adjacent to the curb or no more than two feet from the face of curb or where parking meters are installed (normally 18 inches from the face of the curb), the sign, not the post, may be placed as close as one foot from the face of the curb or in line with the parking meters. This exception will be known as **condition 1**.

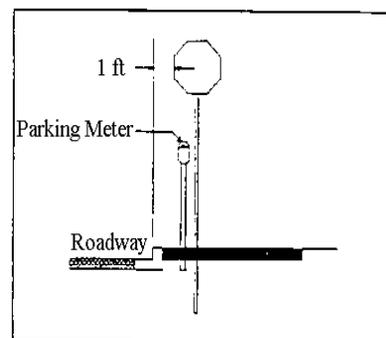


Figure 8 - Parking Meters or Utility Poles (with or without sidewalk)

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- When the sidewalk abuts or is within four (4) feet of the curb, the sign, not the post, should be mounted six (6) inches from the edge of the sidewalk farthest from the traveled roadway if condition 1 does not apply.

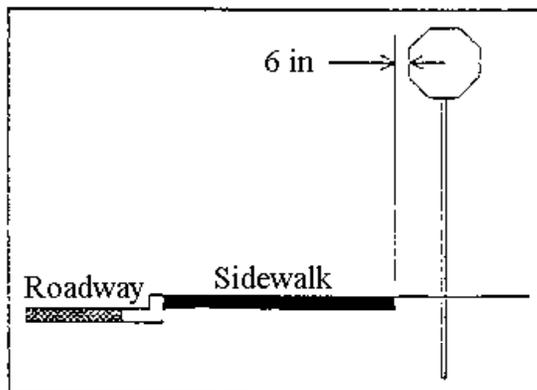


Figure 9 - Sidewalk Abuts Curb

- When the sidewalk does not abut the curb and the distance from the face of the curb to the sidewalk is four feet or more, the sign, not the post, may be mounted six inches from the edge of the sidewalk nearest the traveled way if condition 1 does not apply.

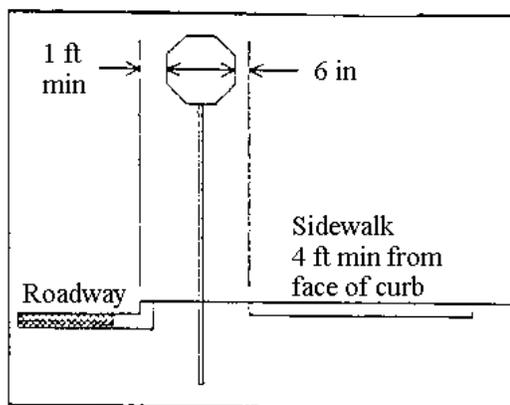


Figure 10 - Sidewalk Away From Curb

### 4. Medians

Lateral clearance in a median is the same, as the clearance of a right side mount except that the center of the sign should not extend beyond the center of the median and both sides of the sign shall not extend past either edge of the median.

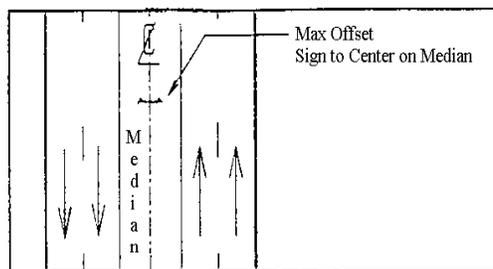


Figure 11 - Median Mounted Signs

### C. Angle of Signs with Roadway

Signs should be mounted approximately at right angles to the direction of, and facing, the traffic that they are intended to serve. Please note the following conditions and exceptions:

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1. Parking signs with arrows are erected at an angle of 30 to 45 degrees to the direction of traffic.

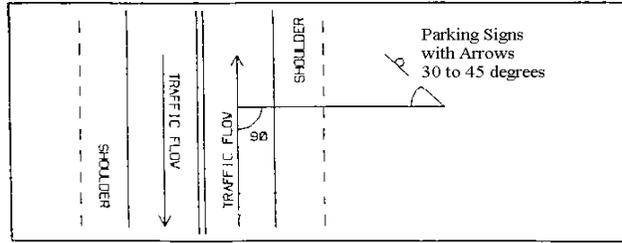


Figure 12 - Installation Angle of Parking Signs

2. DO NOT ENTER, KEEP RIGHT and other regulatory signs at intersections may be angled from 15 to 45 degrees to improve day or night visibility. When a KEEP RIGHT sign is placed in a median nose at an intersection, it should be oriented at an angle (usually 15°) toward any left-turning traffic entering from the side street.
3. Larger signs (guide signs) should be turned slightly away from the roadway to avoid glare reflection (mirror rather than retro-reflective) of headlights off the sign face directly back to the driver's eyes. An angle of 93 degrees to the line of approaching traffic has been found to be satisfactory for signs up to 14 feet from the edge of the pavement. An angle of 93 degrees to the line of approaching traffic has been found to be satisfactory for signs up to 14 feet from the edge of the pavement.

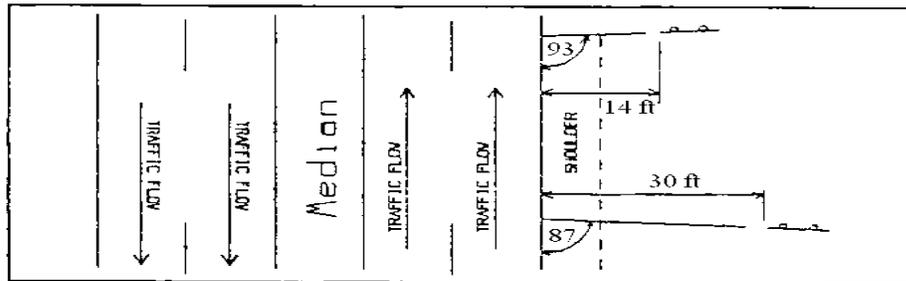


Figure 13 - Installation Angle of Larger (Guide) Signs

4. On curved alignments, the placement of the sign should be directly in line with approaching traffic. "Pointing" of the sign in the direction that traffic is being directed usually results in reduced night reflectivity and an unsatisfactory sign installation. Large arrows (W1-6) and chevrons (W1-8) are the signs most apt to be installed incorrectly.

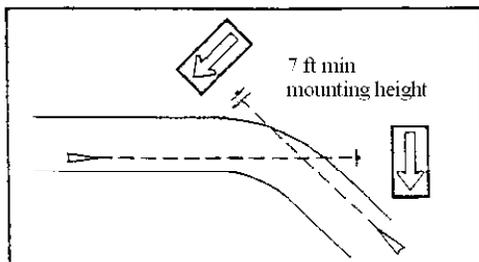


Figure 14 - Correct

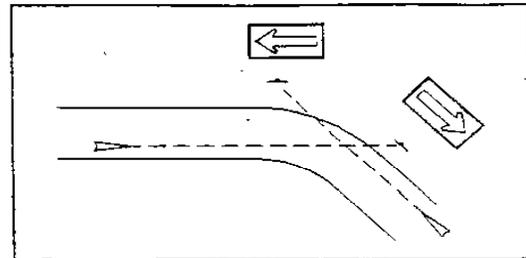


Figure 15 - Incorrect

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5. For double mount Chevron Warning Signs, the placement shall be at a 45 degree angle with both signs mounted to the leading edge of the roadway at a 90 degree point-to-point configuration. Posts shall be installed in a way to the edge of roadway that allows both signs to face each direction of approaching traffic. Double mount Chevron signs shall not be installed parallel (back-to-back) with each other at any time (see Part V- D Chevron Curve Warning Signs for proper installation).

## PART III LONGITUDINAL POSITION OF SIGNS

### A. Advance Warning Sign Placement

The table to the right is the suggested minimum sign placement distances that should be used on County roads. The distance is measured between the object/condition (e.g. stop sign, beginning of curve, beginning of merge, school crossing, etc.) and the advance warning sign.

Posted Speed	Recommended Distances
25	250
30	300
35	350
40	400
45	450
50	500

### B. Other Warning Signs

Miscellaneous warning signs that advise of potential hazards not related to a specific location may be installed at the most appropriate locations. These signs include **DEER CROSSING** and **SOFT SHOULDER**. Other signs have special locations that are defined in Part V of this policy or that are temporary warning signs covered by Part VI of the MUTCD for highway maintenance or construction. These signs shall be installed at locations shown on the work order.

### C. Regulatory Signs

The locations of many intersection related regulatory signs (STOP, KEEP RIGHT) are covered in Part V of this policy. Most intersection related signs are located within 50 feet of the intersection to provide the greatest legibility and emphases. However, the continual upgrading of roadways within Baltimore County results in intersections that are larger and more varied than ever. Therefore, many signs cannot be assigned standard distances. Locations shown on work orders shall have precedence over any set standards. Non-intersection related regulatory signs are located to provide greatest legibility, greatest visibility, and to meet the technical requirements of various traffic laws or traffic orders. Therefore, locations shown on work orders shall have precedence over any set standards.

