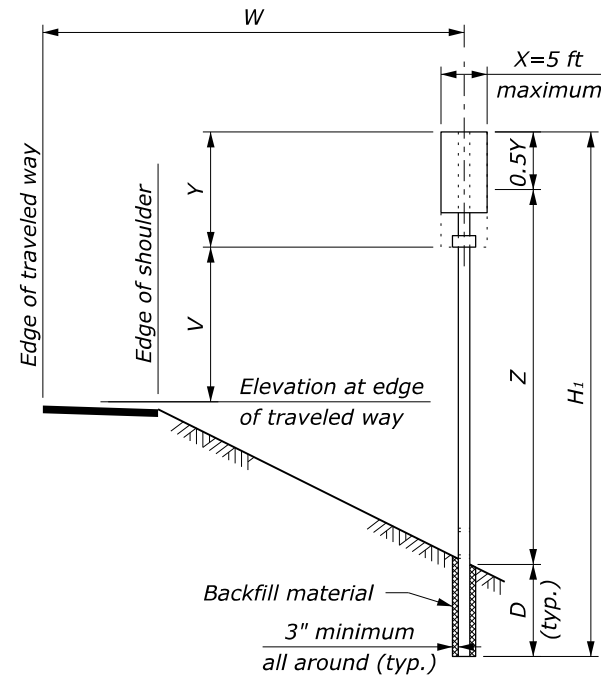
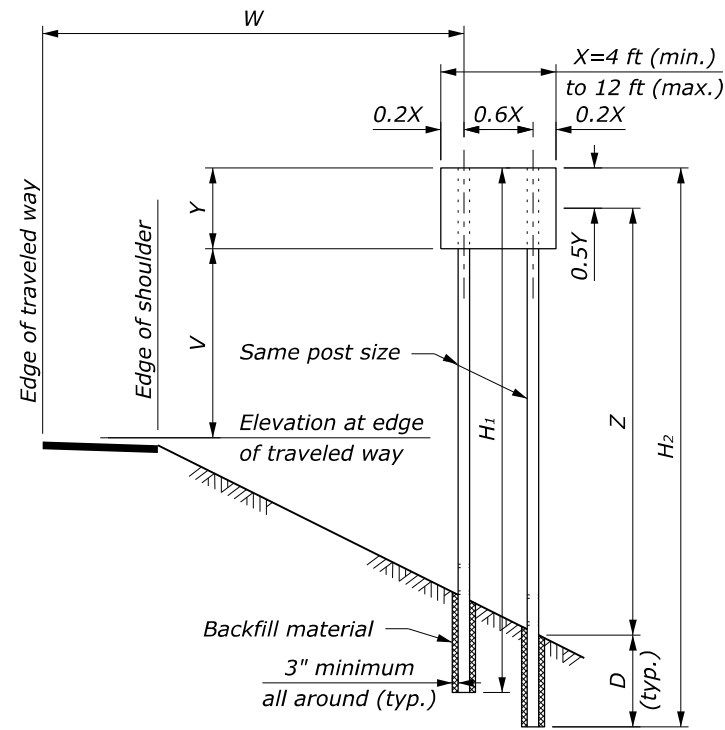


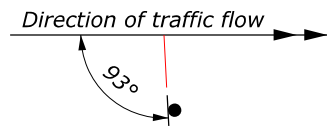
**POST DETAIL**



**SINGLE POST SIGNS**



**TWO POST SIGNS**



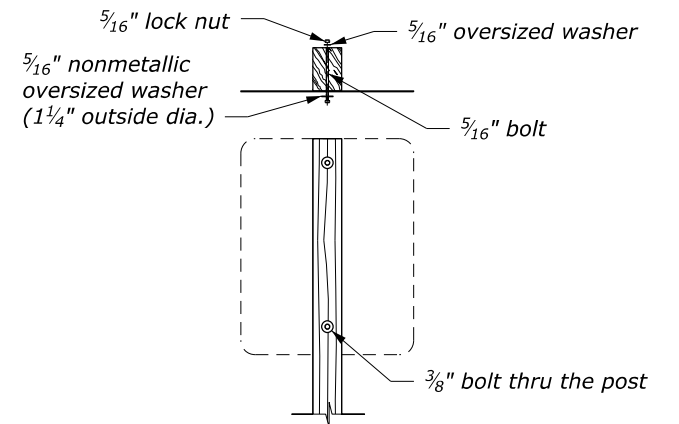
**SIGN INSTALLATION ANGLE**  
For all retroreflectorized signs where  $W > 25'$

MINIMUM DISTANCE TO SIGN		
Location	Lateral Offset (W)	Mounting Height (V)
Rural Districts	6 ft	5 ft
Business or Residence Districts	2 ft from curb	7 ft

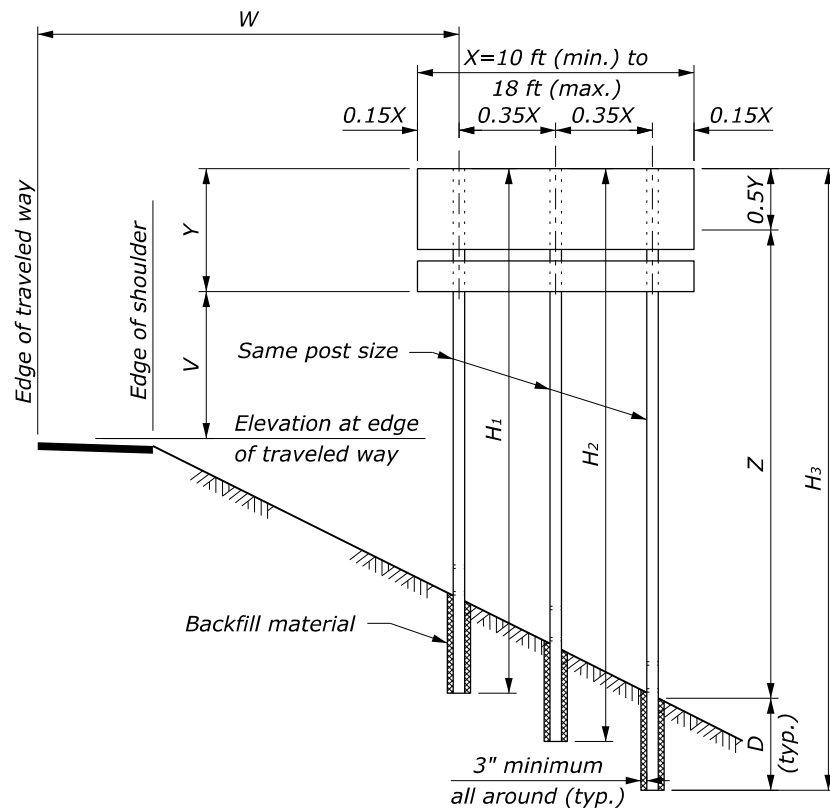
V may be reduced by 1 foot in rural districts for a secondary sign mounted below another sign.

**NOTE:**

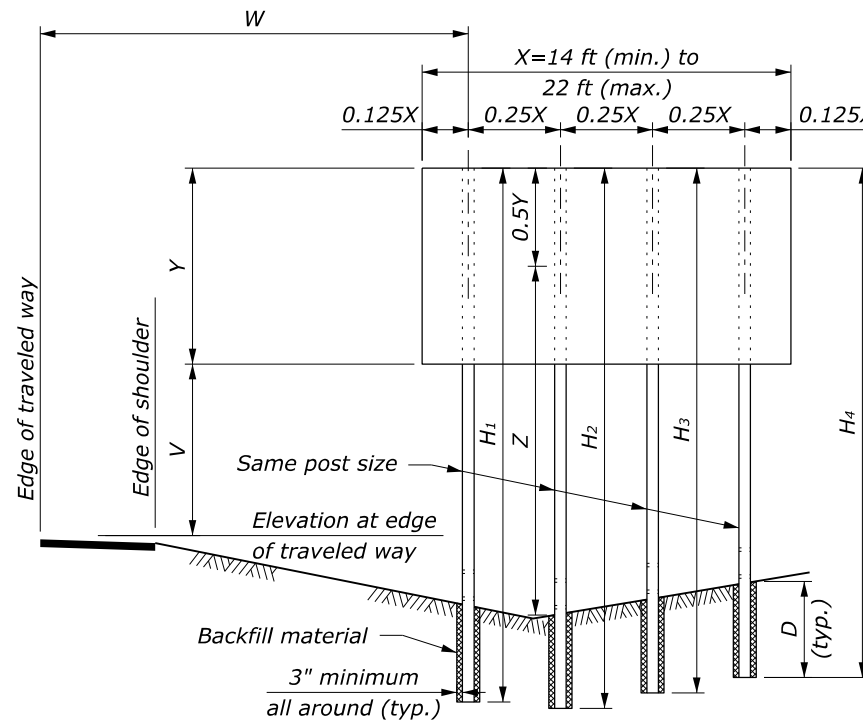
- Traffic barrier protection is required for all posts larger than 6" x 8" when located within the clear zone or if the post is vulnerable to being struck when placed outside the clear zone.
- H<sub>1</sub> thru H<sub>4</sub> indicate overall post length. Select post lengths to fit field conditions.
- D is the minimum post embedment depth for average soil conditions. See Wood Post Selection Table below.
- Z is the height from ground line to mid-height of sign at the longest post.
- For the purpose of post selection X and Y are as follows:
  - Single sign, or back to back signs: X and Y are the overall dimensions of the signs.
  - Multiple sign installations: X and Y are the dimensions of a rectangle enclosing all the signs.



**TYPICAL MOUNTING FOR SIGNS WITHOUT ANGLES**



**THREE POST SIGNS**



**FOUR POST SIGNS**

WOOD POST SELECTION TABLE						
POST SIZE (inch)	NUMBER OF POSTS				D	Notch depth and hole diameter
	1	2	3	4		
4 x 4	80	155	235	310	3'-0"	-
4 x 6	180	385	545	725	4'-0"	1 3/4"
6 x 6	235	475	710	950	4'-0"	1 3/4"
6 x 8	300	850	1280	1700	4'-0"	2 1/2"
6 x 10	385	1180	1170	2360	5'-0"	-
8 x 10	575	1610	2410	3215	5'-0"	-
8 x 12	775	2310	3465	4620	6'-0"	-

Values shown are the maximum permitted. If the product of XYZ exceeds the limit for the largest post, use steel post installation.

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
OFFICE OF FEDERAL LANDS HIGHWAY

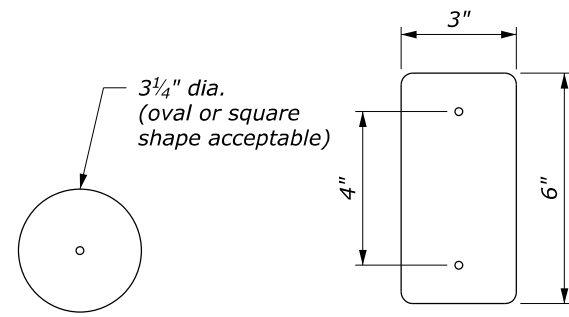
WFLHD DETAIL  
**PERMANENT SIGN INSTALLATION WOOD POSTS**

DETAIL APPROVED FOR USE 10/2009  
REVISED:

DETAIL  
W633-7

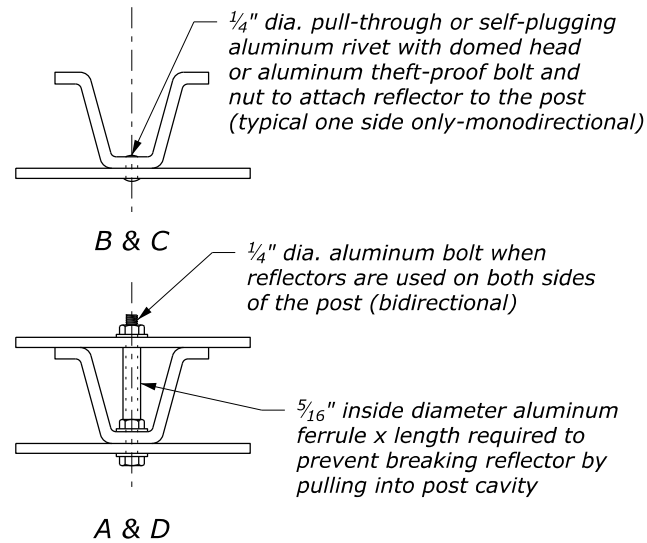
NO SCALE



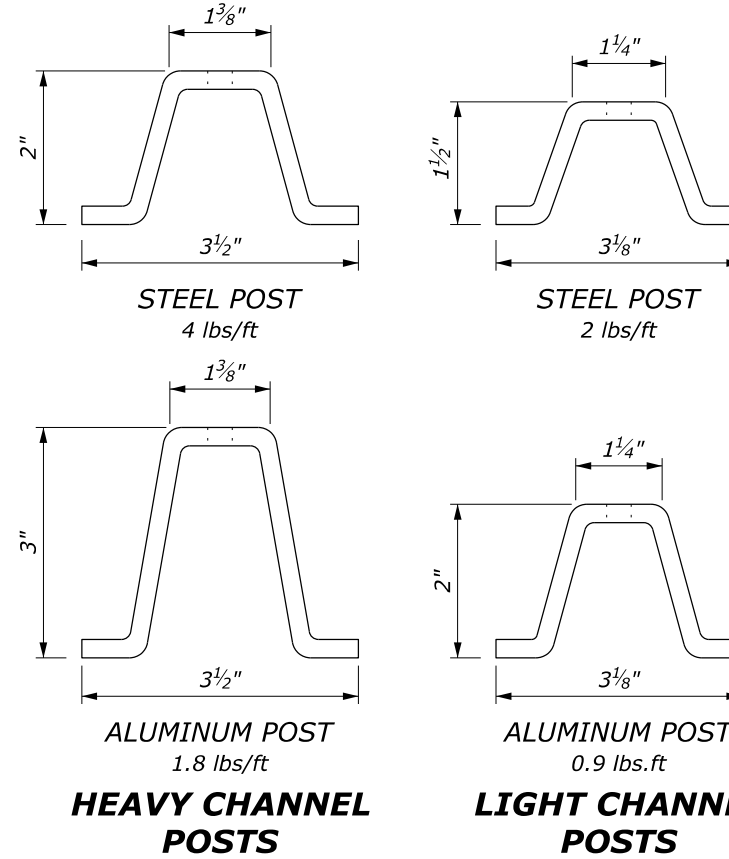


**REFLECTOR DETAILS**

DELINEATION MARKER REFLECTOR		
TYPE	COLOR OF REFLECTOR	REFLECTORIZED
A	White	Front & Rear
B	White	Front
C	Yellow	Front
D	Yellow	Front & Rear

