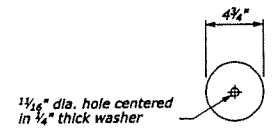
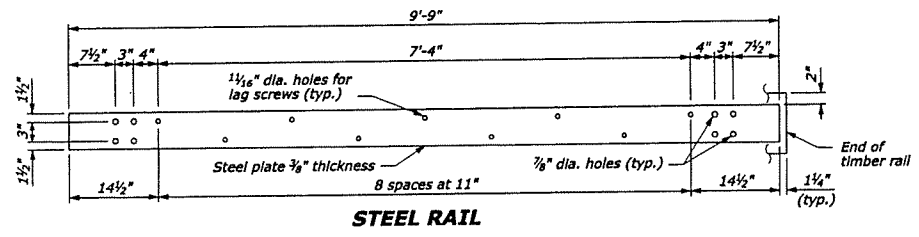
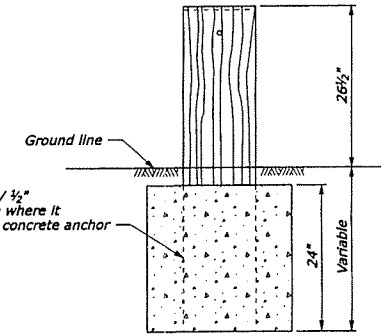
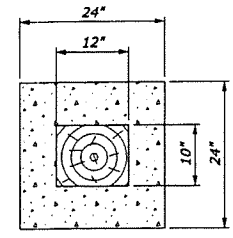
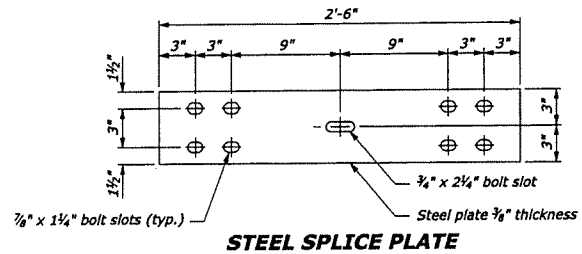
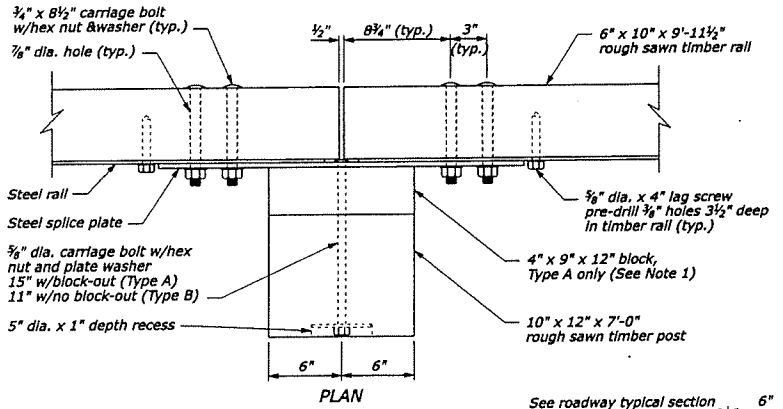