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## PART IV: POST SELECTION

The selection of posts for the installation of a sign is dependent on the following:

- Size of the sign (height and width)
- Mounting height to the bottom of the sign
- Design wind speed loading which meets current AASHTO and FHWA breakaway and yielding requirements of a traffic sign post.

### A. Sign Post Specifications

Baltimore County sign post inventory consists of the following:

#### POSTS

Length	Size	Gauge	Partially or Fully Punched
2 ft.	1.75" x 1.75"	14	Fully
3 ft.	1.75" x 1.75"	14	Fully
10 ft.	1.75" x 1.75"	14	Fully
7 ft.	2" x 2"	14	Fully
10 ft.	2" x 2"	14	Fully
10 ft.	2" x 2"	14	Partially

#### ANCHOR BASES

Length	Size	Gauge	Partially or Fully Punched
3 ft.	2" x 2"	12	Fully
3 ft.	2.25" x 2.25"	12	Fully

Anchor Bases for all square tubular sign posts shall be 36 inches in length with a **minimum of 30 inches** installed in the ground.

### B. Hardware

For 2" square breakaway posts

1. **3/8" Drive Rivet** – Used to attach all traffic signs to the square tube breakaway post
2. **Nylon Washer – 3/8" ID and 7/8" OD** – Placed between Drive Rivets, #34 Rivets or lag bolts and sign panels.

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3. **Corner Bolt with Nut** – For use with 2” to 2-1/4” square tube – Used to fasten the square tube breakaway post and anchor base together.
4. **#34 Rivet – 1-13/16” long** – Used to tack together the ends of street name sign assemblies, back-to-back installation on a square tube breakaway post.
5. **½” PVC Spacer – 1-11/16” long** – Placed over the shaft of the #34 rivet to keep the sign panels from being drawn together too far. (The spacer is placed at the ends and between street name panels)

### For Steel or Fiberglass Poles

1. **Saddles – 1-Bolt Flared Leg Brack-It** – Must be stainless steel with SS bolt and washer. Used with banding and buckles to fasten sign panels to streetlight or signal poles.
2. **Banding – Band-It Brand Banding** – Must be ¾ inches wide and 0.76 mm thick. Used with saddles and buckles to fasten sign panels to streetlight or signal poles.
3. **Buckles – Type 201 stainless steel** – Must be ¾ inches wide and used with saddles and banding to fasten sign panels to streetlight or signal poles.
4. **Cable Ties** – Must be a minimum of 24 inches long and used in combination with a PVC spacer.
5. **PVC Spacer – appropriately sized** – Placed between the 2-9 inch SNS panels to keep the sign panels from being drawn together too far and the blades from rotating.

### C. Specific Sign Installations and Exceptions

Most signs will be installed using the post sizes and lengths that have been determined in Table 1. A few signs (detailed in Part V) are not standard and are to be installed regardless of an urban or rural setting with special mounting criteria. The signs, in Part V, are as follows:

1. STOP Signs (PART V – A)
2. Street Name Signs (PART V – B)
3. Keep Right Signs (PART V – C)
4. Chevron Curve Signs (PART V – D)
5. Parking Signs Combined with Standard Signs (PART V – E)
6. Type I, II, and III Markers (PART V – F)
7. DO NOT ENTER Combined with ONE WAY ARROW Signs (PART V – G)
8. Emergency/Temporary Signing (PART V – H)

### D. Regulatory, Small Guide and Warning Sign Installation Tables

To determine the posts required for a particular sign:

1. Select the type of sign (regulatory/guide or diamond shape)
2. Determine the mounting height to the bottom of the sign.

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3. Determine the maximum height and width of all signs for the location.
4. Check the Table I for that installation to determine the size and number of posts required.

**Regulatory & Small Guide Signs (This Table is for a single sign installation)**

	Minimum Clearance (Feet)	No. of Posts	Max Height (inches)	Width Range (inches)	Post(s) Size (14 ga.)	Drilling Required	Extension Required
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <b>Regulatory Signs Guide Signs</b> </div>	6	1	<=30	<=36	2.00" x 2.00" x 10'	No	No
	6	1	<=36	<=30	2.00" x 2.00" x 10'	No	No
	6	2	<= 24	36 - 96	2.00" x 2.00" x 10'	No	No
	6	2	<=30	36 - 96	2.00" x 2.00" x 10'	No	No
	6	2	<=36	30 - 72	2.00" x 2.00" x 10'	No	No
	6	2	<=48	30 - 72	2.00" x 2.00" x 10'	Yes	No
	7	1	<=30	<=36	2.00" x 2.00" x 10'	No	No
	7	1	<=36	<=30	2.00" x 2.00" x 10'	Yes	No
	7	2	<=24	36 - 84	2.00" x 2.00" x 10'	No	No
	7	2	<=30	36 - 60	2.00" x 2.00" x 10'	Yes	No
	7	2	<=48	30 - 48	2.00" x 2.00" x 10'	Yes	No
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <b>Diamond Shape Signs</b> </div>	6	1	<=36	<=36	2.00" x 2.00" x 10'	Yes	No
	6	2	<=48	<=48	2.00" x 2.00" x 10'	Yes	No
	7	1	<=36	<=36	2.00" x 2.00" x 10'	Yes	No
	7	2	<=48	<=48	2.00" x 2.00" x 10'	Yes	No

Table I –Post Selection Guide for Single Sign Installation

If the sign sizes do not fall within the range of the Table I and the work order does not state the installation procedure for the sign on the work order, the work order should be returned to the Sign Shop Crew for further installation details. A special type of installation shall be required for a sign not specified in the above table.

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Please note the following:

- a. For spacing between posts, see Table II
- b. For larger signs, see work order or Sign Crew Chief for installation details .

### Two (2) Post Installation Post Spacing

Sign Width "a" (inches)	Edge of Sign to Center of First Post "b" (inches)	Spacing Between Center of Posts "c" (inches)
24	2	20
30	5	20
36	8	20
48	9	30
60	12	36
72	15	42
84	17	50
96	20	56

Table II – Two Post Installation post Spacing

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## PART V SPECIAL SIGN DETAILS/WORK ORDER REQUIREMENTS

### A. STOP SIGNS

The longitudinal setbacks of STOP signs from the cross street are as shown in Figure 19 & Figure 20 below.

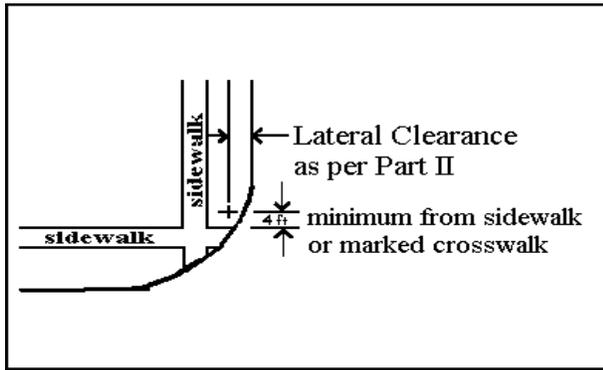


Figure19 - Without Sidewalks

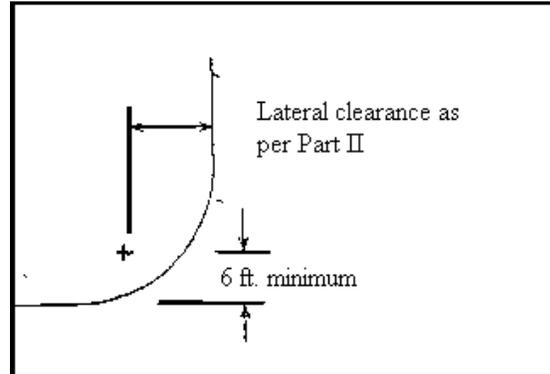


Figure20 - With Sidewalks

### B. 9" Street Name Sign (SNS) Installations

A 9" SNS assembly shall consist of 2 - 9" x (24" min - 48" max) sign panels. The length of street name shall determine the length of the SNS panel. Each street name shall have two (2) single-faced SNS panels. (unless otherwise noted on the work order.)

#### 1. Independent SNS on a Breakaway Post Installation

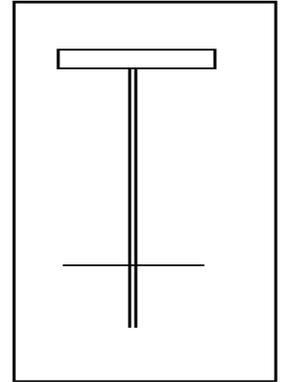
In order to reduce vandalism and to allow for the installation of either Stop, Do Not Enter, Yield and/or other specified traffic signs with SNS Assemblies shall be installed as follows:

- a. Mounting of two one-sided 9" SNS panels, back-to-back, attached to the uppermost top of one 10 ft - 2" square tube breakaway post with anchor base. SNS panels shall be installed at the top of post with designated SNS panel parallel to the associated roadway.
- b. At all times, SNS panels shall be mounted in succession from the utmost top of the sign post. At no time shall there be any overlapping of or gaps between signs in accordance with mounting holes.

