POST CLIP DETAIL

PART PLAN

NOTES:

FOR GENERAL NOTES, SEE SHEET 1 OF 16.
FOR EXTRUDED ALUMINUM PANEL AND POST CLIP DETAILS, SEE STANDARD PLANS 903.02 SHEET 4 OF 7.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL, JEFFERSON CITY, MO 65102
1-888-MO-DOT-Help (663-6683)

SIGN MOUNTING DETAILS
WIDE FLANGE (WF) POSTS

DATE EFFECTIVE: 01/04/2021
DATE REVISED: 01/04/2021
903.03BN SHEET NO. 4 OF 16
ROUND PIPE POST FOR GROUND MOUNTED SIGNS

<table>
<thead>
<tr>
<th>POST</th>
<th>BOLT</th>
<th>WASHER</th>
<th>BASE CONNECTION DATA TABLE (IN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ½</td>
<td>3 ½</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>180</td>
<td></td>
</tr>
</tbody>
</table>

ROUND PIPE POST AND FOOTING DATA TABLE

<table>
<thead>
<tr>
<th>SIZE</th>
<th>HEIGHT</th>
<th>LENGTH</th>
<th>FOOTING</th>
<th>CONCRETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ½</td>
<td>5.79</td>
<td>0.86</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>7.63</td>
<td>0.86</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>10.19</td>
<td>0.86</td>
<td>0.20</td>
<td></td>
</tr>
</tbody>
</table>

BOLT RETAINER

SHEET METAL BOLT RETAINER CUT FROM 20 GAUGE GALVANIZED SHEET METAL. PLACE BETWEEN BASE PLATE. THE WIDTH OF FIT PLATE IS LARGER THAN RETAINED BOLT SIZE.

PLAN VIEW

ROLLED CRIMP TO ENGAGE PIPE O.D.

FRICION CAP

ELEVATION

ROUND PIPE POST AND FOOTING

MULTI-DIRECTION SLIP BASE

POST INSTALLATION DETAILS

PIPED POST

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

POST EFFECTIVE: 01/01/2020

DATE ISSUED: 10/14/2020

903.03BN SHEET NO. 5 OF 16
Extruded Panel Mounting Detail

**Number of Bolts to Attach Steel Channel to PSST Post**

<table>
<thead>
<tr>
<th>Sign Height</th>
<th>No. of Bolts Per PSST Post Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'</td>
<td>2</td>
</tr>
<tr>
<td>2'</td>
<td>3</td>
</tr>
<tr>
<td>3'</td>
<td>4</td>
</tr>
<tr>
<td>4'</td>
<td>5</td>
</tr>
<tr>
<td>5'</td>
<td>6</td>
</tr>
<tr>
<td>6'</td>
<td>7</td>
</tr>
<tr>
<td>1'</td>
<td>8</td>
</tr>
</tbody>
</table>

**Notes:**
- Aluminum bolts shall be ASTM E 211, 2014-16 or 2017-16.
- Aluminum flat washers shall be ASTM E 209, ALCAS 2002-14 or 2024-16.
- Aluminum lock nuts (nylon insert) shall be ASTM E 211 or 2017-16.

For the general notes, see Sheet 1 of 16. For mounting height and offset details, see Sheet 10 of 16. For post clip details, see standard plans 903.02 Sheet 4 of 7. Alternate post mounting hardware use shall be on approved list.
WOOD POST DETAIL

U-CHANNEL POST DETAIL

U-CHANNEL POST-STUB DETAIL

MOUNTING DETAILS FOR EXTRUDED PANELS ON WOOD POST

NUMBER OF BOLTS TO ATTACH STEEL CHANNEL TO WOOD POST

<table>
<thead>
<tr>
<th>SIGN HEIGHT</th>
<th>NO. OF BOLTS PER WOOD POST SIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'</td>
<td>2</td>
</tr>
<tr>
<td>2'</td>
<td>3</td>
</tr>
<tr>
<td>3'</td>
<td>4</td>
</tr>
<tr>
<td>4'</td>
<td>5</td>
</tr>
<tr>
<td>5'</td>
<td>6</td>
</tr>
<tr>
<td>6'</td>
<td>7</td>
</tr>
<tr>
<td>7'</td>
<td>8</td>
</tr>
</tbody>
</table>

