TRANSMITTAL LETTER

PUBLICATION:
Publication 111

DATE:
6/17/2013

SUBJECT:
Publication 111 Traffic Control - Pavement Markings and Signing Standards TC-8600 and TC-8700 Series

INFORMATION AND SPECIAL INSTRUCTIONS:
The attached Standard Drawings shall be used by Department personnel and consultants whenever applicable for the design, details and installation of traffic control Signs and Pavement Markings. The previous edition of Publication 111M, issued May 2007, and any changes thereto shall be replaced by this edition.

The attached pages contain a summary of the major changes that have been incorporated into this edition.

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APPROVED FOR ISSUANCE BY:

Charles C. Goodhart, Director
Bureau of Maintenance and Operations
# PennDOT Publication 111 Revision Log

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<td>Changed note 7 to say <strong>Use any Bulletin 15 approved sheeting.</strong></td>
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1. Materials and workmanship in accordance with Pennsylvania Department of Transportation's Publication 408, unless noted otherwise.

2. Reflective all non-black pavement markings.

3. Five lines should be 4" minimum wide solid line of the color indicated and placed 4" inside the edge of the pavement markings.

4. Dotted extension lines on expressways/freeways shall be used to extend main line, auxiliary lane line, and intersection edge lines in accordance with the TYP.

5. Typical S.P.A.R.E. Zone Length is 0.9 miles, minimum is 0.6 miles.

6. Painted edge lines at 12 mil minimum wet thickness.

7. Use crosshatching at exit gore areas when visibility or sight distance of the gore is insufficient.

8. Paint optional wrong-way arrows in center of each lane of an exit ramp zone, stop bar or pavement edge and across from wrong-way signs.

9. Dotted extension lines on expressways/freeways shall be used to extend main line, auxiliary lane line, and intersection edge lines in accordance with the TYP.

10. Typical S.P.A.R.E. Zone Length is 0.9 miles, minimum is 0.6 miles.

11. For additional details refer to markings, Chapter 3, MUTCD.

12. For conventional highway pavement markings, see sheets 3 and 4.

13. For location and installation of snowplovable raised pavement markers, see TYP.

14. Black shadow lines required for concrete roadway surfaces with epoxy markings only.

15. Pad S.P.A.R.E. Signs (I2-1) Speed Check Markers (I2-1a) with epoxy markings only.

NOTES:

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

PAVEMENT MARKINGS
EXPRESSWAY / FREEWAY

SHOULDER

RECOMMENDED JUN.13, 2013
RECOMMENDED JUN.13, 2013

SHT. 1 OF 13
DETAILS ARE FOR CROSSWALK PAVEMENT MARKINGS ONLY

PLAN
DETAIL A

SIDEWALK
SIDEWALK
STOP LINE
OUTSIDE PEDESTRIAN CROSSWALK LINE
PROJECTED CURB LINE
INSIDE PEDESTRIAN CROSSWALK LINE

PLAN
DETAIL B

SIDEWALK
SIDEWALK
STOP LINE
OUTSIDE PEDESTRIAN CROSSWALK LINE
PROJECTED CURB LINE
INSIDE PEDESTRIAN CROSSWALK LINE

PLAN
DETAIL C

SIDEWALK
SIDEWALK
STOP LINE
OUTSIDE PEDESTRIAN CROSSWALK LINE
PROJECTED CURB LINE
INSIDE PEDESTRIAN CROSSWALK LINE

NOTES:
1. THE MINIMUM WIDTH OF CROSSWALKS SHALL BE 6', AND MAKE THE CROSSWALK LINES SOLID WHITE NOT LESS THAN 6" WIDE, THE LINES FORMING A 20 FT. TO 50 FT. PERMITS SECTION
2. FOR STANDARD CROSSWALK MARKINGS AND APPROVED DECORATIVE CROSSWALKパターン CONFIGURATION AND COLORS SEE SHEET 6.
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

RECOMMENDED TC-8600
RECOMMENDED PAVEMENT MARKINGS
SHT. 6 OF 13

NOTES:

LEGEND

WHITE

NOTE REFERENCE NUMBER

3

CROSSWALKS

STANDARD CROSSWALK MARKINGS

TYPE A - PARALLEL

TYPE B - DIAGONAL

TYPE C - PERPENDICULAR

DECORATIVE CROSSWALK

TYPE D - COURTYARD

TYPE E - HERRINGBONE

TYPE F - OFFSET BRICK

APPROVED NON-REFLECTIVE COLORS:  WHITE, BLACK, BROWN, SILVER-GRAY, TAN AND MAROON

NOTES:

1. MAKE THE CROSSWALK LINES SOLID WHITE, NOT LESS THAN 6" WIDE.

2. EXTEND THE CROSSWALK OVER THE ROADWAY FROM FACE OF CURB TO FACE OF CURB OR EDGE OF SHOULDER AS APPLICABLE.

3. THE MINIMUM WIDTH OF CROSSWALKS SHALL BE 6'.

4. A WHITE BORDER, 6" WIDE, IS REQUIRED ALONG EACH SIDE OF THE DECORATIVE CROSSWALK. THE BORDERS ARE TO BE PARALLEL USING A PLAN OF CROSSWALKS REQUIRED WITHIN 30 FEET OF CURB OR EDGE OF SHOULDER.

LEGEND

6'-0" MIN.

NOTE REFERENCE NUMBER

PEDESTRIAN FLOW

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

PAVEMENT MARKINGS

CROSSWALKS

APPROVED NON-REFLECTIVE COLORS:  WHITE, BLACK, BROWN, SILVER-GRAY, TAN AND MAROON

NOTE REFERENCE NUMBER

PEDESTRIAN FLOW
RAILROAD CROSSING MARKINGS

SEE MUTCD FIG. 8B-6 AND 8B-7 FOR MORE DETAILS

NOTE: SEE DETAIL H, THIS SHEET. (TYP.)

TC-8600

PAVEMENT MARKINGS

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

PERMITS SECTION
CHIEF, TRAFFIC ENGINEERING AND
CHIEF, HIGHWAY SAFETY AND
BUREAU OF MAINTENANCE AND OPERATIONS

NOTE

1. ON TWO-LANE, TWO-WAY HIGHWAYS, THE CENTER LINES ARE YELLOW.
   "W10-1" IS RECOMMENDED IN A COMBINATION WITH THE TRANSVERSE LINE.
   SEE TABLE A FOR THE MINIMUM DISTANCE NOTED IN TABLE A.

2. CENTER THE RAILROAD SYMBOLS WITHIN EACH LANE ON ALL PAVED
   APPROACHES TO HIGHWAY-RAIL GRADE CROSSINGS. THE INSTALLATION MUST
   COMPLY WITH THE MINIMUM DISTANCE NOTED IN TABLE A.

3. ON MULTI-LANE ROADS EXTEND THE TRANSVERSE LINES ACROSS ALL
   APPROACH LANES IN EACH APPROACH AND USE INDIVIDUAL SYMBOLS
   IN EACH APPROACH LANE.

4. LOCATE A PORTION OF RAILROAD PAVEMENT MARKING SYMBOL
   DIRECTLY OPPOSITE THE ADVANCE WARNING SIGN W10-1.

5. LOCATE STOP LINES 6' FROM THE GATE (IF PRESENT),
   BUT NO CLOSER THAN 15' FROM THE NEAREST RAIL.

6. LOCATE IN EACH APPROACH LANE WITHIN THE POLYGON SHAPE
   REPRESENTING THE INSTALLATION. THE INSTALLATION MUST BE
   COMPLETED IN CONFORMANCE WITH MUTCD GUIDELINES."
1. Yield lines may be used to indicate the point behind which vehicles are required to yield in compliance with a yield sign.

2. Yield lines, ped symbol, and bicycle rider symbol may be eliminated on narrow horizontal widening of road or where yielding is prohibited, or when speed facilities such as ramps or signal control.

3. Use MUTCD Chapter 9C, Table 9C-1, Condition "B", for advance placement of yield ahead triangle symbol.

4. Use MUTCD Chapter 9C, Table 9C-1, Condition "B", for advance placement of yield ahead triangle symbol.

NOTES:

1. Yield lines may be used to indicate the point behind which vehicles are required to yield in compliance with a yield sign.
2. Yield lines, ped symbol, and bicycle rider symbol may be eliminated on narrow horizontal widening of road or where yielding is prohibited, or when speed facilities such as ramps or signal control.
3. Use MUTCD Chapter 9C, Table 9C-1, Condition "B", for advance placement of yield ahead triangle symbol.
4. Use MUTCD Chapter 9C, Table 9C-1, Condition "B", for advance placement of yield ahead triangle symbol.

LEGEND

WHITE

YELLOW

DIRECTION OF TRAVEL

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUREAU OF MAINTENANCE AND OPERATIONS

PAVEMENT MARKINGS

LEGENDS AND SYMBOLS

JUN. 13, 2013

JUN. 13, 2013

PERMITS SECTION

CHIEF, TRAFFIC ENGINEERING AND

TRAFFIC OPERATIONS DIVISION

CHIEF, HIGHWAY SAFETY AND
NOTE:

1. Handicapped symbol shall be white. It may be installed alone or with a blue background which extends a minimum of 3" beyond the symbol. The bottom edge of the blue background shall be a minimum of 3" above the top of the symbol. Reduction in dimension must be approved by the Department.

2. In dimensions must be approved by the Department.

3. Handicapped symbol shall be white. It may be installed alone or with a blue background which extends a minimum of 3" beyond the symbol. The bottom edge of the blue background shall be a minimum of 3" above the top of the symbol. Reduction in dimension must be approved by the Department.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

PAVEMENT MARKINGS

LEGENDS AND SYMBOLS

SEE PAGE 3, NOTE 14 FOR SPACING BETWEEN WORDS.

SEE FHWA'S STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS FOR OTHER DETAILS.
1. Locate lane reduction arrow in center of lane.
2. Place lane reduction arrows in groups of three when placed in single lane.
3. Align with Table 2C-4 (Condition A) for placement of first lane reduction arrow in advance of taper.
4. Place additional lane reduction arrows at 300' intervals.
5. Place additional lane reduction arrows at 600' intervals.

**Lane Reduction Arrow Placement**

**Marking Arrows**

**Each Grid Equals 6" x 6"**

**Arrows**

**Quantity for Pavement Marking Removal**

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<th>Arrow</th>
<th>20 ft²</th>
<th>32 ft²</th>
<th>40 ft²</th>
<th>52 ft²</th>
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**LEGENDS AND SYMBOLS**

**COMMONWEALTH OF PENNSYLVANIA**

**DEPARTMENT OF TRANSPORTATION**

**BUREAU OF MAINTENANCE AND OPERATIONS**

**PAVEMENT MARKINGS**

**SHT. 10 OF 13**

**JUN. 13, 2013**

**Drawing Title:**

**COMMONWEALTH OF PENNSYLVANIA**

**DEPARTMENT OF TRANSPORTATION**

**BUREAU OF MAINTENANCE AND OPERATIONS**

**PAVEMENT MARKINGS**

**SHT. 10 OF 13**

**JUN. 13, 2013**

**LEGENDS AND SYMBOLS**
TYPICAL LAYOUT AND PLACEMENT OF SUPPLEMENTAL CURVE PAVEMENT MARKING

NOTE: ON ROADWAYS WITH A POSTED SPEED LIMIT OF 35 MPH OR LESS, USE THE SLOW CURVE ARROW, LOW-SPEED STANDARD MARKING, LEGEND AS SHOWN ON THE SLOW CURVE ARROW, LOW-SPEED STANDARD MARKING, THIS SHEET.

NOTE: ON ROADWAYS WITH A POSTED SPEED LIMIT OF 35 MPH OR LESS, USE THE SLOW CURVE ARROW, HIGH-SPEED STANDARD MARKING, LEGEND AS SHOWN ON THE SLOW CURVE ARROW, HIGH-SPEED STANDARD MARKING, THIS SHEET.

SLOW CURVE ARROW
LOW-SPEED STANDARD MARKING
(POSTED SPEED LIMIT 35 MPH OR LESS)

SLOW CURVE ARROW
HIGH-SPEED STANDARD MARKING
(POSTED SPEED LIMIT 40 MPH OR GREATER)

LEGENDS AND SYMBOLS
ROUNDABOUT LEFT-RIGHT-Straight
Combination Arrow
(OPTIONAL)

CONFIGURATION
DESIRED LANE USE
MATCH ARROW(S) WITH
Left-Most Lane
OPTIONAL FOR
Left-Right Lane

X'-X"

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS
PAVEMENT MARKINGS
LEGENDS AND SYMBOLS

SHT. 12 OF 13
JUN. 13, 2013
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PERMITS SECTION
CHIEF, TRAFFIC ENGINEERING AND
TRAFFIC OPERATIONS DIVISION
CHIEF, HIGHWAY SAFETY AND
BUREAU OF MAINTENANCE AND OPERATIONS
7. For 6' high characters, the width is 12" (use 3" for each grid square).
6. For 10' high characters, the width is 20" (use 5" for each grid square).
5. For 8' high characters, the width is 16" (use 4" for each grid square).
4. Standard character heights are 8', except for the 6' railroad "R" symbol.
3. Space 1 unit (min.) between characters or as otherwise shown (optical spacing may be used).
2. Vertical strokes are 1 unit wide, horizontal strokes are 4 units high.
1. Standard characters are 24 grid units high and 4 units wide (except letter "I" and the number "1" which are 1 unit wide).
EXIT GORE AREA

NOTES:

1. MATERIAL AND WORKMANSHIP IN ACCORDANCE WITH PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION 408, OR AS DIRECTED.
2. PLACE MARKERS ALONG A LANE LINE (BROKEN LINE) MIDWAY BETWEEN THE PAINTED PORTIONS.
3. PLACE MARKERS ALONG AN EDGE OR CHANNELED LANE WITH NEAR EDGE OF MARKER CASTING 4" TOWARD RIGHT SIDE OF TRAVELWAY.
4. INSTALL MARKERS 4" MIN. FROM ANY PAINTED SEAM, JOINT OR EDGE.
5. SEE SHEET 4 FOR MARKER DETAILS.
6. FOR MARKER SPACING ON CURVES SEE SHEET 3.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

SNOWPLOWABLE RAISED PAVEMENT MARKERS

TC-8602

JUN. 13, 2013

PERMITS SECTION
CHIEF, TRAFFIC ENGINEERING AND TRAFFIC OPERATIONS DIVISION
CHIEF, HIGHWAY SAFETY AND
TWO LANES TO ONE LANE

APPROACH SPEED 45 MPH OR GREATER
6 AT 60' MIN.

