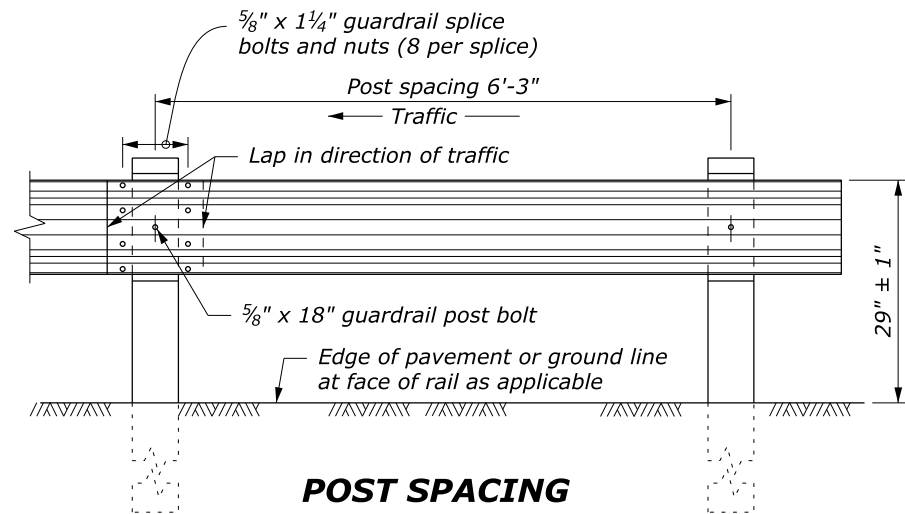
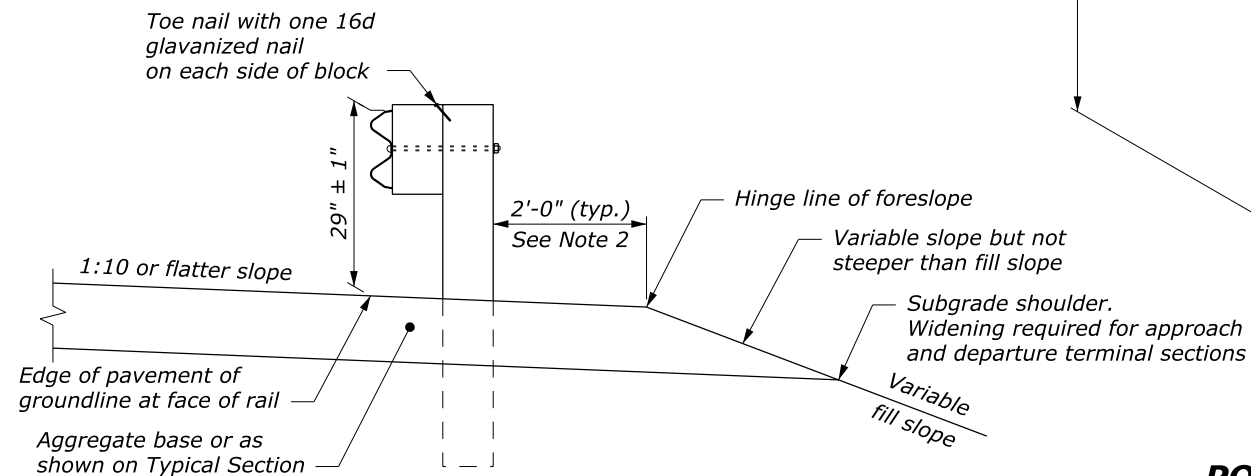


RAIL ELEVATION

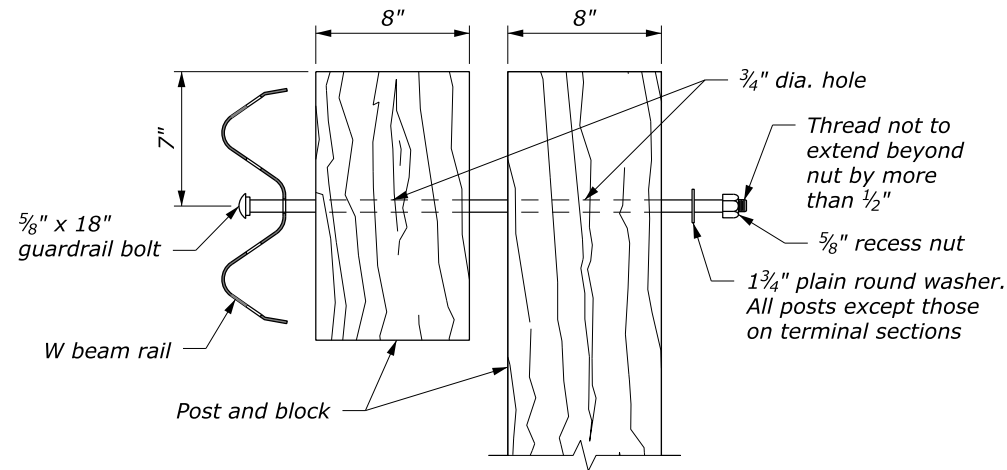
W BEAM RAIL



POST SPACING
STANDARD POST SECTION

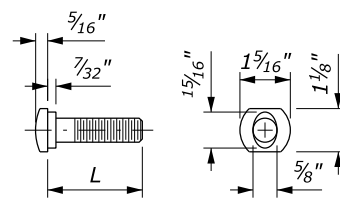


TYPICAL GUARDRAIL CROSS SECTION

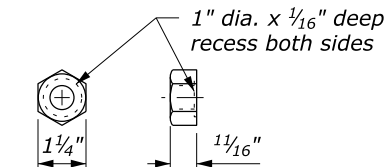


POST BOLT ASSEMBLY

L	Thread Length
1 1/4"	1 1/8" minimum
2"	1 3/4" minimum
10"	4" minimum
18"	4" minimum
25"	4" minimum

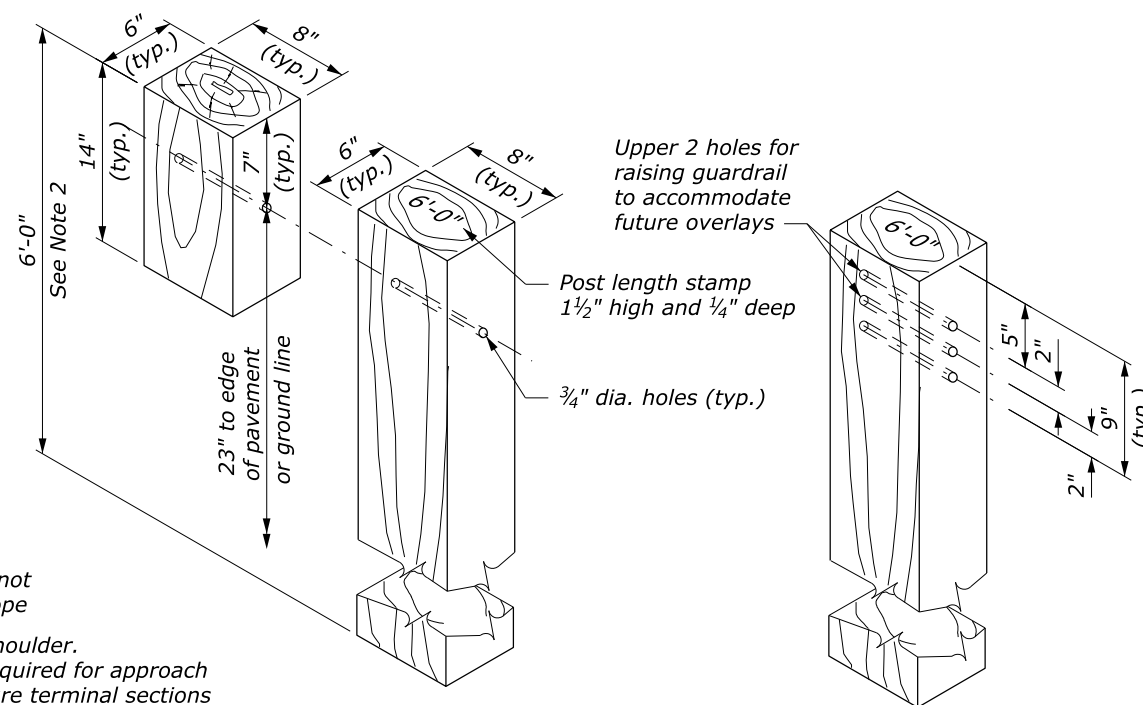


5/8" GUARDRAIL BOLT



5/8" RECESS NUT

GUARDRAIL BOLT AND RECESS NUT



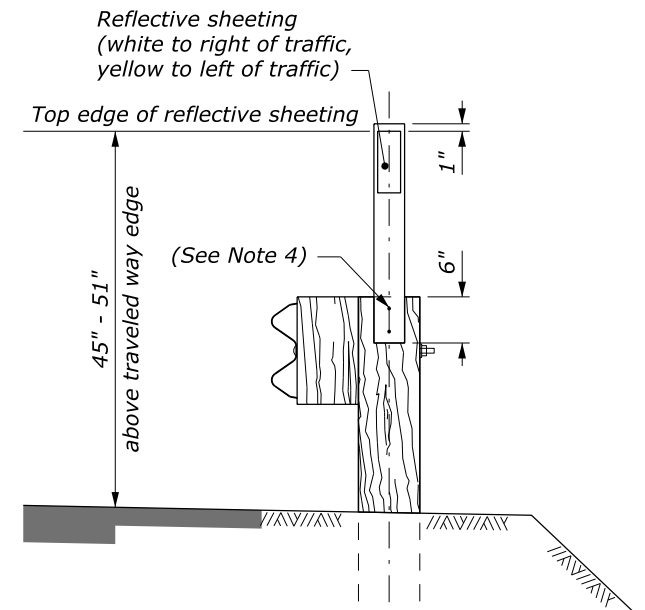
STANDARD HOLE
ARRANGEMENT
POST AND BLOCK DETAIL

ALTERNATE HOLE
ARRANGEMENT
POST AND BLOCK DETAIL

NO SCALE

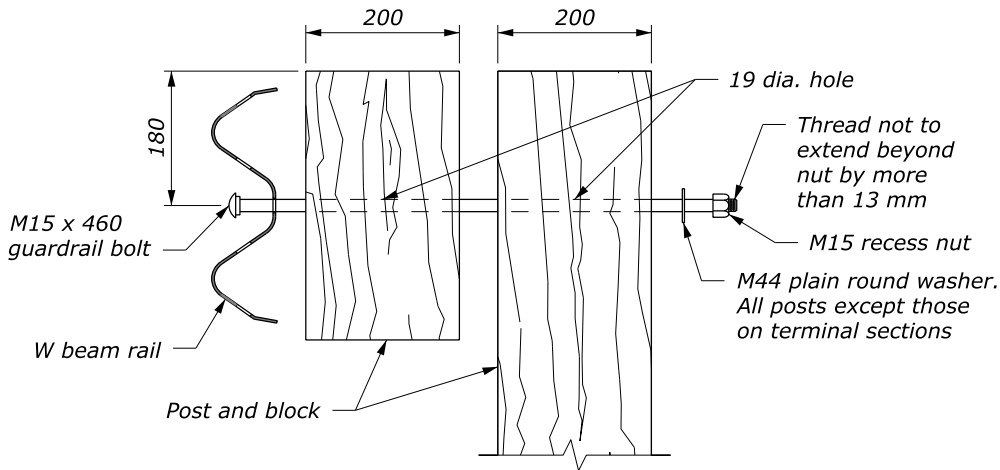
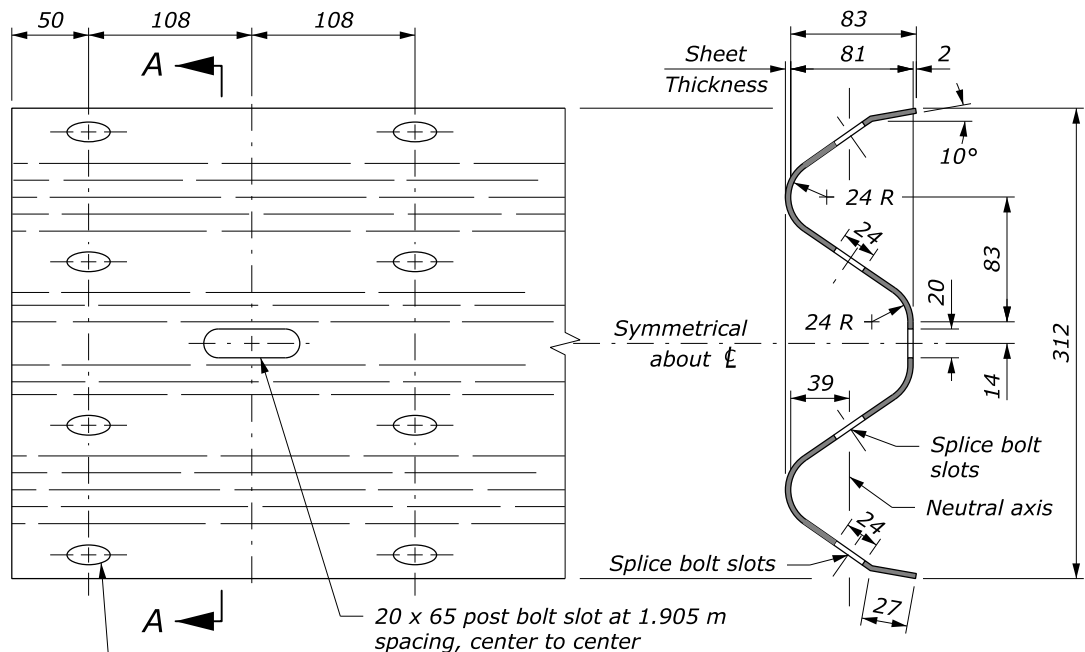
NOTE:

- When encountering impenetrable material, see Standards 617-13 or 617-24.
- See Special Contract Requirements when 7 foot or longer posts are specified.
- See Special Contract Requirements when the alternative hole arrangement is specified.
- Install delineator every fourth post. Fasten delineator to post using two 2" x 3/8" lag screws with washers, along centerline of post; or fasten as specified by the manufacturer.
- Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.