STATE	PROJECT	SHEET NUMBER
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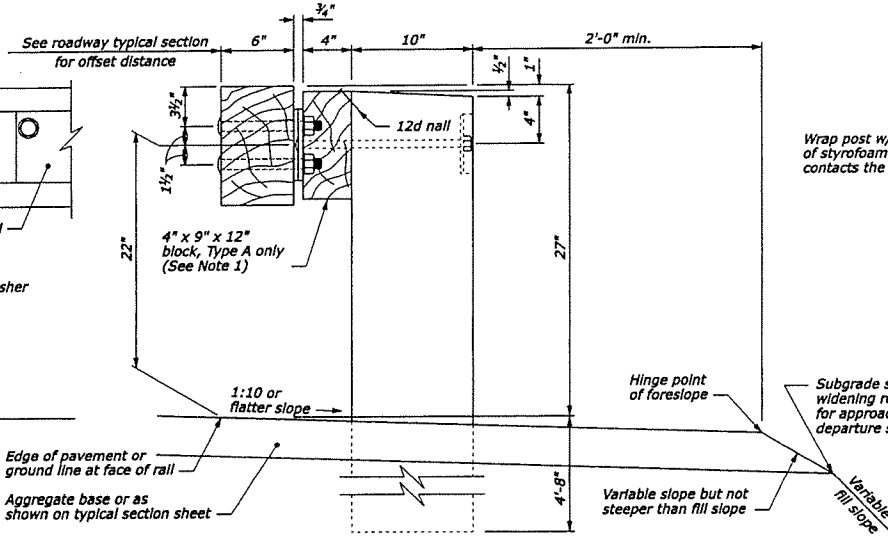
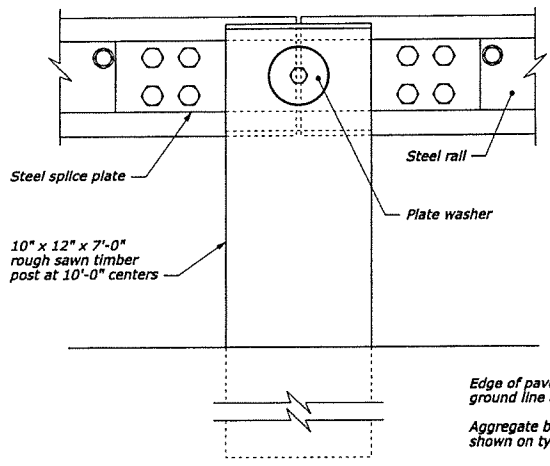


- NOTE:**
1. Use the Type A, blocked-out, system or the Type B, non-blocked-out, system as specified in the plans.
  2. Use weathering steel for all structural steel and fastener hardware as specified.
  3. Place a terminal section (See Standards 617-61 and 617-62) on both approach and trailing ends of barrier installations.



24" dia. round anchor is an acceptable alternative. Reduced size acceptable in solid rock.

