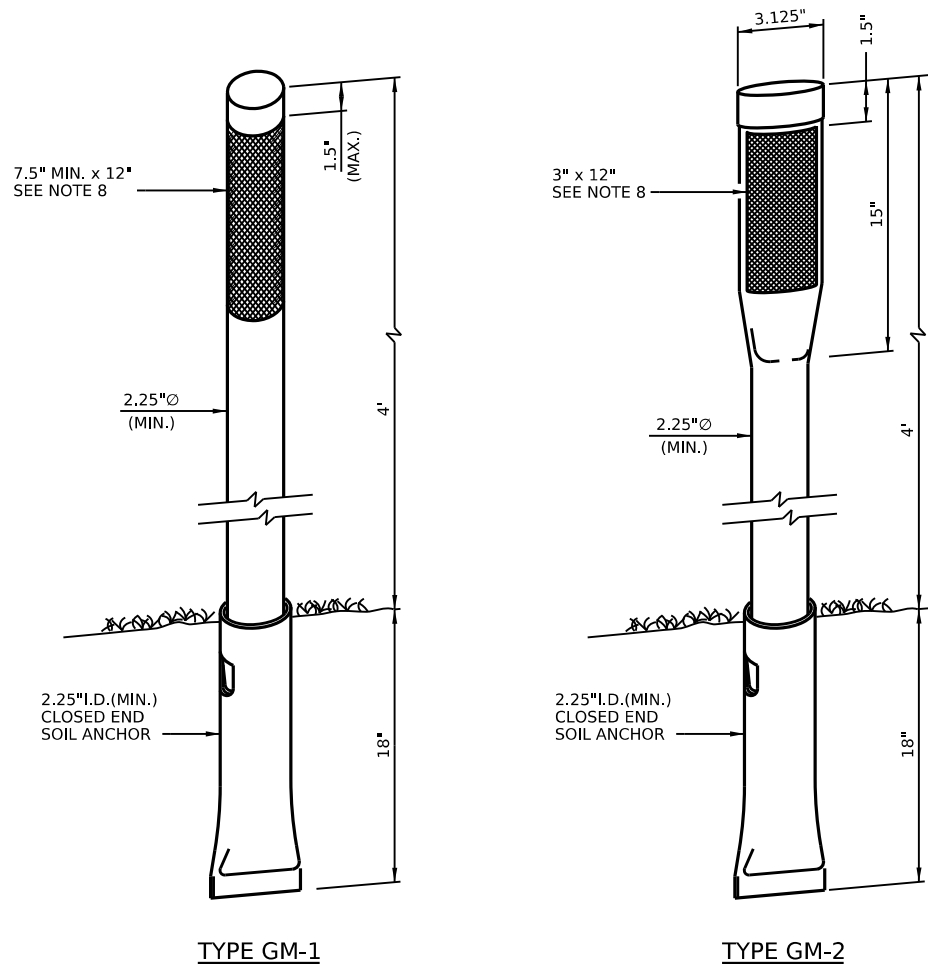


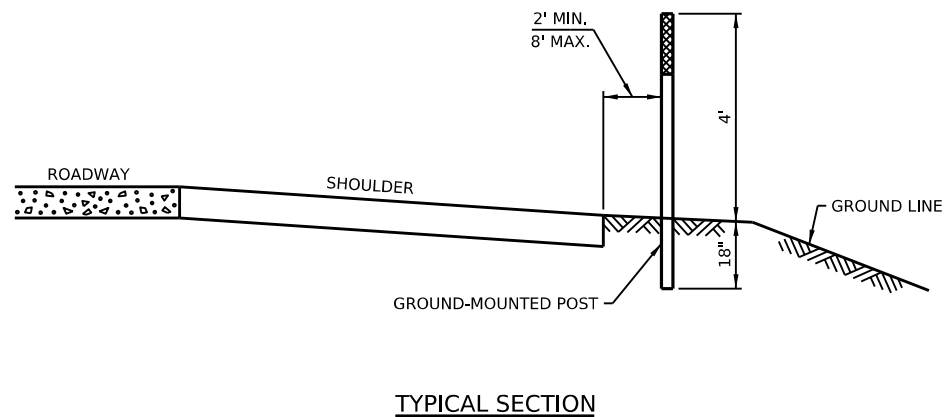
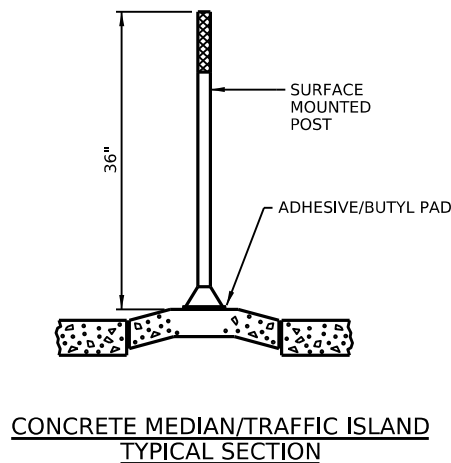
SURFACE-MOUNTED POSTS