POST SIZE REQUIREMENTS

SIGN MOUNTING DETAILS WOOD AND U-CHANNEL POST

POST TYPE

<table>
<thead>
<tr>
<th>SIGN AREA (SQUARE FT.)</th>
<th>H-CHANNEL (LB/Ft.)</th>
<th>WOOD (1' X 4' X 4')</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 10</td>
<td>3-5</td>
<td>1-4' X 4'</td>
</tr>
<tr>
<td>&gt; 10 ≤ 10</td>
<td>2-3</td>
<td>2-4' X 6'</td>
</tr>
<tr>
<td>&gt; 10 ≤ 15</td>
<td>1-2</td>
<td>2-4' X 6'</td>
</tr>
<tr>
<td>&gt; 15 ≤ 20</td>
<td>1-1.5</td>
<td>2-4' X 6'</td>
</tr>
<tr>
<td>&gt; 20 ≤ 30</td>
<td>1-1</td>
<td>2-4' X 6'</td>
</tr>
<tr>
<td>&gt; 30 ≤ 50</td>
<td>N/A</td>
<td>2-6' X 6'</td>
</tr>
</tbody>
</table>

NOTES:

FOR GENERAL NOTES, SEE SHEET 11 OF 16.

ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 3 FEET INTO THE GROUND.

H-CHANNEL POST-STUB OVERLAP SHALL BE POSITIONED ENTIRELY BETWEEN GROUND LINE AND 10' ABOVE GROUND LINE.

FOR POST SIZING SEE ENGINEERING POLICY GUIDE.

FOR POST CLIP DETAILS, SEE STANDARD PLAN 903.00 SHEET 6 OF 7.

FOR MOUNTING HEIGHT AND OFFSET DETAILS, SEE SHEET 10 OF 16.
GENERAL NOTES:

SIGN MOUNTING BOLTS SHALL BE INSTALLED WITH A NYLON WASHER AGAINST THE SIGN FACE WITH A STEEL WASHER BETWEEN THE NYLON WASHER AND BOLT HEAD.

A LOCKNUT SHALL BE USED TO FASTEN THE SIGN TO THE POST.

VERTICAL CLEARANCE FROM THE RIDGEWAY SHALL BE NET AND INCREASED ONLY TO MEET THE 5' MINIMUM VERTICAL CLEARANCE FROM THE CURB.

HORIZONTAL OFFSET MAY BE ADJUSTED BASED ON FIELD CONDITIONS.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

SIGN MOUNTING DETAILS
MOUNTING HEIGHT & OFFSET
PIPE POSTS, PSST, WOOD & U-CHANNEL POSTS

DATE EFFECTIVE: 05/04/2021
DATE REVISED: 10/14/2020

903.03BN SHEET NO.
10 OF 16
CHANNEL POST DELINEATOR

GROUND MOUNT U-CHANNEL

CHANNEL POST DELINEATOR AND FASTENER DETAILS

SHOULDER MOUNTED
OUTSIDE CURB
NARROW PAVED MEDIAN

CHANNEL POST DELINEATOR MOUNTING DETAILS
DELINEATORS ON CONCRETE TRAFFIC BARRIER

FOR CONCRETE BARRIER DETAILS, SEE SHEET 617-10 OF BRIDGE PLANS.

NOTE:

- RETROREFLECTIVE YELLOW, WHITE OR RED SHEETING IN ACCORDANCE WITH SD-1087-2.7 SHALL BE APPLIED TO ONLY ONE SIDE OF THE DELINEATOR BODY.

- RETROREFLECTIVE SHEETING SHALL FOLLOW GUIDELINES OUTLINED IN SD 1087-2.7 FOR CORRECT APPLICATION OF SHEETING TO DELINEATOR BODY. THE COLOR OF THE SHEETING SHALL MATCH THE CLOSEST ADJACENT PAINTING MARKING.