## SIGN INSTALLATION PROCEDURES MANUAL

- c. In some applications, the use of a 1-3/4" square tube extension, inserted 6" or more (as needed) into the top of the post shall be required to maintain the minimum mounting height. No part of the post or extension shall protrude beyond the uppermost sign.

Figure 21 - Independent SNS Assembly on Square Tubing Post Installation



### 2. General Pole Mounting

- a. In order to reduce vandalism of SNS assemblies installed on streetlight poles, signal poles, and utility poles, it is preferred that the mounting height be at a 16 foot maximum, if possible. Due to the shorter length of some street light poles, the mounting height of the SNS assembly may be reduced to a minimum of 10 feet while keeping the SNS assembly as close to the top of the pole as possible (Figure 21). Each set of 9" Street Name Sign panels are to be banded parallel to each other on either side of the utility pole. SNS panels shall be installed at the top of post with designated SNS panel parallel to the associated roadway.

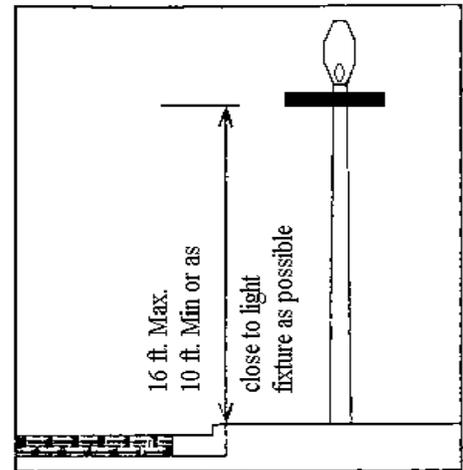


Figure 22 – SNS Assembly on Utility Pole Mount

- b. The ends of each pair of SNS panels shall be secured together with a 24 inch (minimum length) ultraviolet (UV) resistant cable ties and an appropriately sized piece of 1/2 inch PVC conduit to be used as a spacer between the two SNS panels. The spacer is to be placed between the SNS panels and the first cable tie is to be placed through the first SNS panel then the spacer and then through the second SNS panel. The first cable tie is to be placed through the locking end of the first cable tie. Repeat this process for the other end of the SNS panels then cut the cable tie's ends approximately 3/4 to 1 inch away from the cable tie's locking connectors on both ends of the SNS panels.
- On **steel or fiberglass utility poles**, banding, saddles, cable ties, PVC conduit and buckles shall be used to secure signs. (top & bottom, both ends)

## SIGN INSTALLATION PROCEDURES MANUAL

### 3. Installation of Traffic Signs & SNS Assembly

All signs shall be mounted in a manner as to maintain minimum height requirements. (Refer to Part IV: Post Selection). **The Street Name Sign assembly (refer to Part V-B.1 & B.2) that is to be combined with STOP or YIELD sign shall be mounted above the STOP or YIELD sign.** This will result in the use of 1-3/4" square tube extension to achieve the desired height clearance needed.

#### C. Keep Right Sign Assembly (R4-7)

A KEEP RIGHT Assembly (Figure 24) consists of one R4-7 sign, one 12" x 12" yellow panel and one 4" x 24" black on yellow **left** hazard marker (on back side of R4-7).

One R4-7 sign mounted to top of 7 ft - 2" square tube breakaway post with an anchor base installed facing opposing traffic.

KEEP RIGHT signs shall be installed on a 7ft - 2" square tube breakaway post with an anchor base and oriented at an angle (usually 15 degrees) toward any left-turning traffic entering from the side street.

One 12" x 12" yellow panel shall be installed in diamond form directly under the R4-7 also facing opposing traffic.

One 4" x 24" black on yellow **left** hazard marker (HM-L) shall be mounted on back of R4-7 at topmost end of 7 ft post.

All KEEP RIGHT signs shall be installed 10 ft back from the P.C (point of curvature). of the island. If the island does not have a existing PVC sleeve at 10 ft, a 3" hole shall be drilled at the 10 ft mark and centered in the island and the assembly shall be installed as stated above.



Figure 23 – Front of Keep Right Assembly

## SIGN INSTALLATION PROCEDURES MANUAL

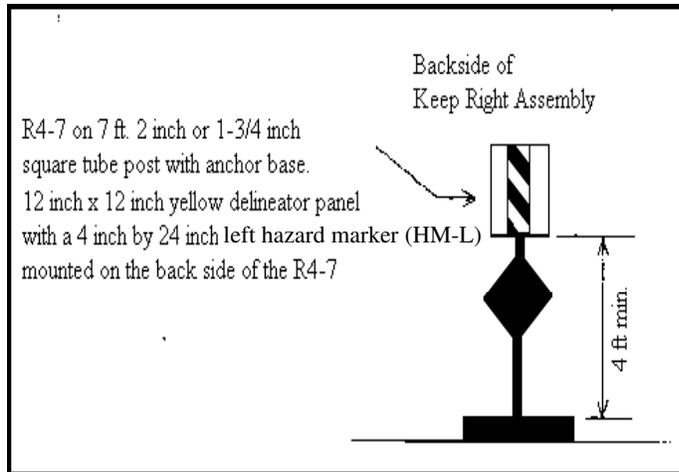


Figure 24  
Back of Keep Right Assembly

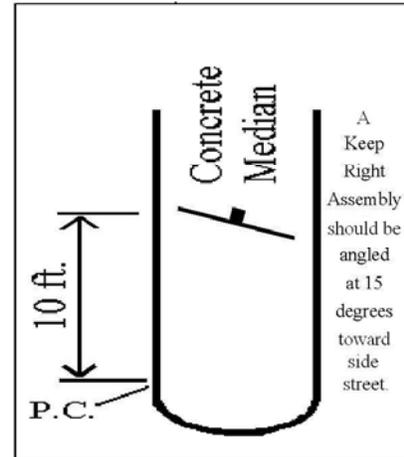


Figure 25  
Placement of Keep Right Assembly in Concrete Median

### D. Chevron Curve Signs (W1-8)

Chevron signs are normally 18" x 24". They are to be installed (as required) either single sign mount or double sign mount. Chevrons shall be installed on the outside of a curve or turn, in line with and at approximately a right angle to approaching traffic. Placement of signs & posts shall be determined by work order and/or drawings.

1. Single Sign Mount - one (1) sign mounted on center (top and bottom holes) to topmost of a 7 foot – 2 inch square tube breakaway post with anchor base. Sign and post to face oncoming traffic. (see figure 26)
2. Double Sign Mount – two (2) signs mounted on the leading edge at a 90 degree angle, edge-to-edge, point-to-point configuration. The top of both signs shall be to the topmost hole of a 7' – 2" square tube breakaway post with anchor base. Both signs in unison to face 45 degree angle (along with post) to square edge of roadway. One sign to face each direction of oncoming traffic. Double mount sign configurations shall not be installed back-to-back or parallel to each other.

# SIGN INSTALLATION PROCEDURES MANUAL

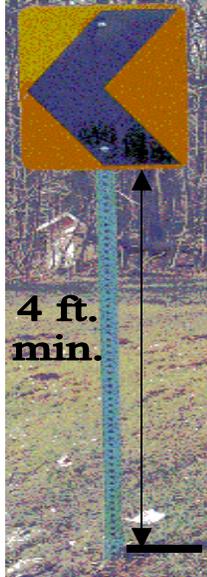


Figure 26  
Single Mount Chevrons

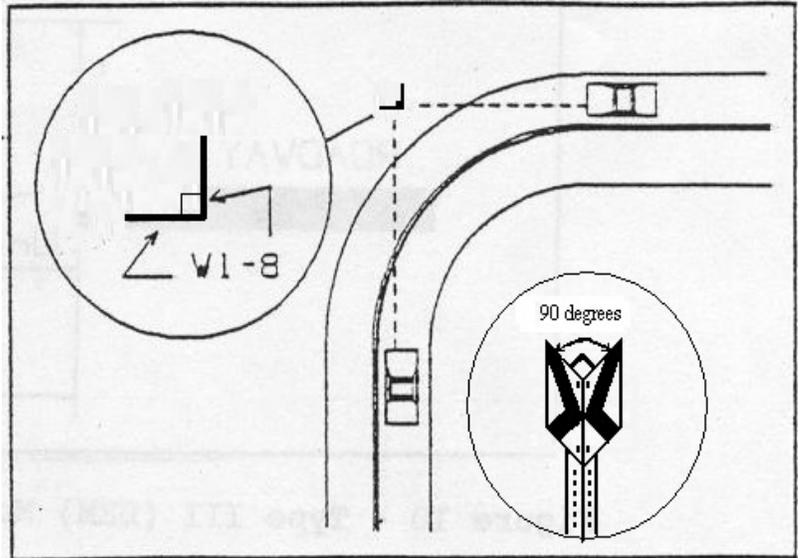


Figure 27 – Double Mount Chevron

## E. Parking Signs

Parking signs with arrows are erected at an **angle of 30 to 45 degrees** to the direction of traffic. All signs shall be installed on 10 foot - 2" square tube breakaway posts with anchor bases. An angled bracket must be used to mount the parking sign to the post if the post requires additional signing which needs to be mounted 90 degrees to the roadway.