APPROACH SPEED LESS THAN 45 MPH
4 AT 60' MIN.

INTERSECTION APPROACH

INTERSECTION APPROACH
WITH LEFT-TURN LANE

NOTES:

APPROACH SPEED 45 MPH OR GREATER
15 AT 40'

APPROACH SPEED LESS THAN 45 MPH
10 AT 40'

VARIABLE AT 40'
6 AT 80' MIN.

VARIABLE AT 40'
4 AT 80' MIN.

VARIABLE AT 40'
6 AT 80'

VARIABLE TAPER LENGTH
SPACING AT 40' ALONG
VARIABLE TAPER LENGTH

LEGEND

WHITE/BLANK REFLECTOR
WHITE/YELLOW REFLECTOR
YELLOW/BLANK REFLECTOR
YELLOW/YELLOW REFLECTOR

( MIN. )
( TYP. )
( UNIT. )

1. SEE SHEET 3 FOR ADDITIONAL NOTES.
2. FOR MARKER SPACING ON CURVES SEE SHEET 3.
TWO-LANE ROADWAY

CURVES

NARROW BRIDGE

UNDIVIDED FOUR LINES

CENTER LANE LEFT-TURN ONLY

NOTES:

LEGEND

- TWO-WAY MARKER WITH WHITE/WHITE REFLECTOR
- TWO-WAY MARKER WITH YELLOW/YELLOW REFLECTOR
- WHITE
- YELLOW
- BROKEN WHITE
- BROKEN YELLOW
- DIRECTION OF TRAVEL

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

SHP. 3 OF 4

TC-8602
RAISED PAVEMENT MARKERS

SECTION D-D

SECTION F-F

PLAN VIEW

SECTION A-A

SECTION B-B

SECTION D-D

SECTION F-F

PLAN VIEW

SECTION A-A

SECTION B-B

RAISED PAVEMENT MARKERS

SECTION D-D

SECTION F-F

PLAN VIEW

SECTION A-A

SECTION B-B

RAISED PAVEMENT MARKERS

SECTION D-D

SECTION F-F

PLAN VIEW

SECTION A-A

SECTION B-B

RAISED PAVEMENT MARKERS

SECTION D-D

SECTION F-F

PLAN VIEW

SECTION A-A

SECTION B-B

RAISED PAVEMENT MARKERS

SECTION D-D

SECTION F-F

PLAN VIEW

SECTION A-A

SECTION B-B

RAISED PAVEMENT MARKERS

SECTION D-D

SECTION F-F

PLAN VIEW

SECTION A-A

SECTION B-B

RAISED PAVEMENT MARKERS

SECTION D-D

SECTION F-F

PLAN VIEW

SECTION A-A

SECTION B-B

RAISED PAVEMENT MARKERS
**GROUND-MOUNTED POSTS**

**SURFACE-MOUNTED POSTS**

**GROUND-MOUNTED POSTS**

**NOTES:**
1. Use materials and workmanship in accordance with Publication 408.
2. Galvanized metal soils anchor after fabrication, in accordance with PSW A-121.
3. For guide rail and barrier delineators, see Sheet 2.
4. For interchange areas location details, see Sheet 2.
5. For location/placement notes, see Sheet 4.
6. For delineator spacing on curves, see Sheet 3.
7. Use type SM-1 and GM-1 posts in areas where traffic movements need multi-direction delineation, such as intersections, roundabouts, and the ends of medians.
8. Use any bulletin 15 approved sheeting.

**COMMONWEALTH OF PENNSYLVANIA**
**DEPARTMENT OF TRANSPORTATION**
**BUREAU OF MAINTENANCE AND OPERATIONS**

**DELINEATION**

**FLEXIBLE POSTS DETAILS**

**TC-8604**
Guideline: Use materials and workmanship in accordance with Publication 408:

1. Install delineators on guide rail at 37.5' spacing on horizontal curves with a radius less than 1,000', and at 75' spacing on horizontal curves with a radius greater than 1,000', and tangents.

Guideline: Delineator placement:

2. See PUB. 72M, RC-57M for concrete median barrier details.
4. In work zones, install type A delineators on the top of all temporary barriers that are adjacent to the road. Install type B delineators on the lower slope of the barrier when justified by engineering judgment.
5. Mount delineators on the top and/or side of barriers or bridge parapets as specified, at a minimum of 0.25' below the center of the delineator.
6. Mount delineators on guide rail at 37.5' spacing on horizontal curves with a radius less than 1,000', and at 75' spacing on horizontal curves with a radius greater than 1,000', and tangents.
7. In work zones, install type A delineators on the top of all temporary barriers that are adjacent to the road. Install type B delineators on the lower slope of the barrier when justified by engineering judgment.
8. Use any Bulletin 15 approved sheeting.
9. As per manufacturer's recommendation.

Barriers that are adjacent to travel lanes at maximum 40' spacing. Use type WZ delineators on the top of all temporary barriers. Type WZ delineators may be located on the lower slope of the barrier when justified by engineering judgment.

Use materials and workmanship in accordance with Publication 408.

Commonwealth of Pennsylvania
Department of Transportation
Bureau of Maintenance and Operations

Delineation

Guide rail and barrier details

Note 7:

As per manufacturer's recommendation.

Guideline: Use materials and workmanship in accordance with Publication 408:

1. Install delineators on guide rail at 37.5' spacing on horizontal curves with a radius less than 1,000', and at 75' spacing on horizontal curves with a radius greater than 1,000', and tangents.

Guideline: Delineator placement:

2. See PUB. 72M, RC-57M for concrete median barrier details.
4. In work zones, install type A delineators on the top of all temporary barriers that are adjacent to the road. Install type B delineators on the lower slope of the barrier when justified by engineering judgment.
5. Mount delineators on the top and/or side of barriers or bridge parapets as specified, at a minimum of 0.25' below the center of the delineator.
6. Mount delineators on guide rail at 37.5' spacing on horizontal curves with a radius less than 1,000', and at 75' spacing on horizontal curves with a radius greater than 1,000', and tangents.
7. In work zones, install type A delineators on the top of all temporary barriers that are adjacent to the road. Install type B delineators on the lower slope of the barrier when justified by engineering judgment.
8. Use any Bulletin 15 approved sheeting.
9. As per manufacturer's recommendation.

Barriers that are adjacent to travel lanes at maximum 40' spacing. Use type WZ delineators on the top of all temporary barriers. Type WZ delineators may be located on the lower slope of the barrier when justified by engineering judgment.

Use materials and workmanship in accordance with Publication 408.

Commonwealth of Pennsylvania
Department of Transportation
Bureau of Maintenance and Operations

Delineation

Guide rail and barrier details

Note 7:

As per manufacturer's recommendation.

Guideline: Use materials and workmanship in accordance with Publication 408:

1. Install delineators on guide rail at 37.5' spacing on horizontal curves with a radius less than 1,000', and at 75' spacing on horizontal curves with a radius greater than 1,000', and tangents.

Guideline: Delineator placement:

2. See PUB. 72M, RC-57M for concrete median barrier details.
4. In work zones, install type A delineators on the top of all temporary barriers that are adjacent to the road. Install type B delineators on the lower slope of the barrier when justified by engineering judgment.
5. Mount delineators on the top and/or side of barriers or bridge parapets as specified, at a minimum of 0.25' below the center of the delineator.
6. Mount delineators on guide rail at 37.5' spacing on horizontal curves with a radius less than 1,000', and at 75' spacing on horizontal curves with a radius greater than 1,000', and tangents.
7. In work zones, install type A delineators on the top of all temporary barriers that are adjacent to the road. Install type B delineators on the lower slope of the barrier when justified by engineering judgment.
8. Use any Bulletin 15 approved sheeting.
9. As per manufacturer's recommendation.

Barriers that are adjacent to travel lanes at maximum 40' spacing. Use type WZ delineators on the top of all temporary barriers. Type WZ delineators may be located on the lower slope of the barrier when justified by engineering judgment.

Use materials and workmanship in accordance with Publication 408.

Commonwealth of Pennsylvania
Department of Transportation
Bureau of Maintenance and Operations

Delineation

Guide rail and barrier details

Note 7:

As per manufacturer's recommendation.

Guideline: Use materials and workmanship in accordance with Publication 408:

1. Install delineators on guide rail at 37.5' spacing on horizontal curves with a radius less than 1,000', and at 75' spacing on horizontal curves with a radius greater than 1,000', and tangents.

Guideline: Delineator placement:

2. See PUB. 72M, RC-57M for concrete median barrier details.
4. In work zones, install type A delineators on the top of all temporary barriers that are adjacent to the road. Install type B delineators on the lower slope of the barrier when justified by engineering judgment.
5. Mount delineators on the top and/or side of barriers or bridge parapets as specified, at a minimum of 0.25' below the center of the delineator.
6. Mount delineators on guide rail at 37.5' spacing on horizontal curves with a radius less than 1,000', and at 75' spacing on horizontal curves with a radius greater than 1,000', and tangents.
7. In work zones, install type A delineators on the top of all temporary barriers that are adjacent to the road. Install type B delineators on the lower slope of the barrier when justified by engineering judgment.
8. Use any Bulletin 15 approved sheeting.
9. As per manufacturer's recommendation.

Barriers that are adjacent to travel lanes at maximum 40' spacing. Use type WZ delineators on the top of all temporary barriers. Type WZ delineators may be located on the lower slope of the barrier when justified by engineering judgment.

Use materials and workmanship in accordance with Publication 408.

Commonwealth of Pennsylvania
Department of Transportation
Bureau of Maintenance and Operations

Delineation

Guide rail and barrier details

Note 7:

As per manufacturer's recommendation.

Guideline: Use materials and workmanship in accordance with Publication 408:

1. Install delineators on guide rail at 37.5' spacing on horizontal curves with a radius less than 1,000', and at 75' spacing on horizontal curves with a radius greater than 1,000', and tangents.

Guideline: Delineator placement:

2. See PUB. 72M, RC-57M for concrete median barrier details.
4. In work zones, install type A delineators on the top of all temporary barriers that are adjacent to the road. Install type B delineators on the lower slope of the barrier when justified by engineering judgment.
5. Mount delineators on the top and/or side of barriers or bridge parapets as specified, at a minimum of 0.25' below the center of the delineator.
6. Mount delineators on guide rail at 37.5' spacing on horizontal curves with a radius less than 1,000', and at 75' spacing on horizontal curves with a radius greater than 1,000', and tangents.
7. In work zones, install type A delineators on the top of all temporary barriers that are adjacent to the road. Install type B delineators on the lower slope of the barrier when justified by engineering judgment.
8. Use any Bulletin 15 approved sheeting.
9. As per manufacturer's recommendation.

Barriers that are adjacent to travel lanes at maximum 40' spacing. Use type WZ delineators on the top of all temporary barriers. Type WZ delineators may be located on the lower slope of the barrier when justified by engineering judgment.

Use materials and workmanship in accordance with Publication 408.

Commonwealth of Pennsylvania
Department of Transportation
Bureau of Maintenance and Operations

Delineation

Guide rail and barrier details

Note 7:

As per manufacturer's recommendation.
TRAFFIC OPERATIONS DIVISION
PERMITS SECTION
TC-8604
CHIEF, HIGHWAY SAFETY AND
CHIEF, TRAFFIC ENGINEERING AND
SHT. 4 OF 4
RECOMMENDED
RECOMMENDED
JUN.13, 2013

LOCATION / PLACEMENT NOTES

DELINEATION AND MARKERS

1. LOCATION:
   A. LEFT SIDE OF THROUGH ROADWAYS - DO NOT PLACE DELINEATORS ON THE THROUGH ROADWAY EXCEPT AT FIXED SOURCE LIGHTING LOCATION OR ON FIXED SOURCE LIGHTING CONTINUOUSLY ALONG THE LEFT SIDE OF THE THROUGH ROADWAY. PLACE DELINEATORS ON THE LEFT SIDE OF THROUGH ROADWAYS AT THE FOLLOWING LOCATIONS:
      I. WHERE GUIDE RAIL OR CONCRETE BARRIER IS LOCATED ON THE LEFT WITHIN 6' OF THE EDGE OF SHOULDER.
      II. ALONG RIGHT-HAND CURVES WITH A RADIUS OF 300' OR LESS.
      III. ALONG INTERCHANGE AREAS AS INDICATED ON SHEET 3.
      IV. ALONG MEDIAN CROSSOVERS AS SHOWN ON SHEET 3.
      V. WITHIN THE LIMITS OF MEDIAN CROSSOVERS AS SHOWN ON SHEET 3.
      VI. IN MEDIAN CROSSOVERS AS SHOWN ON SHEET 3.
      VII. ALONG LEFT-HAND HORIZONTAL CURVES WITH A RADIUS LESS THAN 2900'.
   D. HORIZONTAL CURVES - SPACE DELINEATORS AT 264' ALONG LEFT-HAND ACCELERATION OR DECELERATION LANES AND ALONG MEDIAN CROSSOVERS.
   E. INTERCHANGE AREAS - SPACE DELINEATORS IN INTERCHANGE AREA AT 132'.
   F. DIRECTIONAL ISLANDS - PLACE RED DELINEATORS ON RIGHT SIDE OF THROUGH ROADWAYS TO INDICATE TRAFFIC IN THE SAME DIRECTION TRAVELS TO THE RIGHT OF THE ISLAND AND TRAFFIC IN THE SAME DIRECTION MAY PROCEED ON BOTH SIDES OF THE ISLAND.
   H. MAINTENANCE MARKERS - PLACE ONE RED FLEXIBLE DELINEATOR POST ADJACENT TO NEAR EDGE OF THE ROADWAY WHERE MAINTENANCE APPURTENANCE (END PIPE, END WALL, INLET, ETC....) IS LOCATED.