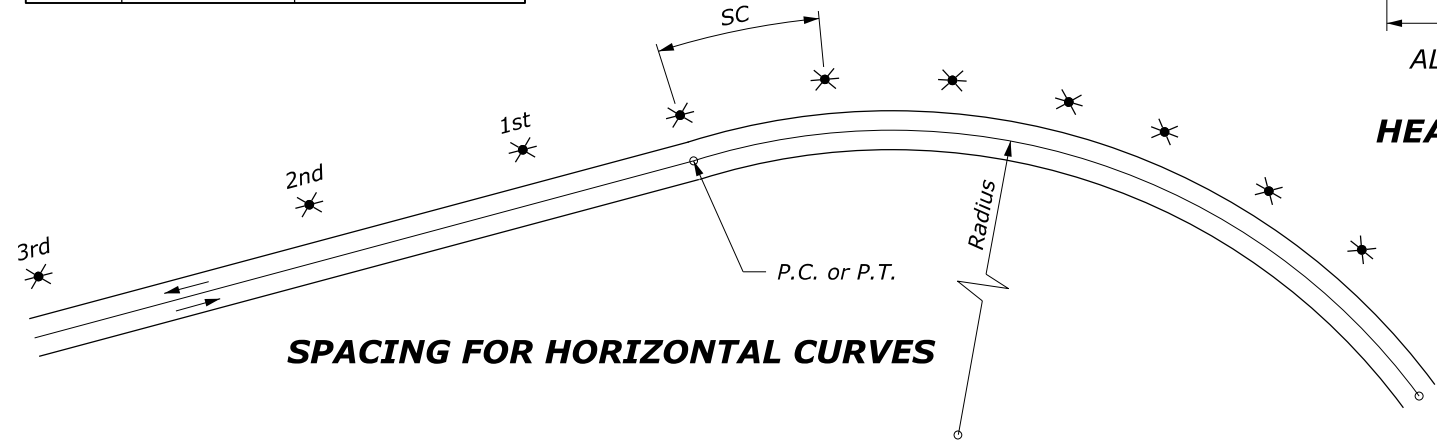


**ATTACHMENT DETAIL**



**NOTE:**

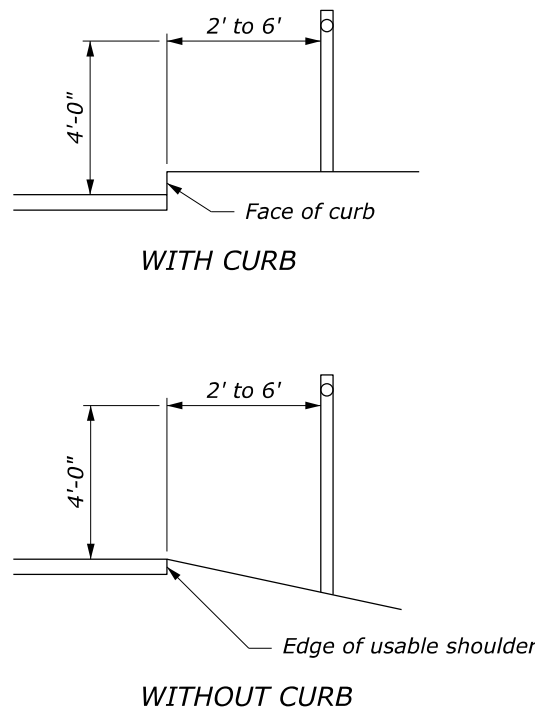
1. Vary the post spacing up to 1/8 of the spacing shown to clear driveways, cross roads, intersections or ramps. Eliminate the post in cases where the variation is exceeded.
2. Dimensions of channel posts shown indicate general design only and may vary slightly among manufacturers.
3. When specified, rectangular 3" x 6" reflectors may be used in lieu of double disk reflector.
4. Offset delineators 2 feet unless otherwise shown.
5. See plans for delineator reflector colors.
6. Use tangent spacing of 500 feet ± (525 feet maximum).
7. When the contract does not include the final pavement, allow for the ultimate base and pavement thickness when establishing the traffic delineator elevation.
8. On two way roads, stagger markers on opposite sides of the road.



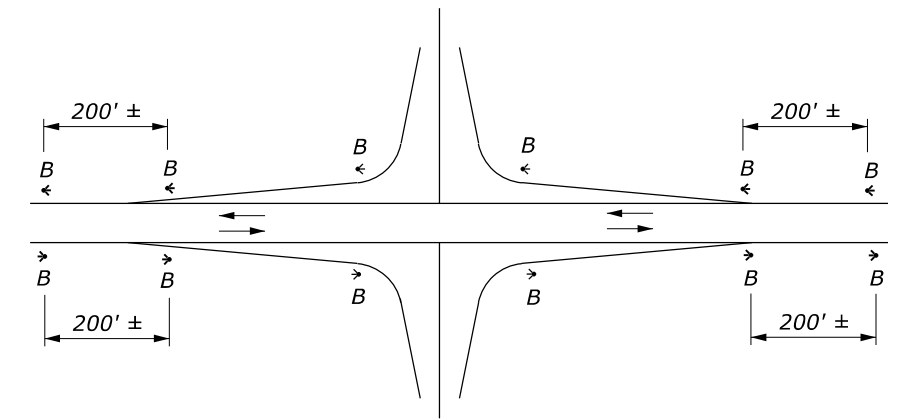
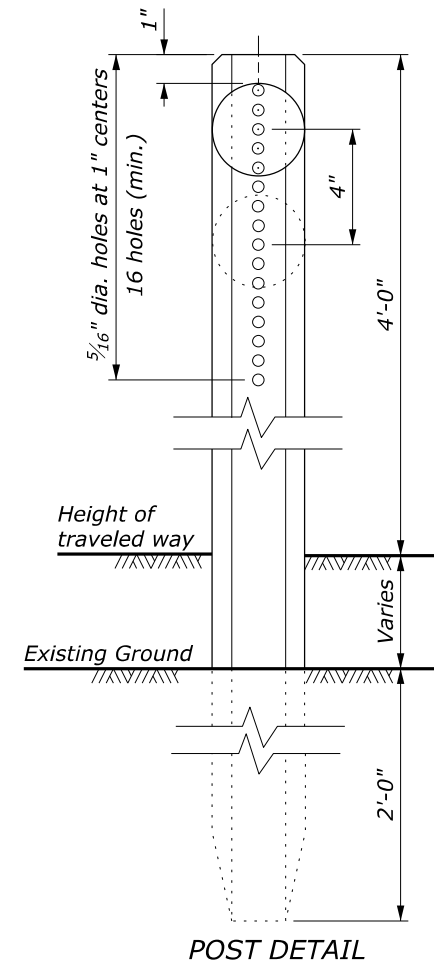
**SPACING FOR HORIZONTAL CURVES**

CURVE RADIUS (FEET)	HORIZONTAL CURVES			
	SPACING ON EACH SIDE OF ROADWAY (FEET)			
	ON CURVE *	IN ADVANCE OF & BEYOND CURVE		
	1st SPACE	2nd SPACE	3rd SPACE	
10,000	300	300	300	300
5,000	200	300	300	300
4,000	190	300	300	300
3,000	165	300	300	300
2,000	130	235	300	300
1,000	90	160	270	300
900	85	155	250	300
800	80	145	240	300
700	75	135	225	300
600	70	125	210	300
500	65	115	195	300
400	55	100	165	300
300	50	90	150	300
250	40	70	120	240
200	35	65	105	210
150	30	55	90	180
100	20	35	60	120
75	20	25	45	90

\* Spacing for specific radii not shown may be interpolated from the formula:  $Spacing = 3 \sqrt{R-50}$   
(Minimum spacing: 20 feet; Maximum spacing: 300 feet)



**TYPICAL INSTALLATION**



**Two Way Road ROAD INTERSECTIONS**

NO SCALE

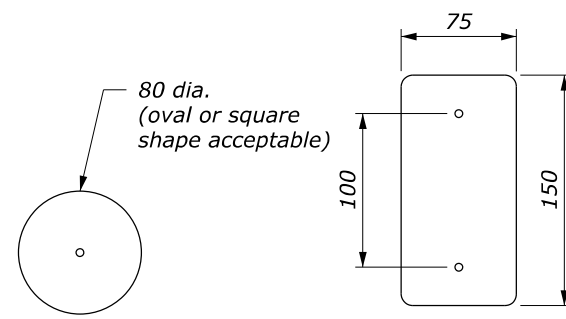
U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
OFFICE OF FEDERAL LANDS HIGHWAY

WFLHD DETAIL

**ALASKA DELINEATORS**

DETAIL APPROVED FOR USE 7/2016  
REVISED: \_\_\_\_\_

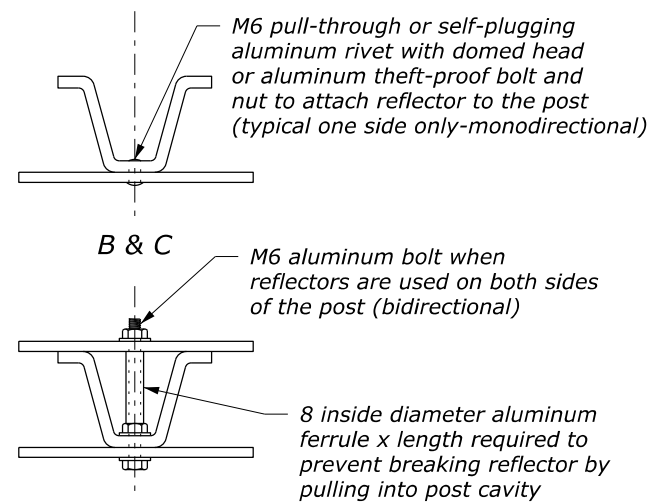
DETAIL W633-40



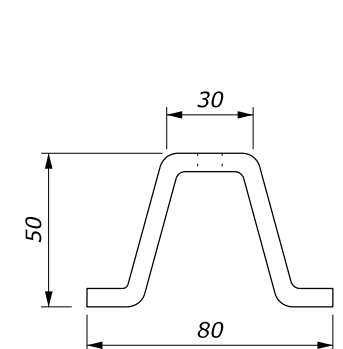
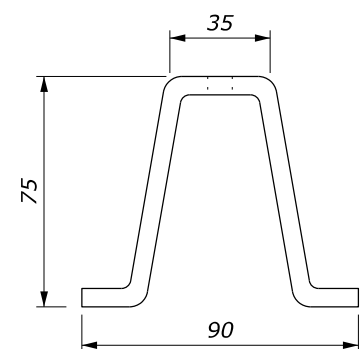
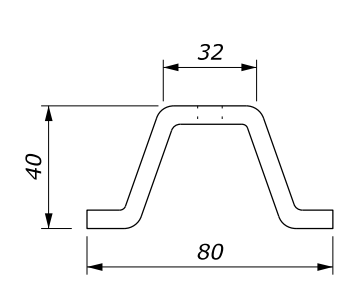
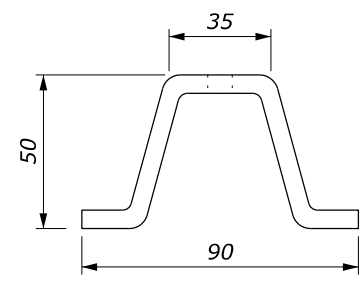
**REFLECTOR DETAILS**

**DELINEATION MARKER REFLECTOR**

TYPE	COLOR OF REFLECTOR	REFLECTORIZED
A	White	Front & Rear
B	White	Front
C	Yellow	Front
D	Yellow	Front & Rear



**ATTACHMENT DETAIL**

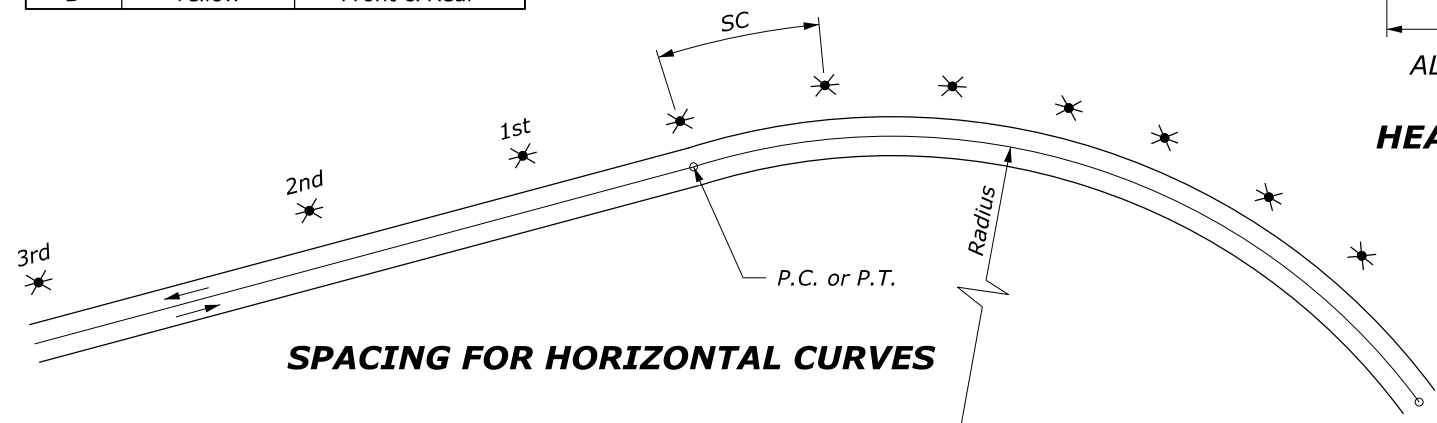


**HEAVY CHANNEL POSTS**

**LIGHT CHANNEL POSTS**

**NOTE:**

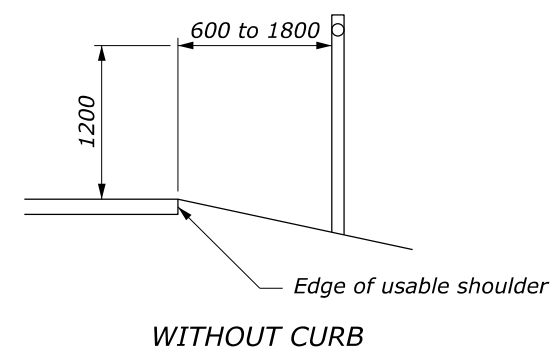
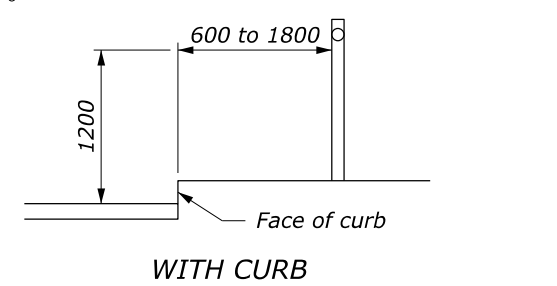
1. Vary the post spacing up to 1/8 of the spacing shown to clear driveways, cross roads, intersections or ramps. Eliminate the post in cases where the variation is exceeded.
2. Dimensions of channel posts shown indicate general design only and may vary slightly among manufacturers.
3. When specified rectangular 75 x 150 mm reflectors may be used in lieu of double disk reflector.
4. Offset delineators 600 mm unless otherwise shown.
5. See plans for delineator reflector colors.
6. Use tangent spacing of 150 m ± (160 m maximum).
7. When the contract does not include the final pavement, allow for the ultimate base and pavement thickness when establishing the traffic delineator elevation.
8. On two way roads, stagger markers on opposite sides of the road.
9. Furnish hardware in the metric sizes shown. Equivalent US Customary sizes may be used when metric sizes are unavailable.
10. Dimensions without units are millimeters.