ROADWAY OR BRIDGE CONCRETE TRAFFIC BARRIER DELINEATION

LEGEND

- WHITE DELINEATOR
- YELLOW DELINEATOR
- RED DELINEATOR

(1) SECONDARY DELINEATOR ON BACK SIDE NOT REQUIRED IF ROADWAY "A" HAS MORE THAN 2 LANES
Delineators on Guardrail

For guardrail details, see STIE Plans 606.00 and 606.50.

(1) A secondary delineator with red sheeting shall be attached to the back side of the channel when the delineation is placed along an interference zone and shall be viewed by drivers not traffic.
TYPICAL DIAMOND EXIT RAMP

TYPICAL DIAMOND ENTRANCE RAMP

NOTE:

1. USE YELLOW DOUBLE STACKED DELINEATORS FOR LEFT HAND ACCESS/DECEL LANE.

2. DELETE IF EMERGENCY REFERENCE MARKERS ARE NECESSARY.

3. EXTEND DELINEATORS ON ROUTES WITH EMERGENCY REFERENCE MARKERS.

4. ON ROUTES WITHOUT EMERGENCY REFERENCE MARKERS, DELINEATORS SHALL BE INSTALLED BETWEEN INTERCHANGES EVERY 500 FT.

LEGEND:
- WHITE DELINEATOR
- YELLOW DELINEATOR
- WHITE DOUBLE STACKED DELINEATOR
- RED DELINEATOR

DELINIEATOR SPACING ON HORIZONTAL CURVES

<table>
<thead>
<tr>
<th>SPACING ON CURVE (FEET)</th>
<th>SPACING IN ADVANCE OF AND BEHIND CURVE (FEET) 1ST</th>
<th>SPACING IN ADVANCE OF AND BEHIND CURVE (FEET) 2ND</th>
<th>SPACING IN ADVANCE OF AND BEHIND CURVE (FEET) 3RD</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>30</td>
<td>60</td>
<td>90</td>
</tr>
<tr>
<td>200</td>
<td>55</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>300</td>
<td>85</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>400</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>500</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>600</td>
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</tr>
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<td>800</td>
<td>100</td>
<td>100</td>
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</tr>
<tr>
<td>900</td>
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<td>100</td>
<td>100</td>
</tr>
<tr>
<td>1000</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

NOTE:
FOR GENERAL NOTES SEE SHEET 1 OF 16.

THE CONTRACT UNIT PRICE FOR EACH CHANNEL POST DELINIEATOR SHALL INCLUDE THE REFLECTOR, FASTENERS AND POST.
TYPE D GUARDRAIL

HEIGHT BEFORE GALLVANIZING OR FINISHING MUST AGREE WITH ABSOLUTE NO FURTHER TOLERANCE. DIMENSIONAL VARIATION OF COMMERCIAL TOLERANCE WILL BE ACCEPTABLE.

RIBER THREAD OR BOLT AS APPROVED BY THE ENGINEER.

HOLE PUNCHING TO EQUAL 2" DIAMETER HOLES, ONE HOLE CENTER TO CENTER, BEGINNING ONE-HALF INCH FROM THE END AND CONTINUING THE ENTIRE LENGTH OF THE POST.

OBJECT MARKER POST AND FASTENER DETAILS

MAX. 5/16 MAX. 5/16 STEEL POST (TYP.)

- - V-BEAM RAIL - -

PLAN

LENGTH OF V-BEAM RAIL = 12'-6 1/2"

ELEVATION

STEEL POST

12'-6"

TYPE D GUARDRAIL

TYPE D GUARDRAIL IS ACCESS RESTRAINT AND VISUAL TARGET VALUE ONLY. IT HAS NO REDIRECTIVE CAPABILITY.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-4MO-MP31 (1-888-466-6731)

SIGN MOUNTING DETAILS
OBJECT MARKERS FOR ROAD CLOSURE

NOTE:
FOR GENERAL NOTES SEE SHEET 1 OF 16.

(1) THE CONTRACTOR MAY FURNISH EQUIVALENT SECTIONS FABRICATED FROM MATERIAL MEETING ONE IN ACCORDANCE WITH SPECIFICATIONS.