2. LONGITUDINAL SPACING:
   A. RIGHT SIDE OF THROUGH ROADWAYS - INSTALL DELINEATORS AT 264' ALONG THE RIGHT SIDE OF THE THROUGH ROADWAY AND ALONG MEDIAN CROSSOVERS.
   B. LEFT SIDE OF THROUGH ROADWAYS - WHEN REQUIRED, INSTALL DELINEATORS AT 264' ALONG LEFT-LANE RAMPS, ACCELERATION OR DECELERATION LANES; ALONG THE LEFT SIDE OF THE THROUGH ROADWAY AND WITHIN THE LIMITS OF LEFT-LANE DROPS OR PAVEMENT WIDTH TRANSITIONS.
   D. HORIZONTAL CURVES - SPACE DELINEATORS AT 264' ALONG LEFT-HAND ACCELERATION OR DECELERATION LANES AND ALONG MEDIAN CROSSOVERS.
   E. INTERCHANGE AREAS - SPACE DELINEATORS IN INTERCHANGE AREA AT 132'.
   F. DIRECTIONAL ISLANDS - PLACE RED DELINEATORS ON RIGHT SIDE OF THROUGH ROADWAYS TO INDICATE TRAFFIC IN THE SAME DIRECTION TRAVELS TO THE RIGHT OF THE ISLAND AND TRAFFIC IN THE SAME DIRECTION MAY PROCEED ON BOTH SIDES OF THE ISLAND.
   H. MAINTENANCE MARKERS - PLACE ONE RED FLEXIBLE DELINEATOR POST ADJACENT TO NEAR EDGE OF THE ROADWAY WHERE MAINTENANCE APPURTENANCE (END PIPE, END WALL, INLET, ETC....) IS LOCATED.

3. VERTICAL PLACEMENT:
   INSTALL DELINEATORS WHERE THE TOPS ARE APPROXIMATELY 4' ABOVE THE GROUND. INSTALL ON CONCRETE BARRIERS OR GUIDE RAIL AS INDICATED ON SHEET 2.

4. LATERAL PLACEMENT:
   A. NO GUIDE RAIL - INSTALL DELINEATORS 2' TO 8' BEHIND THE OUTER EDGE OF THE GUIDE RAIL AS SHOWN ON SHEET 2.
   B. GUIDE RAIL - INSTALL DELINEATORS IN THE WEB OF GUIDE RAIL OR ON GUIDE RAIL POSTS OR SUPPORTS ALONG LEFT-LANE RAMPS ALONG THE THROUGH ROADWAY AND WITHIN THE LIMITS OF ALL LEFT-LANE RAMPS, ACCELERATION OR DECELERATION LANES; ALONG THE LEFT SIDE OF THE THROUGH ROADWAY AND WITHIN THE LIMITS OF LEFT-LANE DROPS OR PAVEMENT WIDTH TRANSITIONS.
   C. HORIZONTAL CURVES - INSTALL DELINEATORS IN THE WEB OF GUIDE RAIL OR ON GUIDE RAIL POSTS OR SUPPORTS ALONG LEFT-LANE RAMPS ALONG THE THROUGH ROADWAY AND WITHIN THE LIMITS OF ALL LEFT-LANE RAMPS, ACCELERATION OR DECELERATION LANES; ALONG THE LEFT SIDE OF THE THROUGH ROADWAY AND WITHIN THE LIMITS OF LEFT-LANE DROPS OR PAVEMENT WIDTH TRANSITIONS.
   D. OBSTRUCTION MARKERS - INSTALL OBSTRUCTION MARKER DELINEATORS ADJACENT TO NEAR EDGE OF THE ROADWAY.
   E. MAINTENANCE MARKERS - INSTALL MAINTENANCE MARKERS ADJACENT TO NEAR EDGE OF THE APPURtenance END PIPE, END WALL, INLET, ETC....

5. TYPES OF DELINEATORS:
   B. YELLOW DELINEATORS - PLACE ON LEFT SIDE OF THROUGH ROADWAYS, RAMPS AND ON CHANNELIZING OR DIVISIONAL ISLANDS WHERE TRAFFIC IN THE SAME DIRECTION TRAVELS TO THE LEFT OF THE ISLAND AND TRAFFIC IN THE SAME DIRECTION MAY PROCEED ON BOTH SIDES OF THE ISLAND.
   C. RED DELINEATORS - PLACE ON LEFT SIDE OF THROUGH ROADWAYS OR CHANNELIZING ISLANDS OR DIRECTIONAL ISLANDS WHERE TRAFFIC IN THE SAME DIRECTION TRAVELS TO THE RIGHT OF THE ISLAND AND TRAFFIC IN THE SAME DIRECTION MAY PROCEED ON BOTH SIDES OF THE ISLAND.
   D. SPECIAL PURPOSE DELINEATOR (OM1-3) MARKERS - PLACE MARKERS AT LOCATIONS SHOWN ON SHEET 3.
   E. MAINTENANCE MARKERS - PLACE MAINTENANCE MARKERS ALONG THE ROADWAY WHERE MAINTENANCE APPURTENANCE (END PIPE, END WALL, INLET, ETC....) IS LOCATED.
HOW TO USE THE SPACING CHARTS ON THE FOLLOWING SHEETS:

1. SELECT THE PROPER CHART FROM SHEETS 2 THROUGH 17. LARGE LETTERS AND NUMERALS USED IN THESE CHARTS MUST BE USED FOR ALL SIGN LAYOUT DETAILS. USE THE SERIES AND NUMERALS USED IN THESE CHARTS TO INTERPRET OTHER DESCRIPTORS FOR SERIES E (UNIFORM TRAFFIC CONTROL DEVICES, MUTCD) NUMERALS, UP TO 4 TIMES THE VALUES SHOWN FOR SERIES E NUMERALS.

2. TO DETERMINE THE PROPER SIZE AND SERIES OF THE FIRST LETTER OF THE ROAD NUMBER OR OF THE EXISTING CHARTS TO DETERMINE PROPER SPACING. FOR NUMERAL SIZES WHERE A SPACING CHART HAS NOT BEEN PROVIDED, USE ONE OF THE SOLIDUS (SLANTED LINE OR FORWARD SLASH) IS INTENDED TO BE USED FOR FRACTIONS ONLY.

3. THE DASH IS TO BE CENTERED OPTICALLY.

SIZE AND SPACING OF DASHES ARE DETERMINED AS FOLLLOWS:

- THE DASH IS TO BE CENTERED OPTICALLY.
- SIZE AND SPACING OF DASHES ARE DETERMINED AS FOLLLOWS:

**COMMONWEALTH OF PENNSYLVANIA**

**DEPARTMENT OF TRANSPORTATION**

**BUREAU OF MAINTENANCE AND OPERATIONS**

**PERMITS SECTION**

**CHIEF, TRAFFIC ENGINEERING AND OPERATIONS DIVISION**

**JUN.13, 2013**

**JUN.13, 2013**
### 20" Upper Case to 15" Lower Case

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### Commonwealth of Pennsylvania

DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

SPACING CHARTS
DIRECT APPLIED LETTERS & NUMERALS

UPPER CASE & LOWER CASE
CLEARVIEW HIGHWAY 5WR

NOTE:
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### COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATION

SPACING CHARTS
DIRECT APPLIED LETTERS & NUMERALS
UPPER CASE & LOWER CASE
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

SPACING CHARTS
DIRECT APPLIED LETTERS & NUMERALS

UPPER CASE SERIES E

NOTE:
ALL DIMENSIONS ARE IN INCHES.
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</thead>
<tbody>
<tr>
<td>4</td>
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<td>2</td>
<td>3</td>
<td>4</td>
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<td>6</td>
<td>7</td>
<td>8</td>
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</tbody>
</table>

### 4" Digit to 4" Digit

<table>
<thead>
<tr>
<th>Digit</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>0</td>
</tr>
</tbody>
</table>

### Notes:
1. Use of Series B alphabet is restricted to street name signs. Applications within this chart should be used where lined drawing and stroke vision are required for design purposes.
2. All dimensions are in inches.

---

**Commonwealth of Pennsylvania**

**Department of Transportation**

**Bureau of Maintenance and Operations**

**Spacing Charts**

**Direct Applied Letters & Numerals**

**Upper Case Series B**

---

**Revised Jun 12, 2013**

**Admin. Addendum No.**

**TC-8700C**
DESTINATION SIGN ARROWS (4" LEGEND)

FOR DETAIL OF ARROW, SEE TYPE P

FOR DETAIL OF ARROW, SEE TYPE F

FOR DETAIL OF ARROW, SEE TYPE J

FOR DETAIL OF ARROW, SEE TYPE E

DESTINATION SIGN ARROWS (6" LEGEND)

FOR DETAIL OF ARROW, SEE TYPE S

FOR DETAIL OF ARROW, SEE TYPE T

FOR DETAIL OF ARROW, SEE TYPE U

FREEWAY / EXPRESSWAY RAMP SIGNING

FOR DETAIL OF ARROW, SEE TYPE K

FOR DETAIL OF ARROW, SEE TYPE L

FOR DETAIL OF ARROW, SEE TYPE M

FOR DETAIL OF ARROW, SEE TYPE R

FOR DETAIL OF ARROW, SEE TYPE Q

FOR DETAIL OF ARROW, SEE TYPE N

FOR DETAIL OF ARROW, SEE TYPE O

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

DIRECT APPLIED SPACING CHARTS

NOTES:
1. ARROW TYPES A THROUGH J, N AND O ARE FOR USE ON FREEWAY AND EXPRESSWAY SIGNS.
2. ARROW TYPES P, Q AND R ARE FOR USE ON DESTINATION SIGNS WITH 6" LEGEND.
3. ARROW TYPES S, T AND U ARE FOR USE ON DESTINATION SIGNS WITH 4" LEGEND.
4. ARROW TYPES K, L AND M ARE FOR USE ON FREEWAY AND EXPRESSWAY RAMP SIGNS.
SIGNING PLANS

1. The signing plans shall be drawn to a scale of 1:100 (1" = 100 ft.)

2. A plan view of the signs and their supports shall be prepared with an approximate location and scale for illustration. The sign plans shall include the location of the signs and their supports in accordance with the appropriate Federal and State requirements. The sign plans shall be prepared in accordance with the appropriate Federal and State requirements.

3. Where signs are to be installed above a roadway or bridge, or where the signs are to be installed on a pole or an attachment, a number shall be assigned to each sign not included in the current, effective or approved plan. Each sign shall be identified by a number, and that number shall be used in subsequent reference to the sign for identification purposes.

4. All signs shall be designed in accordance with the layout details shown in the plans. Each sign shall be designed in accordance with the layout details shown in the plans.

5. Sign lighting shall be included for all overhead guide signs except signs on tangent roadways where motorists have a clear view of the signs for a minimum of 200 feet and meet the aesthetic requirements.

6. The hinge plate shall be separated from the panel and ensure that it is installed on the post above the advance guide sign or may be a separate supplement panel. When a sign is to be used, it should be designed to include the required number of panels.

7. Off-ramp directional signs shall be used on all diamond interchange off-ramps. The directional signs shall be located at the entrance to the off-ramp lane where they effectively direct motorists to the correct exit lane.

8. Post-interchange distance signs shall be used in rural areas and where vehicle repetitions of messages will not occur. When used, they shall include the distance to the nearest national control city except PA 30, US 30, etc.

9. Next-exit signs may be used in advance of more than three destinations. These signs have been designed for urban or industrial or recreational areas. Interchange sequences of signs may be used prior to all but the last interchange.

10. Overhead gantry signs may be used in urban areas near the interchange. The signs shall be designed in accordance with the Department's publication 236M and cross-referenced to the sign publication details.

11. Community interchange identification signs may be used for identification of community interchange. The sign shall be located in advance of the first interchange of the community.

12. Lane assignment signs may be used to assign a particular lane for the driver to the left or to the right. The sign shall not be used in urban areas.

13. Exit-only signs may be used for all diamond interchange exits where the lane assignment does not change. They should be used for all diamond interchange exits where the lane assignment does not change.

14. Exit-only signs may be used for all diamond interchange exits. They should be used for all diamond interchange exits.

15. Exit-only signs may be used for all diamond interchange exits. They should be used for all diamond interchange exits.

16. Exit-only signs may be used for all diamond interchange exits. They should be used for all diamond interchange exits.

17. Exit-only signs may be used for all diamond interchange exits. They should be used for all diamond interchange exits.