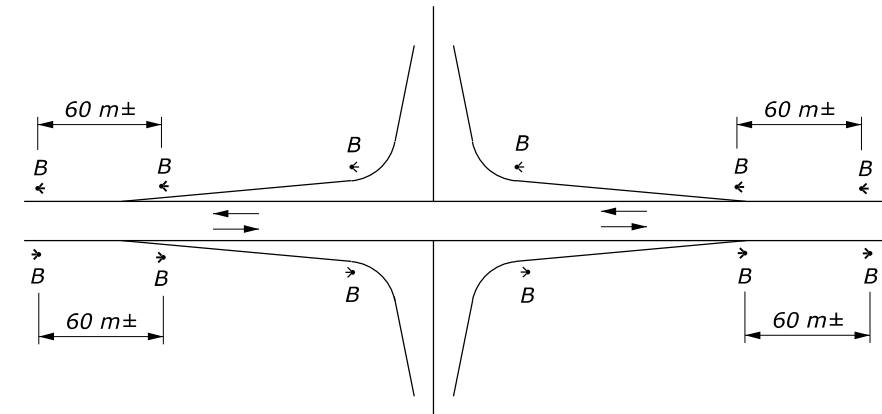
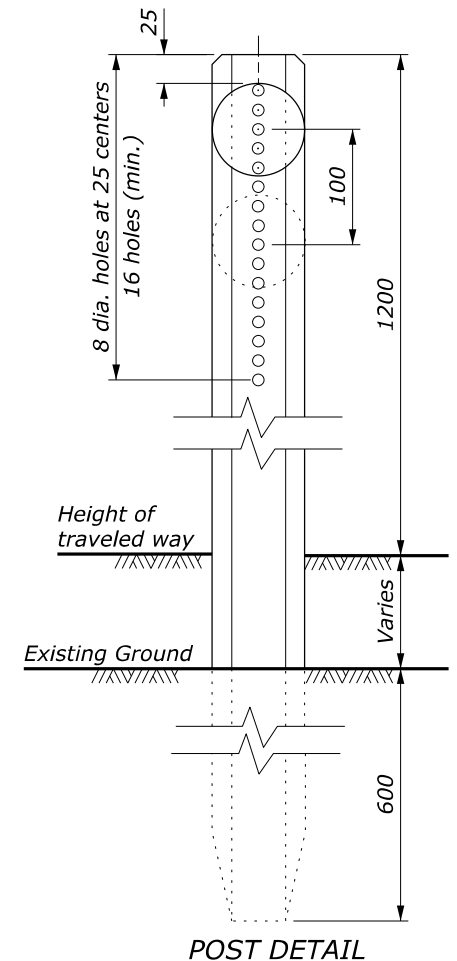
**SPACING FOR HORIZONTAL CURVES**

CURVE RADIUS (METERS)	SPACING ON EACH SIDE OF ROADWAY (METERS)			
	ON CURVE *	IN ADVANCE OF & BEYOND CURVE		
		1st SPACE	2nd SPACE	3rd SPACE
3000	90	90	90	90
1500	64	90	90	90
1200	57	90	90	90
900	49	90	90	90
600	40	80	90	90
300	28	56	84	90
270	26	52	78	90
240	25	50	75	90
210	23	46	69	90
180	22	44	66	90
150	19	38	57	90
120	17	34	51	90
90	14	28	42	84
75	13	26	39	78
60	11	22	33	66
45	9	18	27	54
30	6	12	18	36
25	6	12	18	36

\* Spacing for specific radii not shown may be interpolated from the formula:  $Spacing = 1.65 \sqrt{R-15}$   
(Minimum spacing: 6 m; Maximum spacing: 90 m)



**TYPICAL INSTALLATION**



**Two Way Road ROAD INTERSECTIONS**

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
OFFICE OF FEDERAL LANDS HIGHWAY

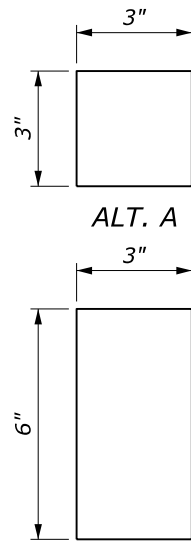
WFLHD METRIC DETAIL

**ALASKA DELINEATORS**

DETAIL APPROVED FOR USE 7/2016  
REVISED:

DETAIL WM633-40

NO SCALE

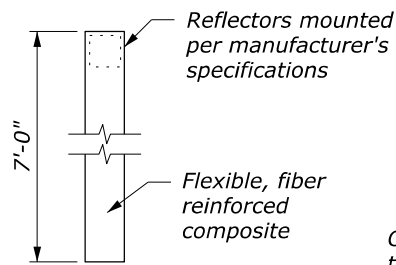


ALT. A

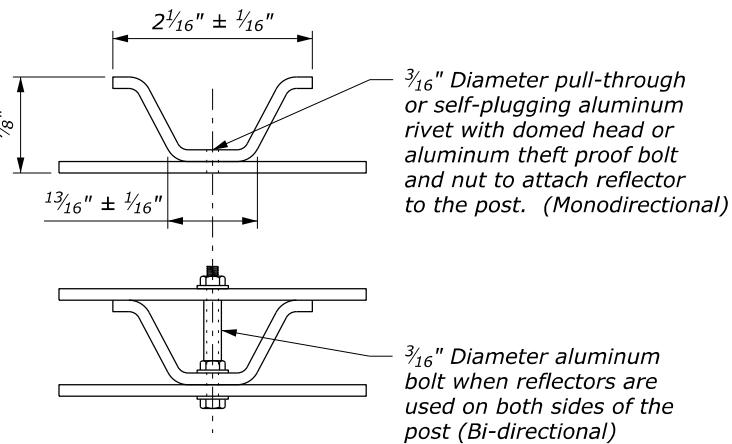
ALT. B

Mount reflectors on aluminum or apply directly to flexible post

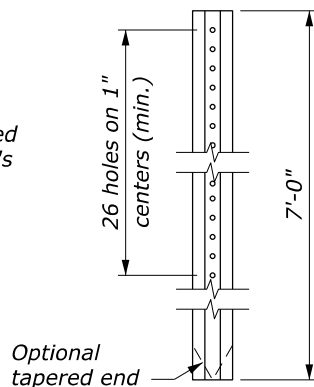
**REFLECTIVE SHEETING**



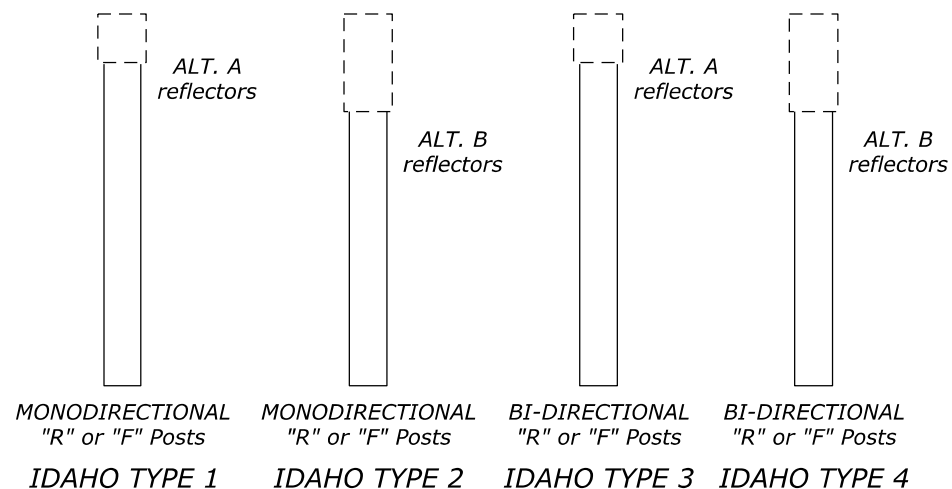
FLEXIBLE, SELF ERECTING OR YIELDING; WHITE UNLESS OTHERWISE NOTED  
**POST "F" DETAIL**



ATTACHMENT DETAIL For "R" Post



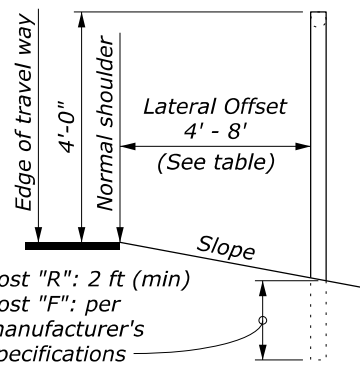
RIGID STEEL OR ALUMINUM (ALL HOLES 1/4" DIAMETER)  
**POST "R" DETAIL**



**DELINEATORS**

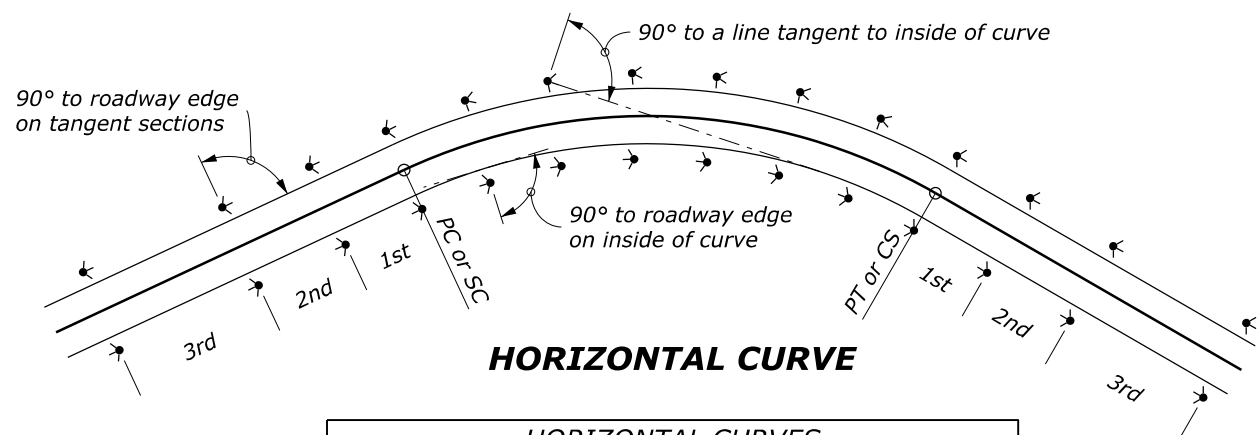
**NOTE:**

- Where delineators are used only on curves, place three delineators outside the curve limits.
- Place Type 3 delineators on the left side of two-way roadways at extreme curves with radii less than 984 feet to the right. They may also be installed where it is not possible or practical to install and maintain right-hand delineation on both sides.
- If horizontal and vertical curves are combined, use the more restrictive spacing.
- Where delineators are used on tangents, space the delineators at 528 feet. Begin the tangent spacing beyond the spacing requirements for horizontal and vertical curves.
- Delineator reflector colors are shown in the plans. Delineator type includes the post type, for example: Type 1R or Type 3F, etc.
- When the contract does not provide for the construction of the ultimate pavement, allow for the thickness of base and pavement to be placed later when establishing the elevation of the traffic delineators.
- Vary the post spacing up to 1/8 of the spacing shown to clear driveways, cross roads, intersections or ramps. Eliminate the post if the variation is exceeded.



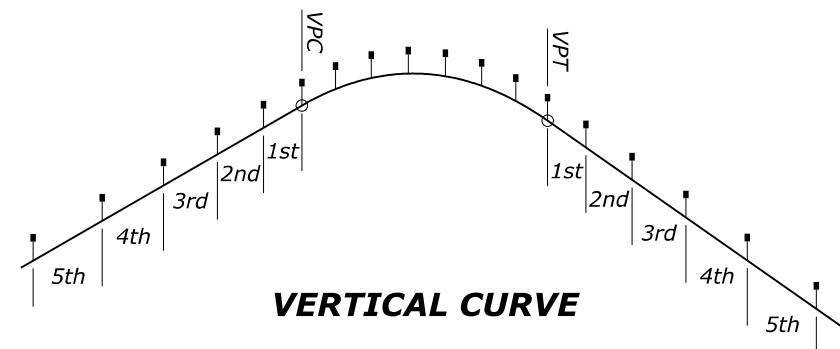
LATERAL PLACEMENT TABLE	
SLOPE	OFFSET
1V:4H	4'-0" to 6'-0"
1V:6H or flatter	6'-0" to 8'-0"
Curb Section	6'-0"

**TYPICAL INSTALLATION**



**HORIZONTAL CURVE**

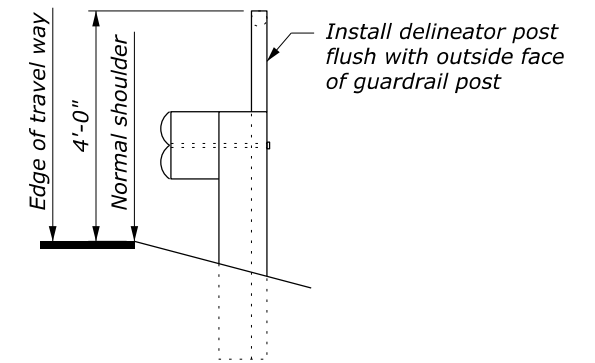
HORIZONTAL CURVES				
CURVE RADIUS (FEET)	SPACING ON EACH SIDE OF ROADWAY (FEET)			
	ON CURVE	BEYOND SC, CS, PC or PT		
		1st SPACE	2nd SPACE	3rd SPACE
≥ 6000	300	528	528	528
1450 - 5999	150	300	528	528
480 - 1449	100	200	300	528
240 - 479	75	150	225	528
< 240	50	100	150	300



**VERTICAL CURVE**

CREST VERTICAL CURVES						
K	SPACING ON EACH SIDE OF ROADWAY IN FEET					
	ON CURVE	BEYOND VPC or VPT				
		1st SPACE	2nd SPACE	3rd SPACE	4th SPACE	5th SPACE
≥ 550	528	528	528	528	528	528
400 - 549	300	528	528	528	528	528
200 - 399	200	300	528	528	528	528
100 - 199	100	150	200	300	528	528
50 - 99	75	100	150	200	300	528
< 50	50	75	100	150	200	300

$K = L/A$  where  $L$  = Length of vertical curve in feet  
 $A$  = Algebraic grade change in %



**TYPICAL INSTALLATION WITH BEAM TYPE GUARD RAIL**

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
OFFICE OF FEDERAL LANDS HIGHWAY