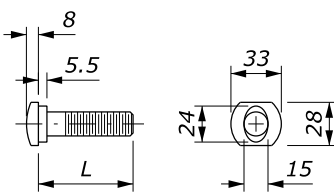


FLEXIBLE GUIDE POST
GUARDRAIL MOUNT

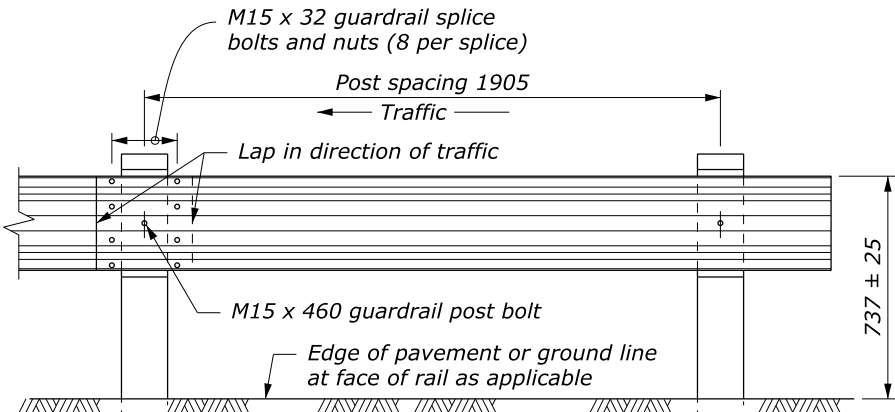
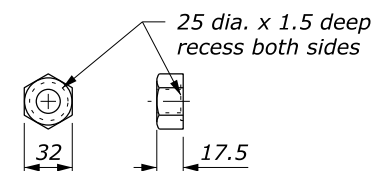
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
G4 W-BEAM GUARDRAIL WOOD POSTS	
STANDARD APPROVED FOR USE 1/1994	STANDARD
REVISED: 4/1994 6/2005 DRAFT: 9/2017	617-10



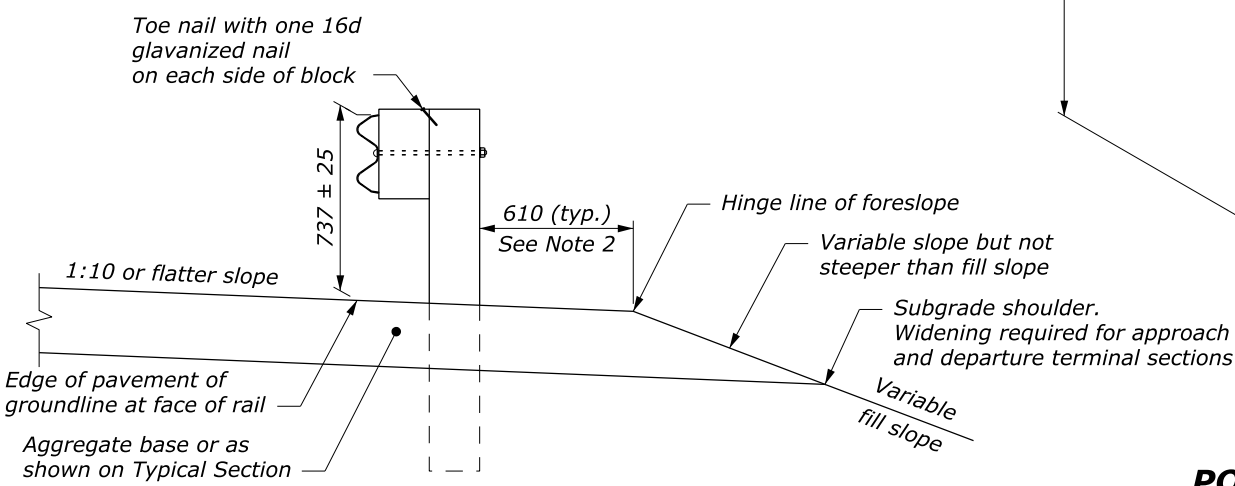
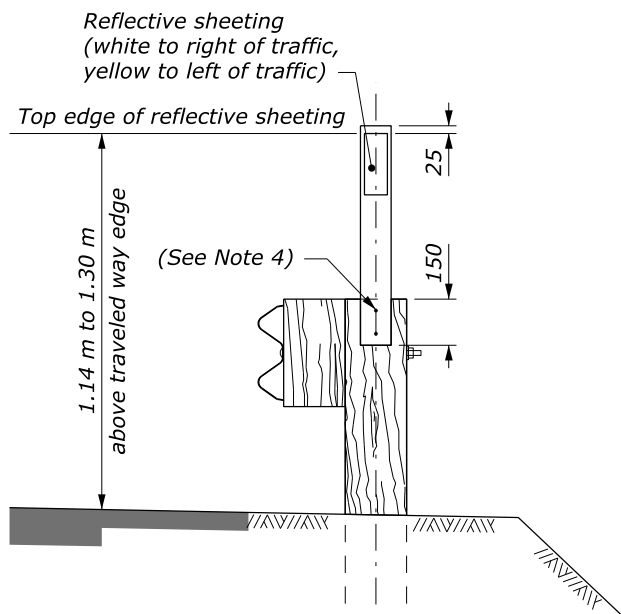
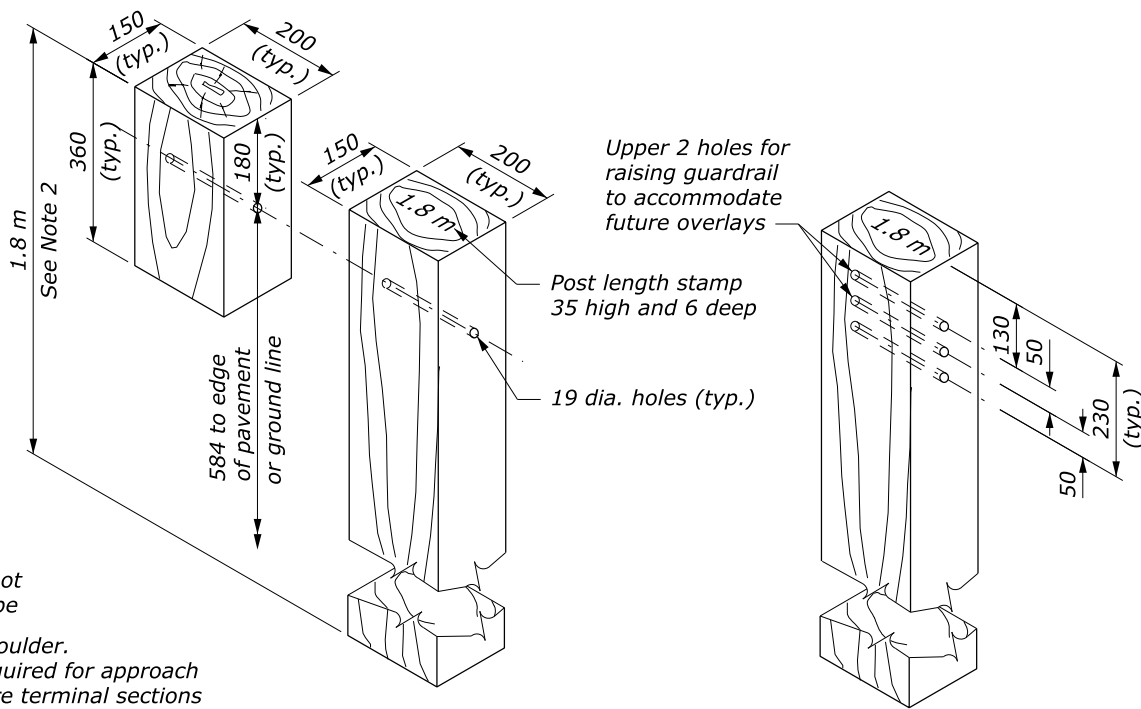
- NOTE:**
1. When encountering impenetrable material, see Standards M617-13 or M617-24.
 2. See Special Contract Requirements when 2 m or longer posts are specified.
 3. See Special Contract Requirements when the alternative hole arrangement is specified.
 4. Install delineator every fourth post. Fasten delineator to post using two 50 mm x 10 mm lag screws with washers, along centerline of post; or fasten as specified by the manufacturer.
 5. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.
 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.



L	Thread Length
32	30 minimum
50	45 minimum
255	100 minimum
460	100 minimum
640	100 minimum



GUARDRAIL BOLT AND RECESS NUT

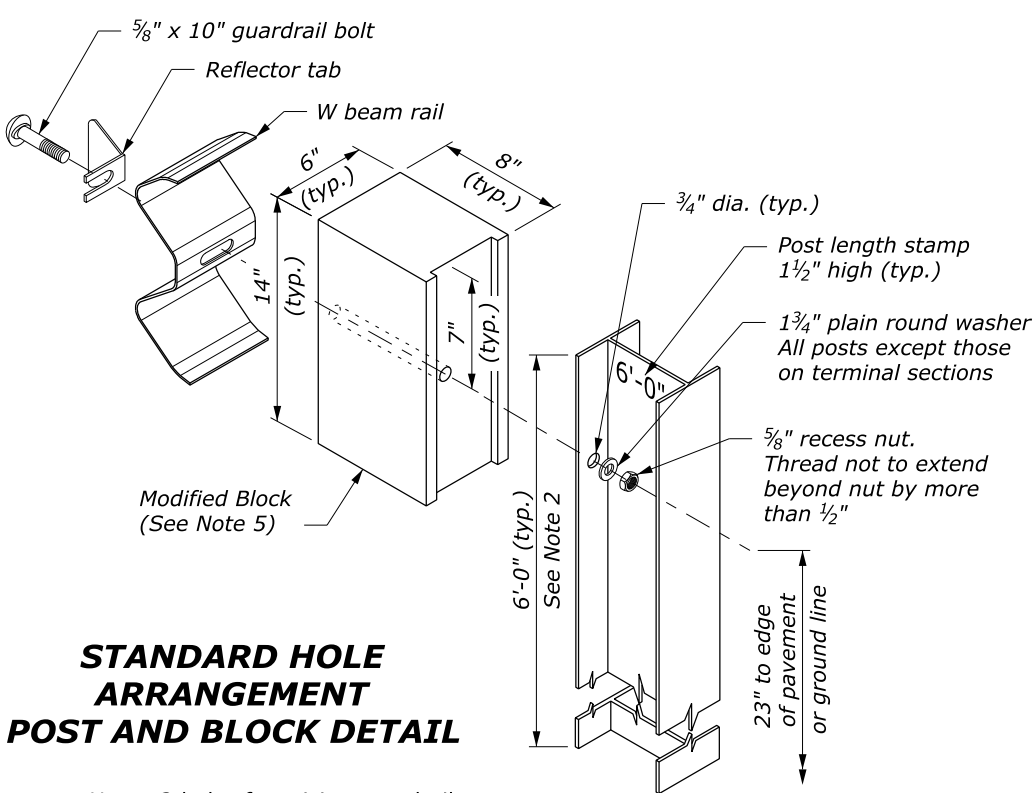
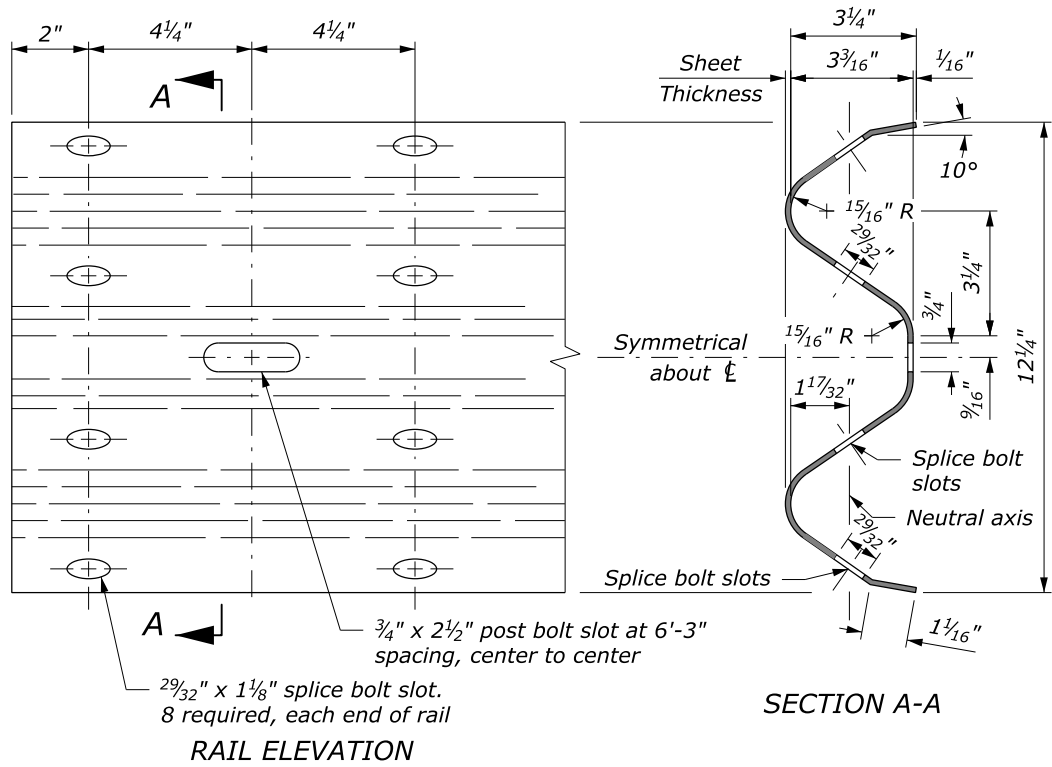


STANDARD HOLE ARRANGEMENT POST AND BLOCK DETAIL

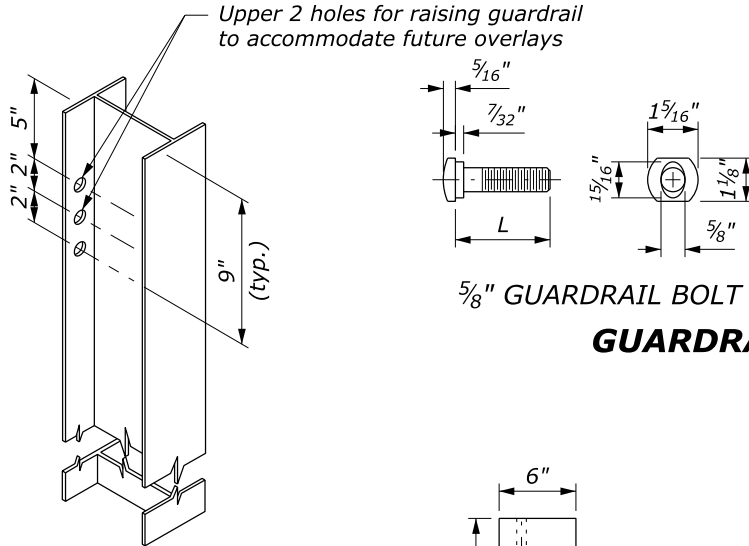
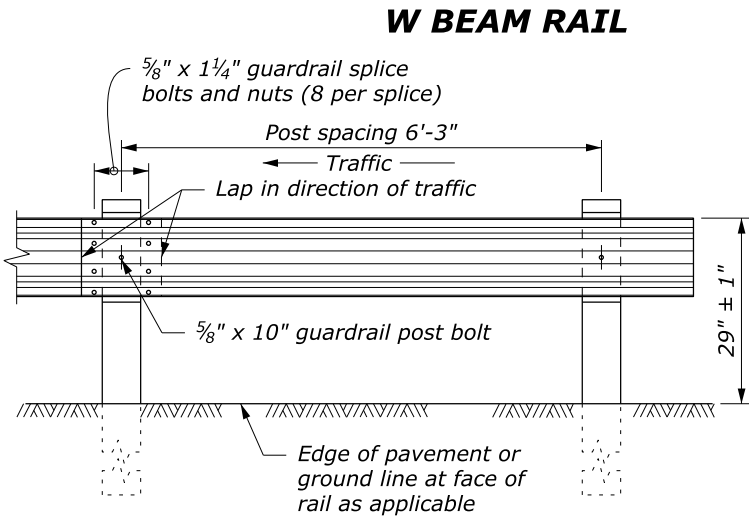
ALTERNATE HOLE ARRANGEMENT POST AND BLOCK DETAIL