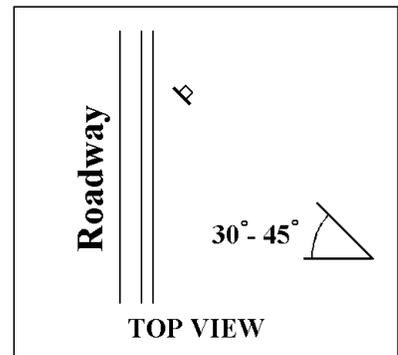


Figure 28 - Parking Sign with Arrow

## F. Traffic Marker and Installation

1. Type I (Yellow Delineator Panel), shall be as follows: one – 12 inch x 12 inch yellow panel, mounted in a diamond configuration on a 5 foot - 2 inch square tube breakaway post with anchor base (cut a 10 ft - 2 inch square tube breakaway post in half). Sign shall be mounted at top of post to face approaching traffic. Sign and post to be placed 2 ft. – 4 ft. from nose of traffic islands or as noted on the work order.



Figure 29 Type I (Yellow Delineator Panel) Mounting Height

## SIGN INSTALLATION PROCEDURES MANUAL

- Type II (Hazard Marker [Balto. Co. only]) shall be as follows: one – 4 inch x 24 inch sign (HM-R for right hazards or HM-L for left hazards) installed on 7 foot - 2 CIP post and the post shall be driven 18 – 24 inches into the ground. Sign and post to be installed at the roadway hazard approximately 2 ft. – 4 ft. from edge of roadway. It may required at times to install 1 each (HM-L, HM-R) back-to-back so that a sign will be seen by each opposing direction of travel.

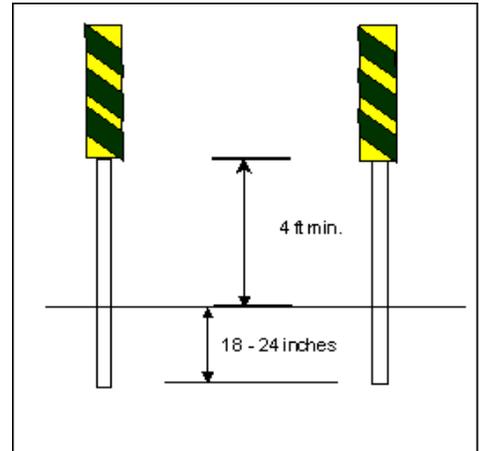


Figure 30 - Type II (Hazard Marker) Mounting Height

- Type III (Object Markers) shall be as follows: one – 12 inch x 36 inch sign, (OM - R for a right object marker or OM - L for a left object marker) installed on a 7 foot - 2 inch square tube breakaway post with anchor base. Sign shall be mounted at top of post to face approaching traffic. It may required at times to install 1 each (OM-L, OM-R) back-to-back so that a sign will be seen by each opposing direction of travel.

When Type III object markers are installed within 8 feet of the shoulder or curb, they should be installed on one 7 foot – 2 inch square tube breakaway post and anchor base with a minimum mounting height of 4 feet above the roadway surface of the nearest traffic lane. When installed at 8 feet or more, the mounting height may be four (4) feet above the ground unless otherwise noted on the work order.

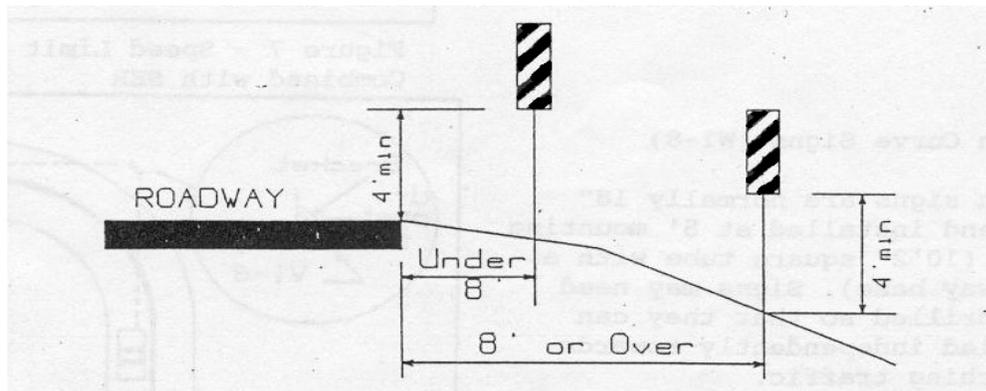


Figure 31 - Type III (Object Marker) Mounting Height

## SIGN INSTALLATION PROCEDURES MANUAL

- Road End signs shall be a 30 inch by 30 inch white legend "ROAD END" on red background and shall be installed on one 10 foot - 2 inch square tube breakaway post and anchor base with a minimum mounting height of 7 feet. Two red delineator panels (OM4-3, 18" x 18") should be installed on a 7 foot - 2 inch square tube breakaway post and anchor base and placed at utmost top of post. Each red delineator panel shall be mounted 5 ft. - 7 ft. from each side of the ROAD END sign. A standard road end installation require only the two delineator panels. The road end sign will be installed only if the work order requires it.

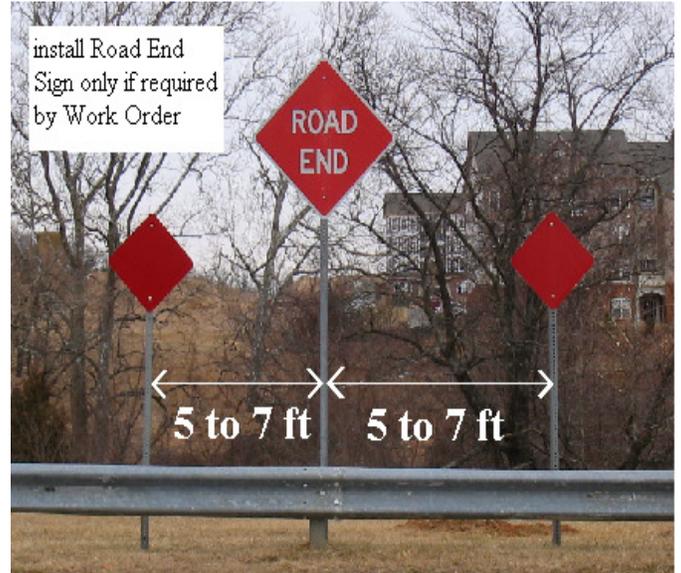


Figure 32 – ROAD END Sign Mounting Heights

### G. DO NOT ENTER Combined with ONE WAY ARROW Signs

When DO NOT ENTER (R5-1) and the 36" x 12" ONE WAY ARROW (R6-1) signs are to be installed together, the ONE WAY ARROW signs shall be mounted **above** the DO NOT ENTER sign. In most cases, it is necessary to install a 2' x 1-3/4" square tube extension into the top of the post to maintain minimum required height of 7' to bottom of DO NOT ENTER. A typical installation is shown below.

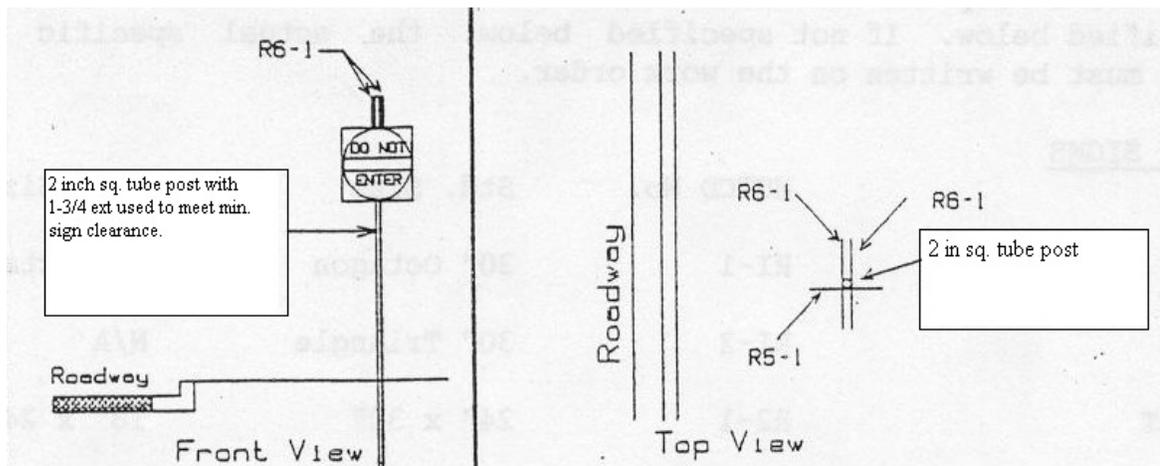


Figure 33

Typical Installation DNE and OWA Combined on 2" Square Tube Breakaway

# SIGN INSTALLATION PROCEDURES MANUAL

## Post with Anchor Base

### H. Emergency/Temporary Signing

Generally, the installation of temporary signs is not different from the installation of permanent signs. Vertical and lateral clearances are the same and the use of utility poles (generally not accepted) is the same. The following are permissible:

- a. Signs mounted on portable supports (such as construction signs) shall have a minimum vertical clearance of one (1) foot.
- b. Signs mounted on pedestals weighted down with sand bags may be placed within the roadway if necessary.
- d. Public Hearing Notice signs may be mounted on a single post (normally two are required for this size) at a reduced vertical clearance when they are not mounted next to a sidewalk or roadway.
- e. In emergency situations, with approval, temporary signs may be banded (top and bottom) on steel poles or lag bolted (top & bottom) on wood poles.