18. The design and layout of the signs shall be in accordance with the Department's publication 236M and cross-referenced to the sign publication details.
**NOTES:**

1. USE NEXT EXIT X MILES X ONLY WHEN X PRECEDING SIGNS ARE X TIMES OR MORE APART.
2. WHEN INSUFFICIENT SPACE EXISTS FOR ALL EXIT SIGNS, DISTANCE SIGN SHOULD BE ELIMINATED FIRST.

**DISTANCE INDICATED ON SIGN SHALL AGREE WITH SECOND ADVANCE GUIDE SIGNS.**

**DISTANCE FROM GORE:**

- **MINIMUM:** 800'
- **DESIRABLE:** 1000'
- **MAXIMUM:** 2 miles (MAXIMUM), 1 mile (MINIMUM) FROM GORE**

**POST-INTERCHANGE SIGNS:**

- WHEN SERVICE SIGN IS NOT USED, LOCATE DISTANCE FROM PREVIOUS SERVICE SIGN.
- DISTANCE INDICATED ON SIGN SHALL CONFORM WITH DISTANCE FROM GORE.

**ALL MAJOR SIGNS AND SIGN STRUCTURES ARE TO BE FIELD LOCATED.**

---

**COMMONWEALTH OF PENNSYLVANIA**
**DEPARTMENT OF TRANSPORTATION**
**BUREAU OF MAINTENANCE AND OPERATIONS**

**ADVANCE SIGNING**
**DIAMOND INTERCHANGE**
**(ONE EXIT)**

**RECOMMENDED:**
**JUN.13, 2013**

**SHT. 2 OF 13**

**TC-8701A**
NOTES:
* IF NEEDED
** A SIGN THAT IS MOUNTED BACK-TO-BACK SHOULDN'T HAVE A "STOP" OR "YIELD" SIGN STAY WITHIN THE EDGES OF THE "STOP" OR "YIELD" SIGN.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

SIGNING
DIAMOND INTERCHANGE
MULTI-LANE CROSSROAD APPROACH

JUN. 13, 2013
JUN. 13, 2013
TO BE FIELD LOCATED.

ALL MAJOR SIGNS AND SIGN STRUCTURES ARE DISTANCE FROM GORE.

** DISTANCE INDICATED ON SIGN SHALL AGREE WITH SECOND ADVANCE GUIDE SIGNS.

SUPPLEMENTAL SIGN MIDWAY BETWEEN FIRST AND SECOND ADVANCE GUIDE SIGNS

* WHEN SERVICE SIGN IS NOT USED, LOCATE SUPPLEMENTAL SIGN MIDWAY BETWEEN EXIT AND ENTRANCE LANE MILEPOST.

** DISTANCE INDICATED ON SIGN SHALL AGREE WITH SECOND ADVANCE GUIDE SIGNS.

NOTES:

1. USE NEXT EXIT TO MILES SIGNS ONLY WHEN SIGN ARRANGEMENT IS 1 MILE OR MORE APART.

2. WHEN INTERCHANGE SPACE EXISTS FOR ALL MAJOR INTERCHANGE SIGNS, THE DISTANCE SIGN SHALL BE DESIGNATED FIRST.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

ADVANCE SIGNING
CLOVERLEAF INTERCHANGE

SHT. 6 OF 13
JUN. 13, 2013
M. P. H. 20 YIELD

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

INTERSATE 83

IN THE

SOUTH OR SOUTH

FORT LAWNTON

BUREAU OF MAINTENANCE AND OPERATIONS
PERMITS SECTION
CHIEF, TRAFFIC ENGINEERING AND TRAFFIC OPERATIONS DIVISION

JUN. 13, 2013

MULTI-LANE CROSSROAD APPROACH

SIGNING
PARTIAL CLOVERLEAF INTERCHANGE
NOTE:
1. Diagrammatic guide signs used where an option lane is present should be used to indicate that the option lane is the only exit lane. The configuration of the lanes at the exit interchange is not to be illustrated on the diagrammatic guide sign. The diagrammatic guide sign shall only show the configuration of the lanes at the exit and not the entire interchange configuration.

2. Diagrammatic guide signs shall not be used at Cloverleaf Interchanges that include multi-lane collector-distributor roadways. The diagrammatic guide sign shall only show the configuration of the lanes at the exit and not the entire interchange configuration.
Fischer St
NEXT RIGHT

TURNS MADE PRIOR TO THE INTERSECTION

Fischer St
ALL TURNS
R3-24

Fischer St
NEXT RIGHT

ALL TURNS FROM RIGHT LANE
R3-23

Ryan Rd
U AND LEFT TURNS
R3-24a

Ryan Rd
U AND LEFT TURNS
R3-26

Ryan Rd
SYMMES DR

Symmes Dr
KEEP RIGHT

Symmes Dr
Ryan Rd

U AND LEFT TURNS
R3-23

TURNS MADE BEYOND THE INTERSECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

SIGNING JUGHANDLES

JUN. 13, 2013
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUREAU OF MAINTENANCE AND OPERATIONS
PERMITS SECTION
CHIEF, TRAFFIC ENGINEERING AND
TRAFFIC OPERATIONS DIVISION

RECOMMENDED: JUN.13, 2013
RECOMMENDED: JUN.13, 2013

SIGNING
TRADITIONAL JUGHANDLES

TRADITIONAL T-INTERSECTION
JUGHANDLE

TRADITIONAL U TURN
JUGHANDLE
INTERMEDIATE & MINOR INTERCHANGE MULTI-LANE EXITS WITH AN OPTION LANE

INTERMEDIATE & MINOR INTERCHANGE MULTI-LANE EXITS WITH AN OPTION AND AUXILIARY LANE
### Notes:

1. The required signs and symbols of signs shall be in multiples of 1/2". The sign materials, such as steel, shall be of the same size. The sign shall be mounted on a pipe-steel post. The sign shall be mounted on a pipe-steel post. The sign shall be mounted on a pipe-steel post. The sign shall be mounted on a pipe-steel post. The sign shall be mounted on a pipe-steel post.

2. **Single Shield:** When mounted alone, shield shall be centered within the sight.

3. **Multiple Shields:** When multiple shields are used, they shall be evenly spaced with at least 1/2" between the images. The shield shall be centered within the sight.

4. **Single Shielded with Cardiac Directions:** The cardiac direction shall be mounted on center of the cardiac shield. The cardiac shield shall be centered within the sight. The shield shall be centered within the sight.

5. **Multiple Shields and Cardiac Directions:** When multiple shields are used with cardiac directions, the shield shall be centered within the sight. The shield shall be centered within the sight. The shield shall be centered within the sight.

6. **Destination:** The destination message shall be positioned within the sight. The shield shall be centered within the sight. The shield shall be centered within the sight.

7. **Action Message:** The action message shall consist of either a distance indication, a direction indication, or a lane assignment.

8. **Exit Only Panel:** Exit only panels shall be used on major guide signs whenever exit numbers are increased beyond the width of the card. Panel shall be centered within the sight. The shield shall be centered within the sight. The shield shall be centered within the sight.

9. **Exit Only Panel:** Exit only panels shall be used for a lane drop, if the panels are increased beyond the width of the card. Panel shall be centered within the sight. The shield shall be centered within the sight. The shield shall be centered within the sight.

10. **Cardinal and Intermediate Signs:** Intermediate signs are to be used for urban and non-urban roads.

11. **Letters:** Letters with non-wielded heights for advance guide, exit, and destination signs are:

#### Table: Recommended Exit Panel Dimensions

<table>
<thead>
<tr>
<th>Category</th>
<th>Letter Height</th>
<th>Width</th>
<th>Height</th>
<th>Sign Height</th>
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<tbody>
<tr>
<td>Cardinal</td>
<td>16&quot;</td>
<td>18&quot;</td>
<td>15&quot;</td>
<td>23&quot;</td>
</tr>
<tr>
<td>Destination</td>
<td>20/15&quot;</td>
<td>20/15&quot;</td>
<td>16/12&quot;</td>
<td>23&quot;</td>
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</table>

#### Table: Dimensions

<table>
<thead>
<tr>
<th>Exit/Distance</th>
<th>Height</th>
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<tbody>
<tr>
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<td>10&quot;</td>
<td>12&quot;</td>
<td>15&quot;</td>
</tr>
<tr>
<td>Distance</td>
<td>15&quot;</td>
<td>12&quot;</td>
<td>15&quot;</td>
</tr>
</tbody>
</table>

**Note:**

- With few exceptions, the size of the panel should be equal to or greater than the size of the legend. The height of the panel shall be equal to or greater than the height of the legend.

### Commonwealth of Pennsylvania

**Department of Transportation**

**Bureau of Maintenance and Operations**

**Advance Guide Signs**

**Sign Details**

**Freeway, Expressway and Conventional Roads Guide Signs**

**TC-87010**

*Indicates minimum spacing.*
CHIEF, HIGHWAY SAFETY AND RECOMMENDED EXPRESSWAY AND CONVENTIONAL
10 16.5
6
7
6
6
8
10
9.4
6.7
1

NOTES:
1. SIGNS ON THIS SHEET ARE TO BE USED OVERHEAD FOR LANE ASSIGNMENTS.
2. REFER TO TC-8700 FOR ARROW DETAILS. TYPE C ARROW SHIELDS ARE SHOWN FOR ILLUSTRATIVE PURPOSES, BUT
THE LINES THROUGH THE ARROW, SHIELD, AND ARROW SHAPE ARE NOT DRAWN ON THE SHEET. THEY ARE TO BE USED ONLY ON MAPS OR PUBLICATIONS. A CODE CAN BE USED FOR THE LINES THROUGH
THE SHIELD OR THE LINES THROUGH THE SHAPE, BUT THE CODE IS NOT SHOWN ON THE SHEET.
3. ON OVERHEAD SIGNS WHERE:> SHIELDS ARE USED TO INDICATE A LANE TO BE FOLLOWED, A SMALL POINT IS USED TO DISTILL THE SHIELD FROM THE ARROW SHIELD OR THE SHAPE SHIELD. THE LINES THROUGH THE ARROW, SHIELD, AND SHAPE ARE NOT DRAWN ON THE SHEET. THEY ARE TO BE USED ONLY ON MAPS OR PUBLICATIONS. A CODE CAN BE USED FOR THE LINES THROUGH THE SHIELD OR THE LINES THROUGH THE SHAPE, BUT THE CODE IS NOT SHOWN ON THE SHEET.
4. IF SHIELD SHIELDS ARE USED, PAYING MORE THAN ONE SHIELD POINTING TO THE SAME LANE ON A SINGLE OVERHEAD SIGN OR ON MULTIPLE SIGNS ON THE SAME OVERHEAD STRUCTURE SHALL NOT BE PERMITTED.

* INDICATES MINIMUM SPACING.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS
SIGN DETAILS - FREEWAY, EXPRESSWAY AND CONVENTIONAL ROAD GUIDE SIGNS
OVERHEAD LANE ASSIGNMENT SIGNS

DATE: 7/22/1985
REV: 2 08/13

TC-8700
TRAFFIC OPERATIONS DIVISION

SHT. 3 OF 13

EXIT DIRECTION SIGNS

SIGN DETAILS

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

SIGN DETAILS FREeways, EXPRESSWAY AND CONVENTIONAL ROADS
GUIDE SIGNS
EXIT DIRECTION SIGNS

* INDICATES MINIMUM SPACING.
NOTES:

1. THE GRAPHIC LEGEND SHALL BE OF A PLAN VIEW SHOWING A SIMPLIFIED SPEAKING BIRD'S-EYE VIEW ARRANGEMENT.
2. NO OTHER SYMBOLS OR ROUTE SHIELDS SHALL BE USED AS A SUBSTITUTE FOR ARROWHEADS.
3. ONLY ONE DESTINATION MAY BE SHOWN FOR EACH ARROWHEAD, WITH A MAXIMUM OF TWO DESTINATIONS PER SIGN.
5. ARROW SHEETSH SHOULDN'T BE PART OF THE SAME SYSTEM. THE ARROWHEADS SHOULD BE CLEARLY RELATED TO THE ARROWHEADS, AND THE ARROWHEADS SHOULD POINT TOWARDS THE ROUTE SHIELD FOR THE OFF MOVEMENT.
6. THE CARDINAL DIRECTION SHOULD GENERALLY BE PLACED ADJACENT TO THE ROUTE SHIELD AND THE DESTINATION SHOULD BE PLACED BELOW AND JUSTIFIED WITH THE ROUTE SHIELD.
7. THE ARROWSHAFTS SHOULD CONTAIN LANE LINES WHERE APPLICABLE AND ROUTE SHIELDS SHALL NOT BE USED AS A SUBSTITUTE FOR ARROWHEADS.
8. THE CARDINAL DIRECTION SHOULD GENERALLY BE PLACED ADJACENT TO THE ROUTE SHIELD AND THE DESTINATION SHOULD BE PLACED BELOW AND JUSTIFIED WITH THE ROUTE SHIELD.
9. THE GRAPHIC LEGEND SHALL BE OF A PLAN VIEW SHOWING A SIMPLIFIED SPEAKING BIRD'S-EYE VIEW ARRANGEMENT.