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
G4 W-BEAM GUARDRAIL WOOD POSTS	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 8/1997 6/2005 DRAFT: 9/2017	M617-10

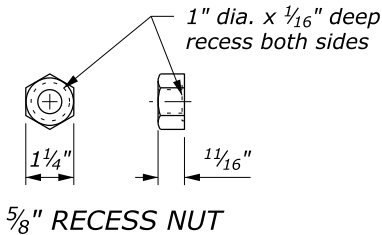
NO SCALE



- NOTE:
- When encountering impenetrable material, see Standards 617-13 or 617-24.
 - See Special Contract Requirements when 7 foot or longer posts are specified.
 - See Special Contract Requirements when the alternative hole arrangement is specified.
 - Install delineator every fourth post. Fasten delineator to post using two galvanized 2" x 3/8" bolts with a washer on both sides, a lock washer, and nut; or fasten as specified by the manufacturer.
 - Modified block may be wood, plastic, or composite material. Use consistent material throughout the length of guardrail run.
 - Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.

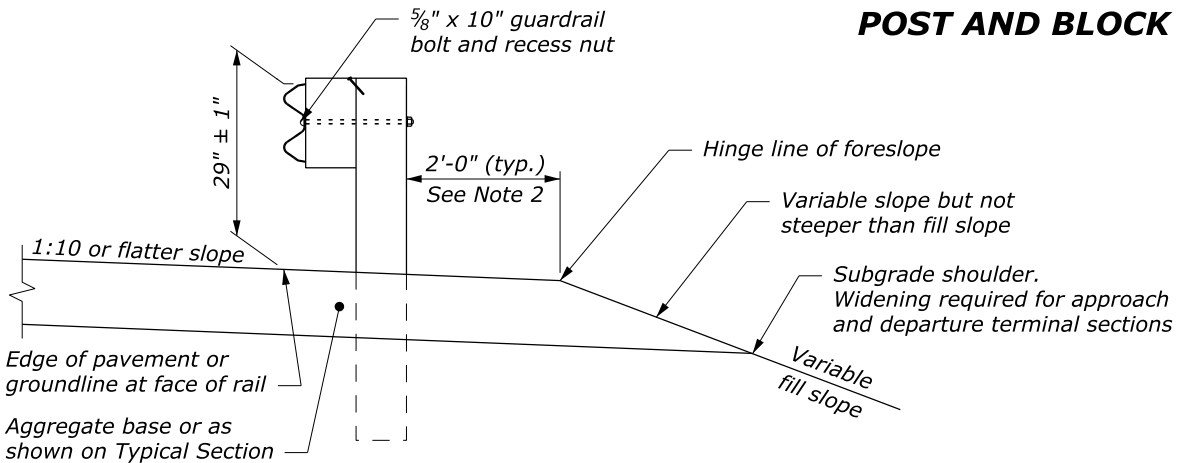


L	Thread Length
1 1/4"	1 1/8" minimum
2"	1 3/4" minimum
10"	4" minimum
18"	4" minimum
25"	4" minimum



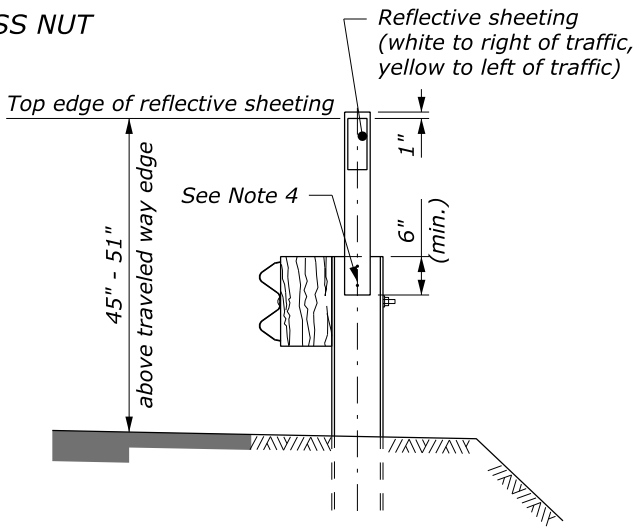
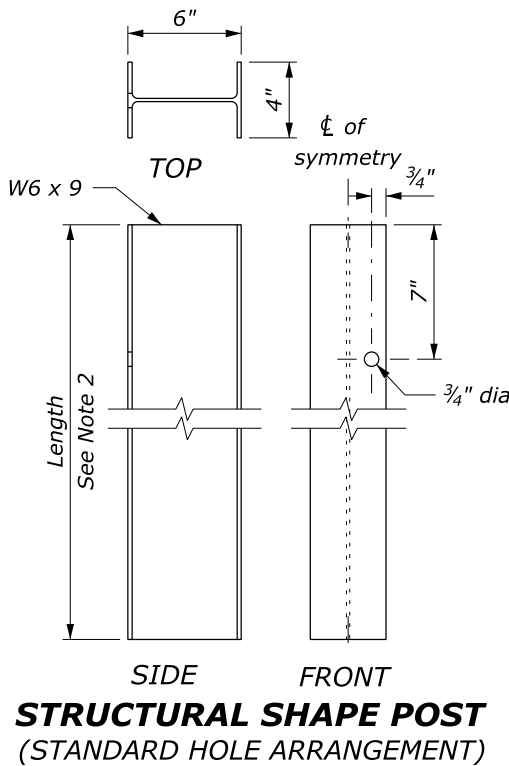
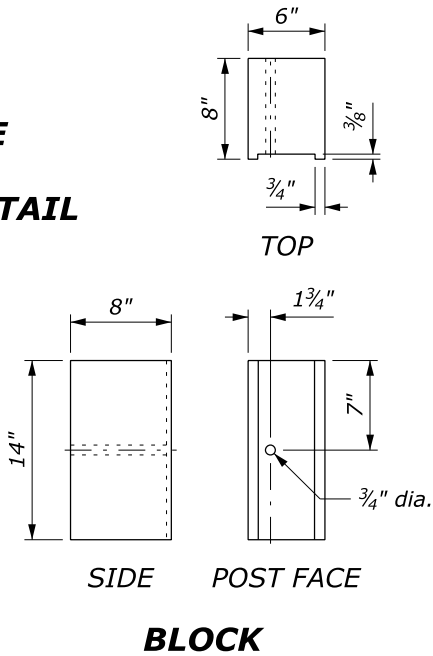
GUARDRAIL BOLT AND RECESS NUT

POST SPACING STANDARD POST SECTION



TYPICAL GUARDRAIL CROSS SECTION

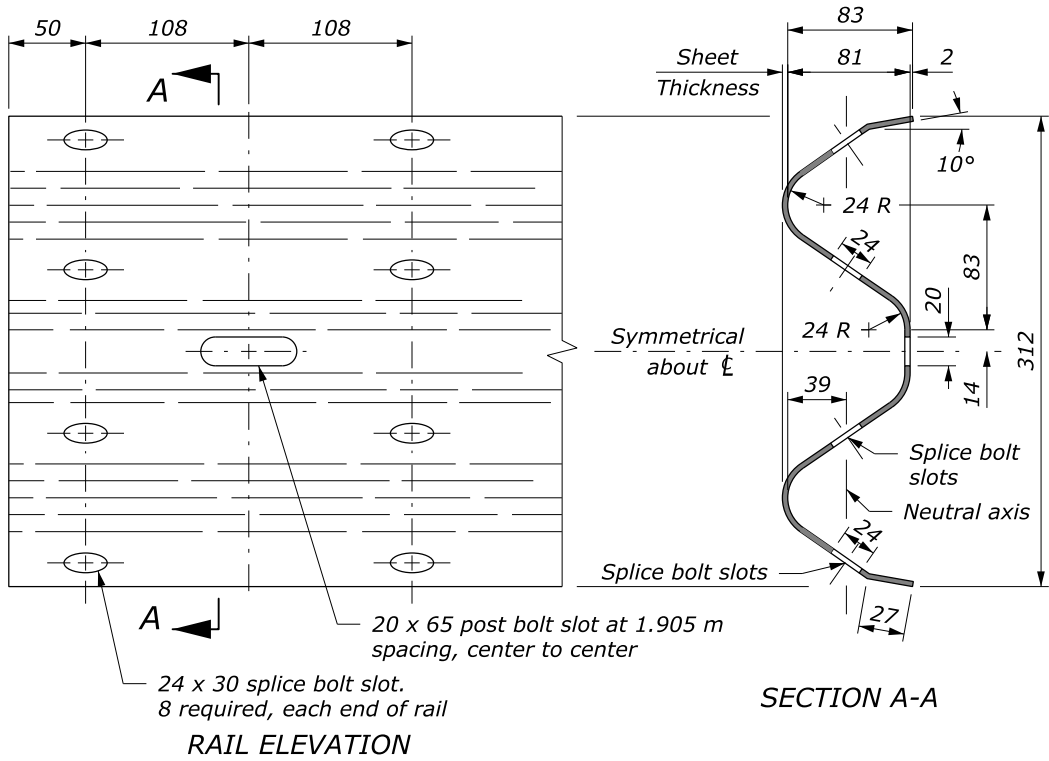
ALTERNATE HOLE ARRANGEMENT POST AND BLOCK DETAIL



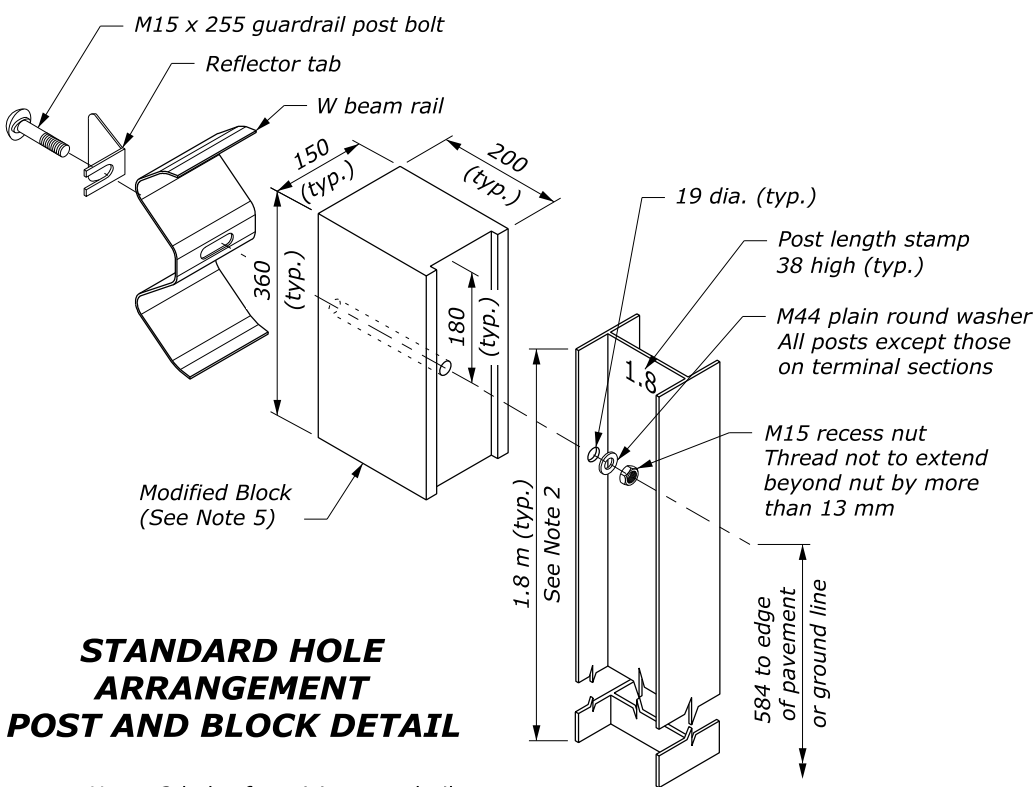
FLEXIBLE GUIDE POST GUARDRAIL MOUNT

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
G4 W-BEAM GUARDRAIL STEEL POSTS	
STANDARD APPROVED FOR USE 1/1994 REVISED: 4/1994 6/2005 DRAFT: 9/2017	STANDARD 617-11

NO SCALE



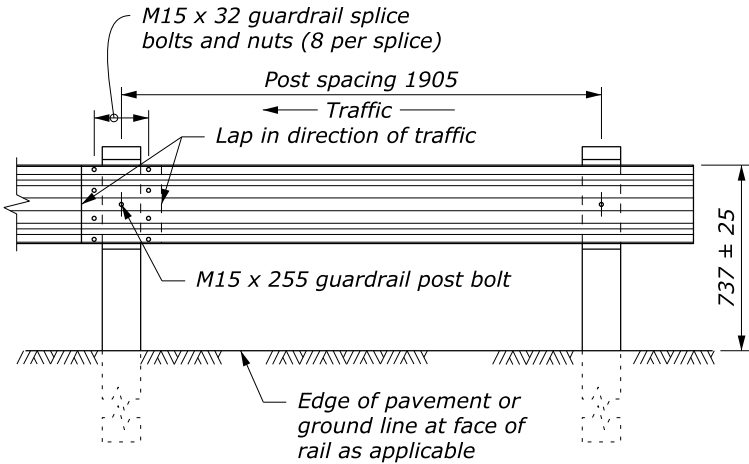
STANDARD HOLE
ARRANGEMENT
POST AND BLOCK DETAIL