**CONCRETE ANCHOR FOR SHORT GUARDRAIL POST**



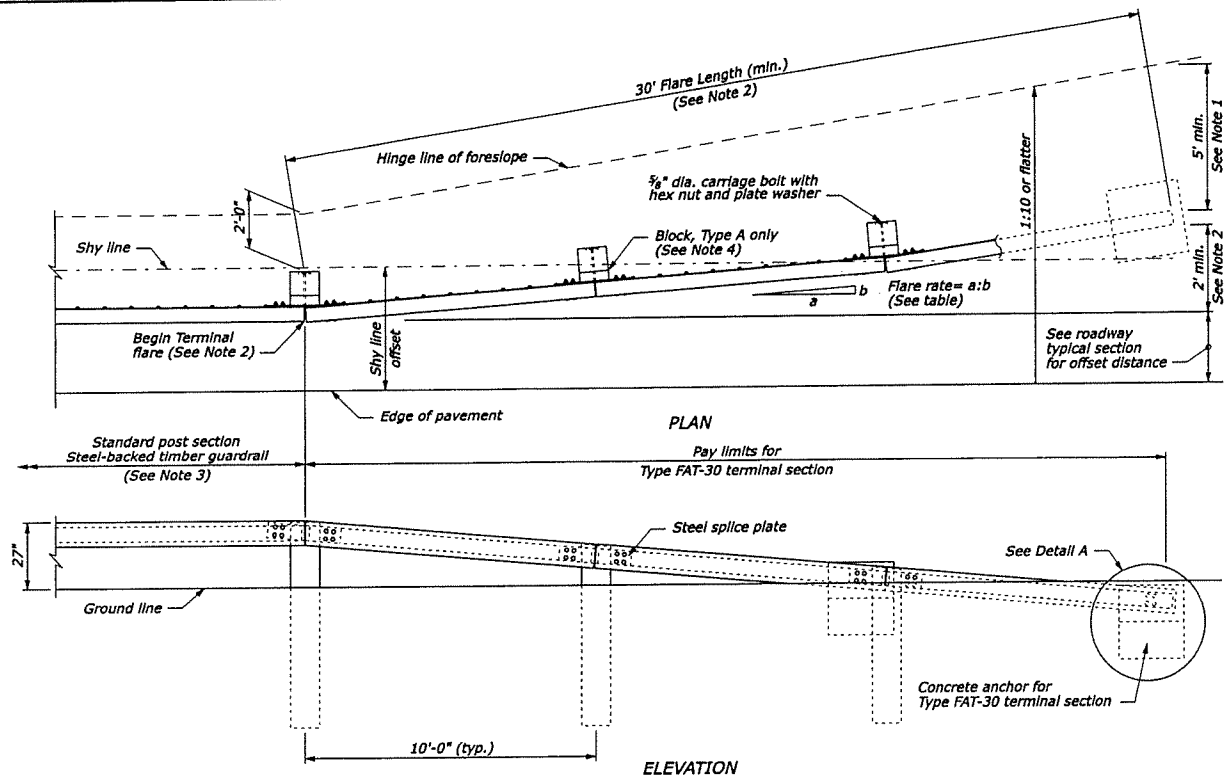
**ELEVATION POST CONNECTION**

**TYPICAL GUARDRAIL CROSS SECTION**

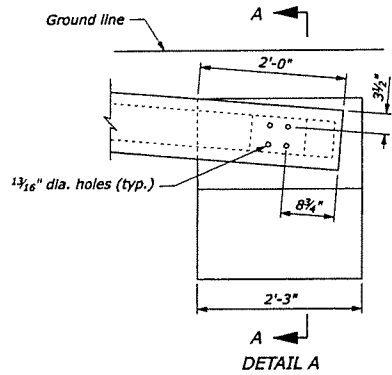
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U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
<b>STEEL-BACKED TIMBER GUARDRAIL TYPE A &amp; TYPE B</b>	
STANDARD APPROVED FOR USE 3/1990 REVISED: 4/1994 6/2005	STANDARD 617-60

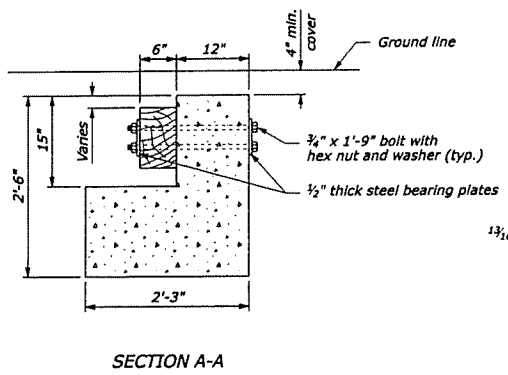
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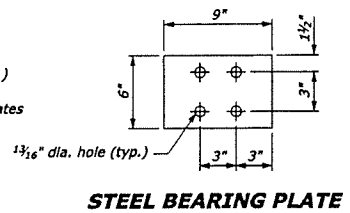
**APPROACH & DEPARTURE FLARE WITH FLARED ANCHOR TERMINAL (FAT)**



**CONCRETE ANCHOR**



**SECTION A-A**



**STEEL BEARING PLATE**

GUARDRAIL FLARE RATE TABLE			
Design Speed (mph)	Shy line offset (ft)	Flare rate inside shy line (a:b)	Flare rate outside shy line (a:b)
60	8.0	26:1	14:1
50	6.5	21:1	11:1
40	5.0	16:1	8:1
30 and less	3.5	13:1	7:1

**NOTE:**

1. Extend the fill widening a minimum of 5 feet behind the guardrail, unless otherwise directed by the CO.
2. The guardrail flare shown in the plan view is the minimum length and rate required. As directed by the CO, flare the guardrail so that the terminal section is outside the clear zone. If the terminal section cannot be located outside the clear zone, it should be flared as far as practical from the road at the maximum rate indicated on the Guardrail Flare Rates table.
3. See Standard 617-60, Steel-Backed Timber Guardrail, Type SBTA and SBTB, for timber, structural steel, and hardware details.
4. On the Type A, blocked-out guardrail, include the blocks in terminal section, except on the concrete anchor. For the Type B, non-blocked-out guardrail, no blocks are included.