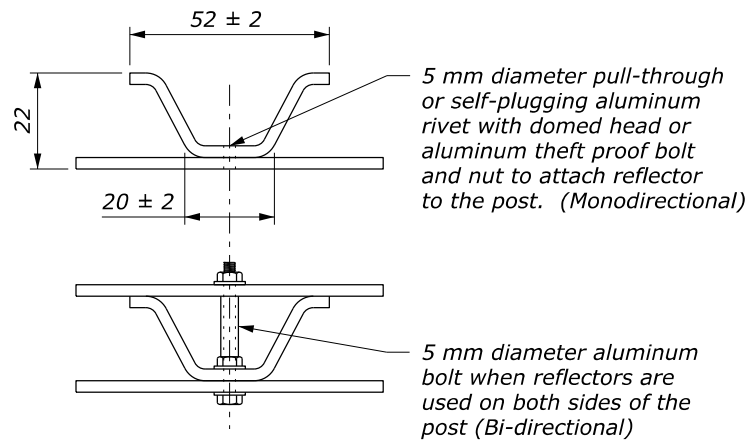
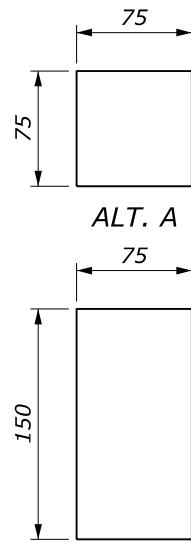
WFLHD DETAIL

**IDAHO DELINEATORS**

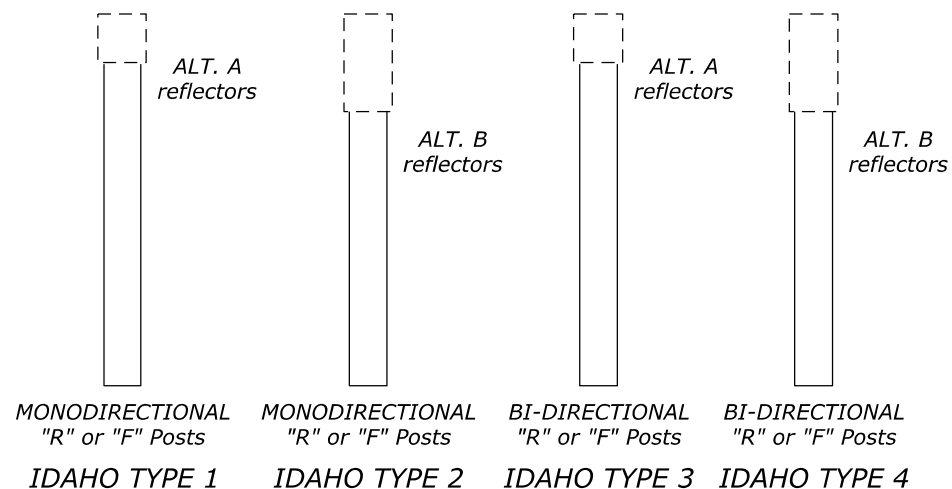
DETAIL APPROVED FOR USE 9/2009  
REVISID:

DETAIL  
W633-50

NO SCALE



ATTACHMENT DETAIL For "R" Post

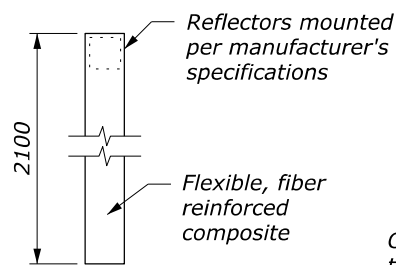


**DELINEATORS**

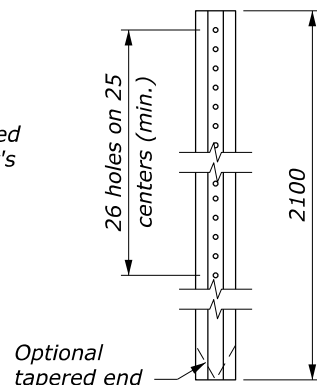
**NOTE:**

- Where delineators are used only on curves, place three delineators outside the curve limits.
- Place Type 3 delineators on the left side of two-way roadways at extreme curves with radii less than 300 m to the right. They may also be installed where it is not possible or practical to install and maintain right-hand delineation on both sides.
- If horizontal and vertical curves are combined, use the more restrictive spacing.
- Where delineators are used on tangents, space the delineators at 160 meters. Begin the tangent spacing beyond the spacing requirements for horizontal and vertical curves.
- Delineator reflector colors are shown in the plans. Delineator type includes the post type, for example: Type 1R or Type 3F, etc.
- When the contract does not provide for the construction of the ultimate pavement, allow for the thickness of base and pavement to be placed later when establishing the elevation of the traffic delineators.
- Vary the post spacing up to 1/8 of the spacing shown to clear driveways, cross roads, intersections or ramps. Eliminate the post if the variation is exceeded.
- Furnish hardware in the metric sizes shown. Equivalent US Customary sizes may be used when metric sizes are unavailable.
- Dimensions without units are millimeters.

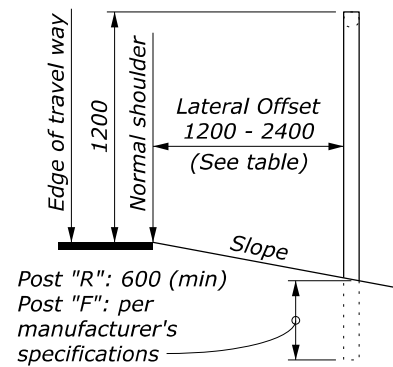
**REFLECTIVE SHEETING**



FLEXIBLE, SELF ERECTING OR YIELDING; WHITE UNLESS OTHERWISE NOTED  
**POST "F" DETAIL**

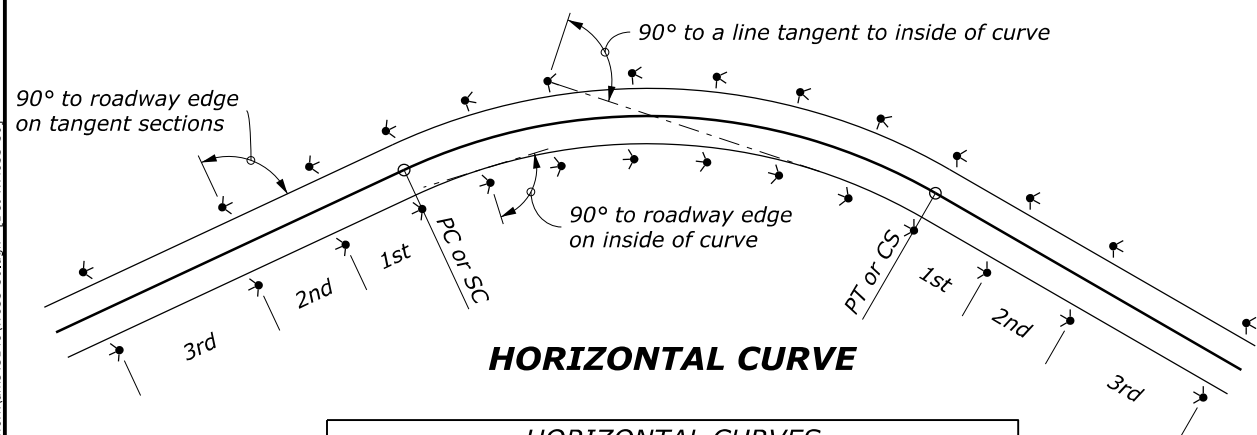


RIGID STEEL OR ALUMINUM (ALL HOLES 6.5 mm DIAMETER)  
**POST "R" DETAIL**



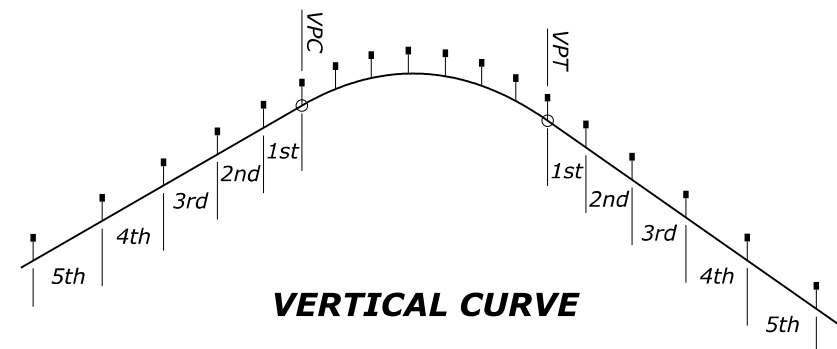
LATERAL PLACEMENT TABLE	
SLOPE	OFFSET
1V:4H	1200 to 1800
1V:6H or flatter	1800 to 2400
Curb Section	1800

**TYPICAL INSTALLATION**



**HORIZONTAL CURVE**

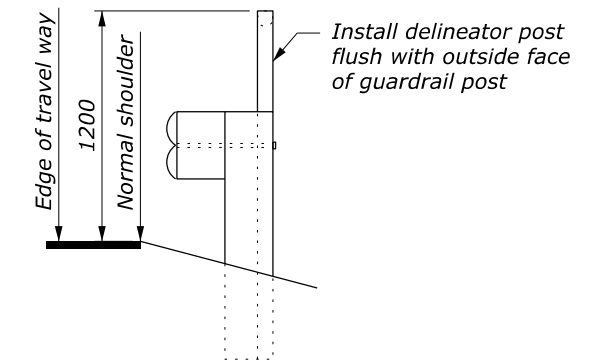
HORIZONTAL CURVES				
CURVE RADIUS (METERS)	SPACING ON EACH SIDE OF ROADWAY (m)			
	ON CURVE	BEYOND SC, CS, PC or PT		
		1st SPACE	2nd SPACE	3rd SPACE
≥ 1900	90	160	160	160
450 - 1899	45	90	160	160
150 - 449	30	60	90	160
75 - 149	25	45	70	160
< 75	15	30	45	90



**VERTICAL CURVE**

CREST VERTICAL CURVES						
K	SPACING ON EACH SIDE OF ROADWAY IN METERS					
	ON CURVE	BEYOND VPC or VPT				
		1st SPACE	2nd SPACE	3rd SPACE	4th SPACE	5th SPACE
≥ 165	160	160	160	160	160	160
120 - 164	90	160	160	160	160	160
60 - 119	60	90	160	160	160	160
30 - 59	30	45	60	90	160	160
15 - 29	25	30	45	60	90	160
< 15	15	25	30	45	60	90

$K = L/A$  where  $L$  = Length of vertical curve in meters  
 $A$  = Algebraic grade change in %



**TYPICAL INSTALLATION WITH BEAM TYPE GUARD RAIL**

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
OFFICE OF FEDERAL LANDS HIGHWAY

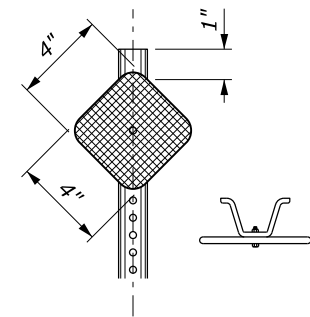
WFLHD METRIC DETAIL

**IDAHO DELINEATORS**

DETAIL APPROVED FOR USE 9/2009  
REVISED:

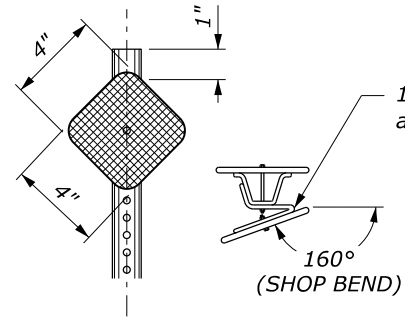
DETAIL WM633-50

NO SCALE



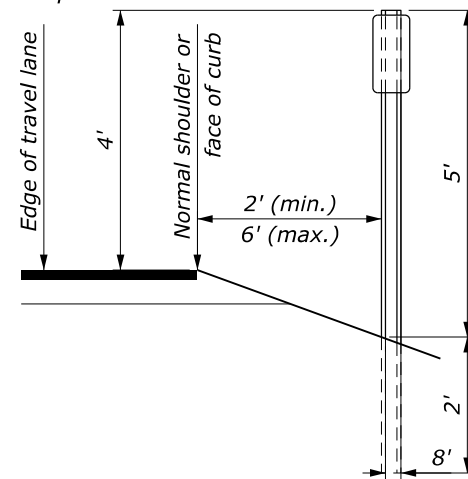
**DESIGN A**  
(WHITE)

Use for delineation on tangents and on curves with  $R > 1500'$ .

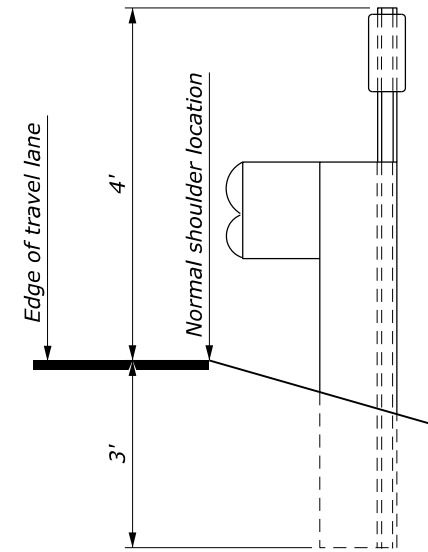


**DESIGN C**  
(WHITE)

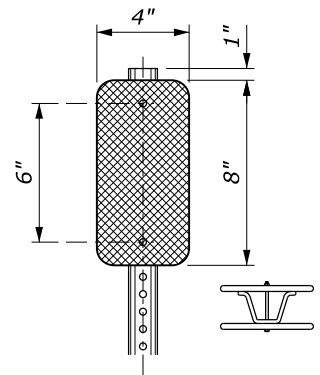
Use on curves with  $R \leq 575'$



**TYPICAL INSTALLATION**

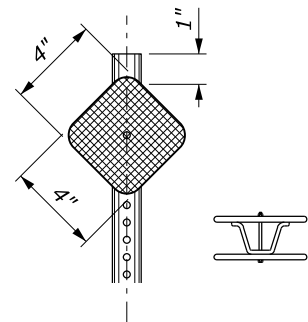


**TYPICAL INSTALLATION WITH BEAM TYPE GUARD RAIL**



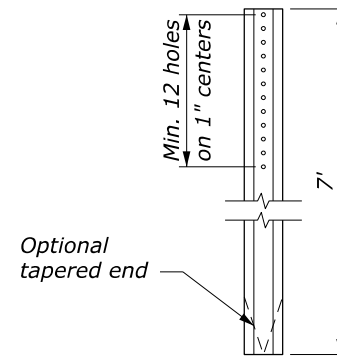
**DESIGN D**  
(YELLOW)

Use at approaches with Stop or Yield signs.