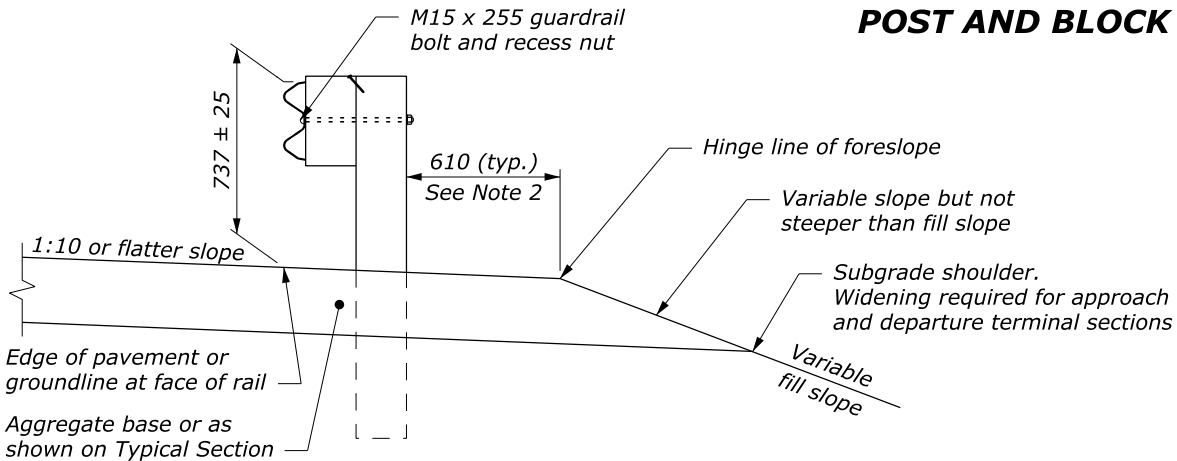
NOTE:

- When encountering impenetrable material, see Standards M617-13 or M617-24.
- See Special Contract Requirements when 2 m or longer posts are specified.
- See Special Contract Requirements when the alternative hole arrangement is specified.
- Install delineator every fourth post. Fasten delineator to post using two galvanized 50 mm x 9.5 mm bolts with a washer on both sides, a lock washer, and nut; or fasten as specified by the manufacturer.
- Modified block may be wood, plastic, or composite material. Use consistent material throughout the length of guardrail run.
- Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.
- Furnish hardware in the metric sizes shown. Equivalent US Customary sizes may be used when metric sizes are unavailable.
- Dimensions without units are millimeters.

W BEAM RAIL

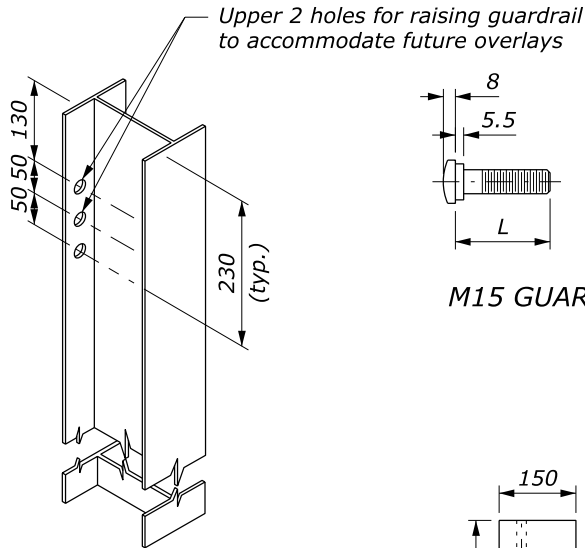


POST SPACING
STANDARD POST SECTION

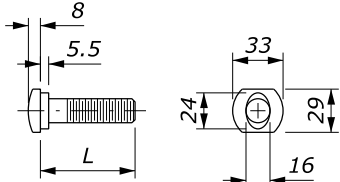


TYPICAL GUARDRAIL CROSS SECTION

ALTERNATE HOLE
ARRANGEMENT
POST AND BLOCK DETAIL



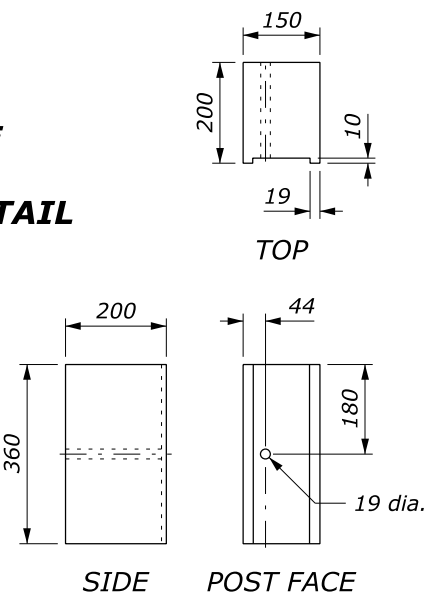
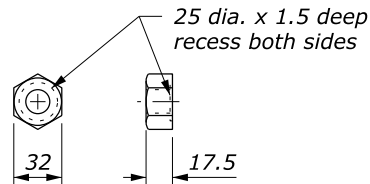
M15 GUARDRAIL BOLT



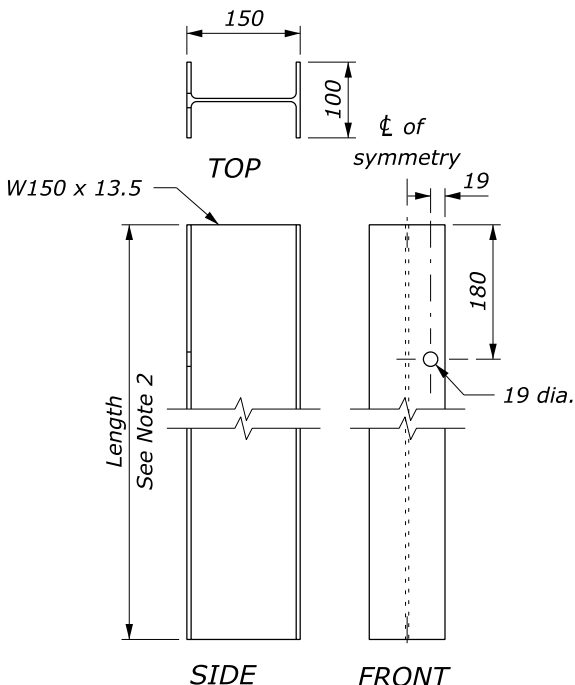
GUARDRAIL BOLT AND RECESS NUT

L	Thread Length
32	30 minimum
50	45 minimum
255	100 minimum
460	100 minimum
640	100 minimum

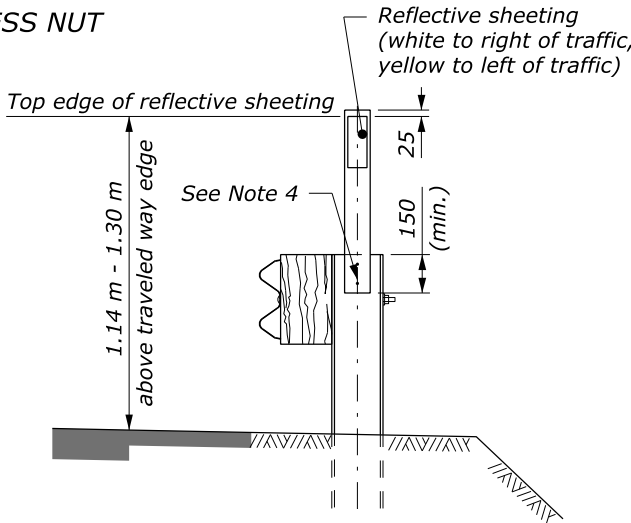
M15 RECESS NUT



BLOCK



STRUCTURAL SHAPE POST
(STANDARD HOLE ARRANGEMENT)

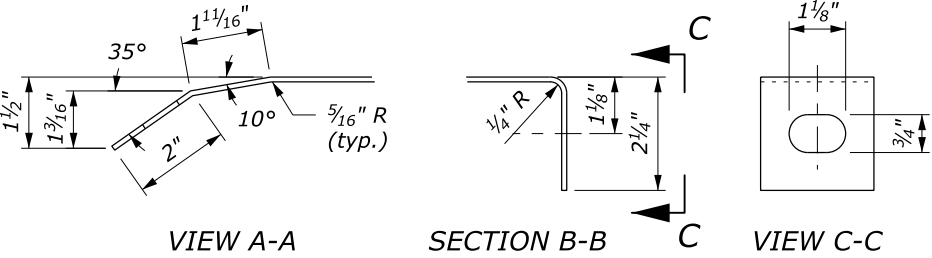


FLEXIBLE GUIDE POST
GUARDRAIL MOUNT

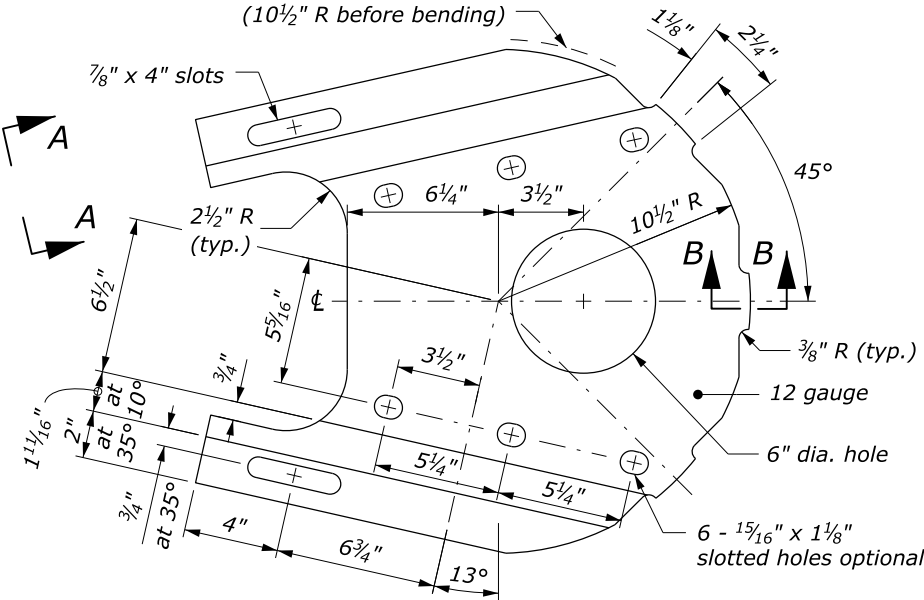
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
G4 W-BEAM GUARDRAIL STEEL POSTS	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 6/1997 12/1998 6/2005	M617-11
DRAFT: 9/2017	

NO SCALE

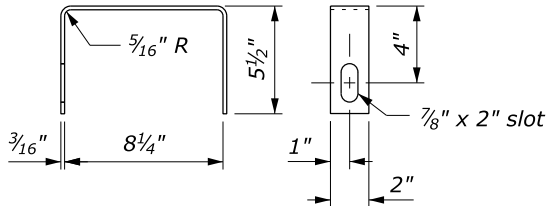
- APPROACH & DEPARTURE FLARE
WITH MODIFIED ECCENTRIC LOADER TERMINAL**



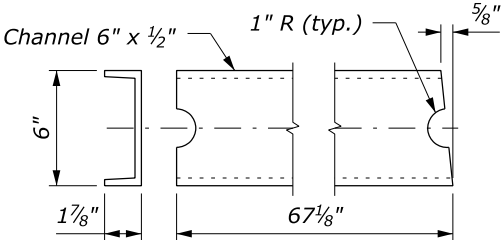
DIAPHRAGM PLATE DETAILS



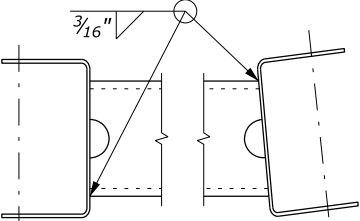
DIAPHRAGM PLATE
(2 required each terminal)



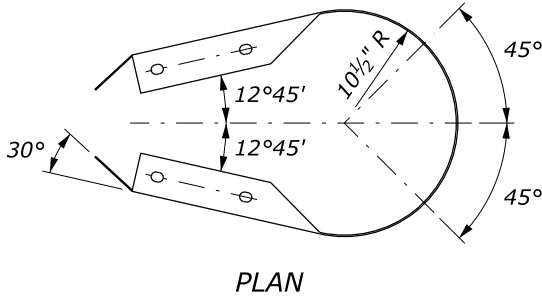
YOKE DETAILS



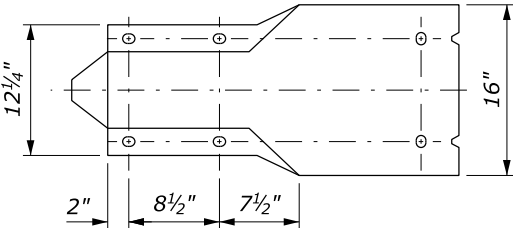
STRUT DETAILS



STRUT AND YOKE ASSEMBLY

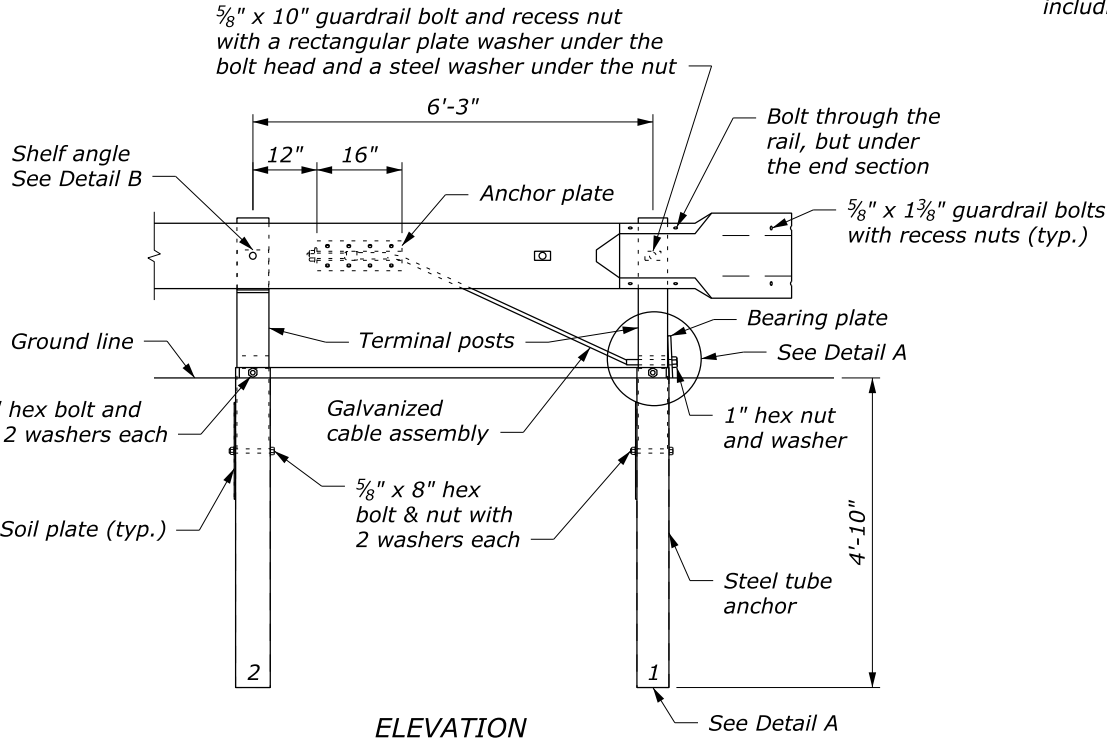
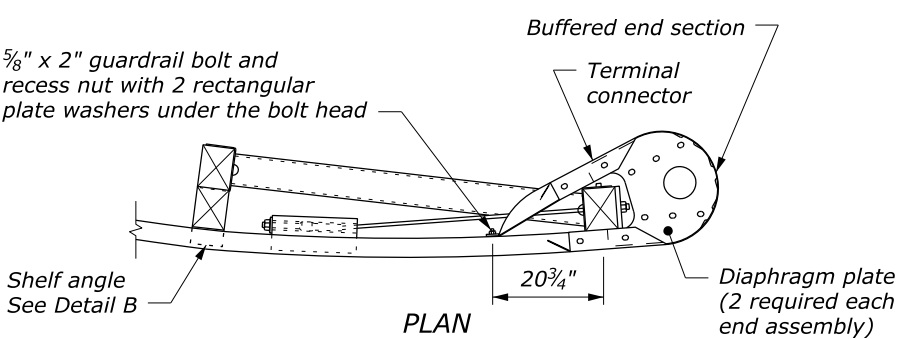