NO SCALE

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

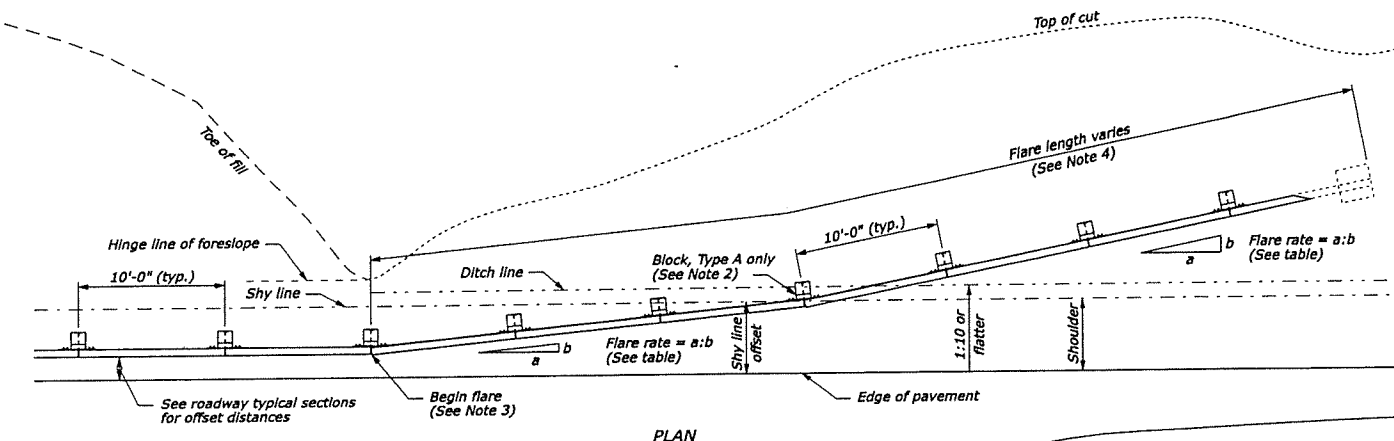
U.S. CUSTOMARY STANDARD

**STEEL-BACKED TIMBER GUARDRAIL  
 TERMINAL SECTION  
 TYPE SBT FAT-30**

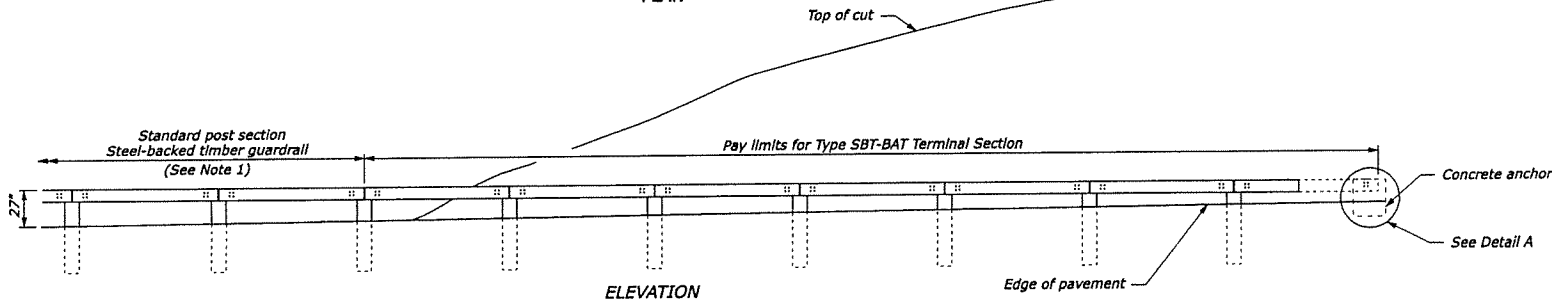
STANDARD APPROVED FOR USE 1/1990  
 REVISED: 4/1994 6/2003

STANDARD  
 617-61

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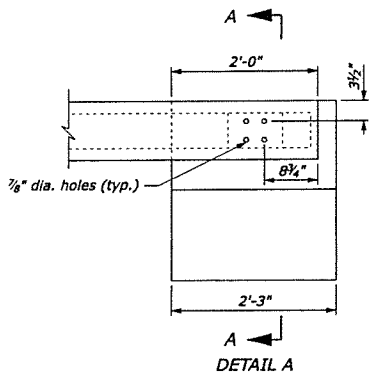


- NOTE:**
1. See Standard 617-60, SBTA and SBTB for timber, structural steel, and hardware details.
  2. On the Type A, blocked-out guardrail, include the blocks in the terminal section, except on the concrete anchor. For the Type B, non-blocked-out guardrail, no blocks are included.
  3. Begin the cut flares at the nearest post to a transition point between fill and cut as directed by the CO.
  4. Extend the flare into the cut until a minimum 1-foot cover is obtained over the guardrail end.