GROUND-MOUNTED POSTS

NOTES:

1. PROVIDE MATERIALS AND CONSTRUCT AS SPECIFIED IN PUBLICATION 408.
2. GALVANIZE METAL SOIL ANCHOR AFTER FABRICATION, ACCORDING TO ASTM A 123.
3. FOR GUIDE RAIL AND BARRIER DELINEATORS, SEE SHEET 2.
4. FOR INTERCHANGE AREAS LOCATION DETAILS, SEE SHEET 4.
5. FOR LOCATION/PLACEMENT NOTES, SEE SHEET 5.
6. FOR DELINEATOR SPACING ON CURVES, SEE SHEET 4.
7. USE TYPE SM-1 AND GM-1 POSTS IN AREAS WHERE TRAFFIC MOVEMENTS NEED MULTI-DIRECTION DELINEATION, SUCH AS ISLANDS, RADII AT INTERSECTIONS AND THE ENDS OF MEDIANS.
8. USE ANY BULLETIN 15 APPROVED SHEETING.
9. ANY BULLETIN 15 APPROVED DELINEATOR CAN BE USED PROVIDED THE DIMENSIONS CONFORM TO THE DETAILS ON THIS SHEET.



PLACEMENT

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF OPERATIONS

DELINEATION

FLEXIBLE POSTS DETAILS

RECOMMENDED XXX, XX, 2024

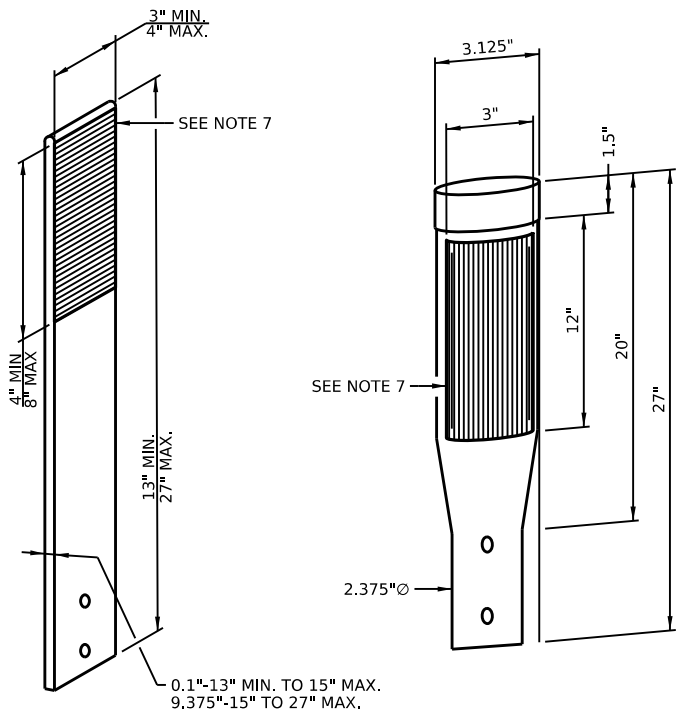
RECOMMENDED XXX, XX, 2024

SHEET 1 OF 5

MANAGER, TRAFFIC ENGINEERING AND PERMITS SECTION

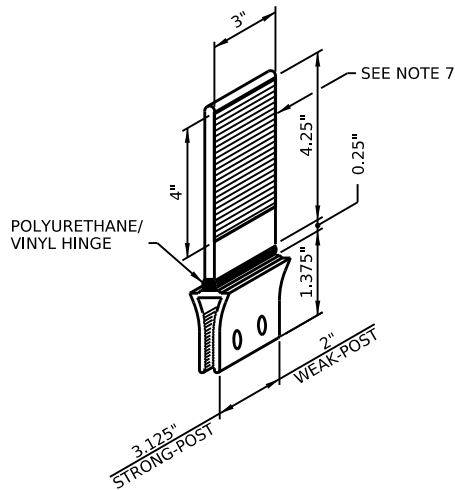
CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION

TC-8604

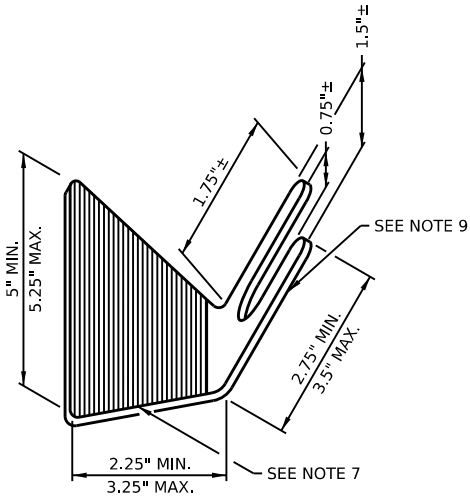


TYPE A

TYPE B

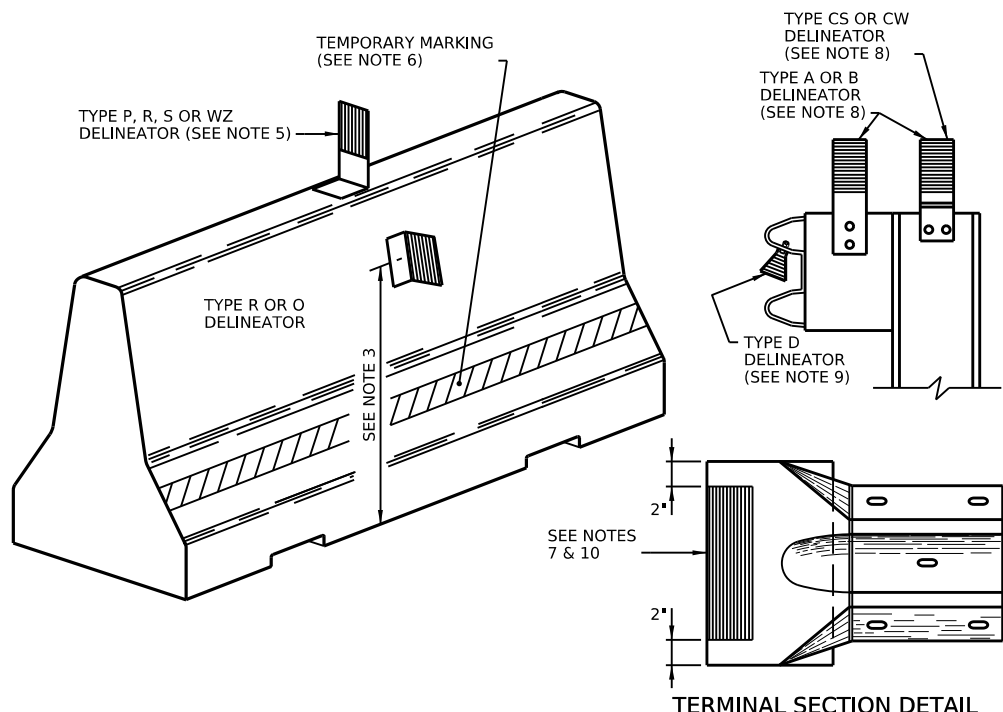


TYPE CS-STRONG POST
TYPE CW-WEAK POST



TYPE D

GUIDE RAIL DELINEATORS



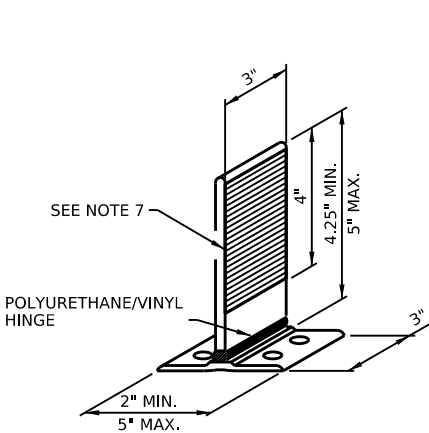
TERMINAL SECTION DETAIL

DELINEATOR PLACEMENT

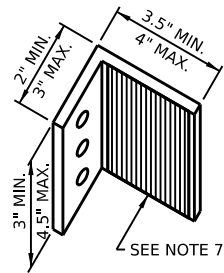
1. SEE PUB. 72M, RC-51M & RC-53M, FOR GUIDE RAIL DETAILS.
2. SEE PUB. 72M, RC-57M, FOR CONCRETE MEDIAN BARRIER DETAILS.