PLAN

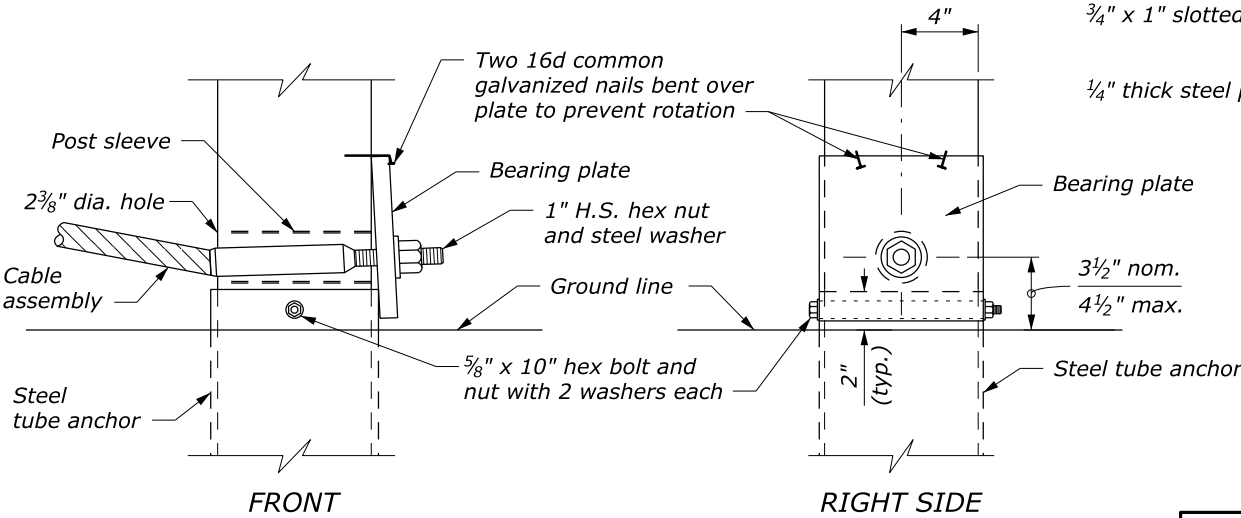


ELEVATION

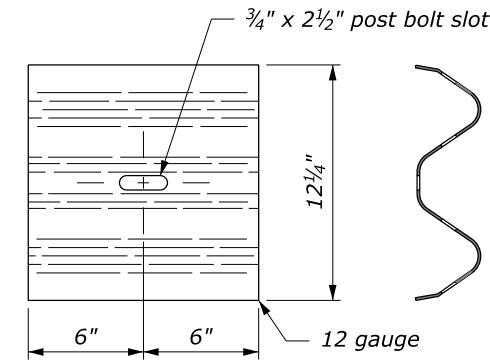
BUFFERED END SECTION



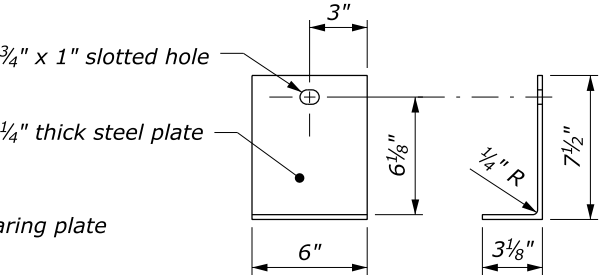
ANCHORAGE ASSEMBLY



DETAIL A
POST #1 ASSEMBLY

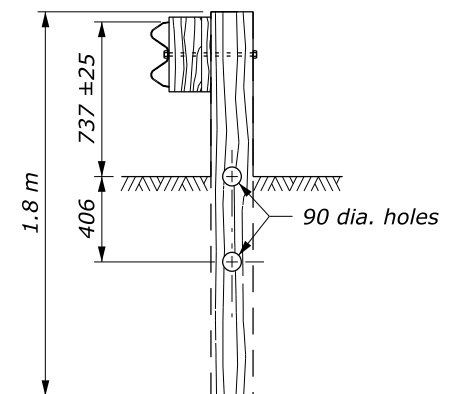


W-BEAM BACK UP PLATE
POSTS #4, 5, 7, & 8



DETAIL B
POST #2 SHELF ANGLE

1. *Do not use terminal where speeds are in excess of 70 kph.*
2. *Extend bolts through the post and block, but not through the W beam rail for Posts #2-8. Extend bolts through the W-Beam rail for Posts #1 and #9.*
3. *Use Back-up plates on posts #4, 5, 7, and 8.*
4. *Use Shelf angle on post #2.*
5. *Dimensions without units are millimeters.*

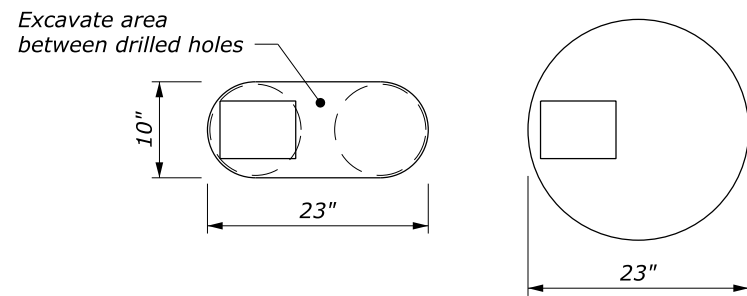


NO SCALE

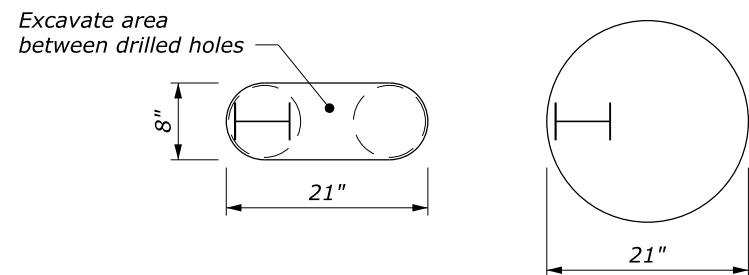
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD G4 W-BEAM GUARDRAIL MODIFIED ECCENTRIC LOADER TERMINAL, TYPE MELT Sheet 1 of 2	
STANDARD APPROVED FOR USE 3/1996 REVISED: 12/1998 6/2005 DRAFT: 4/2016	STANDARD M617-12

24 February 2016 8:59 AM c:\myfiles\pw_production\0243077\FH-Cells.dgnlib [Border.US]

STATE	PROJECT	SHEET NUMBER

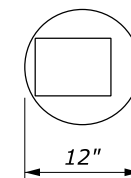


Wood Post

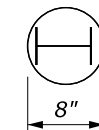


Steel Post

PLAN VIEW



Wood Post

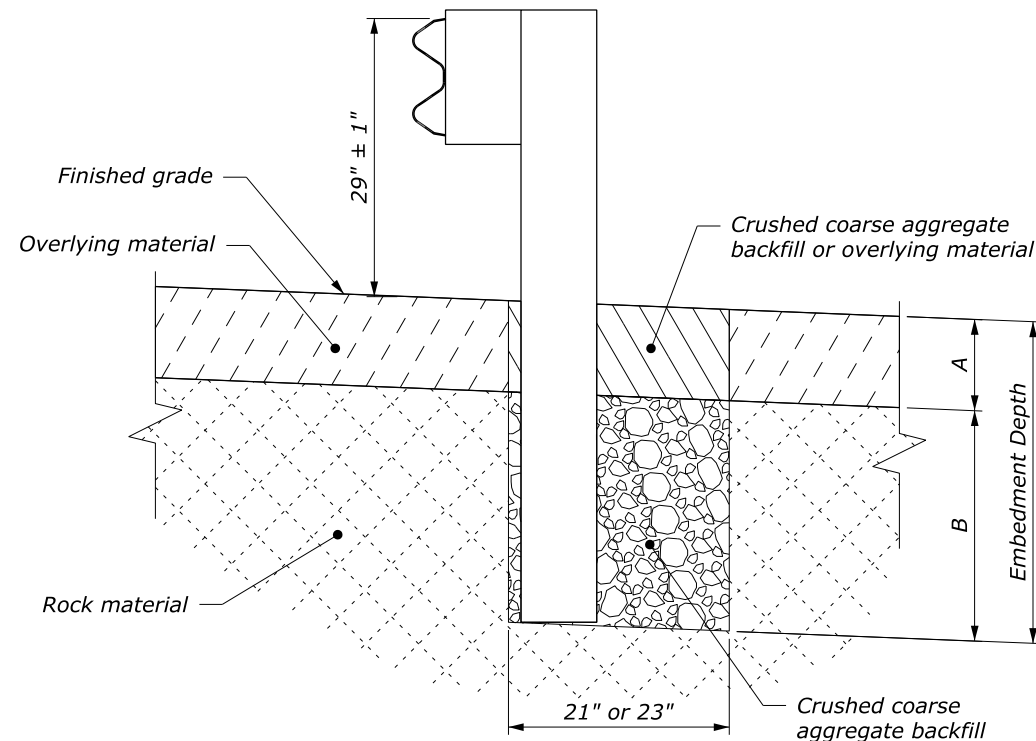


Steel Post

PLAN VIEW

NOTE:

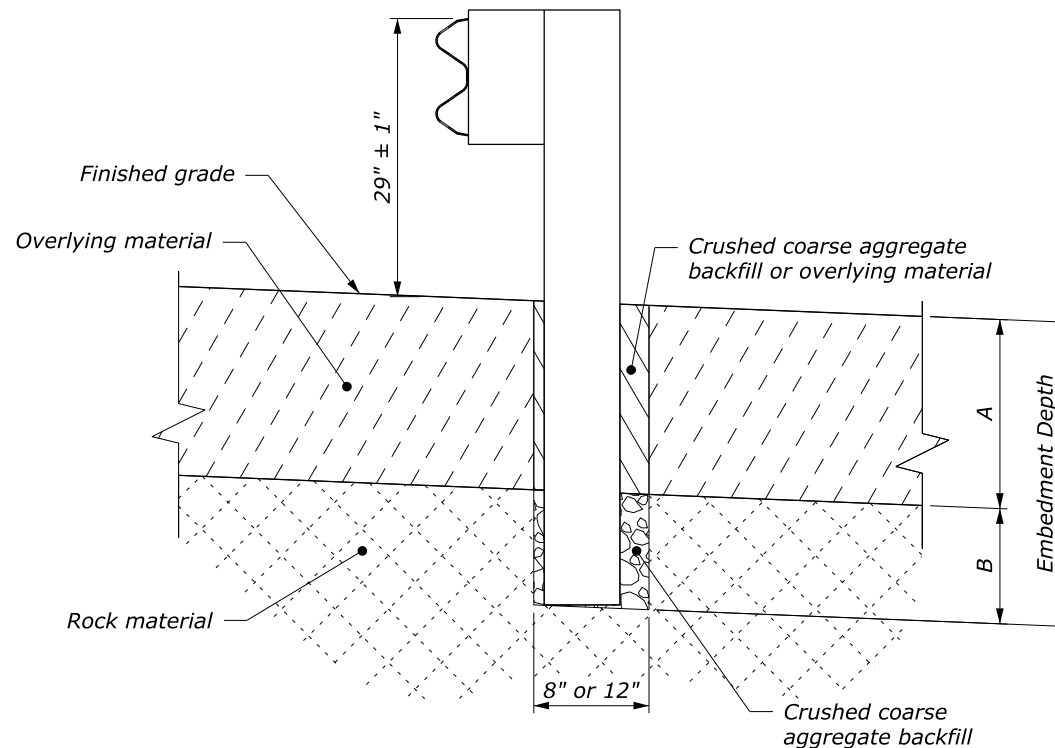
1. Use this standard when posts cannot be embedded to the minimum depth shown on Standards 617-10 or 617-11.
2. Unless otherwise specified use either the circular or the oblong hole configuration for Case 1 conditions.
3. Crushed coarse aggregate backfill conforms to "coarse aggregate for concrete" or "granular backfill for underdrain pipe with geotextile" in Section 703.
4. Place crushed coarse aggregate according to the post requirements in Section 617.
5. Treat field cut galvanized steel post surfaces that expose the base metal with two coats of zinc-oxide paint.



ELEVATION

Case 1: Overlying material depth (A) is 18" or less.