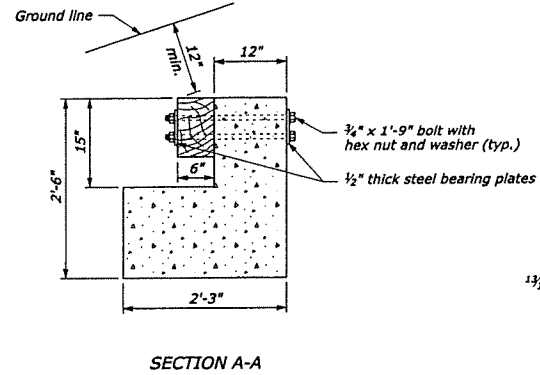


**APPROACH & DEPARTURE FLARE WITH BACK SLOPE ANCHOR TERMINAL (BAT)**

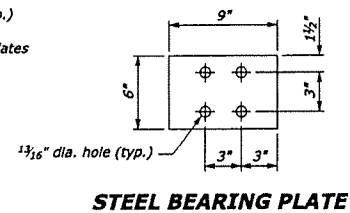
Design Speed (mph)	Shy line offset (ft)	Flare rate inside shy line (a:b)	Flare rate outside shy line (a:b)
60	8.0	26:1	14:1
50	6.5	21:1	11:1
40	5.0	16:1	8:1
30 and less	3.5	13:1	7:1



**CONCRETE ANCHOR**



**SECTION A-A**



**STEEL BEARING PLATE**

NO SCALE

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

U.S. CUSTOMARY STANDARD

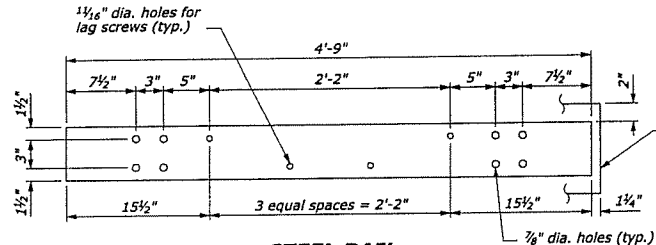
**STEEL-BACKED TIMBER GUARDRAIL  
 TERMINAL SECTION  
 TYPE SBT-BAT**

STANDARD APPROVED FOR USE 3/1990  
 REVISED: 4/1994 6/2005

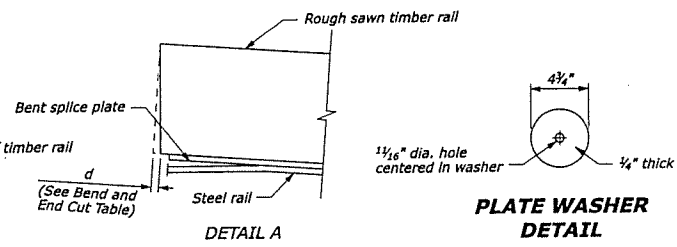
STANDARD  
 617-62

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STATE	PROJECT	SHEET NUMBER
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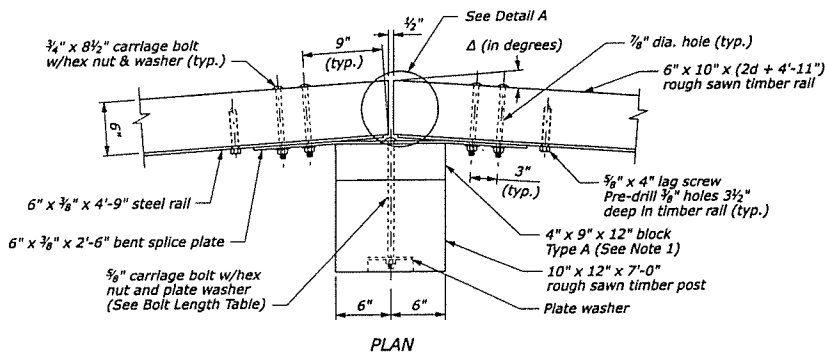