NOTES:

1. PROVIDE MATERIALS AND CONSTRUCT AS SPECIFIED IN PUBLICATION 408.
2. INSTALL DELINEATORS ON GUIDE RAIL AT 37.5' SPACING ON HORIZONTAL CURVES WITH A RADIUS LESS THAN OR EQUAL TO 1000' AND AT 75' SPACING ON HORIZONTAL CURVES WITH A RADIUS GREATER THAN 1000' AND TANGENTS.
3. SIDE-MOUNTED DELINEATORS TYPE "R" OR TYPE "O" SHALL BE LOCATED 26" FROM THE PAVEMENT TO THE CENTER OF THE DELINEATOR. AN ADDITIONAL SIDE-MOUNTED DELINEATOR MAY BE LOCATED ON THE LOWER SLOPE OF THE BARRIER WHEN JUSTIFIED BY ENGINEERING JUDGEMENT.
4. MOUNT DELINEATORS ON THE TOP AND/OR SIDE OF BARRIERS OR BRIDGE PARAPETS AS SPECIFIED AT A MAXIMUM LONGITUDINAL SPACING OF 80' FOR TANGENT SECTIONS AND 40' FOR CURVE SECTIONS WITH A RADIUS LESS THAN 1,000'.
5. IN WORK ZONES, INSTALL TYPE WZ DELINEATORS ON THE TOP AND EITHER TYPE R OR O DELINEATORS ON THE SIDE OF ALL TEMPORARY BARRIERS THAT ARE ADJACENT TO TRAVEL LANES AT MAXIMUM 40' SPACING. USE ANY BULLETIN 15 APPROVED ORANGE SHEETING. USE SHEETING ON BOTH SIDES OF TYPE WZ DELINEATORS WHEN USED BETWEEN TRAFFIC TRAVELING IN OPPOSITE DIRECTIONS. TYPE WZ DELINEATORS MAY BE MADE OF ANY LIGHTWEIGHT MATERIALS THAT MAINTAIN A VERTICAL ORIENTATION (±10 DEGREES)AND DO NOT NEED TO BE OF AN APPROVED TYPE LISTED IN BULLETIN 15.
6. IN AN EFFORT TO MINIMIZE ERADICATION IN WORK ZONES, PAINT CONTINUOUS WHITE OR YELLOW 6" WIDE PAVEMENT MARKINGS AS SHOWN ON TEMPORARY BARRIER INSTEAD OF BEING PLACED ON THE ROAD SURFACE. THE LINE SHALL BE ANY APPROVED PAINT OR PAVEMENT MARKING TAPE THAT SATISFIES THE MINIMUM RETRORREFLECTIVITY REQUIREMENTS.
7. USE ANY BULLETIN 15 APPROVED SHEETING.
8. INSTALL EITHER A TYPE CS OR CW DELINEATOR OR A TYPE A OR B DELINEATOR TO GUIDE RAIL. IF USING A TYPE CS OR CW DELINEATOR, MOUNT DELINEATOR TO GUIDE RAIL POST. IF USING A TYPE A OR B DELINEATOR, MOUNT DELINEATOR TO GUIDE RAIL POST OR OFFSET BLOCK ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
9. INSTALL TYPE D DELINEATORS ON THE GUIDE RAIL WEB THROUGH THE SPLICE HOLE AS SHOWN WITH A BOLT AND NUT. DO NOT INSTALL TYPE D DELINEATORS UNDERNEATH THE BOLT ATTACHING THE RAIL TO THE POSTS. DO NOT INSTALL TYPE D DELINEATORS WITHIN THE LENGTH OF AN END TREATMENT. DO NOT CREATE NEW HOLES IN THE GUIDE RAIL WEB TO INSTALL TYPE D DELINEATORS. THE BOLT AND NUT ARE INCIDENTAL TO THE TYPE D DELINEATOR.
10. INSTALL 1 FT² MINIMUM OF BULLETIN 15 APPROVED YELLOW REFLECTIVE SHEETING ON TERMINAL SECTIONS.