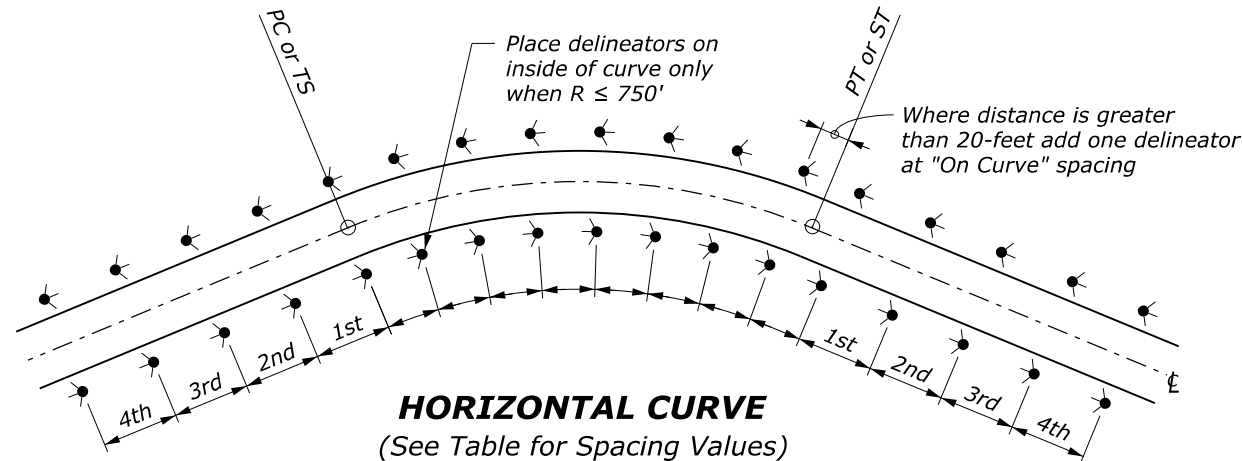
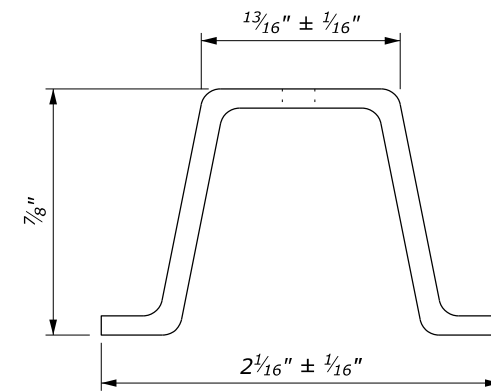
**DESIGN F**  
(WHITE)

Use for curves with  $R > 575'$  and  $R \leq 1500'$ .

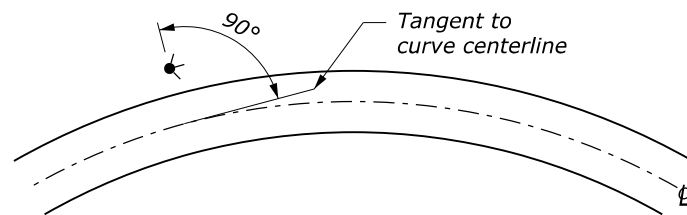


**DELINEATOR POST DETAILS**

Rigid Steel or Aluminum



**HORIZONTAL CURVE**  
(See Table for Spacing Values)



**SIGN INSTALLATION ANGLE**

HORIZONTAL CURVES					
RADIUS (ft)	SPACING ON CURVE (ft)	SPACING IN ADVANCE OF & BEYOND CURVE (ft)			
		1st SPACE	2nd SPACE	3rd SPACE	4th SPACE
$\geq 5700$	300	400	400	400	400
3000 to < 5700	225	400	400	400	400
2000 to < 3000	160	320	400	400	400
1500 to < 2000	130	260	400	400	400
1000 to < 1500	110	220	330	400	400
700 to < 1000	90	185	275	400	400
500 to < 700	75	150	230	300	400
300 to < 500	60	125	185	300	400
< 300	45	90	140	275	400

**NOTE:**

- When the contract does not include the final surfacing, allow for the thickness of the final pavement structure when establishing the elevation of the traffic delineators.
- Place delineators at a constant clearance distance from the edge of pavement except where guardrail or other obstructions interfere. Align delineators with the inside edge of obstruction. Install delineators located behind beam guardrail so that the delineator post is adjacent to the trailing edge of the nearest guardrail post. (See typical installation with beam type guardrail).
- When a delineator falls within a cross road or approach, the delineator may be moved in either direction a distance not to exceed one quarter of the normal spacing. Eliminate the post if this allowance is exceeded.
- Mount delineators on metal posts with  $\frac{3}{16}$ " cadmium plated bolt(s). Drill or punch a minimum of twelve  $\frac{3}{8}$ " diameter holes on 1-inch centers from the top of the post.  $\frac{3}{8}$ " square holes may be used with large-headed bolt or an appropriate washer. Jam threads after tightening the nut to prevent removal.
- All delineator reflectors have  $\frac{3}{4}$ " corner radii.
- Manufacture posts from flanged U-channel sections of steel meeting the requirements of ASTM A 36 and weighing not less than 1.25 pounds per foot or aluminum meeting the requirements of ASTM B 221, Alloy 6061-T6, with a minimum thickness of 0.125 inches. After fabrication galvanize steel posts in accordance with ASTM A 123.
- When a route has a current ADT of 900 or greater, continuously delineate the roadway along the shoulder by means of post mounted reflectors. Spacing on tangent sections is 400 feet.

NO SCALE

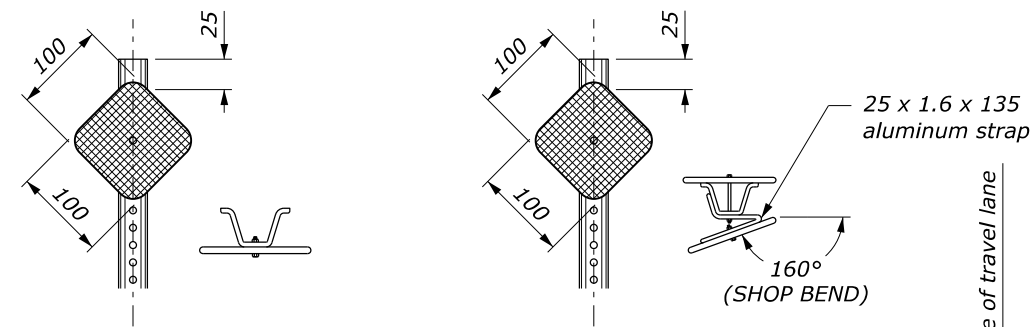
U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
OFFICE OF FEDERAL LANDS HIGHWAY

WFLHD DETAIL

**MONTANA**  
**DELINEATORS**

DETAIL APPROVED FOR USE 11/2006  
REVISED: 1/2008

DETAIL  
W633-60

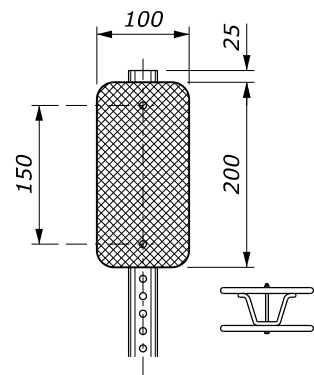


**DESIGN A**  
(WHITE)

Use for delineation on tangents and on curves with  $R > 450$  m.

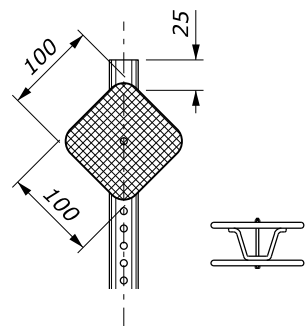
**DESIGN C**  
(WHITE)

Use on curves with  $R \leq 170$  m



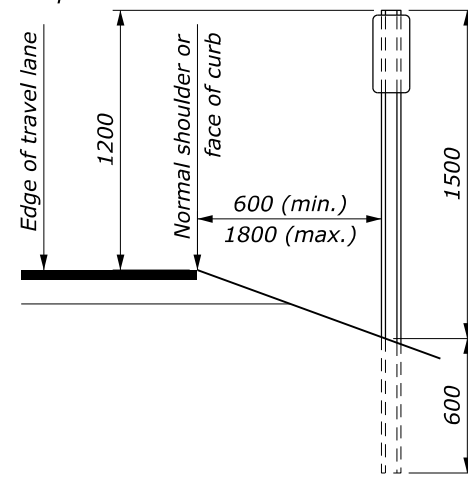
**DESIGN D**  
(YELLOW)

Use at approaches with Stop or Yield signs.

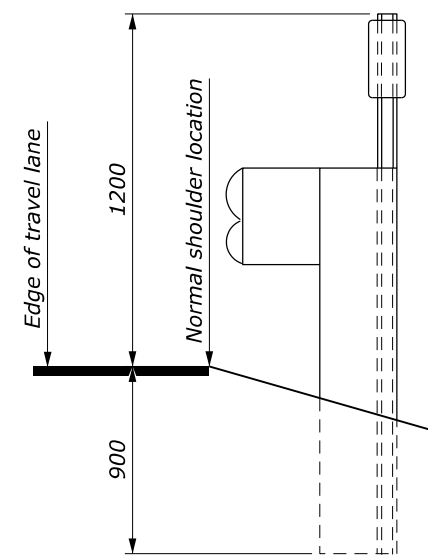


**DESIGN F**  
(WHITE)

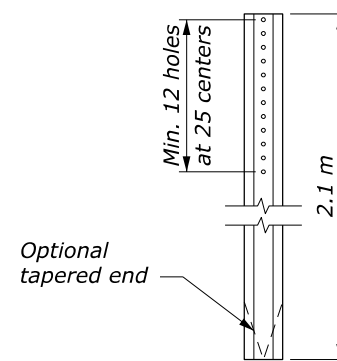
Use for curves with  $R > 170$  m and  $R \leq 450$  m.



**TYPICAL INSTALLATION**

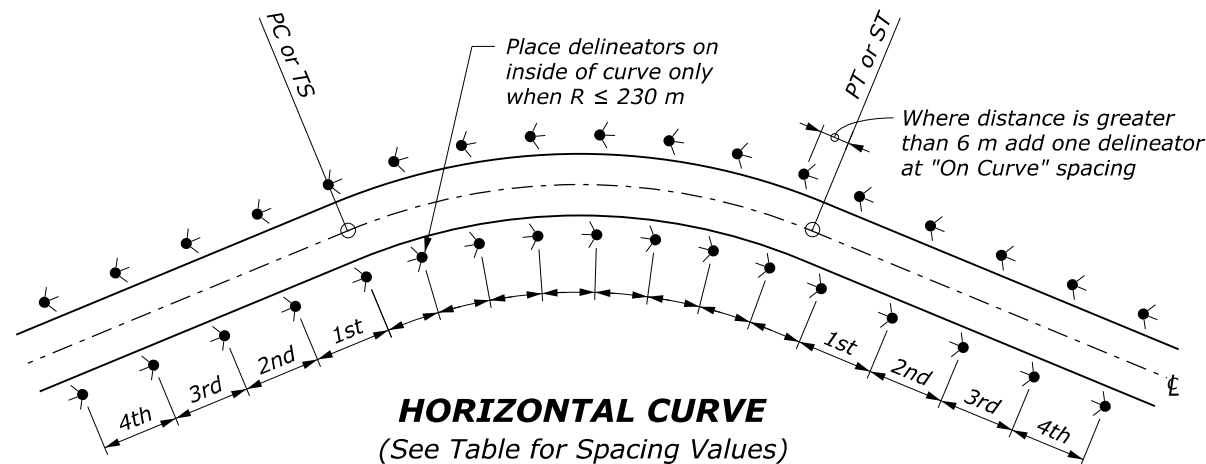


**TYPICAL INSTALLATION WITH BEAM TYPE GUARD RAIL**

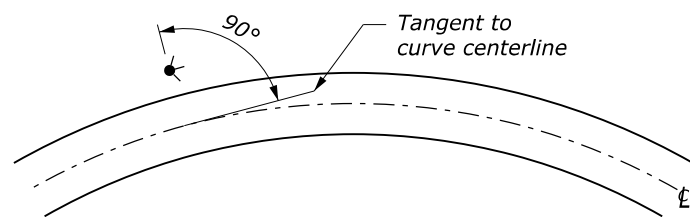


**DELINEATOR POST DETAILS**

Rigid Steel or Aluminum



**HORIZONTAL CURVE**  
(See Table for Spacing Values)



**SIGN INSTALLATION ANGLE**

HORIZONTAL CURVES					
RADIUS (m)	SPACING ON CURVE (m)	SPACING IN ADVANCE OF & BEYOND CURVE (m)			
		1st SPACE	2nd SPACE	3rd SPACE	4th SPACE
$\geq 1750$	90	120	120	120	120
900 to $< 1750$	65	120	120	120	120
600 to $< 900$	50	95	120	120	120
450 to $< 600$	40	75	120	120	120
300 to $< 450$	35	65	100	120	120
200 to $< 300$	25	55	80	120	120
150 to $< 200$	20	45	70	90	120
100 to $< 150$	20	35	55	90	120
$< 100$	15	25	40	80	120

**NOTE:**

- When the contract does not include the final surfacing, allow for the thickness of the final pavement structure when establishing the elevation of the traffic delineators.
- Place delineators at a constant clearance distance from the edge of pavement except where guardrail or other obstructions interfere. Align delineators with the inside edge of obstruction. Install delineators located behind beam guardrail so that the delineator post is adjacent to the trailing edge of the nearest guardrail post. (See typical installation with beam type guardrail).
- When a delineator falls within a cross road or approach, the delineator may be moved in either direction a distance not to exceed one quarter of the normal spacing. Eliminate the post if this allowance is exceeded.
- Mount delineators on metal posts with M5 cadmium plated bolt(s). Drill or punch a minimum of twelve 9.5 mm diameter holes on 25 mm centers from the top of the post. 9.5 mm square holes may be used with large-headed bolt or an appropriate washer. Jam threads after tightening the nut to prevent removal.
- All delineator reflectors have 20 mm corner radii.
- Manufacture posts from flanged U-channel sections of steel meeting the requirements of ASTM A 36 and weighing not less than 1.86 kilograms per meter or aluminum meeting the requirements of ASTM B 221, Alloy 6061-T6, with a minimum thickness of 3.2 mm. After fabrication galvanize steel posts in accordance with ASTM A 123.
- When a route has a current ADT of 900 or greater, continuously delineate the roadway along the shoulder by means of post mounted reflectors. Spacing on tangent sections is 120 meters.
- Furnish hardware in the metric sizes shown. Equivalent US Customary sizes may be used when metric sizes are not available.
- Dimensions without units are millimeters.