**STEEL RAIL**  
6" x 3/8" x 4'-9"

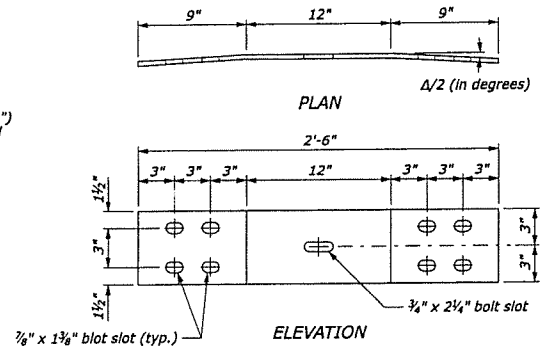


**PLATE WASHER DETAIL**

- NOTE:**
1. Use the Type A, blocked-out, system or the Type B, non-blocked-out, system as specified.
  2. Use the weathering steel for all structural steel and fastener hardware.
  3. Furnish shop bent splice plates. Use the minimum bend angle shown in the table below.
  4. See Sheet 2 of 2 for Plan View Layout.



**BENT SPLICE PLATE**  
6" x 3/8" x 2'-6"

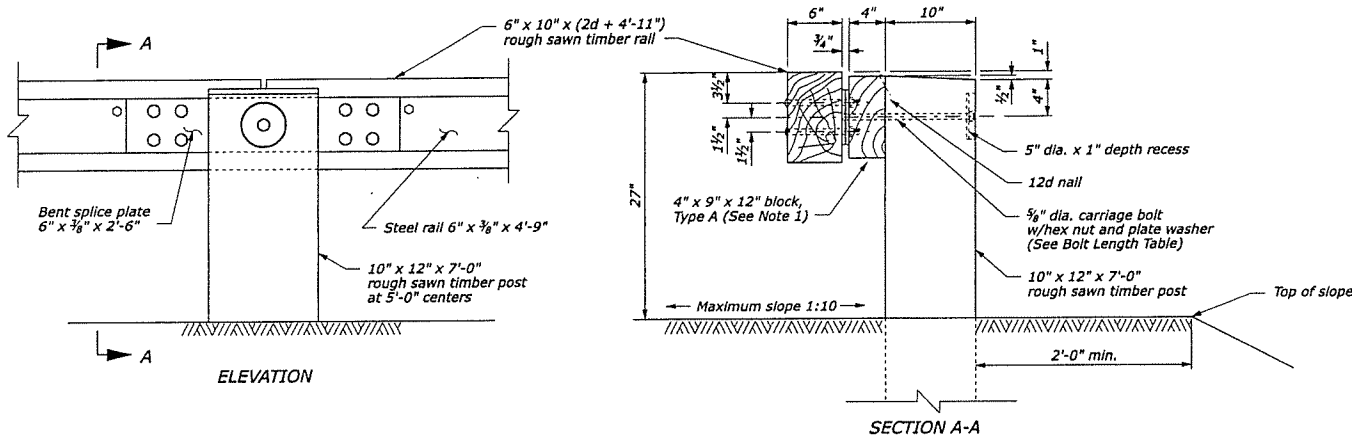


**BEND AND END CUT TABLE**

Radius R	Δ/2 degrees	d in
20	7.18	3/4
25	5.74	5/8
30	4.78	1/2
35	4.10	7/16
40	3.58	3/8
45	3.18	1/2
50	2.87	5/16
55	2.61	1/4
60	2.39	1/4
65	2.20	1/4
70	2.05	1/4
over 70	flat	0

**BOLT LENGTH TABLE**

Type A (Block-out)	Type B (No Block-out)
15"	11"



**POST CONNECTION**

**SECTION A-A**

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

U.S. CUSTOMARY STANDARD  
**STEEL-BACKED TIMBER GUARDRAIL  
AROUND CIRCULAR CURVES  
70 FOOT RADIUS AND BELOW**  
Sheet 1 of 2