## PART VI COUNTY RESPONSIBILITIES AT SHA INTERSECTIONS

- A. KEEP RIGHT signs posted on County roadways at SHA roadways are the responsibility of Baltimore County regardless of whether or not they are in state maintained "apron" of the intersection.
- B. YIELD SIGNS: When leaving a state highway and entering a County maintained roadway the YIELD sign and associated post/posts are County responsibility. When entering a state highway from a County roadway, the YIELD sign and associated post/posts are the State's responsibility.

# SIGN INSTALLATION PROCEDURES MANUAL

## PART VII STANDARD AND MINIMUM SIZES DEFINED

Sign sizes may be noted on work orders as "Std" or "Min" for those signs specified below. If not specified below, the actual specific sign dimensions must be written on the work order.

Sign	MUTCD No.	Std. Size	Min. Size
<b>A. REGULATORY SIGNS</b>			
STOP	R1-1	24" Octagon	N/A
ALL-WAY plates	R1-4	6" x 18"	N/A
Right Turn Permitted w/o Stopping	Balt. Co. Sign	18" x 24"	N/A
YIELD	R1-2	30" Triangle	N/A
SPEED LIMIT	R2-1	24" x 30"	N/A
NO RIGHT TURN (symbol)	R3-1		
(ground mount)		24" x 24"	N/A
(overhead)		30" x 30"	N/A
NO LEFT TURN (symbol)	R3-2		
(ground mount)		24" x 24"	N/A
(overhead)		30" x 30"	N/A
NO TURNS	R3-3	24" x 24"	N/A
NO U TURN (symbol)	R3-4		
(ground mount)		24" x 24"	N/A
(overhead)		30" x 30"	N/A
Lane Use Control	R3-5 & 6 series	30" x 36"	N/A
(overhead)			
Lane Use Control	R3-7 & 8 series	30" x 30"	N/A
(ground mount)			
Center Lane Left Turn	R3-9b	24" x 36"	N/A
(ground mount symbol)			
KEEP RIGHT (symbol)	R4-7	18" x 24"	N/A
Yellow Panel		12" x 12"	N/A
DO NOT ENTER	R5-1	30" x 30"	N/A
NO THRU TRUCKS OVER 3/4 TON		24" x 30"	N/A
ONE WAY	R6-1	36" x 12"	N/A
PARKING	R7 Series	12" x 18"	N/A
Parking Combinations	R7 Series	12" x 18"	N/A
No Stopping Series	R7 Series	12" x 18"	N/A
STOP HERE ON RED	R10-6	24" x 30"	N/A
NO TURN ON RED	R10-11a	24" x 30"	N/A
BRIDGE AHEAD	Balt. Co. Sign	30" x 36"	N/A
Weight Limit	R12-5	30" x 36"	N/A

## SIGN INSTALLATION PROCEDURES MANUAL

### B. WARNING SIGNS

Common Warning Signs (except those listed below)	W Series	30" x 30"	N/A
Red Delineator Panel	OM4-3	18" x 18"	N/A
Advisory & Supplemental legend plate	W13-1	18" x 18"	N/A
Large Arrow	W1-6	18" x 36"	N/A
Chevron Alignment	W1-8	18" x 24"	N/A
STOP AHEAD (symbol)	W3-1a	30" x 30"	N/A
YIELD AHEAD (symbol)	W3-2a	30" x 30"	N/A
SIGNAL AHEAD (symbol)	W3-3	30" x 30"	N/A
Lane Reduction	W9-1 & 2	30" x 30"	N/A
ROAD NARROWS	W5-1	30" x 30"	N/A
ONE LANE BRIDGE	W-5-3	30" x 30"	N/A
Divided Highway (symbol)	W6-1 & 2	30" x 30"	N/A
Pavement Ends (symbol)	W8-3a	30" x 30"	N/A
Low Clearance (symbol)	W12-2	30" x 30"	N/A
Playground (symbol)	W15-1	30" x 30"	N/A
NO OUTLET	W14-2	30" x 30"	N/A
NO THRU STREET		30" x 30"	N/A
NO OUTLET		6" x 30"	N/A
NO THRU STREET		6" x 30"	N/A
Hazard Marker (left)	HM-L	4" x 24"	N/A
Hazard Marker (right)	HM-R	4" x 24"	N/A

### C. BALTIMORE COUNTY SCHOOL SIGNS

Sign Size	MUTCD No.	Std. Size	Min.
School - Ahead	S1W16-9P	30" x 42" Pentagon	N/A
School - Crossing Left Arrow	S1W16-7A(L)	30" x 42" Pentagon	N/A
School - Crossing Right Arrow	S1W16-7A(R)	30" x 42" Pentagon	N/A
School - Blank	S1W16-B	30" x 42" Pentagon	N/A
School Speed Limit			
When Flashing	S5-1 (WF)+Speed	24" x 48"	N/A
When Children Are Present	S5-1 (WCP)+Speed	24" x 48"	N/A
Blank	S5-1 (B)	24" x 48"	N/A

# SIGN INSTALLATION PROCEDURES MANUAL

## PART VIII ACCEPTABLE ABBREVIATIONS

Item	Abbreviation	Item	Abbreviation
------	--------------	------	--------------

### FUNCTIONS

- |                      |      |                   |        |
|----------------------|------|-------------------|--------|
| 1. Back to Back..... | B/B  | 7. Relocate.....  | Rel    |
| 2. Extension.....    | Ext  | 8. Remove.....    | Rem    |
| 3. Fabricate.....    | Fab  | 9. Repair.....    | Repair |
| 4. Install.....      | Inst | 10. Replace.....  | Rep    |
| 5. Minimum.....      | Min  | 11. Standard..... | Std    |
| 6. Maximum.....      | Max  |                   |        |

### REGULATORY SIGNS

- |                                   |        |   |       |
|-----------------------------------|--------|---|-------|
| 1. By Permit Only.....            | BPO    | 9. No Stopping Any Time.....                | NSAT  |
| 2. Do Not Enter.....              | DNE    | 10. No Thru Trucks Over 3/4 Ton... NTTO3/4T |       |
| 3. Handicap Parking.....          | HC PKG | 11. No Turn on Red.....                     | NTOR  |
| 4. Keep Right.....                | KR     | 12. One Way Arrow.....                      | OWA   |
| 5. Left Lane Must Turn Right..... | LLMTL  | 13. Parking.....                            | PKG   |
| 6. No Left Turn.....              | NLT    | 14. Right Lane Must Turn Right.....         | RLMTR |
| 7. No Parking Any Time.....       | NPAT   | 15. Snow Emergency Route.....               | SER   |
| 8. No Right Turn.....             | NRT    | 16. Speed Limit.....                        | SL    |

### WARNING SIGNS

- |                               |              |                              |            |
|-------------------------------|--------------|------------------------------|------------|
| 1. Advisory Speed Plate.....  | ASP or W13-1 | 10. No Thru Street.....      | NTS        |
| 2. Delineator.....            | DEL          | 11. Pedestrian Crossing..... | Ped X-ing  |
| 3. Crossing.....              | X-ing        | 12. Railroad Sign.....       | RR         |
| 4. Hazard Marker (Left).....  | HM-L         | 13. School.....              | SCH        |
| 5. Hazard Marker (Right)..... | HM-R         | 14. School Crossing.....     | SCH X-ing  |
| 6. Large Arrow.....           | LA or W1-6   | 15. Signal Ahead.....        | Sig Ahead  |
| 7. Object Marker (Left).....  | OM-L         | 16. Slippery When Wet.....   | SWW        |
| 8. Object Marker (Right)..... | OM-R         | 17. Stop Ahead.....          | Stop Ahead |
| 9. No Outlet.....             | NO           |                              |            |

### MISCELLANEOUS

1. Crossing.....X-ing
2. Directional Sign.....DS
3. End County Maintenance.....ECM
4. Hospital.....H
5. Street Name Sign.....SNS
6. Street Name Sign Assembly.....SNSA
7. Work Order.....W.O.
8. Begin County Maintenance.....BCM

# SIGN INSTALLATION PROCEDURES MANUAL

## PART IX SELECTED MARYLAND STATE STATUTES

### TR, §25-104. State Highway Administration to Adopt Sign Manual

The State Highway Administration shall adopt a manual and specifications for a uniform system of traffic control devices, consistent with the provisions of the Maryland Vehicle Law, for use on highways in this State. This uniform system shall correlate with and, as far as possible, conform to the system set forth in the most recent edition of the Manual on Uniform Traffic Control Devices for Streets and Highways.