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
OFFICE OF FEDERAL LANDS HIGHWAY

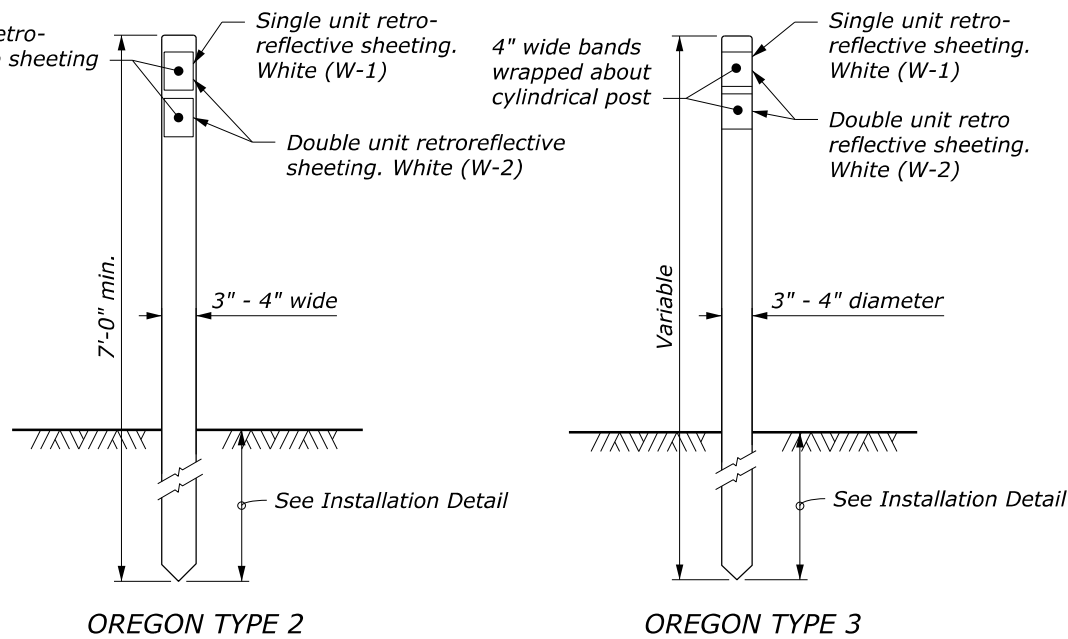
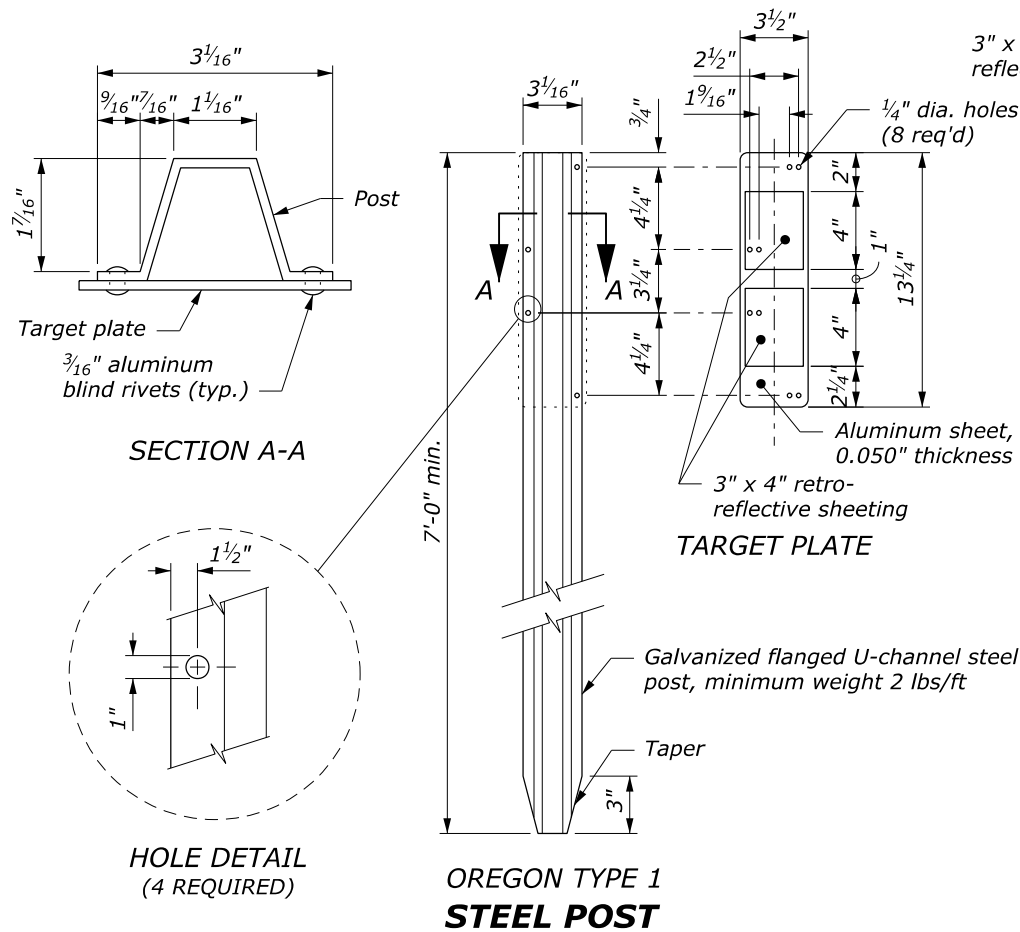
WFLHD METRIC DETAIL

**MONTANA**  
**DELINEATORS**

DETAIL APPROVED FOR USE 11/2006  
REVISED: 1/2008

DETAIL  
WM633-60

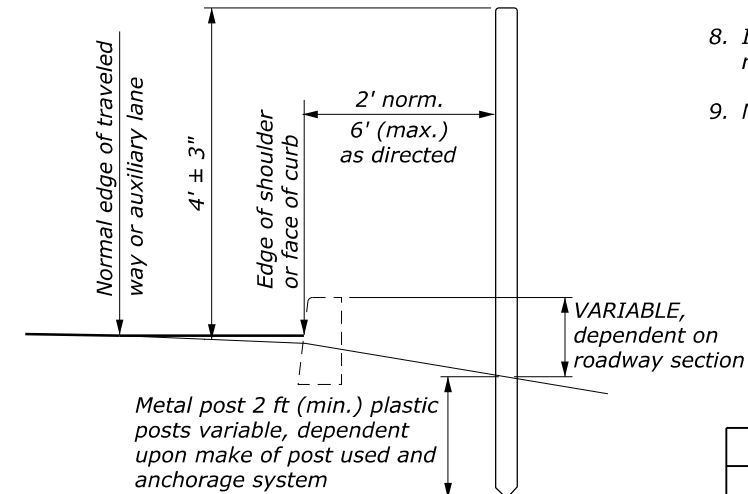
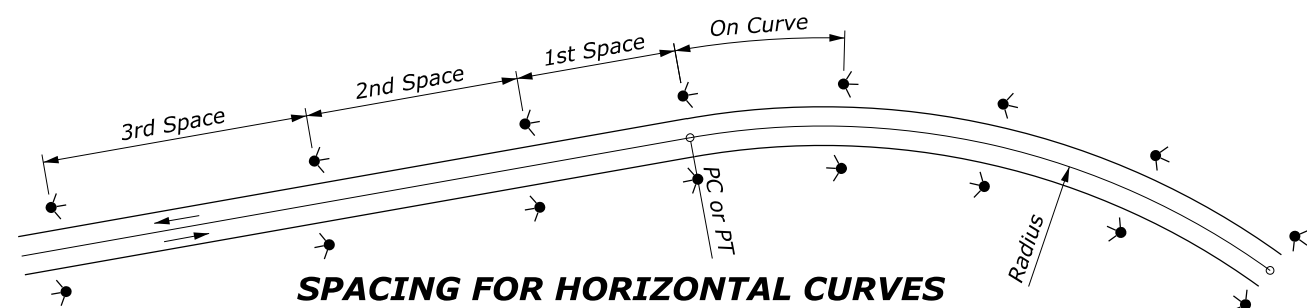




**FLEXIBLE PLASTIC POSTS**

**NOTE:**

1. Place delineators nearly opposite each other on horizontal curves.
2. Install all delineators with reflectors facing adjacent on-coming traffic.
3. Install delineators behind the rail at guardrail locations.
4. Offset delineators a minimum distance of 4 feet in areas of heavy snow removal operations.
5. On roads with less than 500 ADT, use delineators only for situations such as sharp vertical or horizontal curves, or other undesirable geometrics exist.
6. Vary the post spacing up to 1/4 of the spacing shown to clear driveways, cross roads, intersections or ramps. Eliminate the post if the variation is exceeded.
7. When the contract does not provide for the construction of the ultimate pavement, allow for the thickness of base and pavement to be placed later when establishing the elevation of the traffic delineators.
8. If horizontal and vertical curves are combined, use the more restrictive spacing.
9. Measure spacing along the shoulder or face of curb.

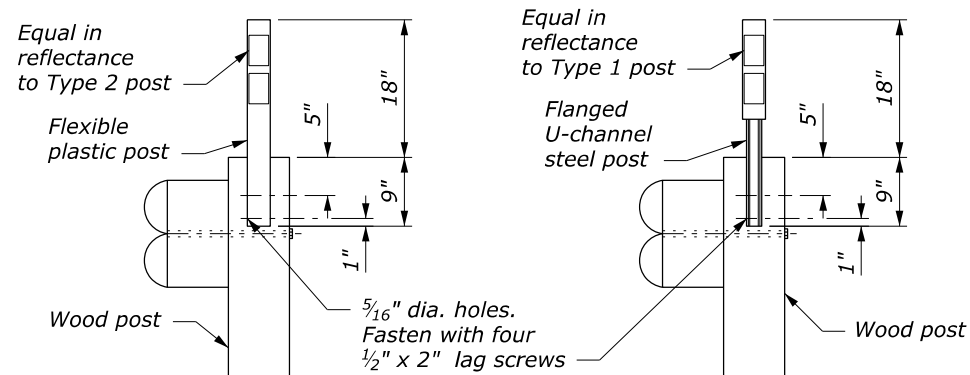


**REFLECTOR DETAILS**

TYPE	REFLECTOR & TARGET/POST COLOR	NUMBER OF REFLECTORS	USAGE AND SPACING
W-1	White	1	Max. tangent spacing: 400' each side Intersections (tapers and widening): 100' See Horizontal Curves table for variations
W-2	White	2	Intersection Radius: 3 min. @ 50' Lane Reduction: 3 min @ 100'

**HORIZONTAL CURVES**

RADIUS OF CURVE	SPACING ON EACH SIDE OF ROADWAY IN FEET			
	ON CURVE	IN ADVANCE OF & BEYOND CURVE		
		1st SPACE	2nd SPACE	3rd SPACE
≥ 5800	300	300	300	300
2900 to < 5800	230	300	300	300
2000 to < 2900	160	300	300	300
1500 to < 2000	130	260	300	300
1200 to < 1500	110	220	300	300
960 to < 1200	100	200	300	300
820 to < 960	90	180	270	300
640 to < 820	80	160	240	300
480 to < 640	70	140	210	300
340 to < 480	60	120	180	300
250 to < 340	50	100	150	300
170 to < 250	40	80	120	240
110 to < 170	30	60	90	180
≤ 110	20	40	60	120



**OREGON TYPE 4  
PLASTIC OR STEEL POST INSTALLATION  
WITH BEAM TYPE GUARDRAIL**

NO SCALE

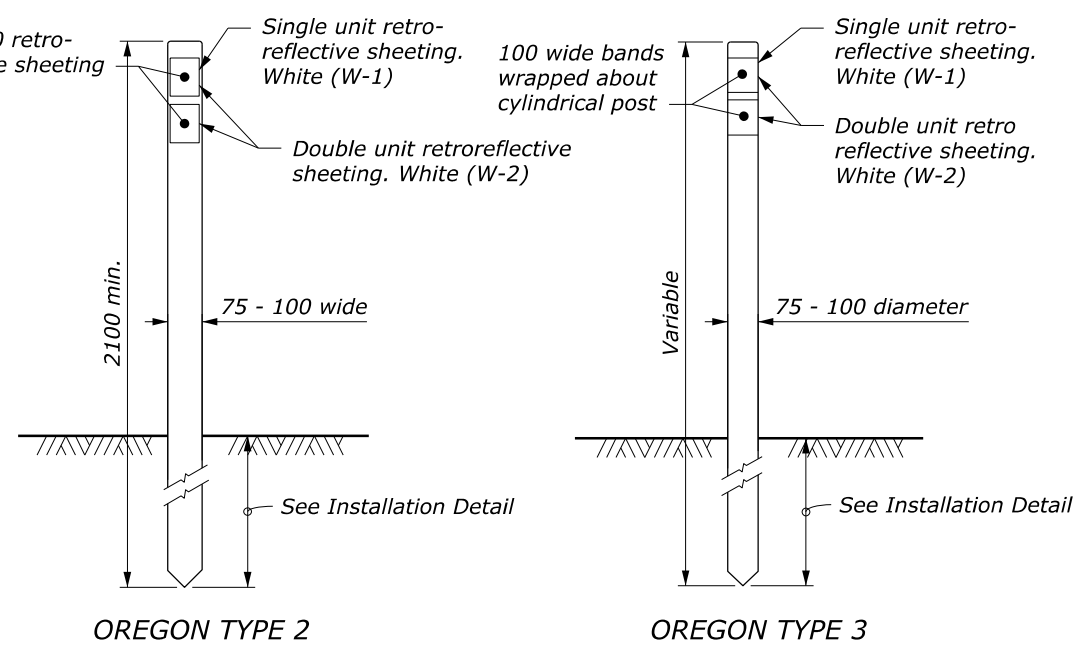
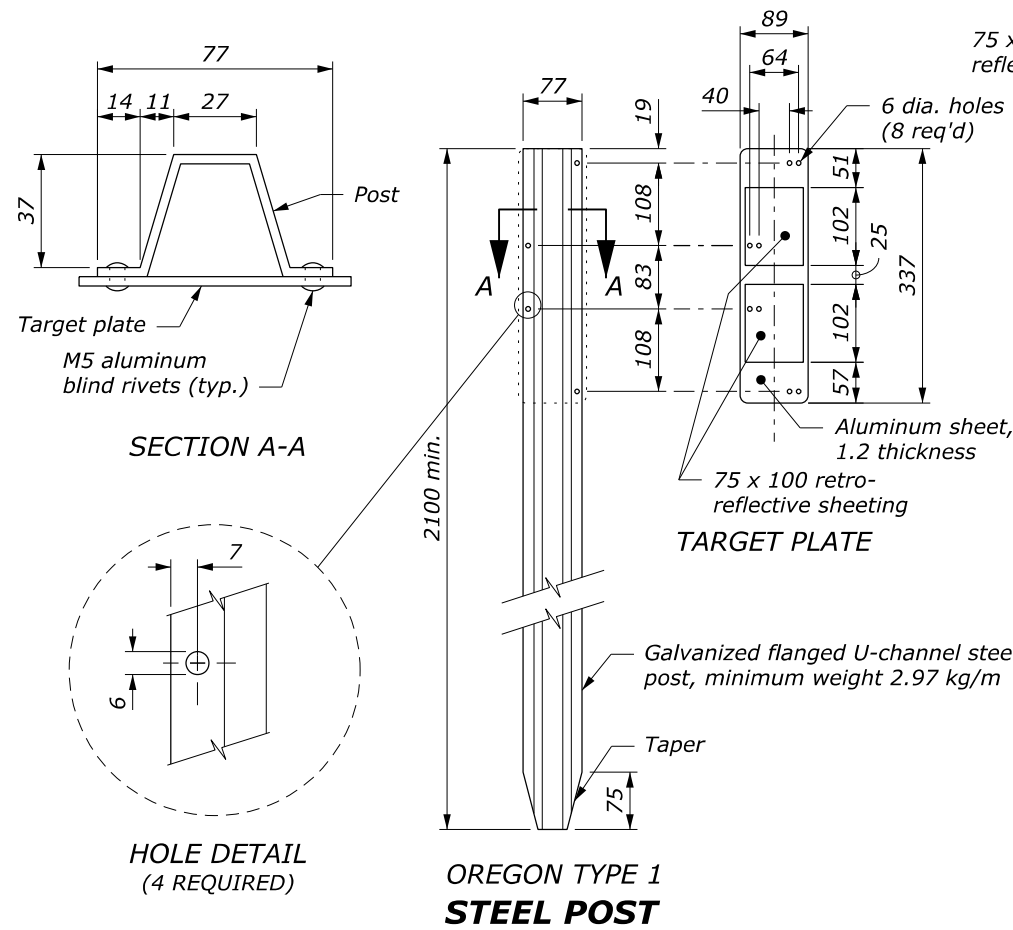
U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
OFFICE OF FEDERAL LANDS HIGHWAY