10. EXIT NUMBER PANELS SHOULD BE LOCATED TOWARD THE TOP LEFT EDGE OF THE SIGN FOR A LEFT EXIT AND TOWARDS THE TOP RIGHT EDGE FOR RIGHT EXITS.
11. FOR ROUTES OR UCL EXPORTS IN A SIMPLE DIRECTION, THE CARDINAL DIRECTION SHOULDN'T BE USED AS A SUBSTITUTE FOR THE ARROWHEADS AND THE ARROWHEADS SHOULD BE PLACED BELOW THE ROUTE SHIELD AND CARDINAL DIRECTION.
12. THE EXIST ONLY SHIELD PANELS SHALL BE USED IN THE EXIT DIRECTION AT THE THEORETICAL GORE, EXCEPT AT DELAYED OR SPLITTING RUTES WHERE NONE OF THE ROUTES IS DESIGNATED AS AN EXIT.
13. SPECIFIC DESIGN STANDARDS FOR GRAPHIC COMPONENTS AND OTHER RECOMMENDED FEATURES ARE SHOWN IN THIS STANDARD.
14. SEE SHEET 12 OF THIS STANDARD FOR SHIELD AND CARDINAL DETAILS.
15. SEE TC-8701A SHEET 5 FOR ADVANCE PLACEMENT OF SIGN.
**NOTES:**

1. Exit Only and This Lane Panels shall have a yellow background with a 0.5" yellow and 0.375" black border.

2. Refer to TC-8700 for arrow details. Type N arrow shall be used on the exit only, and type A arrow shall be used on the exit only and this lane panels.

* Increase spacing between letters by 40%.
**Single Exit Supplemental Guide Sign**

**POST INTERCHANGE DISTANCE SIGN**

**Interchange Sequence Sign**

**Next (Number) Exits Area Sign**

**Double Exit Supplemental Guide Sign**

**Community Interchanges Identification Sign**

**Commonwealth of Pennsylvania**

**Department of Transportation**

**Bureau of Maintenance and Operations**

**Sign Details Freeway and Expressway Guide Signs**

**Supplemental Guide Signs & Miscellaneous Interchange Signs**

**Recommended June 13, 2013**

** Diedrich, Chief, Highway Safety and Traffic Engineering and Operations**

**TRAFFIC OPERATIONS DIVISION**

**PERMITS SECTION**
1. **ALL SERVICE SIGNS SHALL HAVE A BLUE REFLECTORIZED BACKGROUND AND WHITE REFLECTORIZED SYMBOLS, LEGEND, AND NUMBERS. UNLESS OTHERWISE INDICATED, THE TYPE OF REFLECTIVE SHEETING SHALL COMPLY WITH DEPARTMENT PUBLICATION 408.**

2. **ALL MAINLINE SERVICE SIGNS SHALL HAVE A 2" BORDER WITH 3/8" CORNER RADIUS.**

3. **THE STANDARD MAINLINE SERVICE SIGN SHALL USE A 60" x 24" PANEL AND SHALL USE THE THREE-SYMBOL LAYOUT.**

4. **IF MORE THAN FOUR SYMBOLS ARE REQUIRED, THE SYMBOLS SHALL BE AS INDICATED.**

5. **WHEN THE EXIT IS NUMBERED, THE EXIT NUMBER SHOULD BE USED INSTEAD OF "NEXT RIGHT" OR "SECOND RIGHT."**

6. **NORMAL SERVICE SHOULD BE GAS (DIESEL), FOOD, LODGING, AND OTHER:**

7. **SUMMARY OF SYMBOLS AND THEIR IMPACT:**

   - **3-SERVICE SIGN**
   - **4-SERVICE SIGN**
   - **6-SERVICE SIGN**

8. **RAMP SIGNING**

   - **STATE POLICE**

---

**COMMONWEALTH OF PENNSYLVANIA**

**DEPARTMENT OF TRANSPORTATION**

**BUREAU OF MAINTENANCE AND OPERATIONS**

**BUREAU OF TRANSPORTATION**

**GUIDE SIGNS**

**GENERAL MOTORIST**

**SERVICE SIGNS**

---

**PERMITS SECTION**

Chief, Traffic Engineering and Traffic Operations Division

JUN. 13, 2013

SHT. 10 OF 13
RAMP DESTINATION SIGNS

* INDICATES MINIMUM SPACING

NOTES:
1. All signs on this sheet shall have a 1.25" border
   unless otherwise noted.
2. Refer to TC-8700E for arrow details. Type K, Type L or
   Type M arrows shall be used for the ramp destination
   signs.
3. Boundary and waterway signs shall have white reflectorized
   backgrounds and blue reflectorized legends and borders.
   Indicates minimum spacing

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS
SIGN DETAILS
FREeway AND EXPRESSWAY
GUIDE SIGNS
RAMP DESTINATION
AND BOUNDARY SIGNS

CHIEF, TRAFFIC ENGINEERING AND
TRAFFIC OPERATIONS DIVISION

JUN.13, 2013
SHT. 11 OF 13
**COMMONWEALTH OF PENNSYLVANIA**
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

**EXTRUDED ALUMINUM CHANNEL SIGN**

**NOTES:**
1. IF A 6" SECTION IS REQUIRED IT SHOULD BE PLACED AT THE TOP OR AT THE SIDES OF THE SIGN.
2. STITCH BOLTS TO BE USED AT 12" CENTERS THROUGHOUT THE SIGN PANEL.
3. A DOUBLE POST CLIP PATTERN IS REQUIRED FOR ALL OVERHEAD SIGNS.
4. A LOCK NUT AND 3/8" WASHER MAY BE USED IN LIEU OF LOCK WASHER AND STANDARD NUT FOR POST CLIPS.
5. SEE TC-8702E FOR INSTALLATION ON WOOD POSTS.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot; EXTENDED ALUMINUM</td>
<td>TOP - MOUNTED</td>
</tr>
<tr>
<td>12&quot; EXTENDED ALUMINUM</td>
<td>BOTTOM - MOUNTED</td>
</tr>
<tr>
<td>3&quot; OR 6&quot; HOLES FOR STITCH BOLTS</td>
<td></td>
</tr>
<tr>
<td>0.281&quot; R</td>
<td>0.703&quot;</td>
</tr>
<tr>
<td>0.375&quot;</td>
<td>1.000&quot;</td>
</tr>
<tr>
<td>0.266&quot; R</td>
<td>0.484&quot; R</td>
</tr>
<tr>
<td>0.438&quot;</td>
<td>0.625&quot;</td>
</tr>
<tr>
<td>0.656&quot;</td>
<td>1.094&quot;</td>
</tr>
<tr>
<td>0.563&quot;</td>
<td>1.275&quot;</td>
</tr>
<tr>
<td>1.063&quot;</td>
<td>1.928&quot;</td>
</tr>
</tbody>
</table>

**SECTION A-A**

**EXTRUDED ALUMINUM CHANNEL SIGN WITH REFLECTIVE SHEETING**

**Post Clip and Bolt**

**(See Note 4)**
HOLE FOR STITCH BOLT
SEE DETAIL A
90°
SEE DETAIL B
90°
SEE DETAIL B
HOLE FOR STITCH BOLT
SEE DETAIL C
SAME AS END VIEW
DIMENSIONS NOT SHOWN ARE SAME AS END VIEW

DETAIL A
END VIEW
CORNER DETAIL
APPROVED ALTERNATE
REAR VIEW

DETAIL B
DETAIL C
END VIEW
LIGHT SECTION

NOTES:
1. USE EIGHTING FOR STANDARD SECTION (28008) OR THE LIGHT SECTION (401771).
2. FOR DETAILS A, B, AND C USE 0.062" R ON ALL OUTSIDE CORNERS UNLESS OTHERWISE SPECIFIED.

12" EXTRUDED ALUMINUM CHANNEL
SHOR VIEW
END VIEW
LIGHT SECTION
DETAIL A
DETAIL B
DETAIL C

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
EXTRUDED ALUMINUM CHANNEL SIGN

JUN.13, 2013
TRAFFIC OPERATIONS DIVISION

CHIEF, HIGHWAY SAFETY AND
CHIEF, TRAFFIC ENGINEERING AND

RECOMMENDED

JUN. 13, 2013

A4-1

NOTE:

1. DEFINITION: PARKING AREAS DO NOT HAVE PERMANENT REST HANDBACKS.

2. DISTANCE: USE DISTANCE FROM THEORETICAL GORE FOR INSTRUCTIONS ON SIGNS.

3. COLOR: USE BLUE REFLECTORIZED BACKGROUND WITH WHITE REFLECTORIZED LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

4. BORDERS: USE 2" WIDE BORDER WITH 12" CORNER RADII, UNLESS OTHERWISE NOTED.

5. LEGEND AND SIGN WIDTH: UNLESS OTHERWISE NOTED, USE 4" WIDE BLACK LEGEND AND 3" WIDE REFLECTORIZED BLACK LETTERING AND BORDER, UNLESS OTHERWISE NOTED.

6. DISTANCE: USE DISTANCE FROM THEORETICAL GORE FOR INSTRUCTIONS ON SIGNS.

7. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

8. DISTANCE: USE DISTANCE FROM THEORETICAL GORE FOR INSTRUCTIONS ON SIGNS.

9. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

10. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

11. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

12. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

13. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

14. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

15. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

16. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

17. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

18. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

19. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

20. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

21. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

22. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

23. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

24. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

25. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

26. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

27. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

28. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

29. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

30. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.

31. LEGEND: USE LIGHT GREEN WITH WHITE REFLECTORIZED BACKGROUND FOR LEGEND AND BORDER, UNLESS OTHERWISE NOTED.
1. STIFFENER SPACING CHARTS

2. STIFFENER LOCATION

3. BEAR VIEW

4. COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
FLAT SHEET ALUMINUM SIGNS
WITH EXTRUDED ALUMINUM STIFFENERS

NOTES:
1. MAXIMUM STIFFENER SPACING IS 29"; HOWEVER, FOR SIGNS HAVING WIDTHS EXCEEDING 120" (HEIGHT 180"), MAXIMUM STIFFENER SPACING IS 36".

2. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THIS STANDARD AND PUB. 408.

3. TO USE THE STIFFENER SPACING CHARTS, START WITH THE SIGN WIDTH AND GO THROUGH THE TABLES. THE CHARTS INDICATE THE APPROPRIATE STIFFENER SPACING FOR THE SAME WIDTH OF SIGN.

4. THE MAXIMUM STIFFENER SPACING IS NORMALLY 29", HOWEVER, FOR SIGNS HAVING WIDTHS EXCEEDING 120" (HEIGHT 180"), MAXIMUM STIFFENER SPACING IS 36".

5. PANELS MAY BE SPICED USING ANY OF THREE ARRANGEMENTS SHOWN ON SHEET 2 OF THIS STANDARD.

6. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THIS STANDARD AND PUB. 408.

7. PANELS MAY BE SPICED USING ANY OF THREE ARRANGEMENTS SHOWN ON SHEET 2 OF THIS標準.

8. SEE TC-8702E FOR INSTALLATION ON WOOD POSTS.
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

RECOMMENDED
TC-8701S

SHT. 2 OF 4

ALUMINUM EXTRUSION SIGN BRACE

SECTION A-A

BUTTING PLATE

SECTION B-B

SPlice PLATE

SECTION C-C

RIVET

GUTER

PERMITS SECTION
CHIEF, TRAFFIC ENGINEERING AND
TRAFFIC OPERATIONS DIVISION
CHIEF, HIGHWAY SAFETY AND
BUREAU OF MAINTENANCE AND OPERATIONS

FLAT SHEET ALUMINUM SIGNS
WITH EXTRUDED ALUMINUM STIFFENERS

GENERAL INFORMATION
Commonwealth of Pennsylvania
Department of Transportation
Bureau of Maintenance and Operations
Freeway and Expressway Advance Signing

Welcome Centers

Note: All dimensions are in inches unless otherwise noted.

1. All signs may be used only in conjunction with a suitable sign or signs to direct the proper use of the main sign. If only one direction of traffic is involved, include the appropriate direction in the legend. If a sign is to be placed in a shoulder, the direction of traffic involved should be included in the legend. If a sign is to be placed in a median, the direction of traffic involved should be included in the legend.

2. All signs may be used only in conjunction with a suitable sign or signs to direct the proper use of the main sign. If only one direction of traffic is involved, include the appropriate direction in the legend. If a sign is to be placed in a shoulder, the direction of traffic involved should be included in the legend. If a sign is to be placed in a median, the direction of traffic involved should be included in the legend.

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4. All signs may be used only in conjunction with a suitable sign or signs to direct the proper use of the main sign. If only one direction of traffic is involved, include the appropriate direction in the legend. If a sign is to be placed in a shoulder, the direction of traffic involved should be included in the legend. If a sign is to be placed in a median, the direction of traffic involved should be included in the legend.

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6. All signs may be used only in conjunction with a suitable sign or signs to direct the proper use of the main sign. If only one direction of traffic is involved, include the appropriate direction in the legend. If a sign is to be placed in a shoulder, the direction of traffic involved should be included in the legend. If a sign is to be placed in a median, the direction of traffic involved should be included in the legend.

7. All signs may be used only in conjunction with a suitable sign or signs to direct the proper use of the main sign. If only one direction of traffic is involved, include the appropriate direction in the legend. If a sign is to be placed in a shoulder, the direction of traffic involved should be included in the legend. If a sign is to be placed in a median, the direction of traffic involved should be included in the legend.

8. All signs may be used only in conjunction with a suitable sign or signs to direct the proper use of the main sign. If only one direction of traffic is involved, include the appropriate direction in the legend. If a sign is to be placed in a shoulder, the direction of traffic involved should be included in the legend. If a sign is to be placed in a median, the direction of traffic involved should be included in the legend.

9. All signs may be used only in conjunction with a suitable sign or signs to direct the proper use of the main sign. If only one direction of traffic is involved, include the appropriate direction in the legend. If a sign is to be placed in a shoulder, the direction of traffic involved should be included in the legend. If a sign is to be placed in a median, the direction of traffic involved should be included in the legend.