### TR, § 25-105. Placement of Traffic Control Devices on State Highways

- (b) Placement by local authorities - A local authority may place or maintain a traffic control device on a highway under the jurisdiction of the State Highway Administration only with the permission and under the direction of the State Highway Administration.

### TR, § 25-106. Placement of Local Traffic Control Devices

On every highway under its jurisdiction, a local authority shall place and maintain those traffic control devices that it considers necessary to carry out the provisions of the Maryland Vehicle Law or local traffic ordinances or to regulate, warn, or guide traffic. Each of these traffic control devices shall conform to the manual and specifications of the State Highway Administration.

# SIGN INSTALLATION PROCEDURES MANUAL

## PART X OTHER GENERAL RESPONSIBILITIES OF SIGN AND MARKING MECHANICS

### A. Other Responsibilities

1. Occasionally digs holes to install posts/bases.
2. Operates drill to drill holes in concrete or asphalt to install posts.
3. Repairs all types of traffic signs and other signs upon request.
4. Replaces all damaged posts where needed.
5. May assist in the fabrication of all traffic/street name signs and related sign work.
6. Checks clearances for underground utilities.
7. Installs traffic/street name signs on street light/ signal poles using approved banding brackets /strapping on steel poles and using approved lag bolts and on wood utility poles.
8. Makes field decisions concerning traffic sign locations. Also repairs and/or replaces damaged signs/posts observed in the field.
9. May lead and instruct other mechanics and associates.
10. May layout and install school crossing intersection markings, lane arrows, railroad crossings and other types of road markings.
11. Makes field decisions concerning road marking installations.
12. May operate and maintain a centerline paint truck.
13. May participate in a 24-hour emergency response crew.
14. Is responsible to perform all related duties and requests pertaining to traffic signs and road marking installations.
15. Replaces signs with like size signs unless specified otherwise.
16. Is responsible for assuring that Stop signs on the same roadway at the same intersection are like sizes.
17. Is responsible for removing all old hardware from the work site.
18. Is responsible for assuring trucks are equipped with all necessary tools, hardware, signs, etc. to perform the necessary duties required to complete work orders for that day.
20. When working alone should a post need to be replaced and the mechanic is unable to accomplish this alone, it is the mechanic's responsibility to notify the supervisor accordingly.
21. The existing 5' (lightweight) extension posts will no longer be used. In their place, with the use of a 10' - 2" square tube breakaway post with an anchor base, the use of a 1-3/4" square extension tube shall be used to achieve appropriate recommended clearances. A length to be determined and cut appropriately from 2' - 10'.

# SIGN INSTALLATION PROCEDURES MANUAL

## Part XI. REQUIRED POSTING OF DISABLED PARKING SIGNS & PARKING LOT LAYOUTS

### A. Effective October 10, 2010 Laws Initiated by the Maryland General Assembly

Under the Annotated Code of Maryland, Transportation Article, Title 21, Section 21-1004(f), as of October 1, 2010 any sign that designates a parking space or zone for the use of individuals with disabilities shall clearly state the maximum amount of the fine to which a person is subject for parking a vehicle in the parking space or zone without the appropriate special disability registration plates or disability parking placard. In Baltimore County that fine is \$152. Disabled parking signs in Baltimore County which do not contain the fine value of \$152 will be unenforceable by parking enforcement officers/agents after October 1, 2010.

In addition, under Section 21-1006(a)(2) of the same Transportation Article, as of October 1, 2010 each parking lot in Maryland must conform with the requirements of the Maryland Accessibility Code adopted under Section 12-202 of the Public Safety Article. This law applies to ALL parking lots in Maryland, regardless of the time they were built or approved.

The Maryland Accessibility Code Guidelines for Building and Facilities dealing the disabled parking signs in found under COMAR 05.02.02 and is restated below:

#### Section D. Parking Space Signs – Public and Private Facilities

- (1) The parking areas of all buildings and facilities, including the buildings and facilities of State and local governments, shall identify each accessible parking space by a sign.
- (2) If the sign in §D (1) of this regulation is:
  - (a) Not placed flush against a building, structure, or other location that does not obstruct vehicle or pedestrian traffic, it shall be at least 7 feet above the ground;
  - (b) Placed flush against a building structure or other location that does not obstruct vehicle or pedestrian traffic, it shall be at least 6 feet, and not more than 10 feet, above the ground.
- (3) Signs shall bear the international symbol of access and the words "Reserved Parking", and shall be in conformance with the requirements for uniform traffic control devices under Transportation Article, §25-104, Annotated Code of Maryland. (See Regulation .12 of this chapter for explanatory material.)
- (4) Each van-accessible parking space shall be identified with a supplemental "Van Accessible" sign in conformance with the requirements for uniform traffic control devices under Transportation Article, §25-104, Annotated Code of Maryland (See Regulation .12 of this chapter for explanatory material.)
- (5) Each van-accessible parking space aisle shall be identified with a supplemental "No Parking" sign in conformance with the requirements for uniform traffic control devices under Transportation Article, §25-104, Annotated Code of Maryland (See Regulation .12 of this chapter for explanatory material.)

## SIGN INSTALLATION PROCEDURES MANUAL

(6) A *[new]* sign *[posted after October 1, 2002]* that designates a parking space or zone for the use of individuals with disabilities shall be identified with a supplemental "Maximum Fine" sign in conformance with the requirements for uniform traffic control devices under Transportation Article, §25-104, Annotated Code of Maryland. (Italicized lettering in brackets will be removed on October 1, 2010.)

### B. Disabled Parking Sign Configurations and Placements

The following is provided as a guide to demonstrate accepted sign configurations on sign posts and sign post placements on parking lots in order to conform to the above laws and standards.

#### 1. Sign Configurations

- a. Option A - The standard Reserved Parking sign, universally used in the U.S., is shown on Page 32 (Sign R7-8). If this sign is used by itself in Baltimore County, then it must have an associated plaque directly underneath it, shown on Page 33 (Sign R7-8(2)), stating "MAXIMUM FINE \$152", **OR**

Option B - As an alternate to the use of the two separate signs in Option A, a combined message sign is also permitted, shown as a Maryland State Highway Administration (SHA) standard Sign R7-8(3), as shown on Page 34. This sign is 3" shorter than the two-sign Option A. The SHA sign is accepted for use throughout the state of Maryland, however the fine value has to be set for the appropriate amount established in each local jurisdiction in Maryland. In Baltimore County it must state "MAXIMUM FINE \$152".

- b. Van Accessible Parking Spaces - Any parking space that is intended and designed to be accessible to vans must have an individual sign(s) as listed in Option A, B, or C above and under that sign(s) must have an additional plaque stating "VAN ACCESSIBLE", that plate shown on Page 35 (Sign R7-8b) and consisting of white letters on a blue background. To meet Item #5 of the COMAR regulations outlined in this section, the approved "NO PARKING IN ACCESS AISLE" SHA sign is shown on Page 36 (Sign R8-1(2)) and Page 37 (Sign R8-1(2\_A)). This sign is intended to keep drivers from parking vehicles in the 8-foot wide hatched area next to a van accessible parking space. If the R8-1(2) or R8-1(2\_A) sign is not in place, parking enforcement officers/agents cannot ticket ANY vehicle if it is parked on the hatched out 8-foot wide access aisle.

# SIGN INSTALLATION PROCEDURES MANUAL

## 2. Sign Placements

Pages 38 and 39 show a typical layout for perpendicular disabled parking spaces. Under any circumstance, each disabled parking space must have a reserved parking sign adjacent to it. (Van Accessible reserved parking spaces must always have the sign and post centered at the head of each space with no arrow under the wheelchair symbol.) There are two options for installing Reserved Parking signs for those spaces.

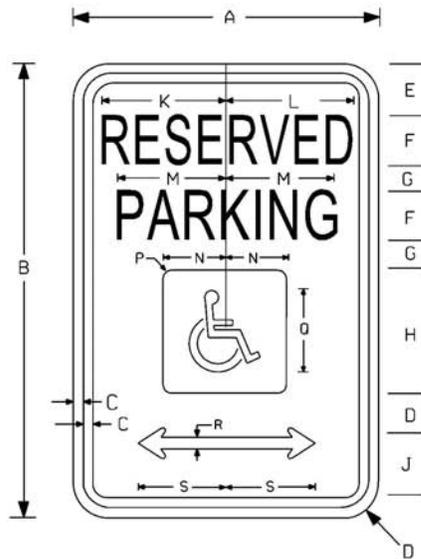
- a. Option #1 - This option involves placing a parking sign(s) and post at the head of each parking space, centered in the middle of each space. Under this option, there should be NO arrow under the wheelchair symbol.
- b. Option #2 - This option involves placing the signs to the edge of the parking space and alternating signs to the left and right of each space. Under this option there MUST be an appropriate arrow under the wheelchair symbols to outline the area in which there are reserved parking spaces. If there are several disabled parking spaces in a row, this option can reduce the number of signs and posts. The posts may also be less subject to being struck by the front bumpers of vehicles pulling into these spaces.