WFLHD DETAIL

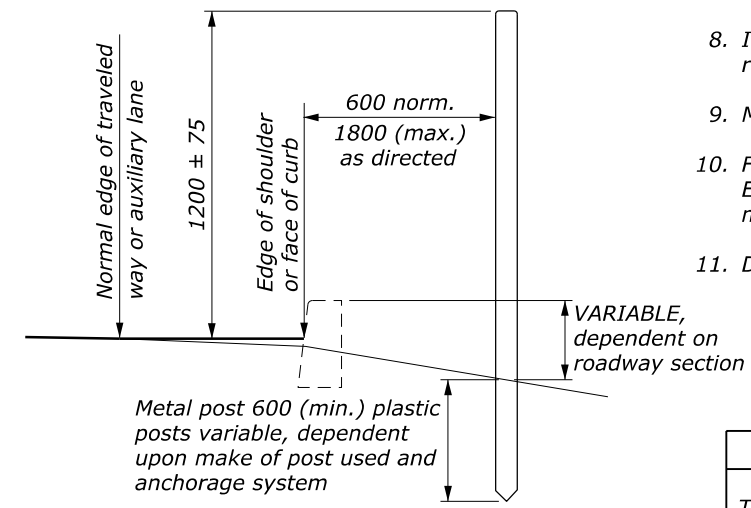
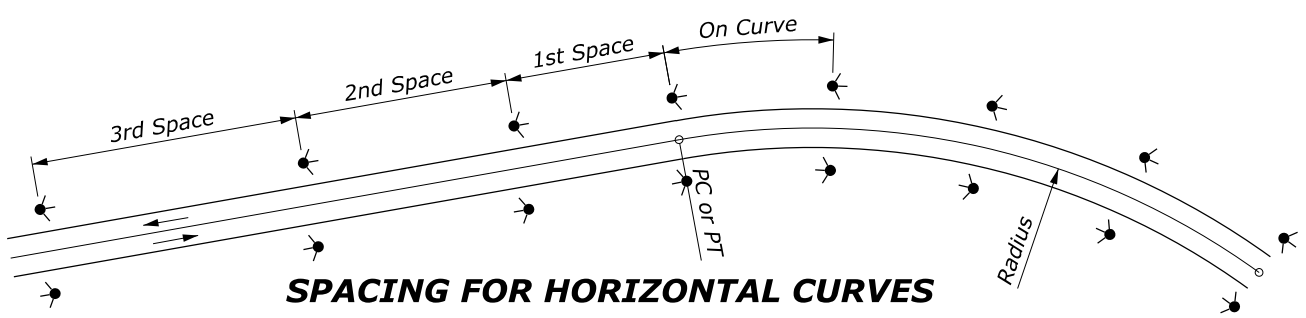
**OREGON  
DELINEATORS**

DETAIL APPROVED FOR USE 11/2014  
REVISED:

DETAIL  
W633-70



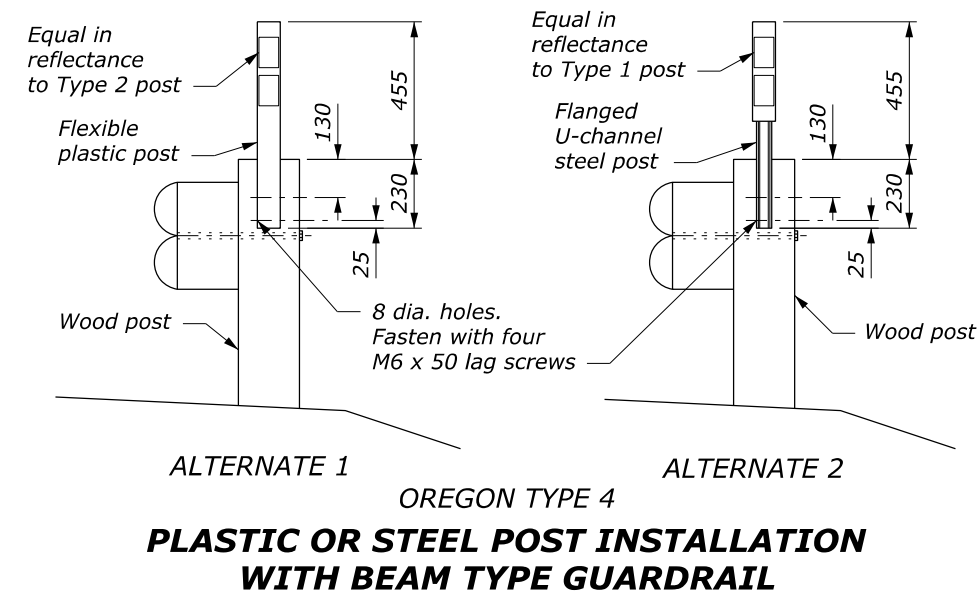
**FLEXIBLE PLASTIC POSTS**



- NOTE:**
1. Place delineators nearly opposite each other on horizontal curves.
  2. Install all delineators with reflectors facing adjacent on-coming traffic.
  3. Install delineators behind the rail at guardrail locations.
  4. Offset delineators a minimum distance of 1.2 m in areas of heavy snow removal operations.
  5. On roads with less than 500 ADT, use delineators only for situations such as sharp vertical or horizontal curves, or other undesirable geometrics exist.
  6. Vary the post spacing up to ¼ of the spacing shown to clear driveways, cross roads, intersections or ramps. Eliminate the post if the variation is exceeded.
  7. When the contract does not provide for the construction of the ultimate pavement, allow for the thickness of base and pavement to be placed later when establishing the elevation of the traffic delineators.
  8. If horizontal and vertical curves are combined, use the more restrictive spacing.
  9. Measure spacing along the shoulder or face of curb.
  10. Furnish hardware in the metric sizes shown. Equivalent US Customary sizes may be used when metric sizes are unavailable.
  11. Dimensions without units are millimeters.

REFLECTOR DETAILS			
TYPE	REFLECTOR & TARGET/ POST COLOR	NUMBER OF REFLECTORS	USAGE AND SPACING
W-1	White	1	Max. tangent spacing: 120 m each side
			Intersections (tapers and widening): 30 m
			See Horizontal Curves table for variations
W-2	White	2	Intersection Radius: 3 min. @ 15 m
			Lane Reduction: 3 min @ 30 m

HORIZONTAL CURVES				
RADIUS OF CURVE	SPACING ON EACH SIDE OF ROADWAY IN METERS			
	ON CURVE	IN ADVANCE OF & BEYOND CURVE		
		1st SPACE	2nd SPACE	3rd SPACE
≥ 1750	90	90	90	90
875 to < 1750	70	90	90	90
585 to < 875	50	90	90	90
440 to < 585	40	80	90	90
350 to < 440	35	70	90	90
295 to < 350	30	60	90	90
250 to < 295	30	55	85	90
195 to < 250	25	50	75	90
145 to < 195	20	45	65	90
105 to < 145	20	35	55	90
75 to < 105	15	30	45	90
50 to < 75	10	25	35	75
32 to < 50	10	20	30	55
≤ 32	5	15	20	40



**ALTERNATE 1 ALTERNATE 2**  
**OREGON TYPE 4**  
**PLASTIC OR STEEL POST INSTALLATION**  
**WITH BEAM TYPE GUARDRAIL**

NO SCALE

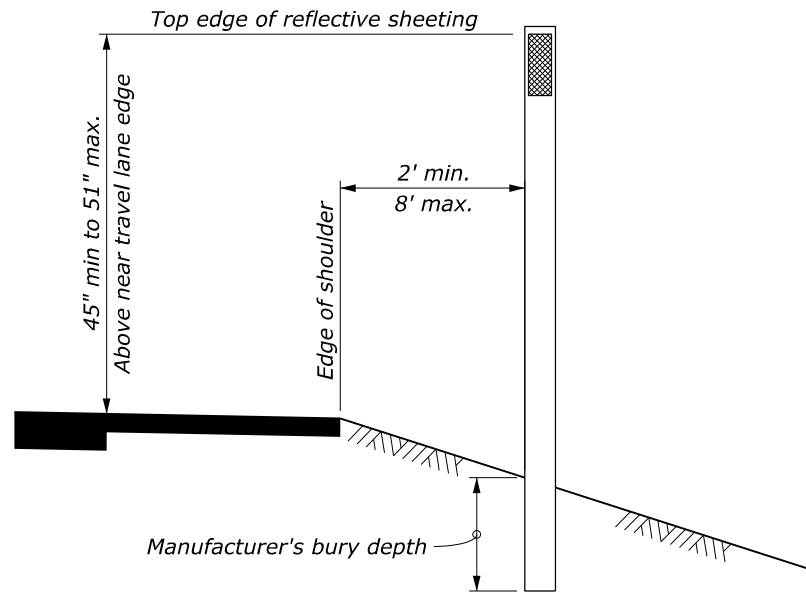
U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 OFFICE OF FEDERAL LANDS HIGHWAY

WFLHD METRIC DETAIL

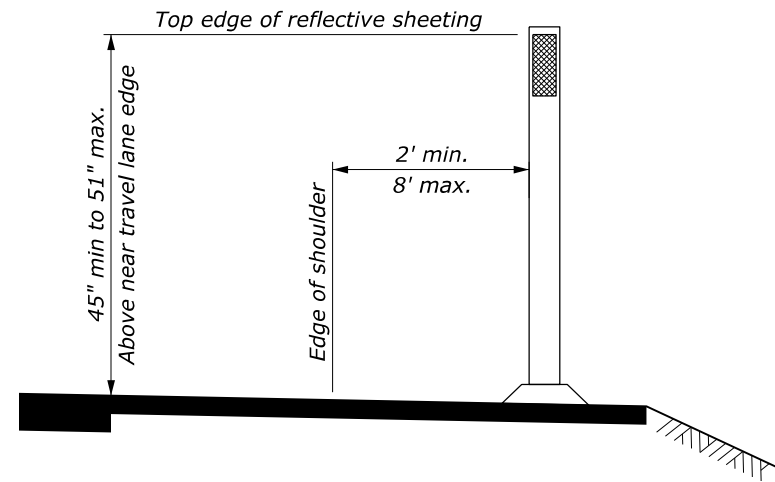
**OREGON**  
**DELINEATORS**

DETAIL APPROVED FOR USE 11/2014  
 REVISD:

DETAIL  
 WM633-70



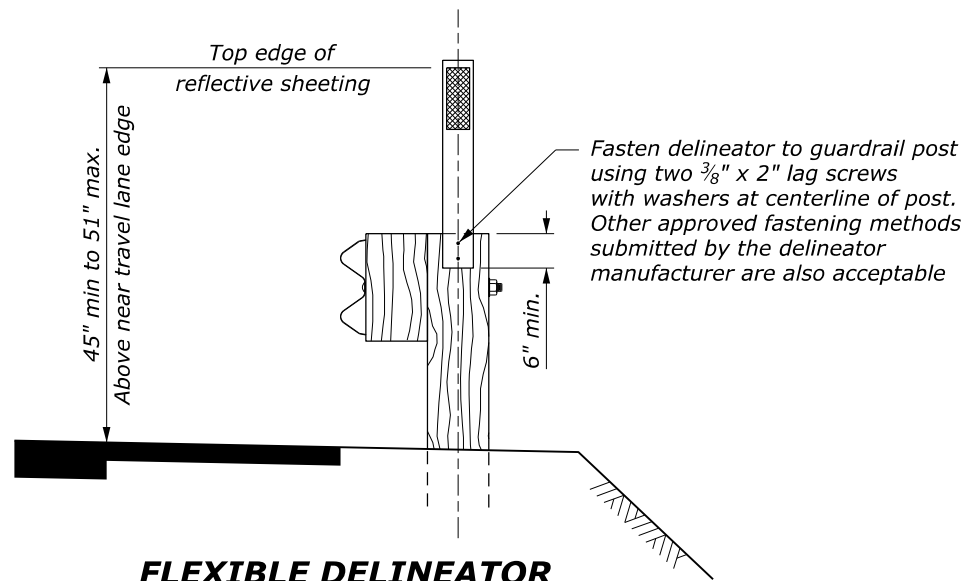
**FLEXIBLE DELINEATOR**  
GROUND MOUNTED



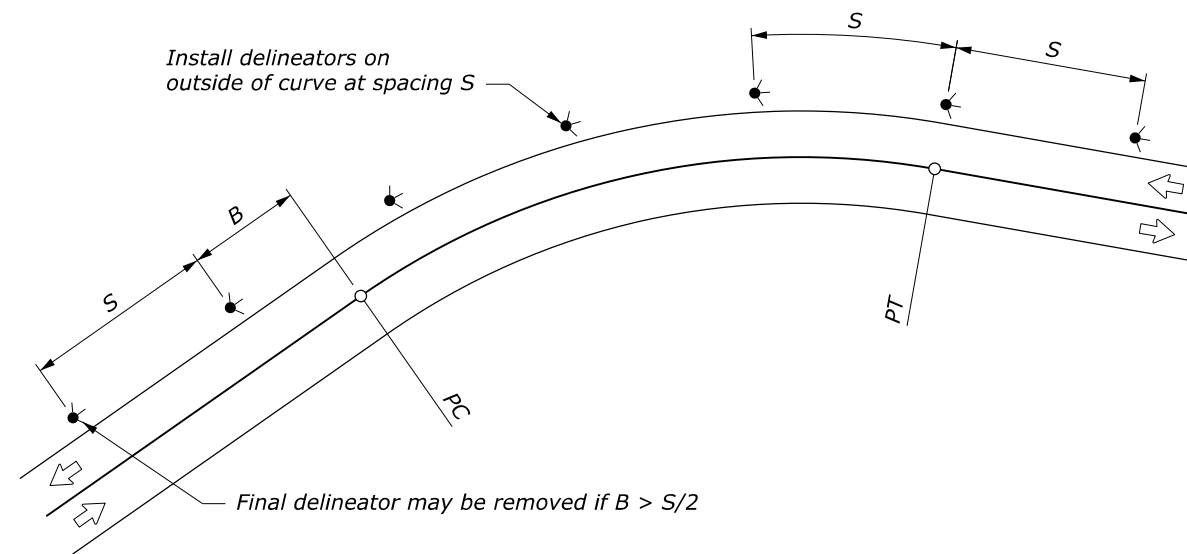
**FLEXIBLE DELINEATOR**  
SURFACE MOUNTED

**NOTE:**

1. When a delineator falls within a cross road or approach, the delineator may be moved in either direction a distance not to exceed one quarter of the normal spacing. Eliminate the delineator if this allowance is exceeded.
2. Place delineators 2 feet from the edge of design shoulder unless otherwise specified.
3. Install delineators behind the rail at guardrail locations. Either drive the delineator in line with the guardrail posts or mount a shorter delineator onto the guardrail post as shown on this sheet.
4. When the contract does not provide for the construction of the ultimate pavement, allow for the thickness of base and pavement to be placed later when establishing the elevation of the traffic delineators.
5. Use the current edition of the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) as a guide for delineation layout.