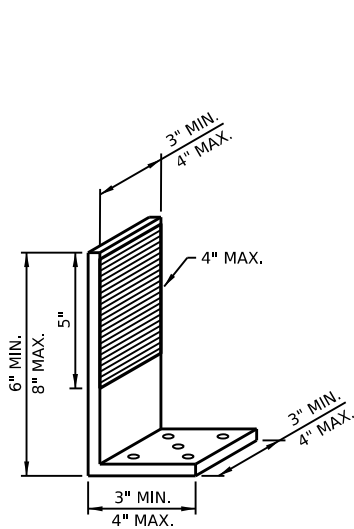


TYPE R

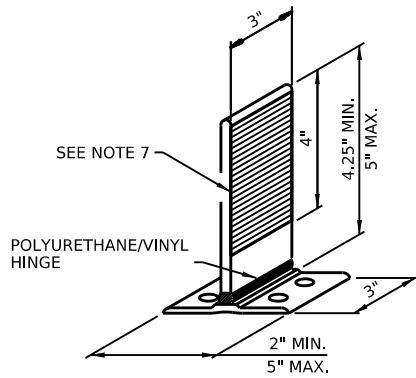


TYPE O

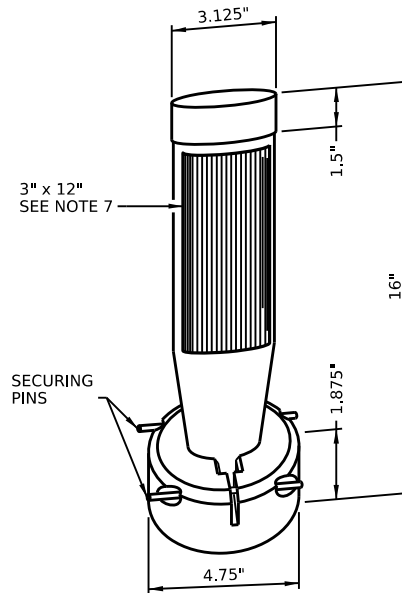
SIDE-MOUNT



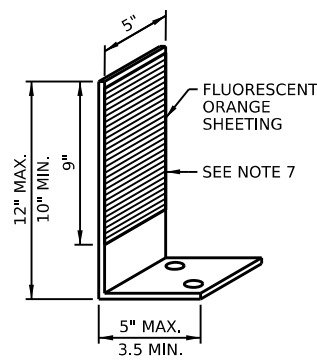
TYPE P



TYPE R



TYPE S



TYPE WZ

TOP-MOUNT

BARRIER DELINEATORS

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

DELINEATION

**GUIDE RAIL AND
BARRIER DETAILS**

RECOMMENDED XXX, XX, 2024

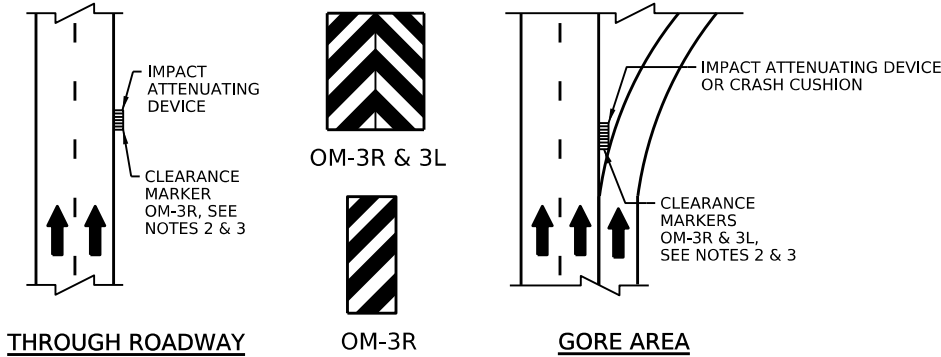
RECOMMENDED XXX, XX, 2024

SHEET 2 OF 5

MANAGER, TRAFFIC ENGINEERING AND
PERMITS SECTION

CHIEF, HIGHWAY SAFETY AND TRAFFIC
OPERATIONS DIVISION

TC-8604



**DELINEATION OF IMPACT ATTENUATING DEVICES
AND CRASH CUSHIONS**

NOTES:

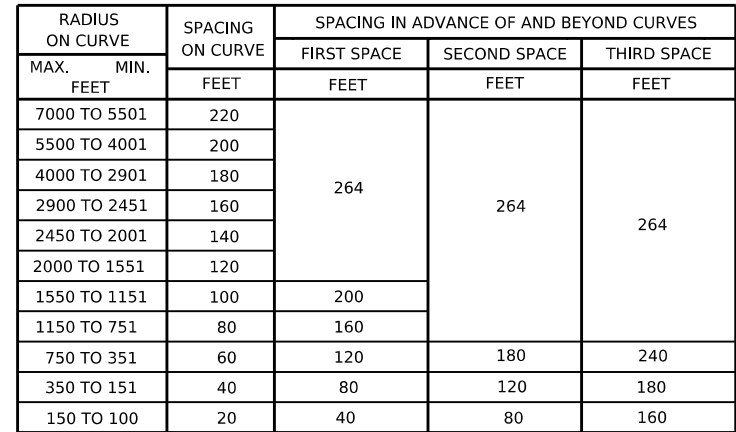
1. PROVIDE MATERIALS AND CONSTRUCT AS SPECIFIED IN PUBLICATION 408.
2. FOR PERMANENT IMPACT ATTENUATING DEVICES OR CRASH CUSHIONS, WHERE A TYPE 3 OBJECT MARKER IS TO BE APPLIED TO THE APPROACH END OF AN IMPACT ATTENUATING DEVICE OR CRASH CUSHION, AFFIX SHEETING WITHOUT A SUBSTRATE DIRECTLY TO THE APPROACH END OF THE IMPACT ATTENUATING DEVICE OR CRASH CUSHION IN A RECTANGULAR SHAPE WITH ALTERNATING BLACK AND RETROREFLECTIVE YELLOW STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45° TOWARD THE SIDE OF THE OBSTRUCTION ON WHICH TRAFFIC IS TO PASS.
3. FOR WORK ZONES WITH TEMPORARY IMPACT ATTENUATING DEVICES OR CRASH CUSHIONS, PROVIDE VERTICAL RECTANGLE, STANDARD ALUMINUM, PRESSURE SENSITIVE CLEARANCE MARKERS, W16-2R AND/OR W16-2L. ATTACH MARKERS DIRECTLY TO THE LEADING END OF TEMPORARY IMPACT ATTENUATING DEVICES OR CRASH CUSHIONS. ON INERTIAL BARRIERS (SAND BARRELS), PROVIDE SENSITIVE SHEETING, WITHOUT RIGID BACKING, DIRECTLY TO BARRIER FRONT OR NOSE SECTIONS. DO NOT POST-MOUNT MARKERS IN FRONT OF TEMPORARY IMPACT ATTENUATING DEVICES OR CRASH CUSHIONS. MARKERS ARE PROVIDED IN TWO SIZES: 12" X 36" AND 18" X 36". WHEN ONE MARKER IS REQUIRED, USE 18" X 36". WHEN TWO MARKERS ARE REQUIRED SIDE BY SIDE, USE 12" X 36". INSTALL CLEARANCE MARKERS WITH ALTERNATING BLACK AND RETROREFLECTIVE ORANGE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45° TOWARD THE SIDE OF THE OBSTRUCTION ON WHICH TRAFFIC IS TO PASS.
4. FOR ADDITIONAL DELINEATION, A GROUND-MOUNTED POST OR SURFACE-MOUNTED POST (SEE SHEET 1) MAY BE INSTALLED A MINIMUM OF 3' IN ADVANCE OF AN IMPACT ATTENUATING DEVICE.
5. USE ANY BULLETIN 15 APPROVED SHEETING.

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

DELINEATION

**IMPACT ATTENUATING
DEVICE DETAILS**

RECOMMENDED XXX, XX, 2024	RECOMMENDED XXX, XX, 2024	SHEET 3 OF 5
MANAGER, TRAFFIC ENGINEERING AND PERMITS SECTION	CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION	TC-8604



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF OPERATIONS

DELINEATION

LOCATION DETAILS

INTERCHANGE AREAS

RECOMMENDED XXX. XX, 2024

CHIEF, HIGHWAY SAFETY AND TRAFFIC
OPERATIONS DIVISION

SHEET 4 OF 5

TC-8604

1. LOCATION:

- A. LIGHTED THROUGH ROADWAYS - DO NOT PLACE DELINEATORS ON THE THROUGH ROADWAY BETWEEN INTERCHANGES WHERE FIXED SOURCE LIGHTING IS INSTALLED UNLESS OTHERWISE SPECIFIED.
- B. UNLIGHTED THROUGH ROADWAYS - ON ROADWAYS WITHOUT FIXED SOURCE LIGHTING, CONTINUOUSLY PLACE DELINEATORS ALONG THE RIGHT SIDE OF THE THROUGH ROADWAYS. 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 HORIZONTAL CURVES WITH A RADIUS OF 2000' OR LESS.