10. All signs may be used only in conjunction with a suitable sign or signs to direct the proper use of the main sign. If only one direction of traffic is involved, include the appropriate direction in the legend. If a sign is to be placed in a shoulder, the direction of traffic involved should be included in the legend. If a sign is to be placed in a median, the direction of traffic involved should be included in the legend.

11. All signs may be used only in conjunction with a suitable sign or signs to direct the proper use of the main sign. If only one direction of traffic is involved, include the appropriate direction in the legend. If a sign is to be placed in a shoulder, the direction of traffic involved should be included in the legend. If a sign is to be placed in a median, the direction of traffic involved should be included in the legend.

12. All signs may be used only in conjunction with a suitable sign or signs to direct the proper use of the main sign. If only one direction of traffic is involved, include the appropriate direction in the legend. If a sign is to be placed in a shoulder, the direction of traffic involved should be included in the legend. If a sign is to be placed in a median, the direction of traffic involved should be included in the legend.
1. DESIGN BASED ON 2001 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC signals, INCLUDING 2002 INTERIM SPECIFICATIONS WITH THE FOLLOWING DESIGN CRITERIA:
   - BASE WIND SPEED V = 45 MPH (1-SECOND設計)
   - BASE WIND PRESSURE factor k = 0.005 (1-SECOND设计)
   - POST HINGE LOCATION:
   - POST HINGE is not considered for road signs.

2. EMBEDMENT OF FOOTINGS IS BASED ON BRM'S METHOD OUTLINED IN THE AASHTO SPECIFICATIONS. SEE SHEET 8 FOR SOIL PROPERTIES.

3. MINIMUM POST HEIGHT BETWEEN GROUND LEVEL AND BOTTOM OF SIGN WILL BE 7' MIN. (SEE GENERAL NOTE 3)

4. LOCATE SIGNS TO AVOID PLACING SUPPORTS IN DRAINAGE DITCHES.

5. MOUNT ALL SIGN PANELS ABOVE POST HINGES.

6. FOR SELECTION OF FOOTING SIZE AND REINFORCEMENT, REFER TO FOOTING SELECTION TABLE ON SHEET 8.

7. FOR SELECTION OF POSTS, REFER TO POST SELECTION TABLES ON SHEETS 2 THROUGH 4.

8. FOR DETAIL OF SIGN PANELS AND ATTACHMENT HARDWARE, SEE TRAFFIC STANDARD TC-8702A. (SEE NOTE 2)

GENERAL NOTES:
1. MATERIALS AND WORKMANSHIP TO ACCORDANCE WITH PENNSYLVANIA COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION 408, UNLESS NOTED OTHERWISE.

2. POST #1 IS ALWAYS ADJACENT TO ROADWAY, WHETHER SIGN IS LOCATED ON LEFT OR RIGHT.

3. AT LOCATIONS WITH UNMOUNTABLE CURB, GUIDE RAIL OR BARRIER, PLACE THE SIDE EDGE OF THE SIGN AT LEAST 5 FT. BEHIND THE CURB. PLACE ALL MOUNTABLE CURB, GUIDE RAIL OR BARRIER, PLACE ALL MOUNTABLE SIGNS FACE, GUIDE RAIL OR BARRIER. PRIOR TO FABRICATION, DETERMINE ACTUAL LATERAL PLACEMENT IN THE FIELD WITH THE APPROVAL OF THE ENGINEER.

4. LOCATE SIGNS TO AVOID PLACING SUPPORTS IN DRAINAGE DITCHES.

5. MOUNT ALL SIGN PANELS ABOVE POST HINGES.

6. FOR SELECTION OF POSTS, REFER TO POST SELECTION TABLES ON SHEETS 2 THROUGH 4.

7. FOR DETAIL OF SIGN PANELS AND ATTACHMENT HARDWARE, SEE TRAFFIC STANDARD TC-8702A. (SEE NOTE 2)

DESIGN CRITERIA:
1. DESIGN BASED ON 2001 AASHTO STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC signals, INCLUDING 2002 INTERIM SPECIFICATIONS WITH THE FOLLOWING DESIGN CRITERIA:
   - BASE WIND SPEED V = 45 MPH (1-SECOND设计)
   - BASE WIND PRESSURE factor k = 0.005 (1-SECOND设计)
   - POST HINGE LOCATION:
   - POST HINGE is not considered for road signs.

2. EMBEDMENT OF FOOTINGS IS BASED ON BRM'S METHOD OUTLINED IN THE AASHTO SPECIFICATIONS. SEE SHEET 8 FOR SOIL PROPERTIES.

3. MINIMUM POST HEIGHT BETWEEN GROUND LEVEL AND BOTTOM OF SIGN WILL BE 7' MIN. (SEE GENERAL NOTE 3)

4. LOCATE SIGNS TO AVOID PLACING SUPPORTS IN DRAINAGE DITCHES.

5. MOUNT ALL SIGN PANELS ABOVE POST HINGES.

6. FOR SELECTION OF FOOTING SIZE AND REINFORCEMENT, REFER TO FOOTING SELECTION TABLE ON SHEET 8.

7. FOR SELECTION OF POSTS, REFER TO POST SELECTION TABLES ON SHEETS 2 THROUGH 4.

8. FOR DETAIL OF SIGN PANELS AND ATTACHMENT HARDWARE, SEE TRAFFIC STANDARD TC-8702A. (SEE NOTE 2)
### POST SELECTION TABLE - TWO POSTS

<table>
<thead>
<tr>
<th>W (FT)</th>
<th>L (FT)</th>
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**Legend**
- \( P_1 \) = \( W \times 6 \) (Post 1)
- \( P_2 \) = \( W \times 10 \) (Post 2)
- \( P_3 \) = \( W \times 13 \) (Post 3)
- \( P_4 \) = \( W \times 16 \) (Post 4)
- \( P_5 \) = \( W \times 19 \) (Post 5)

**Notes**
1. Determine values of \( W \), \( H \), and \( L \) as indicated in Sketch A.
2. For selection of posts, enter values with values of \( W \), \( H \), and \( L \) in the table. Use next nearest \( P \) value.
3. For a sign size between these values of \( W \), \( H \), and \( L \), in the table, use next nearest \( P \) value.
4. All posts are ASTM A 572 GR 50 steel, grade 50 steel.
5. Use the longest post to select all posts.
6. Posts in the selection table with an ** must have a minimum clear distance of \( P \) above, above, and below the sign space between \( P_1 \) and \( P_2 \), with the sign space between \( P_3 \) and \( P_4 \), with the sign space between \( P_5 \) and \( P_6 \), with the sign space between \( P_7 \) and \( P_8 \), with the sign space between \( P_9 \) and \( P_{10} \).
7. There is no need to check the clear ground criteria for signs mounted on one post or for signs mounted on one post with one additional post. In these cases, the sign shall be mounted on the post which is the most secure method of mounting. In other cases, the sign shall be mounted on the post which is the most secure method of mounting.
8. See sheet 4 for three-post installation.

**SKETCH A**
- Sign on two posts
- 

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**Commonwealth of Pennsylvania**
- Department of Transportation
- Bureau of Maintenance and Operations

**POST-MOUNTED SIGNS, TYPE A**

**POST SELECTION TABLE**

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**Notes**
1. The routing height will be adjusted when support is provided.
2. The routing height will be adjusted when support is provided.
3. The routing height will be adjusted when support is provided.
4. The routing height will be adjusted when support is provided.
5. The routing height will be adjusted when support is provided.
6. The routing height will be adjusted when support is provided.
7. The routing height will be adjusted when support is provided.
8. The routing height will be adjusted when support is provided.
<table>
<thead>
<tr>
<th>Height (FEET)</th>
<th>( L_1 )</th>
<th>4</th>
<th>5</th>
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<th>7</th>
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**Legend:**
- \( P_1 = W_6 \times 9 \)
- \( P_2 = W_6 \times 12 \)
- \( P_3 = W_6 \times 15 \)
- \( P_4 = W_6 \times 18 \)
- \( P_5 = W_10 \times 20 \)
- \( P_6 = W_10 \times 22 \)
- \( P_7 = W_{18} \times 35 \)
- \( P_8 = W_{10} \times 30 \)
- \( P_9 = W_{12} \times 40 \)

**Note:**
1. See Sheet 2 for sign post selection notes and Sheet 4 for sign on table posts.
### POST SELECTION TABLE - THREE POSTS

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<th>B (FEET)</th>
<th>L (FEET)</th>
<th>4'</th>
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### LEGEND

- P1 = W6 x 9
- P2 = W6 x 12
- P3 = W8 x 18
- P4 = W8 x 14
- P5 = W10 x 22
- P6 = W10 x 26
- P7 = W10 x 26
- P8 = W14 x 30
- P9 = W18 x 35
- P10 = W18 x 40

### NOTES

1. SEE SHEETS 2 AND 3 FOR SIGN POST SELECTION NOTES AND SIGNS ON THE POSTS.
NOTES:
1. THE BRACKET NUMBER IS STAMPED ON THE BRACKET.
2. BOLT THE BRACKETS TO POST, THEN PLACE POST AND CONNECTED BRACKET TO BREAKAWAY COUPLING.
3. FOR BRACKET, BREAKAWAY COUPLING, COUPLING BOLT, AND SHIM DETAILS, REFER TO SHEET 6.
4. FOR POSTING AND ANCHOR DETAILS, REFER TO SHEET 8.
5. ALL BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. FASTENERS, INCLUDING SPECIAL BOLT AND COUPLING, SHOULD BE SECURED AS TIGHT AS POSSIBLE WITH LOCK WASHERS. FASTENERS, EXCEPT FOR SPECIAL BOLT AND COUPLING, ARE INSTALLED WITH CONVENTIONAL WRENCHES. DO NOT USE A PIPE WRENCH.
6. SHIMS BETWEEN THE COUPLINGS AND ANCHORS SHOULD BE SECURED AS TIGHT AS POSSIBLE AND TIGHTEN COUPLINGS INTO THE MANUFACTURER'S SPECIFICATIONS. FASTENERS, EXCEPT FOR SPECIAL BOLT AND COUPLING, ARE INSTALLED WITH CONVENTIONAL WRENCHES. DO NOT USE A PIPE WRENCH.
7. SHIMS TO BE ADDED UNDERNEATH ANY TWO COUPLINGS. LIMIT TO TWO SHIMS UNDERNEATH ANY ONE COUPLING.
8. HOLE IN POST (TYP.) DRILL 1.25" | CUT EXCEEDS 0.05" FLANGES AT POST BETWEEN POST WHEN VARIATION EXCEEDS 0.05" SHIMS TO BE ADDED.
9. ANCHOR TO BE FROM A SUPPLIER LISTED IN BULLETIN 15.
10. BOLT THE BRACKET TO POST, THEN PLACE POST AND CONNECTED BRACKET TO BREAKAWAY COUPLING.
11. FOR BRACKET, BREAKAWAY COUPLING, COUPLING BOLT, AND SHIM DETAILS, REFER TO SHEET 6.
12. FOR POSTING AND ANCHOR DETAILS, REFER TO SHEET 8.
13. BREAKAWAY COUPLING SWING (AS NECESSARY) BETWEEN POST.
14. ALL BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. FASTENERS, INCLUDING SPECIAL BOLT AND COUPLING, SHOULD BE SECURED AS TIGHT AS POSSIBLE WITH LOCK WASHERS. FASTENERS, EXCEPT FOR SPECIAL BOLT AND COUPLING, ARE INSTALLED WITH CONVENTIONAL WRENCHES. DO NOT USE A PIPE WRENCH.
15. SHIMS BETWEEN THE COUPLINGS AND ANCHORS SHOULD BE SECURED AS TIGHT AS POSSIBLE AND TIGHTEN COUPLINGS INTO THE MANUFACTURER'S SPECIFICATIONS. FASTENERS, EXCEPT FOR SPECIAL BOLT AND COUPLING, ARE INSTALLED WITH CONVENTIONAL WRENCHES. DO NOT USE A PIPE WRENCH.
**BREAKAWAY COUPLING DETAIL**

*NOTE: DO NOT PLACE TORSION ACROSS NECK PORTION OF COUPLING.*

---

**COUPLING BOLT DETAIL**

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**SHIM DETAIL**

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**BRACKET DETAIL**

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**TABLE A**

<table>
<thead>
<tr>
<th>BRACKET NO.</th>
<th>Ø (INCHES)</th>
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<tbody>
<tr>
<td>1</td>
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<td>0.150*</td>
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<tr>
<td>3</td>
<td>0.200*</td>
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</tbody>
</table>
### Notes for Selection of Bracket Number

1. For each post, determine values of \( H \) and \( L \) as indicated in sheet.

2. Enter table with \( H \) and \( L \) to select the required bracket number.

3. For sizes of \( H \) and \( L \) between those values on the table, use the next highest value.

---

### W5 Post

| Post Length (L') (Feet) | 1' | 2' | 3' | 4' | 5' | 6' | 7' | 8' | 9' | 10' | 11' | 12' | 13' | 14' | 15' | 16' | 17' | 18' | 19' | 20' | 21' | 22' | 23' | 24' | 25' | 26' | 27' | 28' | 29' | 30' | 31' | 32' | 33' | 34' |
|-------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| H                       |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| L                       |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

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### W6 Post

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### W18 Post

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</table>
1. Enter footing selection table with required post size and find required footing values as shown in details.