## 3. Parallel Parking Layout

When providing parallel disabled parking spaces, this will generally require the use of reserved parking signs and posts at both ends of the parking space with the appropriate left, right, or double arrow under the wheelchair symbol.

# SIGN INSTALLATION PROCEDURES MANUAL

R7-8



NOTE: ARROW MAY BE REMOVED OR MODIFIED AS NECESSARY

• REDUCED SPACING

SIGN SIZE	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	K
STANDARD	12	18	1/2	1-1/2	2	2C	1	6	2-1/2	4-7/8

SIGN SIZE	DIMENSIONS (INCHES)							
	L	M	N	P	Q	R	S	
STANDARD	5	4-1/4	3	1/2	4	3/4	3-7/8	

### REFERENCES

MUTCD SECTION - 2B-31, 2B-32  
 MUTCD SUPPLEMENT - 2B-31, 2B-32, 2B-33

### COLORS

LEGEND, BORDER & ARROWS(WHEN USED) - GREEN  
 WHITE SYMBOL ON BLUE BACKGROUND  
 BACKGROUND - WHITE



DRAWN BY W.D.FOX DATE 02/23/2009  
 CHECKED BY G.CARSKI DATE \_\_\_\_\_  
 APPROVED BY STEPHEN WEBER DATE \_\_\_\_\_

DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF TRAFFIC ENGINEERING  
 RESERVED PARKING (HANDICAP SYMBOL)

ISSUED: \_\_\_\_\_  
 REVISED: \_\_\_\_\_  
 REVISED: \_\_\_\_\_  
 DRAWING #  
 (R7-8)  
 RESVD\_PRKG\_HC

# SIGN INSTALLATION PROCEDURES MANUAL

MD.DOT.SHA.#

R7-8(2)



NOTE: SIGN SUPPLEMENTS FEDERAL SIGN R7-8.

SIGN SIZE	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
STANDARD	12	9	3/8	1-3/4	2B	1-1/2

### REFERENCES

MdMUTCD SECTION - 2B.39, 2B.40, 2B.41, 7B.14

### COLORS

LEGEND & BORDER - GREEN  
BACKGROUND - WHITE



DRAWN BY W.D.FOX DATE 03/03/2009

CHECKED BY G.CARSKI DATE \_\_\_\_\_

APPROVED BY STEPHEN WEBER DATE \_\_\_\_\_

DEPARTMENT OF PUBLIC WORKS  
DIVISION OF TRAFFIC ENGINEERING  
ATTACHMENT PLATE (FINE \$XXX) FOR  
RESERVED PARKING (HANDICAP SYMBOL)

ISSUED: \_\_\_\_\_

REVISED: 11/06/2009

REVISED: \_\_\_\_\_

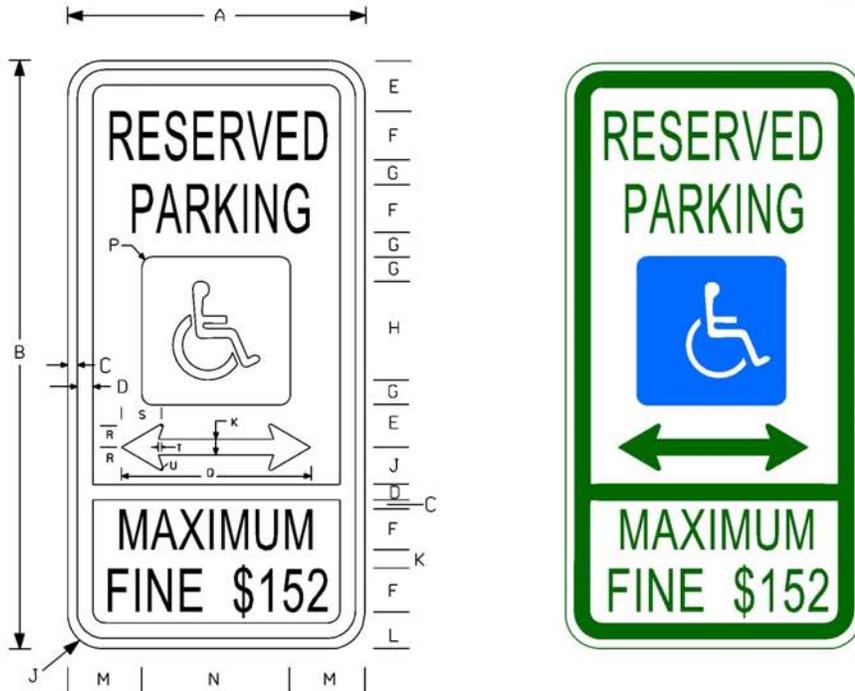
DRAWING #

R7-8 (2)

# SIGN INSTALLATION PROCEDURES MANUAL

MD.DOT.SHA.#

R7-8 (3)



**NOTES:**

1. ARROW MAY BE REMOVED OR MODIFIED AS NECESSARY.
2. FOR SYMBOL DESIGN REFER TO THE APPENDIX-GRID SECTION FROM FHWA'S STANDARD HIGHWAY SIGNS BOOK-APPENDIX SECTION.

SIGN SIZE	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	K
STANDARD	12	24	3/8	5/8	1-3/4	28	1	4	1-1/2	3/4

SIGN SIZE	DIMENSIONS (INCHES)								
	L	M	N	P	Q	R	S	T	U
STANDARD	1-1/4	3	6	1/2	7-11/16	7/8	1-5/8	1/8	9/64

**REFERENCES**

MdMUTCD SECTION - 2B.39, 2B.40, 2B.41, 7B.14

**COLORS**

- LEGEND - GREEN  
 BACKGROUND - WHITE  
 HANDICAP INLAY - WHITE ON BLUE



DRAWN BY W.D.FOX DATE 02/23/2009  
 CHECKED BY G.CARSKI DATE \_\_\_\_\_  
 APPROVED BY STEPHEN WEBER DATE \_\_\_\_\_

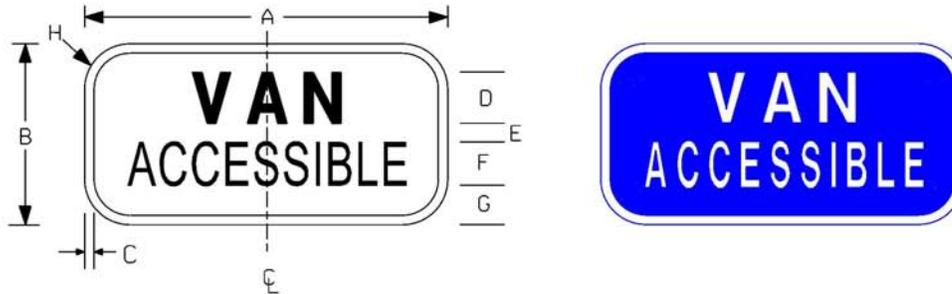
DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF TRAFFIC ENGINEERING  
 RESERVED PARKING (HANDICAP SYMBOL)  
 FINE \$XXX

ISSUED: \_\_\_\_\_  
 REVISED: 11/06/2009  
 REVISED: \_\_\_\_\_  
 DRAWING #  
 R7-8(3)  
 RESVD\_PRKG\_HC  
 FINE\_\$XXX