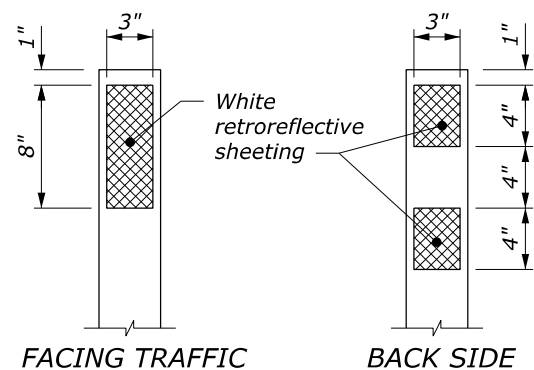
**FLEXIBLE DELINEATOR**  
GUARDRAIL MOUNTED OPTION  
(Use only with wood guardrail posts)



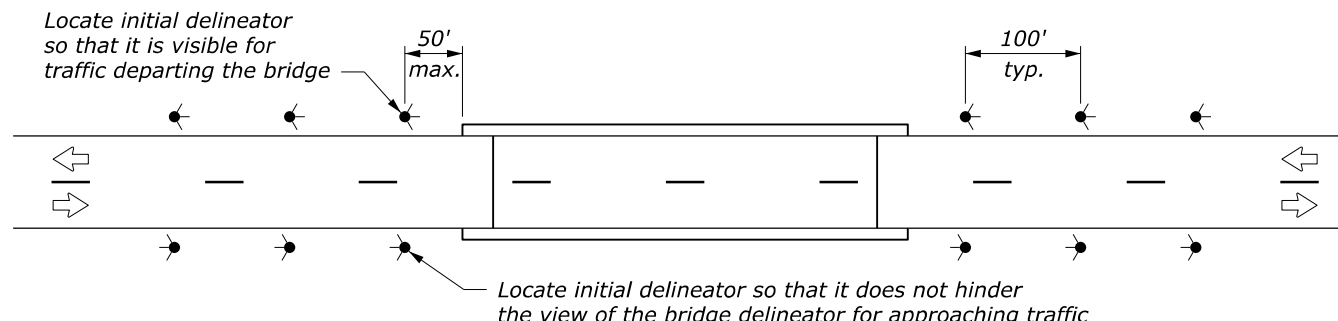
**PLACEMENT ON HORIZONTAL CURVES**

DELINEATOR SPACING ON HORIZONTAL CURVES	
CURVE RADIUS (FEET)	SPACING (S) (FEET)
50	20
115	25
180	35
250	40
300	50
400	55
500	65
600	70
700	75
800	80
900	85
1,000	90

Spacing for a specific curve may be interpolated from the table, or calculated using the formula:  
 $Spacing = 3 \sqrt{R-50}$   
 The minimum spacing should be 20 feet.  
 Curve spacing should not exceed 300 feet.



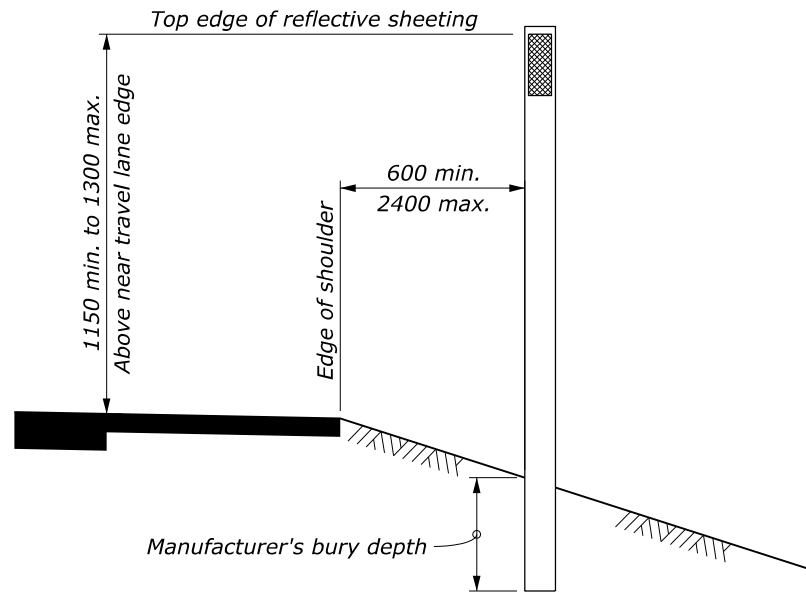
**REFLECTIVE SHEETING DETAIL**



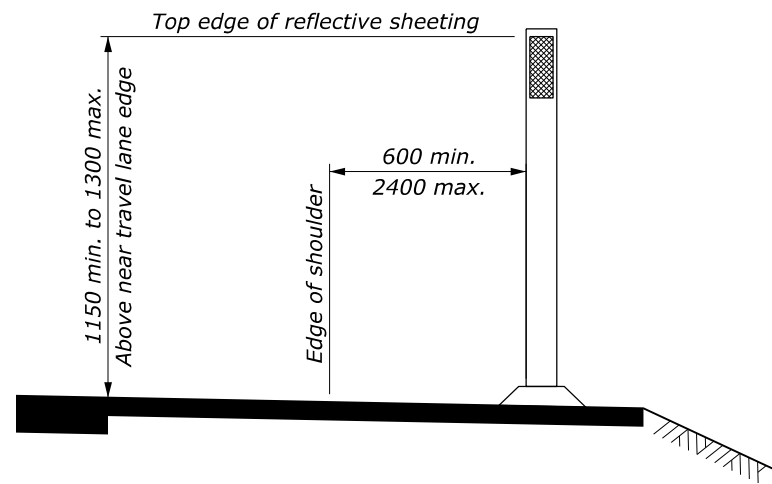
**PLACEMENT AT BRIDGE APPROACHES**

NO SCALE

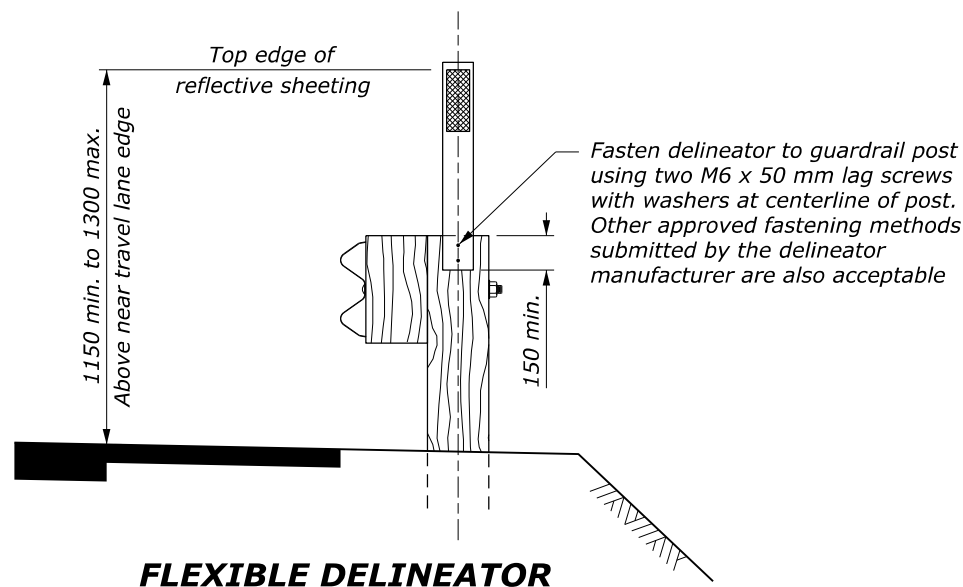
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION OFFICE OF FEDERAL LANDS HIGHWAY	
WFLHD DETAIL	
<b>WASHINGTON DELINEATORS</b>	
DETAIL APPROVED FOR USE 1/2008 REVISED:	DETAIL W633-80



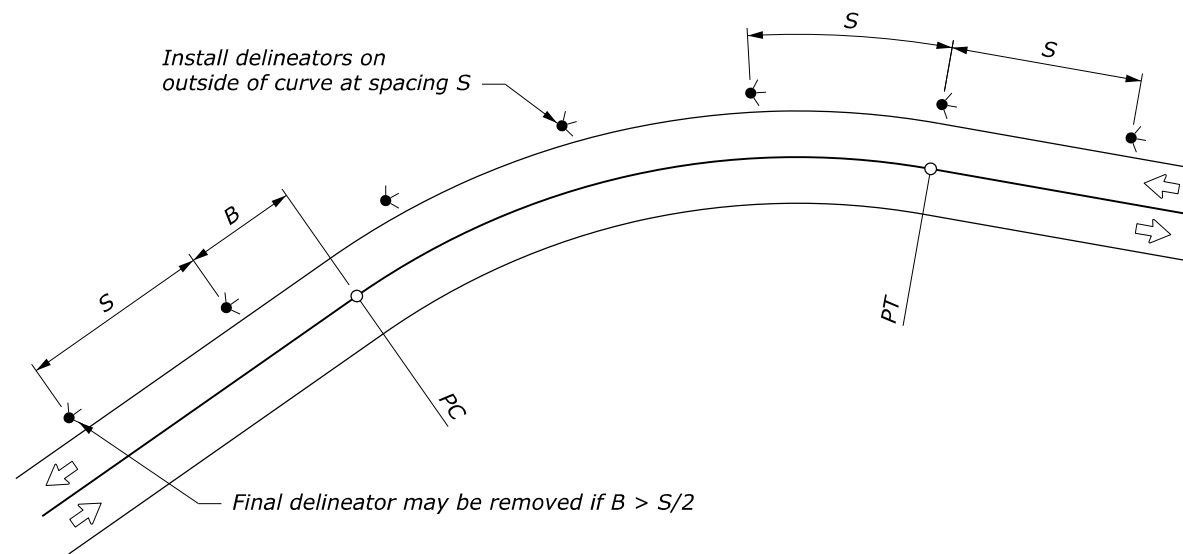
**FLEXIBLE DELINEATOR**  
GROUND MOUNTED



**FLEXIBLE DELINEATOR**  
SURFACE MOUNTED



**FLEXIBLE DELINEATOR**  
GUARDRAIL MOUNTED OPTION  
(Use only with wood guardrail posts)



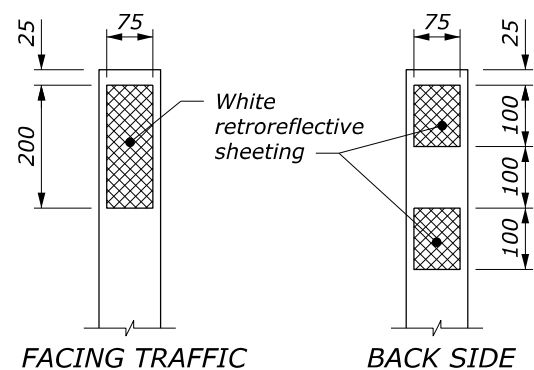
**PLACEMENT ON HORIZONTAL CURVES**

DELINEATOR SPACING ON HORIZONTAL CURVES	
CURVE RADIUS (m)	SPACING (S) (m)
15	6
35	8
55	11
75	13
95	15
125	18
155	20
185	22
215	24
245	26
275	27
305	29

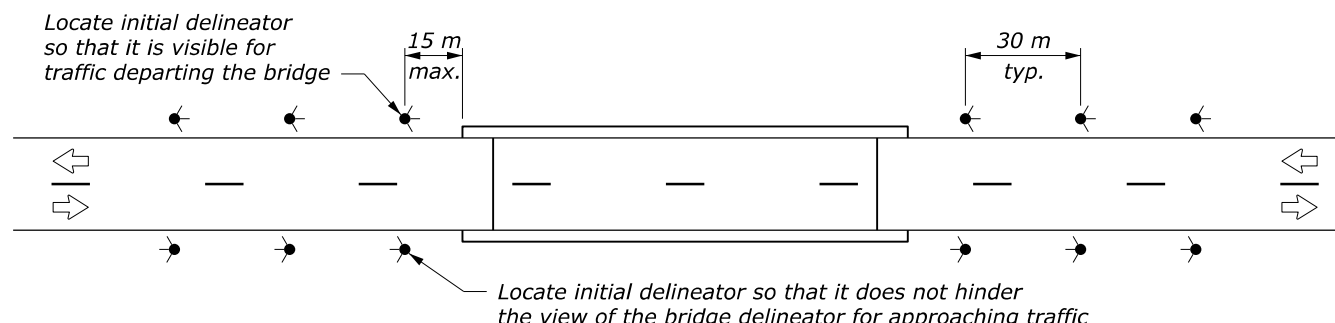
Spacing for a specific curve may be interpolated from the table, or calculated using the formula:  

$$\text{Spacing} = 1.7 \sqrt{R-15}$$

The minimum spacing should be 6 meters.  
 Curve spacing should not exceed 90 meters.



**REFLECTIVE SHEETING DETAIL**



**PLACEMENT AT BRIDGE APPROACHES**

**NOTE:**

1. When a delineator falls within a cross road or approach, the delineator may be moved in either direction a distance not to exceed one quarter of the normal spacing. Eliminate the delineator if this allowance is exceeded.
2. Place delineators 600 mm from the edge of design shoulder unless otherwise specified.
3. Install delineators behind the rail at guardrail locations. Either drive the delineator in line with the guardrail posts or mount a shorter delineator onto the guardrail post as shown on this sheet.
4. When the contract does not provide for the construction of the ultimate pavement, allow for the thickness of base and pavement to be placed later when establishing the elevation of the traffic delineators.
5. Use the current edition of the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) as a guide for delineation layout.
6. Furnish hardware in the metric sizes shown. Equivalent US Customary sizes may be used when metric sizes are unavailable.
7. Dimensions without units are millimeters.

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 OFFICE OF FEDERAL LANDS HIGHWAY

WFLHD METRIC DETAIL

**WASHINGTON  
 DELINEATORS**

DETAIL APPROVED FOR USE 1/2008  
 REVISED:

DETAIL  
 WM633-80