2. The anchor shall be 304 stainless steel with 1045 steel rod and 1008 coil.

3. Form the top 1 ft. of the footing.

4. Thread depth = 1.725" min.

5. Stainless steel thread

6. Stainless steel washer

7. Steel wire

8. Longitudinal spacing of anchors

9. Close up coil 2" long and 6" alternating.

10. Depth of post section plus 1/16".

11. Bracket #1 - depth of post section plus 1/16".

12. Bracket #2 - depth of post section plus 1/16".

13. To avoid undesirable dragging on convex ground profiles, the entire anchor shall be removed and reinforcement shall be used to prevent.

14. Soil properties:
   Foundation design is based on Broms' method using the following soil properties:

   Type of Soil = Loose-Medium Sand
   Unit Weight of Soil (γ) = 120 PCF
   Angle of Internal Friction (φ) = 25°.
1. Determine the proper size and number of sign posts from the appropriate drawing on Sheet A.
2. Punch out appropriate knockouts and attach the sign.
3. Determine the proper size anchor post from the square steel posts table on this sheet.
4. Drive the anchor post into the ground, using the splice sleeve.
5. Punch out the sixth knockout from the bottom of the sign post.
6. Slide a minimum of 6" of the sign post into the anchor post.
7. Slide a minimum of 6" of the sign post into the anchor post.

INSTALLATION IN CONCRETE:
Install as noted above, but place a 18" long anchor sleeve over the end of the sign post and anchor sleeve are even. Select the proper size anchor sleeve from the square steel posts table on this sheet.

NOTES:
1. Materials and workmanship shall be in accordance with Pub. No.
2. Bolt and nut shall be as noted above.
3. Bolts and nuts shall be ASTM A 307, Grade B.
4. Drive rivets may be used to fasten sign blanks to the sign post.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS
POST-MOUNTED SIGNS, TYPE B
STEEL SQUARE POSTS (SYSTEM A)
ERECTION DETAILS

PERMITS SECTION
CHIEF, TRAFFIC ENGINEERING AND TRAFFIC OPERATIONS DIVISION
CHIEF, HIGHWAY SAFETY AND BUREAU OF MAINTENANCE AND OPERATIONS

JUN. 13, 2013
1. To determine the post size, enter the graph with the values of \( A \) and \( B \). The shaded area indicates the appropriate post size required.

2. See sheet 9 for sign location/installation details.

**NOTES:**

1. 1.75" posts may have less than 7 ft clearance between each other when used in two-post installations.

2. Steel square posts (system A) selection tables.
1. To extend the height of a sign post, a maximum of one splice may be made.
2. Sign post splices must be a minimum of 3 ft. above ground.
3. Select the proper size splice sleeve from the square steel post table on this sheet.

INSTALLATION IN CONCRETE:
Install as noted above.

NOTES:
1. Material and workmanship shall be in accordance with Pub. 408.
2. Sign posts and splice sleeves shall have 1/8" diameter holes in 1" centers on all four sides. Anchor posts and anchor sleeves shall have 1/4" diameter holes in 1" centers on all four sides.
3. Bolts and nuts shall be ASTM A 307, Grade B.
4. Drive rivets may be used to fasten sign blanks to the sign post.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS
POST-MOUNTED SIGNS, TYPE B
STEEL SQUARE POSTS (SYSTEM C) ERECTION DETAILS

PERMITS SECTION
CHIEF, TRAFFIC ENGINEERING AND OPERATIONS DIVISION
CHIEF, HIGHWAY SAFETY AND OPERATIONS BUREAU

JUN. 2013
ONE-POST INSTALLATION

TWO-POST INSTALLATION

SIGN AREA TABLE

<table>
<thead>
<tr>
<th>SQUARE OR RECTANGULAR SIGNS</th>
<th>IRREGULAR SHAPED SIGNS</th>
</tr>
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<tr>
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<td>SIGN AREA IN FT²</td>
</tr>
<tr>
<td>SIZE (in. x in.)</td>
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<tr>
<td>28&quot; x 28&quot;</td>
<td>5.5</td>
</tr>
<tr>
<td>30&quot; x 30&quot;</td>
<td>6.0</td>
</tr>
<tr>
<td>32&quot; x 32&quot;</td>
<td>6.5</td>
</tr>
<tr>
<td>34&quot; x 34&quot;</td>
<td>7.0</td>
</tr>
<tr>
<td>36&quot; x 36&quot;</td>
<td>7.5</td>
</tr>
<tr>
<td>38&quot; x 38&quot;</td>
<td>8.0</td>
</tr>
<tr>
<td>40&quot; x 40&quot;</td>
<td>8.5</td>
</tr>
</tbody>
</table>

NOTES:

1. TO DETERMINE THE POST SIZE, ENTER THE GRAPH WITH THE VALUES OF A AND B. THE SHADED AREA INDICATES THE APPROPRIATE POST SIZE.
2. "1" AND "1.5" POSTS MAY HAVE LESS THAN 7 FT. CLEARANCE BETWEEN EACH OTHER WHEN USED IN TWO-POST INSTALLATIONS.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

POST-MOUNTED SIGNS,
TYPE B

STEEL SQUARE POSTS (SYSTEM C)
SELECTION TABLES

JUN. 13, 2013
1. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH PUB. 408.

2. FORMED-CHANNEL SIGN MOUNTS SHALL BE MILD STEEL.

3. HOLES SHALL BE 0.31" IN DIAMETER TO ALLOW MOUNTING OF SIGNS IN ADDITION TO THE NORMAL USE WHEN IT IS NECESSARY TO MOUNT SIGNS ON THE SIDE POST.

4. WASHERS SHALL BE 0.19" GRADE 9 PLATED.

5. LOCKNUTS SHALL BE 0.16" - 18 UNC THREADS, HEX HEADS.

6. ANY OTHER DEPARTMENT APPROVED BREAKAWAY CONNECTION APPROVED FOR USE IN PLACE OF POST MAY BE SUBSTITUTED FOR THE UNIVERSAL SPACER.

7. SEE SHEET 6 FOR SPACER AND ANCHOR BOLT DETAILS.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

POST-MOUNTED SIGNS,
TYPE B

CHANNEL BAR POSTS
(ROLLED STEEL RAILS)
MATERIAL DETAILS

JUN. 13, 2013
JUN. 13, 2013
ANCHOR SPLICE INSTALLATION INSTRUCTIONS:
1. Determine the proper size sign post and anchor post, from the appropriate graph on Sheet 7. Use 2.5 lb/ft. anchor posts with 4.0 lb/ft. sign posts and 4.0 lb/ft. anchor posts with 2.5 lb/ft. sign posts. Securely tighten anchor post from the end of the exposed anchor post. Securely tighten spacer onto bolt.
2. Secure anchor post to 4" above ground level. Place a locknut on each bolt. Standard lockwashers and nuts may be used in lieu of the locknut. Temporarily tighten bolts and nuts by turn-of-nut method. Bring nut to a snug tight condition to ensure that all parts are brought together into full contact with each other, then tighten securely additional 1/2 turn.
3. Drive anchor post with a drive cap to within approximately 18" above ground level. Place one bolt and washer in first hole from the end of the anchor post. Securely tighten spacer onto bolt (bolts 4" apart).
4. Drive anchor post to 4" above ground level. Place remaining anchor post bolts through first and fifth holes of top sign post. This will result in a 4" to 6" overlap.
5. Place a locknut on each bolt. Standard lockwashers and nuts may be used in lieu of the locknut. Temporarily tighten bolts and nuts by turn-of-nut method. Bring nut to a snug tight condition to ensure that all parts are brought together into full contact with each other, then tighten securely additional 1/2 turn.
6. Place a locknut on each bolt. Standard lockwashers and nuts may be used in lieu of the locknut. Temporarily tighten bolts and nuts by turn-of-nut method. Bring nut to a snug tight condition to ensure that all parts are brought together into full contact with each other, then tighten securely additional 1/2 turn.
7. Restore soil around the anchor post.

INSTALLATION IN SOFT SOIL
1. Use the anchor plate in areas with soft soil. Bolt the top anchor post 1/2 to 1" below the bottom anchor post.

POST EXTENSION SPLICE NOTES:
1. To extend the height of a sign post, a minimum of one splice may be made.
2. Four anchor bolts, washers, lockwashers, and nuts are required. Lockwashers may be used in lieu of standard lockwashers and nuts. See this sheet for anchor bolt system.
3. Post extension splice detail A is preferred over post extension splice detail B. Main detail is used to splice post extension post for splice extensions more than 18" in length. Post extension splice post for splice extensions less than 18" in length may be made with a minimum height of 6.25 ft., measured to the bottom of the splice.
4. Post extension splice detail B is preferred for use to provide a flush sign mount surface for 4.0 lb/ft. posts. Splice detail C is used for 2.5 lb/ft. post extension splice post for height of 6.25 ft., measured to the bottom of the splice.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS
POST-MOUNTED SIGNS, TYPE B
CHANNEL BAR POSTS
ERECTON DETAILS

TC-8702B
WHEN ERECTING STANDARD WARNING OR REGULATORY SIGNS THAT ARE PREPUNCHED, THIS DISTANCE IS THE DISTANCE BETWEEN THE HORIZONTAL HOLES.

* W = WIDTH OF SIGN
A = W x H FOR SQUARE OR RECTANGULAR SIGNS,
A = SIGN AREA (SEE TABLE).


NOTES:

1. 2.5 LB/FT. AND 4.0 LB/FT. POSTS MAY HAVE LESS THAN 7 FT. CLEARANCE BETWEEN EACH OTHER WHEN USED IN TWO-POST INSTALLATIONS.

COMMUNE OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS
POST-MOUNTED SIGNS, TYPE B

CHANNEL BAR POSTS
SELECTION TABLES

RECOMMENDED JUN. 13, 2013
RECOMMENDED JUN. 13, 2013
Sheet 9 of 9
TC-8702B
NOTES:

SIGN CLEARANCE HEIGHT

1. Clearance height shall be measured from the bottom of the sign to a level line projected from the near edge of roadway. This may result in a sign height greater than the minimum height required when measured from the top of the sign. The clearance height shall also be measured from the bottom of the sign to the side of the near travel lane to reduce the possibility of pedestrians colliding with the sign.

LATERAL SIGN CLEARANCE

2. Signs should be placed as far to the right as possible from the edge of the roadway to reduce the possibility of vehicles hitting the signs. When guide rails are present, signs will be placed behind the guide rail.

3. Route marker signs, post auxiliary signs (North, South, etc.) shall be considered a single sign assembly. The clearance height is measured from the top of the sign to a level line projected from the near edge of roadway.

4. Business or urban areas

A. In business, commercial, or residential districts, or where parking and pedestrian movement are limited, or where the sign may present a hazard, a lateral offset of 1 foot from the center of the travel lane is recommended.

B. Lateral clearance recommended is 2’ behind curb. In business, commercial or residential areas where sidewalk width is limited, or when existing utility poles are close to the curb, clearance is recommended. Signs supports should not protrude into sidewalks area.

5. Rural areas

A. Conventional highways. Although 7’ minimum sign height clearance is recommended, in rural areas, in which conditions listed in note 4A are not present, or where the sign is placed behind the guide rail, or behind a low, 1-foot wide concrete or metal barrier, a clearance height of 5’ may be used.

B. Freeway and expressways. Directional signs shall be set a minimum of 12’ from the edge of roadway. The clearance height shall be measured from the bottom of the sign to a level line projected from the near edge of roadway. Where shoulders are not present, or when shoulders are not present, it is recommended that signs be mounted at least 10’ from the edge of roadway. When shoulders are not present, it is recommended that signs be mounted at least 10’ from the edge of roadway.

6. On conventional roads 2’-foot lateral offset is recommended when it is impractical to locate the sign with the prescribed offset.

7. A lateral offset of 1’ from the face of the curb may be used in business, commercial, or residential areas, where several feet is limited, or where existing poles are close to the curb.

8. Overhead sign supports and post-mounted sign and guide markers supports should not extend into the usable width of a sidewalk or other pedestrian facility.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

POST-MOUNTED SIGNS,
TYPE B

SIGN LOCATION/INSTALLATION DETAILS
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
RECOMMENDED
TC-8702C
SHT. 2 OF 2
ERECTION DETAILS

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION 408, UNLESS OTHERWISE NOTED.

2. A 3/8" x 3" LAG SCREW MAY BE USED IN LIEU OF A BOLT THROUGH THE POST AS ILLUSTRATED.

3. USE A FLAT ALUMINUM OR NYLON WASHER ON THE FACE OF ALL SCREWS.

4. DRILL BREAKAWAY HOLES IN POSTS AND ERECT AS SHOWN ON SHEET 1 OF 2.

5. STAMP BRACKET/BAR NUMBER IN 0.375" HIGH LETTERS AND NUMBERS IN POSITIONS AS SHOWN.

NOTES:

TYPICAL YIELD SIGN ASSEMBLY

ROUTE MARKER BRACKET ASSEMBLY - TYPE I

ROUTE MARKER BRACKET ASSEMBLY - TYPE II

ROUTE MARKER POST SELECTION TABLE

BOLT TABLE

POST-MOUNTED SIGNS, TYPE C

ERECTION DETAILS

JUN. 13, 2013

JUN. 13, 2013
**Design Criteria:**
1. Design based on AASHTO Standard Specifications for Structural Supports for Highway Signs, Lampposts and Traffic Signals, including foot traffic specifications with the following design criteria:
   - Loads to 90 mph wind speed
   - Rainfall for Outdoor Design Life
   - Pressure at base is not controlled for design life.
2. Expansion of footings is based on Figures 13-2 and 13-4 as outlined in the AASHTO specifications.