# SIGN INSTALLATION PROCEDURES MANUAL

MD.DOT.SHA.#

R7-8b



• REDUCED SPACING

SIGN SIZE	DIMENSIONS (INCHES)							
	A	B	C	D	E •	F	G	H
STANDARD	12	6	5/16	1-1/2	5/8	1-9/32	1-7/16	1-1/2

### REFERENCES

MUTCD SECTION - 2B-31, 2B-32  
 MUTCD SUPPLEMENT - 2B-31, 2B-32, 2B-33

### COLORS

LEGEND & BORDER - WHITE  
 BACKGROUND - BLUE



DRAWN BY W.D.FOX DATE 03/03/2009

CHECKED BY G.CARSKI DATE \_\_\_\_\_

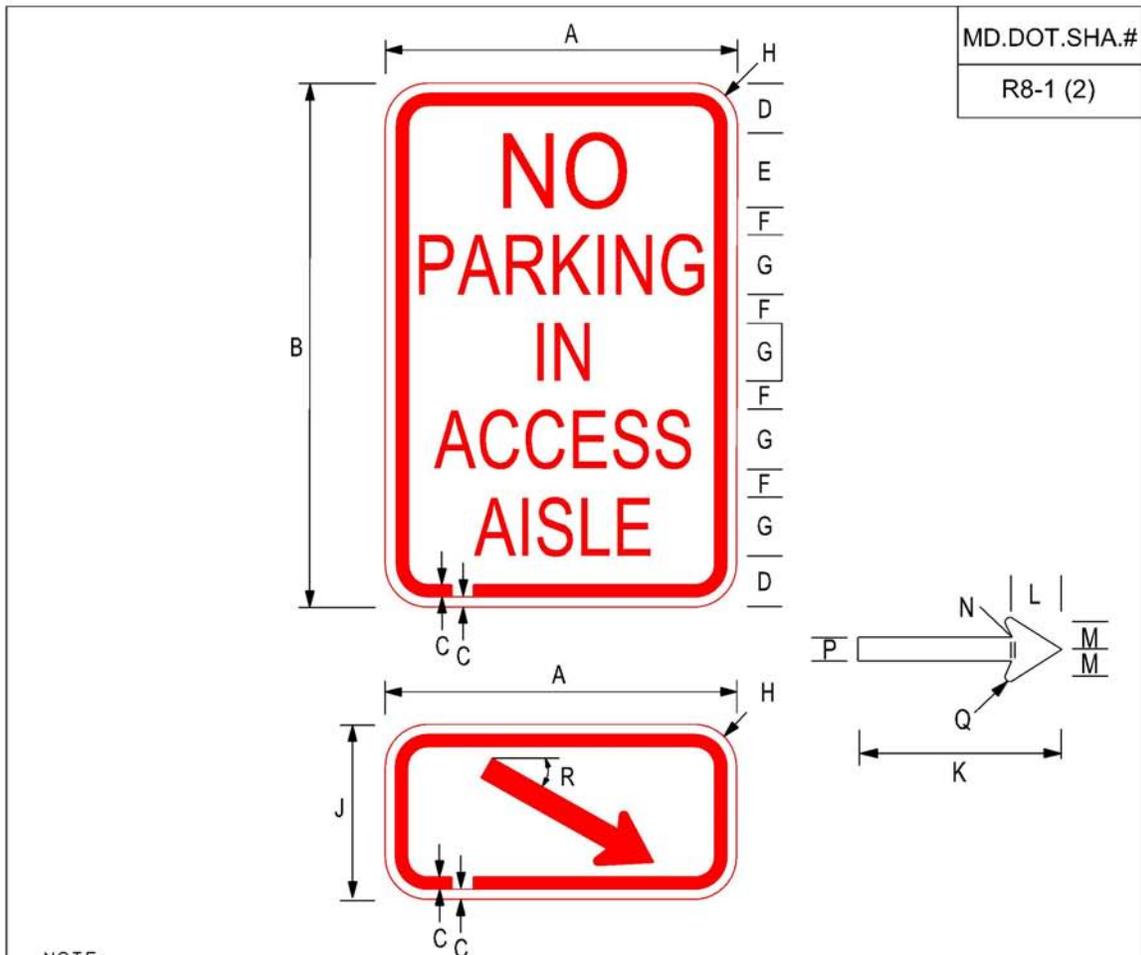
APPROVED BY STEPHEN WEBER DATE \_\_\_\_\_

DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF TRAFFIC ENGINEERING  
 ATTACHMENT PLATE ( VAN ACCESSIBLE )  
 FOR  
 RESERVED PARKING (HANDICAP SYMBOL)

ISSUED: \_\_\_\_\_  
 REVISED: \_\_\_\_\_  
 REVISED: \_\_\_\_\_

DRAWING #  
**R7-8 (b)**

# SIGN INSTALLATION PROCEDURES MANUAL



NOTE:  
ARROW MAY BE MODIFIED AS NECESSARY TO ACCOMMODATE LOCATION ACCESS RAMP

SIGN SIZE	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	K
STANDARD	12	18	3/8	1-1/2	2-1/40	.625	2C	1-1/2	6	6-1/2

SIGN SIZE	DIMENSIONS (INCHES)						
	L	M	N	P	Q	R	
STANDARD	1-5/8	7/8	1/8	3/4	9/64	30°	

**REFERENCES**

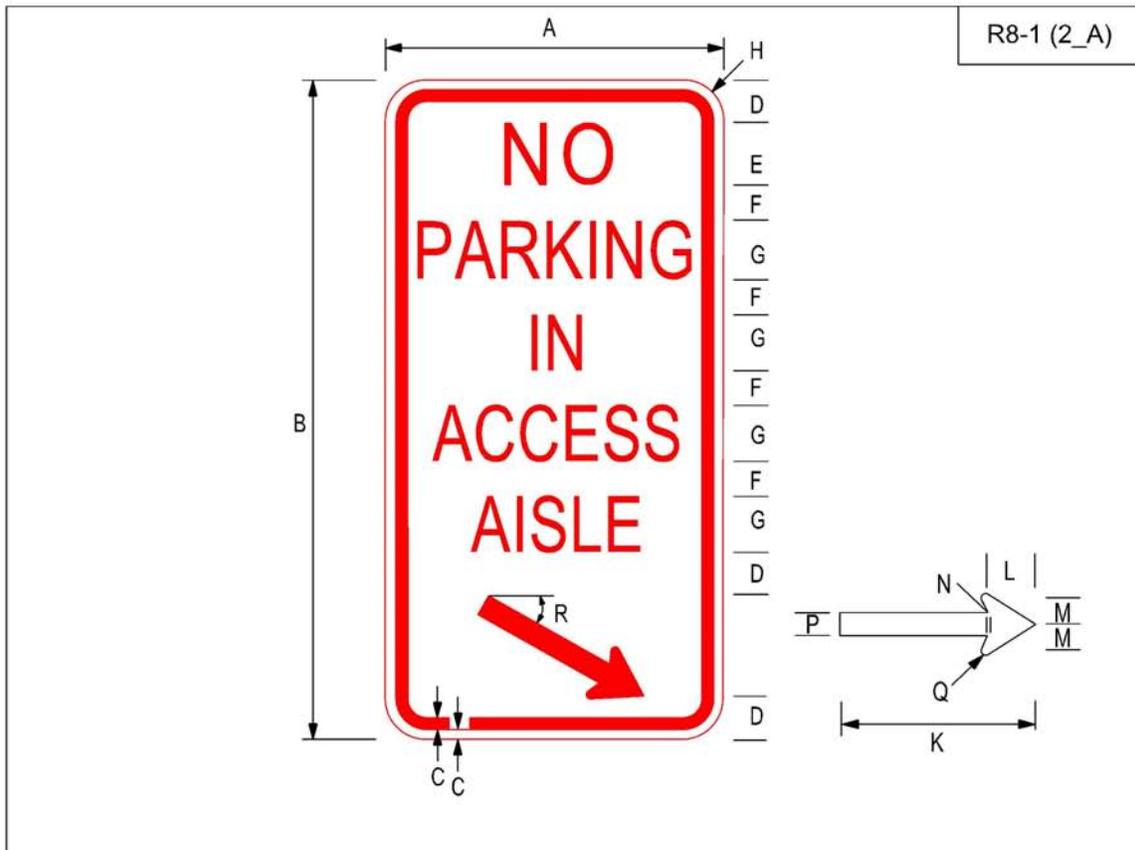
MUTCD SECTION - 2B.39,2B.40,2B.41,5B.05,7B.14

**COLORS**

LEGEND & BORDER - RED  
RED SYMBOL ON WHITE BACKGROUND

	DRAWN BY <u>W.D.FOX</u> DATE <u>07/27/2009</u>	DEPARTMENT OF PUBLIC WORKS DIVISION OF TRAFFIC ENGINEERING  NO PARKING IN ACCESS AISLE	ISSUED: _____ REVISED: _____ REVISED: _____
	CHECKED BY <u>G. CARSKI</u> DATE _____ APPROVED BY <u>STEPHEN WEBER</u> DATE _____		DRAWING # <b>R8-1 (2)</b>

# SIGN INSTALLATION PROCEDURES MANUAL



R8-1 (2\_A)

NOTE:  
ARROW MAY BE MODIFIED AS NECESSARY  
TO ACCOMMODATE LOCATION ACCESS RAMP

SIGN SIZE	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J	K	
STANDARD	12	24	3/8	1-1/2	2-1/40	1-1/4	2C	1-1/2	6	6-1/2	

SIGN SIZE	DIMENSIONS (INCHES)							
	L	M	N	P	Q	R	S	
STANDARD	1-5/8	7/8	1/8	3/4	9/64	30°	1/4	

**REFERENCES**

MUTCD SECTION - 2B.39,2B.40,2B.41,5B.05,7B.14

**COLORS**

LEGEND & BORDER - RED  
RED SYMBOL ON WHITE BACKGROUND



DRAWN BY W.D.FOX DATE 07/27/2009  
 CHECKED BY G.CARSKI DATE \_\_\_\_\_  
 APPROVED BY STEPHEN WEBER DATE \_\_\_\_\_

DEPARTMENT OF PUBLIC WORKS  
 DIVISION OF TRAFFIC ENGINEERING  
 NO PARKING IN ACCESS AISLE

ISSUED: \_\_\_\_\_  
 REVISED: 12/15/2009  
 REVISED: \_\_\_\_\_  
 DRAWING #  
**R8-1 (2\_A)**

# SIGN INSTALLATION PROCEDURES MANUAL