III. ALONG COMBINATIONS OF OVER-VERTICALS AND RIGHT-HAND HORIZONTAL CURVES WITH A RADIUS LESS THAN 2900'.

IV. ON THE APPROACH AND THROUGHOUT LEFT LANE DROPS OR PAVEMENT WIDTH TRANSITIONS.

V. WITHIN THE LIMITS OF MEDIAN CROSSEOVERS (AS SHOWN ON SHEET 4).

VI. WITHIN THE LIMITS OF VARIABLE MEDIAN WIDTHS (AS SHOWN ON SHEET 4).

VII. ALONG PAVED MEDIANS WITH CURBING.
- C. INTERCHANGE AREAS - PLACE DELINEATORS ALONG THE RIGHT SIDE IN ALL INTERCHANGE AREAS AND ALONG THE LEFT SIDE WITHIN THE LIMITS OF ALL LEFT-HAND RAMPS. PLACE DELINEATORS ALONG ACCELERATION, DECELERATION AND SPEED CHANGE LANES; ALONG THE RIGHT SIDE OF THE THROUGH ROADWAY AND ALONG THE OUTSIDE OR BOTH SIDES AS SPECIFIED ON ALL RAMPS.
- D. BRIDGE PARAPETS - PLACE DELINEATORS ON PARAPETS OF ALL BRIDGES WHERE RPMs ARE USED ON APPROACH ROADWAY.
- E. SPECIAL PURPOSE DELINEATION - PLACE OBJECT AND CLEARANCE MARKER GROUP (OM SERIES) ALONG THE THROUGH ROADWAY AND WITHIN THE INTERCHANGE AREA AS SPECIFIED IN ADDITION TO THE ABOVE SPECIFIED DELINEATORS.
- F. MAINTENANCE MARKERS - PLACE ONE RED FLEXIBLE DELINEATOR POST ADJACENT TO NEAR EDGE OF MAINTENANCE APPURTENANCE (END PIPE, END WALL, INLET, END OF GUIDE RAIL, ETC.....). MATCH REFLECTIVE SHEETING COLOR WITH THE NEAREST PAVEMENT MARKING EDGE LINE COLOR.

2. LONGITUDINAL SPACING:

- A. RIGHT SIDE OF THROUGH ROADWAYS - INSTALL DELINEATORS AT 264' EXCEPT IN INTERCHANGE AREAS WITH RIGHT - HAND RAMPS, ACCELERATION OR DECELERATION LANES AND ALONG HORIZONTAL CURVES.
- B. LEFT SIDE OF THROUGH ROADWAYS - WHEN REQUIRED, INSTALL DELINEATORS AT 264' EXCEPT IN INTERCHANGE AREAS WITH LEFT-HAND RAMPS, ACCELERATION OR DECELERATION LANES, ON MEDIAN BARRIERS AND ALONG HORIZONTAL CURVES.
- C. INTERCHANGE AREAS - SPACE DELINEATORS IN INTERCHANGE AREA AT 132'.
- D. HORIZONTAL CURVES - SPACE DELINEATORS AS INDICATED IN THE TABLE "GROUND/SURFACE-MOUNTED DELINEATOR SPACING ON CURVES," SEE SHEET 4.
- E. EXIT GORES, CHANNELIZING ISLANDS AND RAMP TERMINALS - THE DESIGN VARIES SUFFICIENTLY AT THESE LOCATIONS MAKING TYPICAL SPACING UNAVAILABLE FOR EVERY SITUATION. DETERMINE DELINEATOR SPACING AND APPLICATION ON SITE AND AS DIRECTED BY THE ENGINEER. HOWEVER, USE A MINIMUM SPACING OF 20' EXCEPT AS INDICATED.
- F. SPECIAL PURPOSE DELINEATION - PLACE SPECIAL PURPOSE DELINEATION (OM SERIES) ALONG THE ROADWAY WITHOUT REGARD TO LONGITUDINAL SPACING. SPACE DELINEATION ON MEDIAN BARRIERS ACCORDING TO NOTE 4 ON SHEET 2.
- G. MEDIAN CROSSEOVERS - PLACE DELINEATORS AT 100' SPACING AS INDICATED ON SHEET 4 WITH A MINIMUM OF FIVE DELINEATORS ON THE APPROACH TO THE CROSSOVER AND THREE DELINEATORS BEYOND THE CROSSOVER.
- H. MAINTENANCE MARKERS - PLACE MAINTENANCE MARKERS ALONG THE ROADWAY WITHOUT REGARD TO LONGITUDINAL SPACING.