POST EMBEDMENT DIMENSIONS			
HOLE TYPE	EMBEDMENT DEPTH	OVERLYING MATERIAL (A)	DRILLING DEPTH (B)
Case 1	24" to 42"	0 to 18"	24"
Case 2	30" to 42"	> 18" to 30"	12"
	42"	> 30"	42" - A

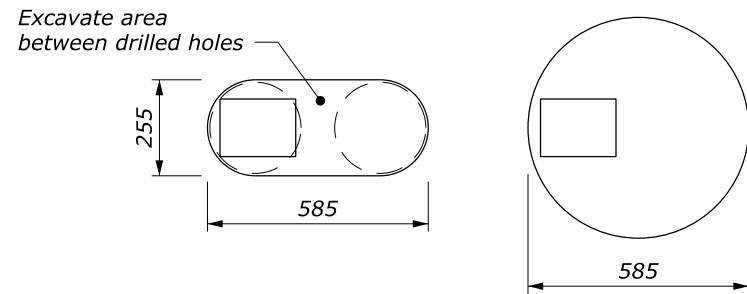


ELEVATION

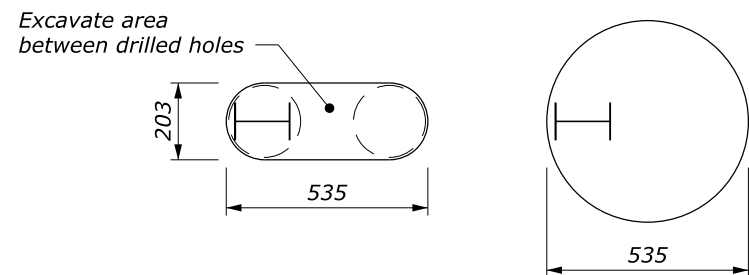
Case 2: Overlying material depth (A) is greater than 18".

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
G4 W-BEAM GUARDRAIL INSTALLATION IN ROCK	
STANDARD APPROVED FOR USE --/----	STANDARD
REVISED: DRAFT: 6/2014	617-13

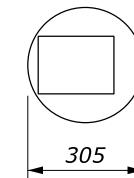


Wood Post

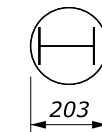


Steel Post

PLAN VIEW



Wood Post

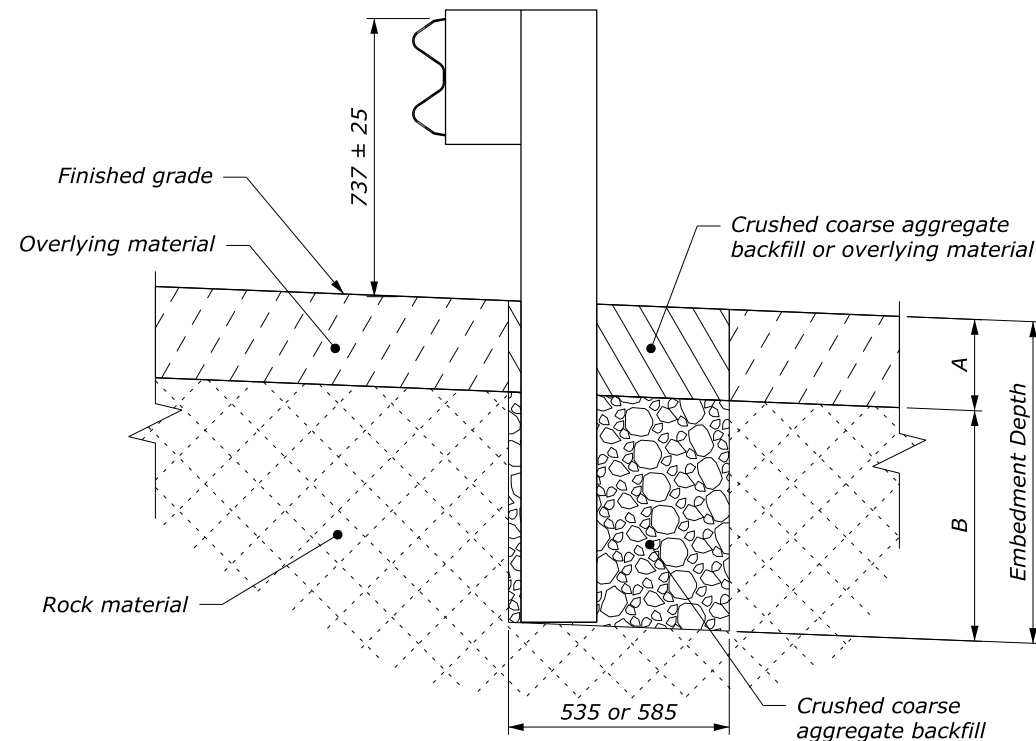


Steel Post

PLAN VIEW

NOTE:

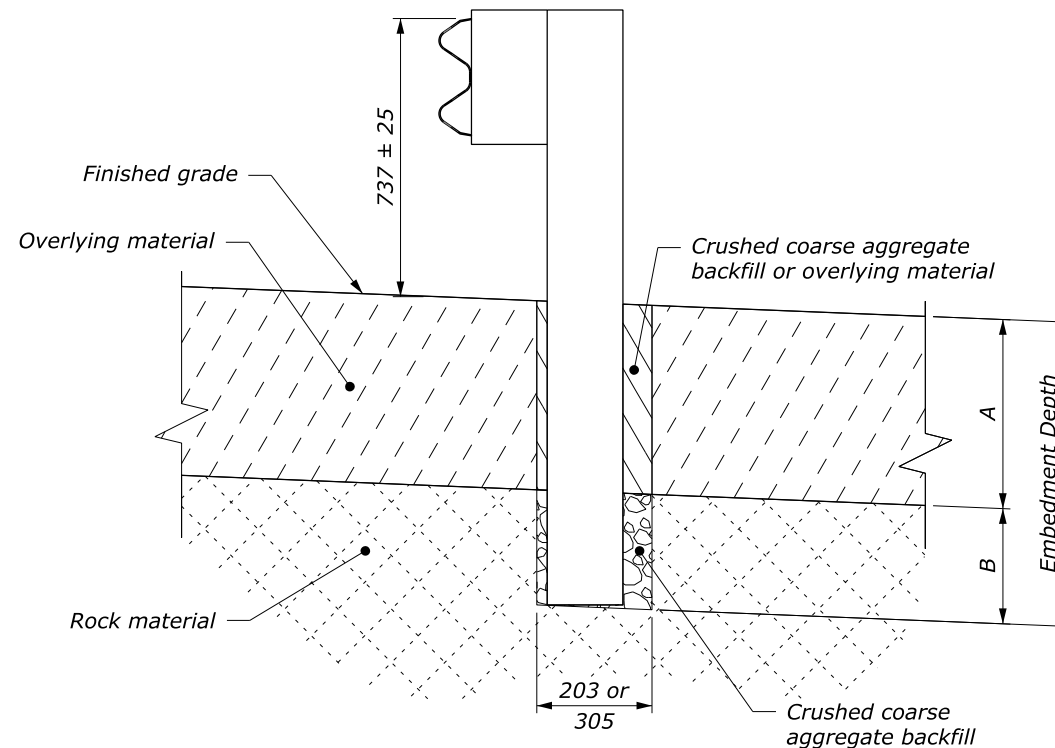
1. Use this standard when posts cannot be embedded to the minimum depth shown on Standards M617-10 or M617-11.
2. Unless otherwise specified use either the circular or the oblong hole configuration for Case 1 conditions.
3. Crushed coarse aggregate backfill conforms to "coarse aggregate for concrete" or "granular backfill for underdrain pipe with geotextile" in Section 703.
4. Place crushed coarse aggregate according to the post requirements in Section 617.
5. Treat field cut galvanized steel post surfaces that expose the base metal with two coats of zinc-oxide paint.
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.



ELEVATION

Case 1: Overlying material depth (A) is 457 mm or less.

POST EMBEDMENT DIMENSIONS			
HOLE TYPE	EMBEDMENT DEPTH	OVERLYING MATERIAL (A)	DRILLING DEPTH (B)
Case 1	610 to 1065	0 to 457	610
	760 to 1065	> 457 to 760	305
Case 2	1065	> 760	1065 - A

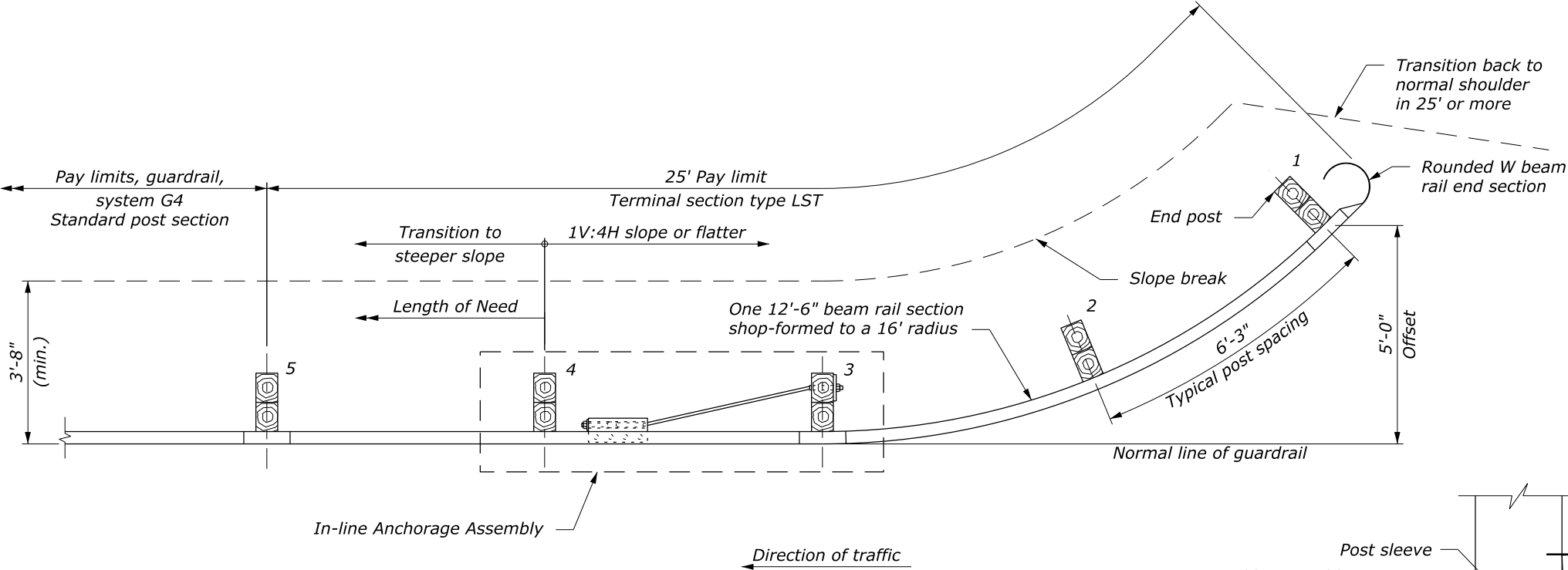


ELEVATION

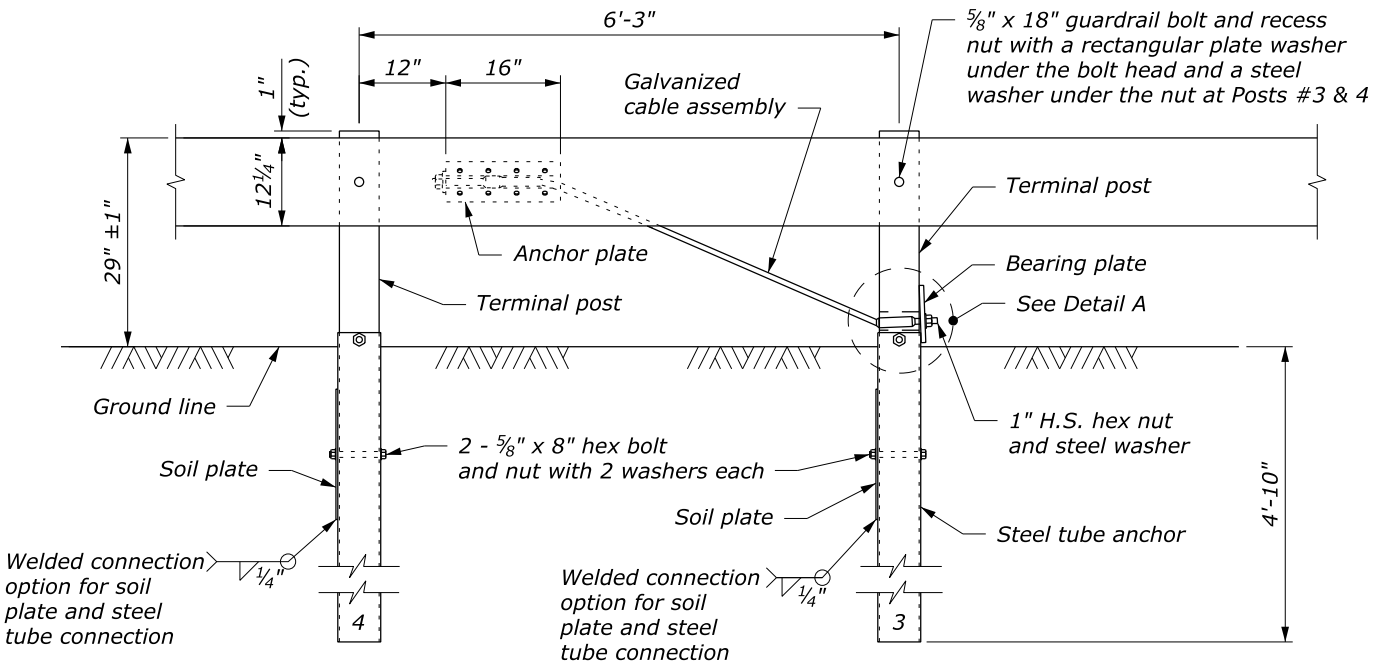
Case 2: Overlying material depth (A) is greater than 457 mm.