STANDARD APPROVED FOR USE 6/2003  
REVISED: STANDARD 617-63

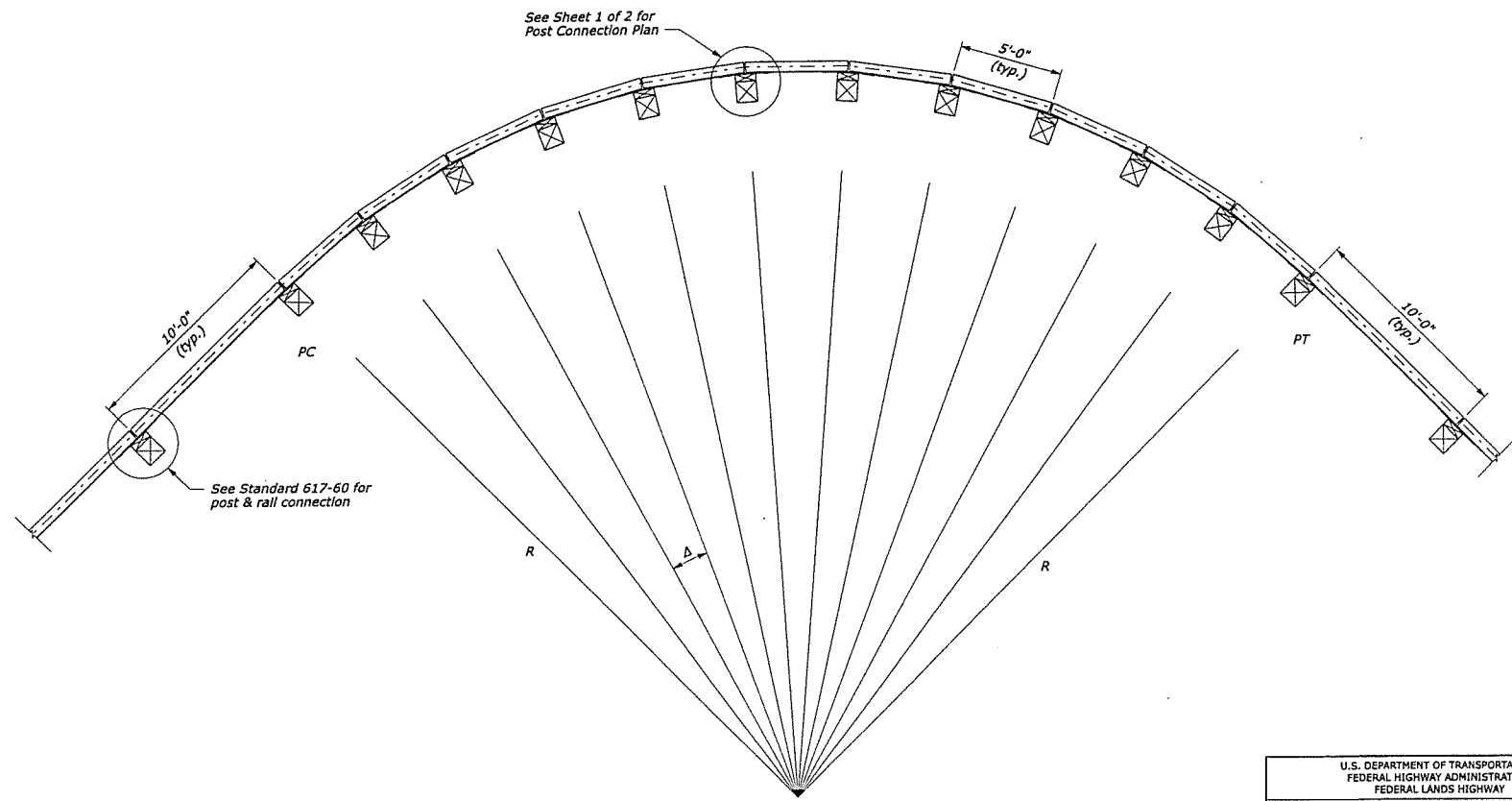
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STATE	PROJECT	SHEET NUMBER

**NOTE:**

1.  $\Delta$  is the central angle which subtends a 5'-0" chord.
2.  $R$  is measured from the center of the circle to the back surface of the rough sawn timber rail.



**PLAN VIEW LAYOUT**

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
<b>STEEL-BACKED TIMBER GUARDRAIL AROUND CIRCULAR CURVES 70 FOOT RADIUS AND BELOW</b>	
Sheet 2 of 2	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED:	617-63

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