3. VERTICAL PLACEMENT:

INSTALL DELINEATORS THAT 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 SHOULDER, OR AS DIRECTED.
- B. GUIDE RAIL - INSTALL DELINEATORS IN THE WEB OF GUIDE RAIL OR ON GUIDE RAIL POSTS AS INDICATED ON SHEET 2, IF THE GUIDE RAIL IS LESS THAN 8' FROM THE OUTER EDGE OF SHOULDER. DO NOT USE GROUND-MOUNTED DELINEATORS IN AREAS WITH GUIDE RAIL. IF THE GUIDE RAIL IS MORE THAN 8' FROM THE OUTER EDGE OF THE SHOULDER, INSTALL DELINEATORS AS SPECIFIED IN NOTE 4.A.
- C. CURB IN PLACE - INSTALL DELINEATORS IMMEDIATELY BEHIND CURB PROVIDED PLACEMENT WILL NOT EXCEED 8' BEHIND THE EDGE OF SHOULDER. IF THE CURB IS MORE THAN 8' FROM THE EDGE OF SHOULDER, INSTALL DELINEATORS AS SPECIFIED IN NOTE 4.A.
- D. OBJECT MARKERS - INSTALL OBJECT MARKERS ADJACENT TO NEAR EDGE OF THE OBSTRUCTION.
- E. MAINTENANCE MARKERS - INSTALL MARKERS ADJACENT TO NEAR EDGE OF THE APPURTENANCE (END PIPE, END WALL, INLET, END OF GUIDE RAIL, ETC....).

5. TYPES OF DELINEATOR:

- A. WHITE DELINEATORS - PLACE WHITE POST WITH WHITE REFLECTIVE SHEETING ON RIGHT SIDE OF THROUGH ROADWAYS, ALONG RIGHT-HAND ACCELERATION, DECELERATION AND SPEED-CHANGE LANES, RAMPS AND ON CHANNELIZING OR DIVISIONAL ISLANDS WHERE TRAFFIC IN THE SAME DIRECTION MAY PROCEED ON BOTH SIDES OF THE ISLAND.
- B. YELLOW DELINEATORS - PLACE YELLOW POST WITH YELLOW REFLECTIVE SHEETING ON LEFT SIDE OF THROUGH ROADWAYS (E.G., FREEWAYS, EXPRESSWAYS, DIVIDED HIGHWAYS), RAMPS AND ON CHANNELIZING OR DIVISIONAL ISLANDS WHERE TRAFFIC IN THE SAME DIRECTION TRAVELS TO THE RIGHT OF THE ISLAND AND ALONG LEFT-HAND ACCELERATION, DECELERATION AND SPEED CHANGE LANES AND ON FAR SIDE OF MEDIAN CROSSEOVERS.
- C. RED DELINEATORS - PLACE RED POST WITH RED REFLECTIVE SHEETING ON RIGHT, LEFT, OR BOTH SIDES OF ROADWAYS OR RAMPS TO INDICATE WRONG-WAY MOVEMENT. ALSO PLACE ON BOTH SIDES OF RUN-AWAY TRUCK ESCAPE RAMPS.
- D. SPECIAL PURPOSE DELINEATOR (OM1-3) MARKERS - PLACE MARKERS AT LOCATIONS SHOWN ON SHEETS 3 & 4.
- E. MAINTENANCE MARKERS - PLACE RED POST WITH REFLECTIVE SHEETING COLOR TO MATCH THE NEAREST PAVEMENT MARKING EDGE LINE COLOR.

NOTES:

1. MAINTENANCE MARKERS ARE RED FLEXIBLE DELINEATOR POSTS INSTALLED TO CALL OUT THE LOCATION OF END PIPES, END WALLS, INLETS, END OF GUIDE RAIL, ETC. FOR MAINTENANCE PURPOSES ONLY. ANY MAINTENANCE APPURTENANCE WITHIN OR ADJACENT TO THE ROADWAY THAT IS DEEMED AN OBSTRUCTION SHOULD BE REMOVED, MODIFIED OR DELINEATED AS SUCH. INSTALL RED FLEXIBLE DELINEATOR POSTS A MINIMUM OF 3' AWAY FROM THE IMPACT ATTENUATOR.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF OPERATIONS

DELINEATION AND MARKERS

LOCATION / PLACEMENT NOTES

RECOMMENDED XXX. XX, 2024

RECOMMENDED XXX. XX, 2024

SHEET 5 OF 5

MANAGER, TRAFFIC ENGINEERING AND PERMITS SECTION

CHIEF, HIGHWAY SAFETY AND TRAFFIC OPERATIONS DIVISION

TC-8604