NO SCALE

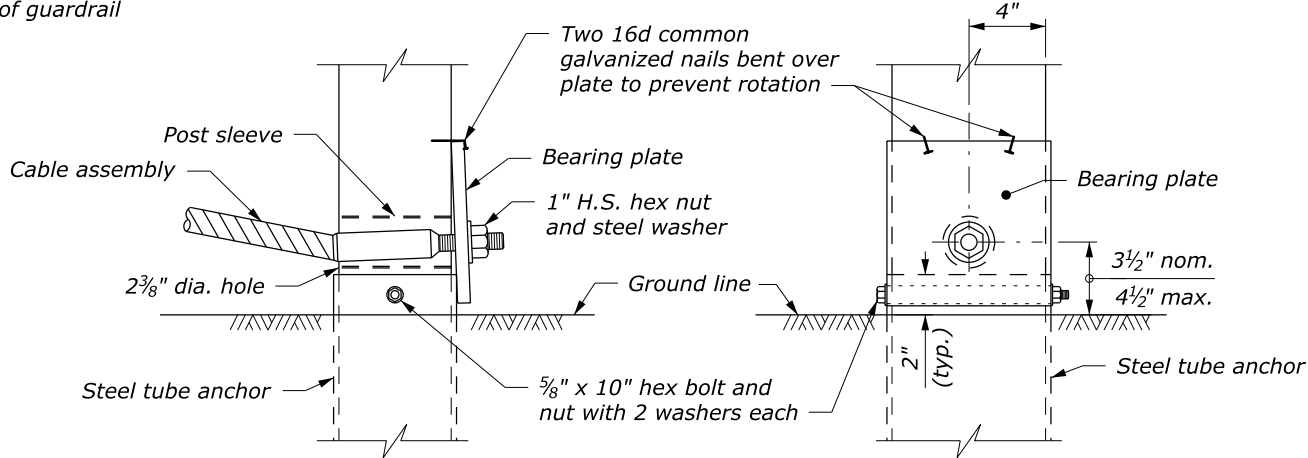
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
G4 W-BEAM GUARDRAIL INSTALLATION IN ROCK	
STANDARD APPROVED FOR USE --/----	STANDARD
REVISED: DRAFT: 6/2014	M617-13



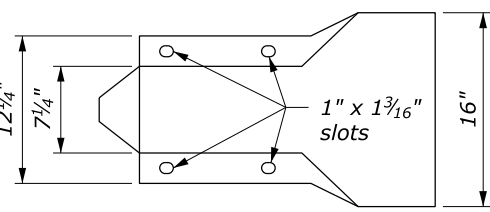
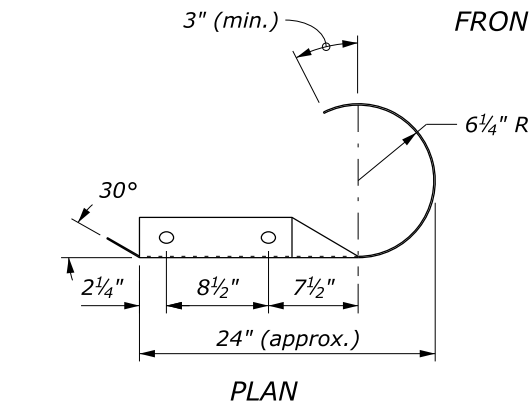
PLAN



ELEVATION
IN-LINE ANCHORAGE ASSEMBLY



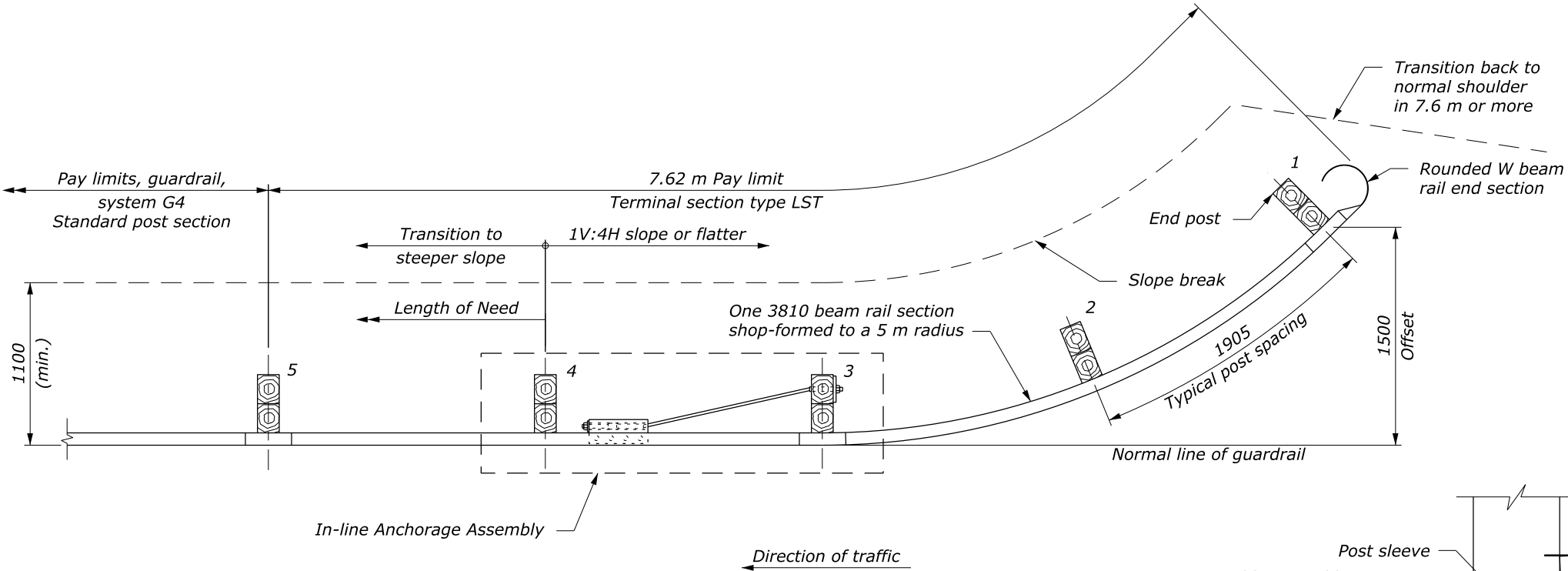
DETAIL A
POST #3 ASSEMBLY



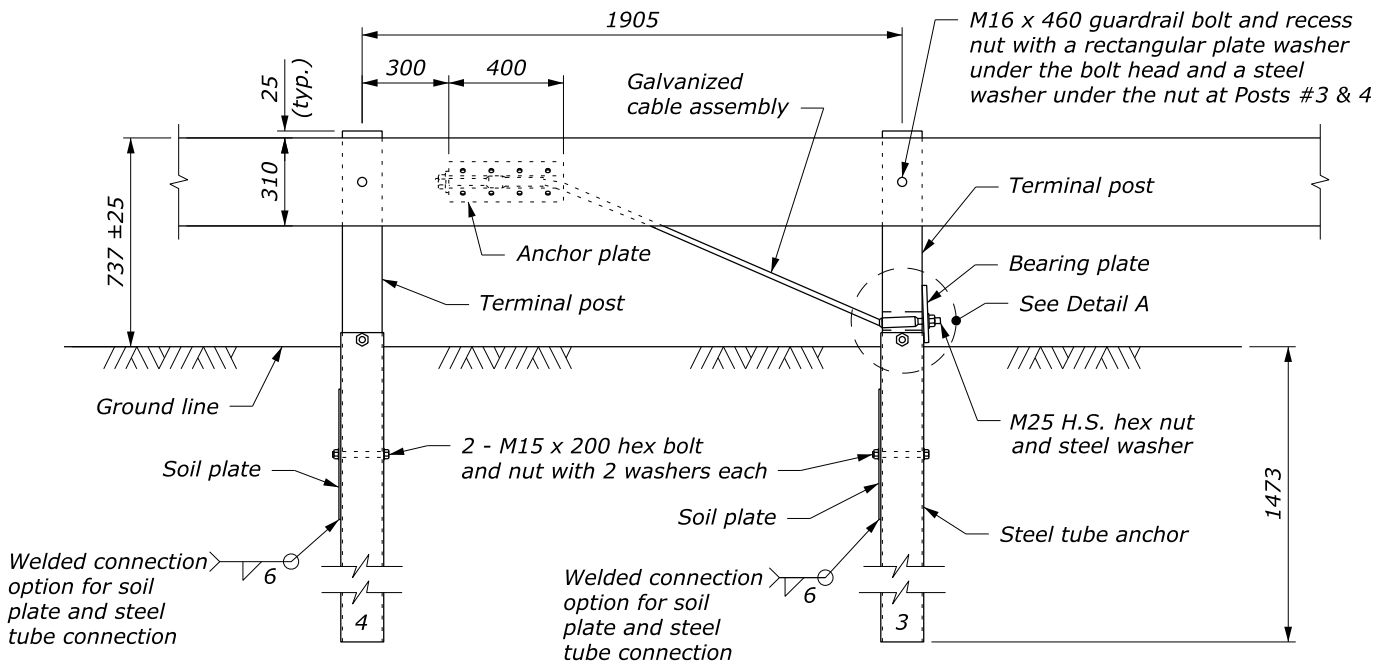
ELEVATION
ROUNDED END SECTION

NO SCALE

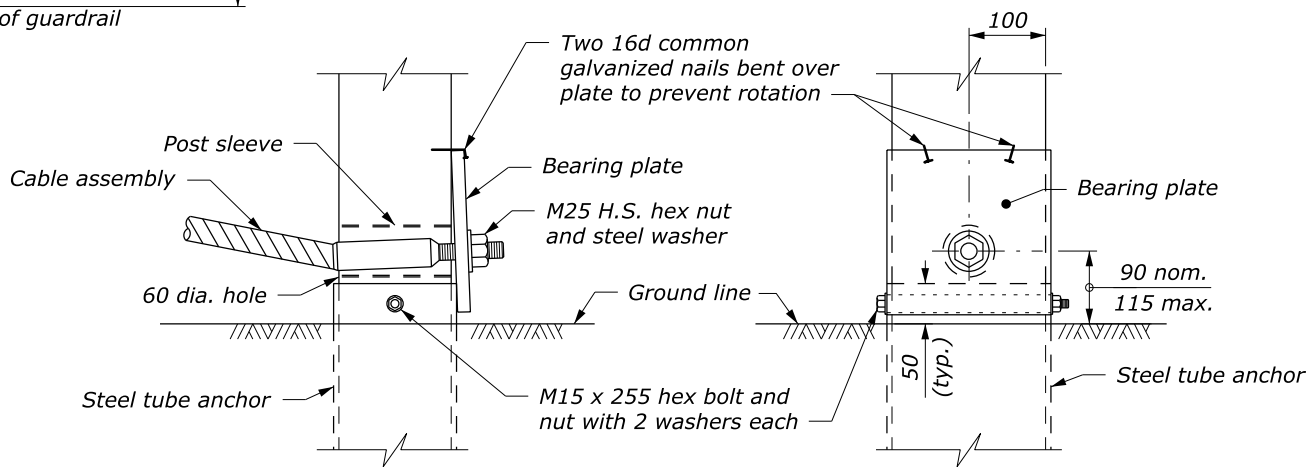
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD G4-W BEAM GUARDRAIL LOW SPEED TERMINAL TYPE LST, WOOD POSTS	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED: DRAFT: 12/2014	617-14



PLAN



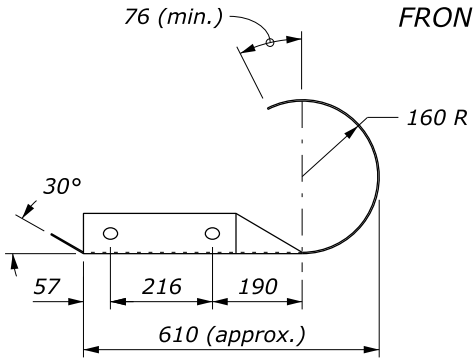
ELEVATION
IN-LINE ANCHORAGE ASSEMBLY



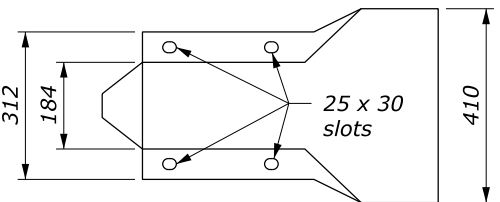
FRONT

RIGHT SIDE

DETAIL A
POST #3 ASSEMBLY



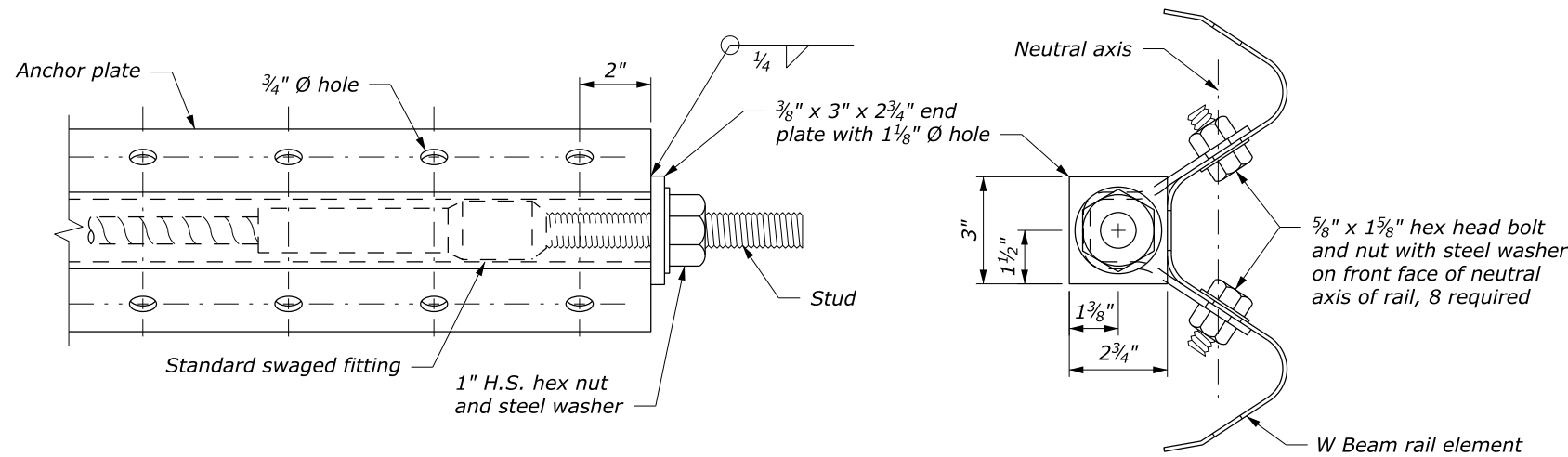
PLAN



ELEVATION
ROUNDED END SECTION

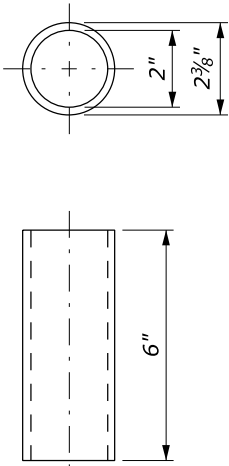
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD G4-W BEAM GUARDRAIL LOW SPEED TERMINAL TYPE LST, WOOD POSTS	
STANDARD APPROVED FOR USE 6/2005 REVISED: DRAFT: 12/2014	STANDARD M617-14

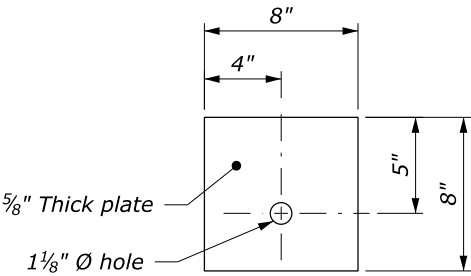


ANCHOR PLATE DETAILS FOR LST ANCHORAGE ASSEMBLY

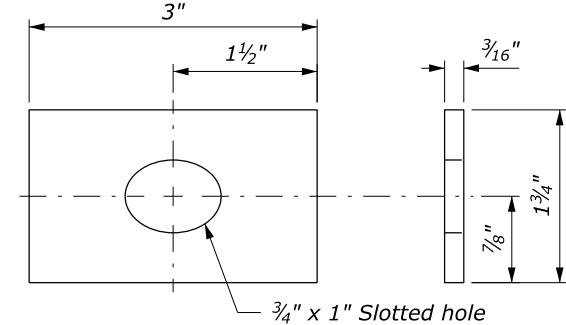
NOTE:
1. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.