**Legend:**
- Post selection example
- Use two posts (see sheet 3)
- Weighted post

**Post Selection Table - One Post**

<table>
<thead>
<tr>
<th>Post</th>
<th>W (ft)</th>
<th>H (ft)</th>
<th>L (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>1</td>
<td>3.5</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>1</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**Notes:**
1. Materials and workmanship in accordance with Pennsylvania Department of Transportation Publication 408, unless noted.
2. Post #1 is always adjacent to roadway, whether sign is located on left or right.
3. At locations where unavoidable curbs, guard rail or barriers place the near edge of the sign at least 6" BEYOND THE CURB, GUIDE RAIL OR BARRIER, PLACE THE NEAR EDGE OF THE SIGN AT LEAST 6" BEYOND THE CURB, GUIDE RAIL OR BARRIER AND SELECT AN ALTERNATIVE INSTALLATION OF THE CURB, GUIDE RAIL OR BARRIER.
4. Business, commercial, or residential districts, or where visibility,停车和/or pedestrian movements are likely, or where deflection of the guide rail or barrier is recommended, in rural districts where aeolian wind conditions exist, use one post #1 BEYOND THE DEFLECTION FACE, GUIDE RAIL OR BARRIER. In locations with guide rail or barrier, the near edge must be 2' BEYOND THE FACE, GUIDE RAIL OR BARRIER. At locations with guide rail or barrier, place post #1 BEYOND THE NEAR EDGE.
5. Locate signs to avoid placing supports in drainage ditches.

**Commonwealth of Pennsylvania Department of Transportation Bureau of Maintenance and Operations**

**Post-Mounted Signs, Type E**

**Wood Posts**

**Selection Tables**

**Erection Details**

- Recommended: 01/13/2013
- Recommended: 01/13/2013
- Sheet: 1 of 4
- TC-8702E
### POST SELECTION TABLE - TWO POSTS

<table>
<thead>
<tr>
<th>W (FT)</th>
<th>L (FT)</th>
<th>HEIGHT (FT)</th>
<th>W</th>
<th>L</th>
<th>HEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* SEE NOTE 1.

### POST SELECTION EXAMPLE

P1 = 4" x 4" POST  
P2 = 6" x 6" POST  
P3 = 6" x 8" POST

FOR A SIGN WEIGHING:

\[ W = 6' - 1/4' \]  
\[ L = 10' - 0' \]

TWO P1 = 4" x 4" WOOD POSTS ARE REQUIRED.

### NOTES:

1. POSTS IN THE SELECTION TABLE WITH AN "\*" MUST HAVE A  
   "\*" WOOD POST SHOWN IN THE SELECTION TABLE.  
   A "\*" POST SHOULD NOT BE INCLUDED IN THE SELECTION.

2. SEE SHEET 1 FOR ADDITIONAL NOTES.

3. SEE SHEET 4 FOR SETTINGS AND ERECTION DETAILS.

---

### MATERIALS

- CLASS A CEMENT CONCRETE
- BITUMINOUS
- STEEL SLEEVE

---

### TABLE FOR HOLE SPACING

- SIGN ELEVATION
- END VIEW

---

### COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

POST-MOUNTED SIGNS, TYPE E
WOOD POSTS
SELECTION TABLES
ERECTION DETAILS

RECOMMENDED: JUL 12, 2012  
REVISED: JUL 13, 2013

[TC-8702E]
**PERMITS SECTION**

**TRAFFIC OPERATIONS DIVISION**

**CHIEF, HIGHWAY SAFETY AND**

**CHIEF, TRAFFIC ENGINEERING AND**

JUN. 13, 2013

**SELECTION TABLES**

**WOOD POSTS**

THREE P3 = 6"x8" WOOD POSTS ARE REQUIRED.

**= 15'-0"**

3. SEE SHEET 4 FOR SECTIONS AND ERECTION DETAILS.

**H = 2'-0"**

POST-MOUNTED SIGNS, TYPE E

FOR A SIGN WHERE

"W" SHOULD BE EQUALLY DISTRIBUTED TO THE OVERHANGS.

**MINIMUM CLEAR SPACING OF 7'-0" BETWEEN POSTS BY**

1. POSTS IN THE SELECTION TABLE WITH AN "*" MUST HAVE A

**TABLE FOR HOLE SPACING**

- **SEE NOTE 1.**

**LEGEND**

P1 = 4"x4" POST
P2 = 6"x6" POST
P3 = 8"x8" POST

**POST SELECTION EXAMPLE**

FOR A SIGN Width

W = 22'-0"
B = 2'-0"
Lb = 15'-0"

THREE P3 = 8"x8" WOOD POSTS ARE REQUIRED.

**NOTES:**

1. POSTS IN THE SELECTION TABLE WITH A "*" MUST HAVE A

2. SEE SHEET 1 FOR ADDITIONAL NOTES.

3. SEE SHEET 4 FOR SECTIONS AND ERECTION DETAILS.
### PERMITS SECTION

**LEGAL IMPACTS:**

- **P1 = 4"x6"**
- **P3 = 6'**

**NOTE:**

- **SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO BUREAU OF MAINTENANCE AND OPERATIONS USED IN BUSINESS, COMMERCIAL OR RESIDENTIAL AREAS WHERE**

---

### POST SELECTION TABLE - TWO POSTS

<table>
<thead>
<tr>
<th>Height (&quot;in FT&quot;)</th>
<th># P1</th>
<th># P2</th>
<th># P3</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LEGEND:**

- SEE TABLE FOR HOLE SPACING
- SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO BUREAU OF MAINTENANCE AND OPERATIONS USED IN BUSINESS, COMMERCIAL OR RESIDENTIAL AREAS WHERE
- SET THE POST AND BACKFILL TO GRADE.

---

### TABLE FOR HOLE SPACING

<table>
<thead>
<tr>
<th>Height (&quot;in FT&quot;)</th>
<th># P1</th>
<th># P2</th>
<th># P3</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
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<td>14</td>
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<tr>
<td>15</td>
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<td></td>
</tr>
</tbody>
</table>

---

### COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

### WOOD POSTS - DIRECT BURIAL

**ERECTION DETAILS**

**TEMPORARY USE ONLY**

**NOTE:**

- POST SELECTION EXAMPLE
- FOR A SIGN WHERE
- **P1 = 4"x6"**
- **P3 = 6'**
- **P2 = 2"**

**WARNING:**

- TWO P2 = 4"x6" WOOD POSTS ARE REQUIRED.

---

**NOTES:**

1. POSTS IN THE SELECTION TABLE WITH AN "x" MUST HAVE A HORIZONTAL CLEARANCE OF 6" OR MORE.
2. DETAILED TO ACCOMPLISH A WIDTH OF DISTANCE BETWEEN THE HOLES TO PLATE THE POSTS AT LEAST 6" TO THE POST AND GATE FENCE TO MINIMUM DISTANCE PERMITTED BY THE CODE.
3. POSTS IN THE SELECTION TABLE "x" MUST BE EQUALLY DISTRIBUTED TO THE HOLES.
4. **LEGEND:**
   - SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO BUREAU OF MAINTENANCE AND OPERATIONS USED IN BUSINESS, COMMERCIAL OR RESIDENTIAL AREAS WHERE
   - SET THE POST AND BACKFILL TO GRADE.

---

**POST-MOUNTED SIGNS, TYPE E**

**WOOD POSTS - DIRECT BURIAL**

**ERECTION DETAILS**

**TEMPORARY USE ONLY**
DISTANCE MARKER SIGN

ALUMINUM BRACKET

CLAMP

STAINLESS STEEL RAILING TUBE

ALUMINUM BAR

NOTES:

1. IT SHALL BE THE RESPONSIBILITY OF THE ENGINEER TO ACCURATELY ESTABLISH THE LOCATION OF EACH DISTANCE MARKER.

2. MEASUREMENTS TO ACCURATELY ESTABLISH THE LOCATION OF DISTANCE MARKERS IN INTERVALS OF 1 MILE WILL BE TAKEN ALONG THE OUTSIDE EDGE OF THE PAVEMENT OF NORTHBOUND OR EASTBOUND ROADWAYS ONLY. DISTANCE MARKERS ON SOUTHBOUND OR WESTBOUND ROADWAYS SHALL BE INSTALLED ALONG THE OUTSIDE EDGE OF THE PAVEMENT OF THE ROADWAY ON WHICH THEY FACE.

3. ALL STAINLESS STEEL STRAPS AND CLAMPS SHALL CONFORM TO ASTM A167.

4. DISTANCE MARKERS WHICH ARE NOT ON BRIDGES SHALL BE INSTALLED ON TYPE B SIGN POSTS AT A 4'-0" HEIGHT.

TYPICAL LOCATION OF DISTANCE MARKERS

SIGN SUPPORT

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

DISTANCE MARKERS

PERMITS SECTION

CHIEF, TRAFFIC ENGINEERING AND TRAFFIC OPERATIONS DIVISION

BUREAU OF MAINTENANCE AND OPERATIONS
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MAINTENANCE AND OPERATIONS

SIGN LIGHTING
(SAMPLE DRAWING)

RECOMMENDED JUN. 13, 2013

SHT. 4 OF 4

NOTE:
It may be more desirable to use one common enclosure on the bridge pier in lieu of separate enclosures for each sign because of the proximity of the bridge pier to the signs. In this option the clearance requirements are satisfied by the bridge pier itself. In the sample, enclosures for sign locations 3 and 6 would not be specified and a note explaining the omission would be necessary.
1. PROVIDE SIGN MATERIALS MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 1103.4.
2. DIAMOND, RECTANGULAR, OCTAGONAL AND TRIANGULAR SIGNS ARE RECOMMENDED. THE HEIGHT OF THE SIGN IS NOT RESTRICTED. THE HEIGHT OF THE TOP OF THE SIGN IS NOT RESTRICTED.
3. MINIMUM MOUNTING HEIGHT OF ALL SIGNS IS 7.5'.
4. SUPPLEMENTAL PLAQUE IS TO BE MOUNTED AS SHOWN.
5. BATTERY CASE MUST BE PLACED EITHER ON THE GROUND OR ATTACHED 20" ABOVE THE GROUND TO THE POST OR BASE LEG.
6. SIGN SUBSTRATE MAY BE MDF, ALUMINUM, FLEXIBLE ROLL-UP, STEEL, ALUMINUM / PLASTIC LAMINATE, COMPOSITE METAL/PLASTIC OR POLYETHYLENE.
7. SANDBAG BALLAST SHALL BE PLACED AT THE END OF EACH LEG TO PROVIDE STABILITY.
8. SIGNS AND RAILS ARE TO BE ATTACHED WITH BOLTS AND NUTS.
9. IF TURNED 90°, RETROREFLECTIVE SHEETING MUST BE PLACED ON THE SIDE OF THE SIGN WHICH IS NEAREST TO TRAFFIC.
10. MAXIMUM OF TWO TYPE B WARNING LIGHTS ON ALL SIGNS ARE ALLOWED WITH 36" SEPARATING LIGHTS ON ROAD CLOSED SIGNS.
11. FLASHING LIGHTS ARE OPTIONAL. WHEN USED, LIGHTS SHALL BE ATTACHED AS SHOWN AND LOCATED ON THE SIDE OF THE SIGN MOUNTED NEAREST TO TRAFFIC.
12. SIGNS SHALL REMAIN IN THE VERTICAL POSITION WHEN LOCATED WITHIN THE HIGHWAY RIGHT-OF-WAY.
NOTES:
1. PROVIDE SIGN MATERIALS MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 1103.4.
2. DIAMOND, RECTANGULAR, OCTAGONAL AND TRIANGULAR SIGNS ARE RECOMMENDED.
3. BATTERY CASE MUST BE PLACED EITHER ON THE GROUND OR ATTACHED BUT NOT ON THE GROUND AT THE POST OR BASE LEG.
4. SIGN SUBSTRATE MAY BE PRESSO ALUMINUM, ROLLED ALUMINUM / PLASTIC LAMINATE, CORRUGATED POLYPROPYLENE OR POLYETHYLENE. MAX. WEIGHT IS 15 lbs.
5. POST, 2" STEEL TUBING SLEDGES OVER BASE STUD, 1.75" STEEL TUBING FASTENED WITH 3/8 DIAMETER 2.5" LONG STAINLESS STEEL OR 3/8 INCH PLATED BOLTS AND NYLON INSERT LOCK NUT. USE 3/8" STEEL AND NYLON WASHERS UNDER BOTH THE BOLT AND NUT.
6. SANDBAG BALLAST SHALL BE PLACED ON THE END OF EACH LEG TO PROVIDE STABILITY.
7. SIGN PANEL IS PLACED ON THE VERTICAL SIGN POST WITH TOP EDGE ALIGNED WITH POST TOP END AND FASTENED WITH 3/8 DIAMETER 2.5" LONG STAINLESS STEEL BOLTS THREADED HEADED BOLTS AND NYLON INSERT LOCK NUT. USE 3/8" STEEL AND NYLON WASHERS UNDER BOTH THE BOLT AND NUT.
8. MAXIMUM OF TWO TYPE B WARNING LIGHTS ON ALL SIGNS ARE ALLOWED WITH 24" SEPARATING LIGHTS ON ROAD CLOSED SIGNS.
9. NCHRP 350 TEST LEVEL 3 CRASH TESTED AND APPROVED. FLASHING LIGHTS ARE OPTIONAL. WHEN USED, LIGHTS SHALL BE ATTACHED AS SHOWN AND LOCATED ON THE SIDE OF THE SIGN WHICH IS NEAREST TO TRAFFIC.
10. SIGNS SHALL REMAIN IN THE VERTICAL POSITION WHEN LOCATED WITHIN THE ROADWAY RIGHT-OF-WAY.