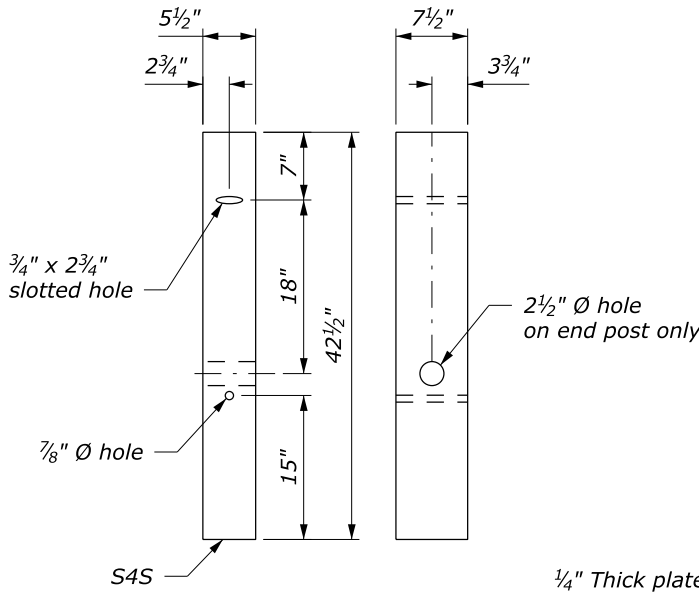
POST SLEEVE



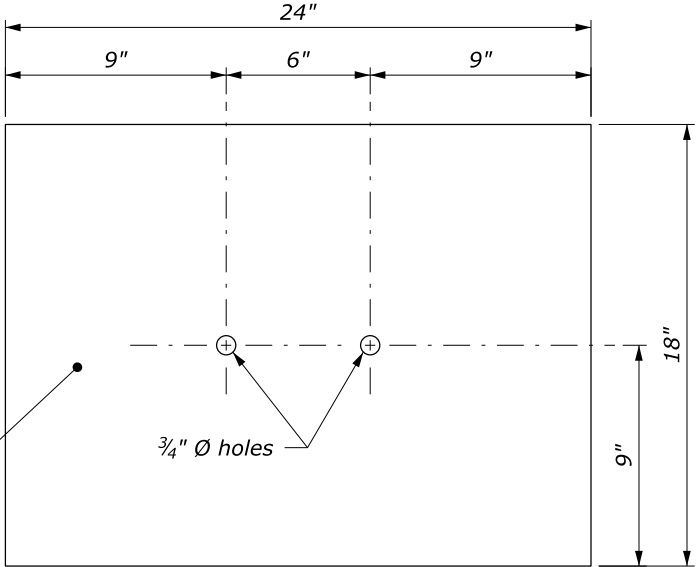
BEARING PLATE



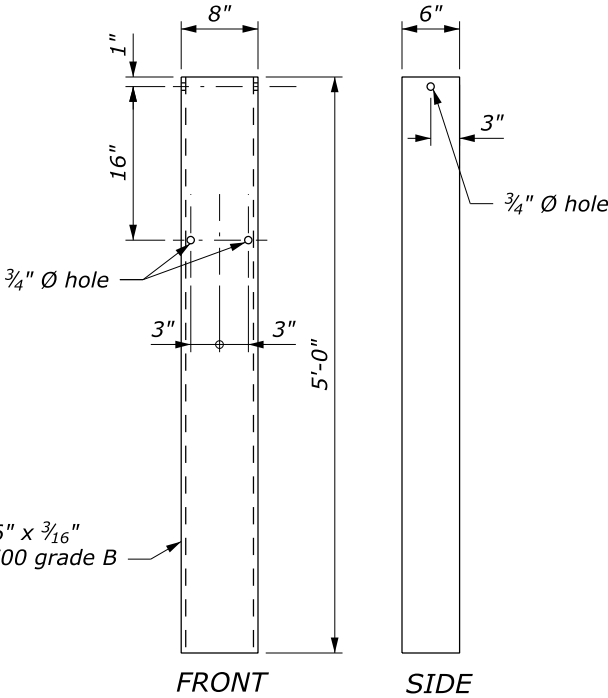
RECTANGULAR PLATE WASHER
(Use to attach the section to the post of anchorage assembly)



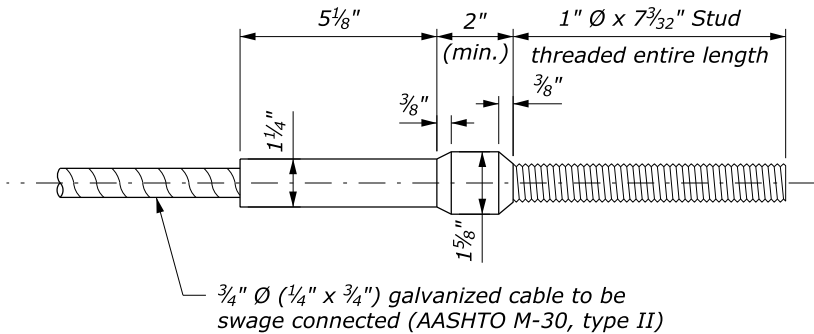
TERMINAL POST



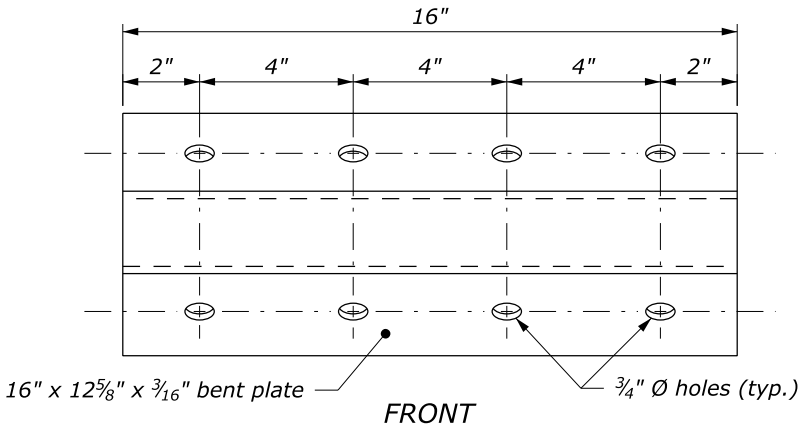
SOIL PLATE
(2 REQUIRED)



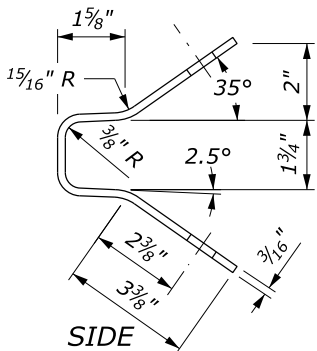
STEEL TUBE ANCHOR



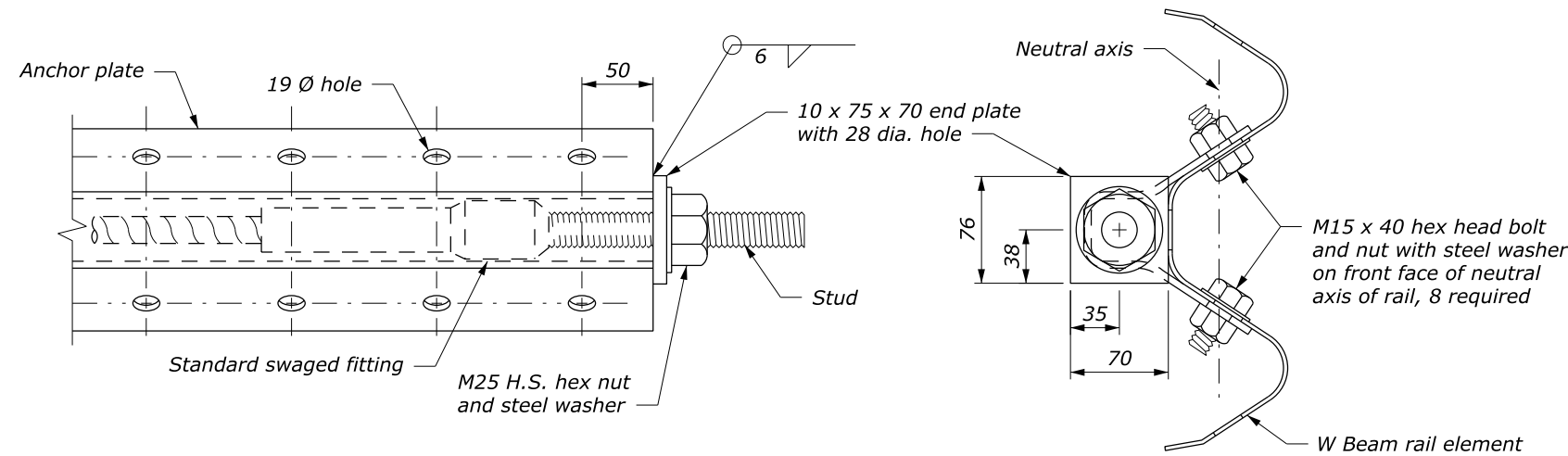
CABLE ASSEMBLY
(Standard swaged fitting and stud)



GUARDRAIL ANCHOR PLATE



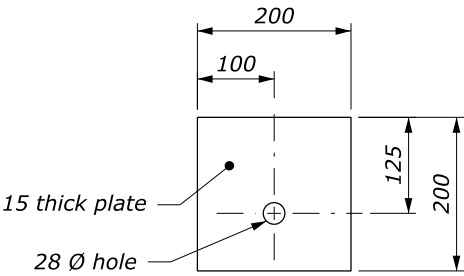
NO SCALE



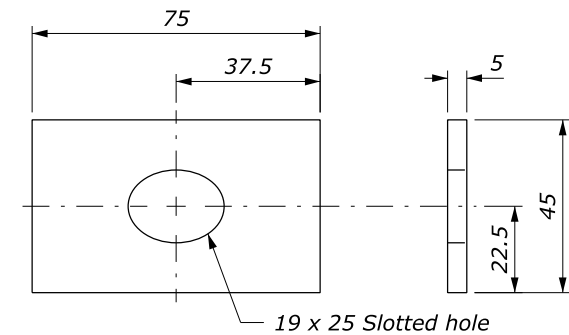
ANCHOR PLATE DETAILS FOR LST ANCHORAGE ASSEMBLY

NOTE:

1. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.
2. Furnish hardware in the metric sizes shown. Equivalent U.S. Customary sizes may be used when metric sizes are unavailable.
3. Dimensions without units are millimeters.

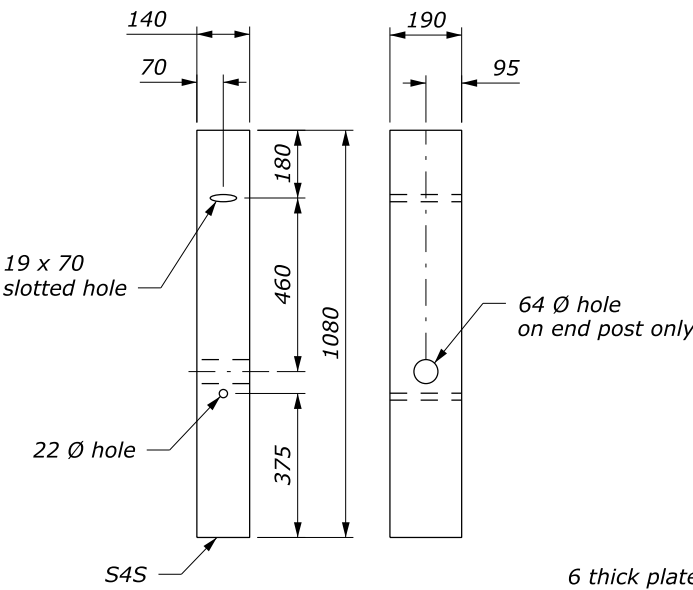


BEARING PLATE

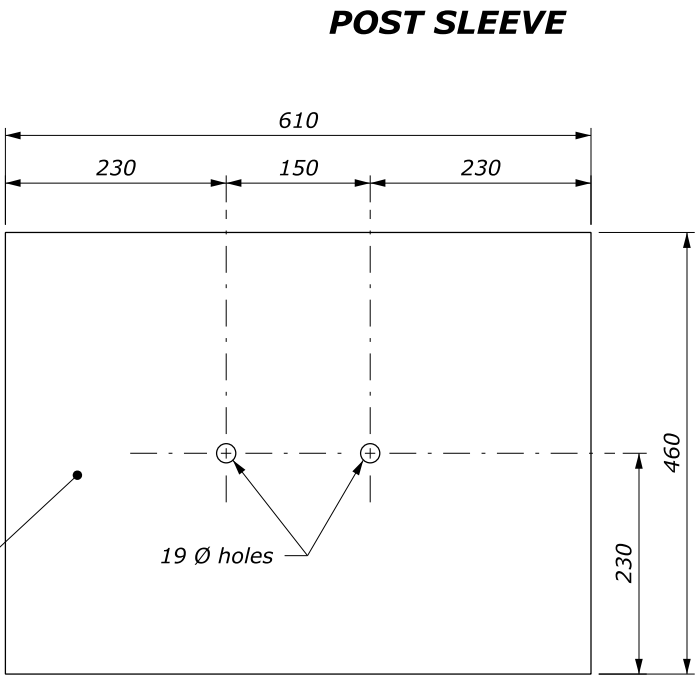


RECTANGULAR PLATE WASHER

(Use to attach the section to the post of anchorage assembly)



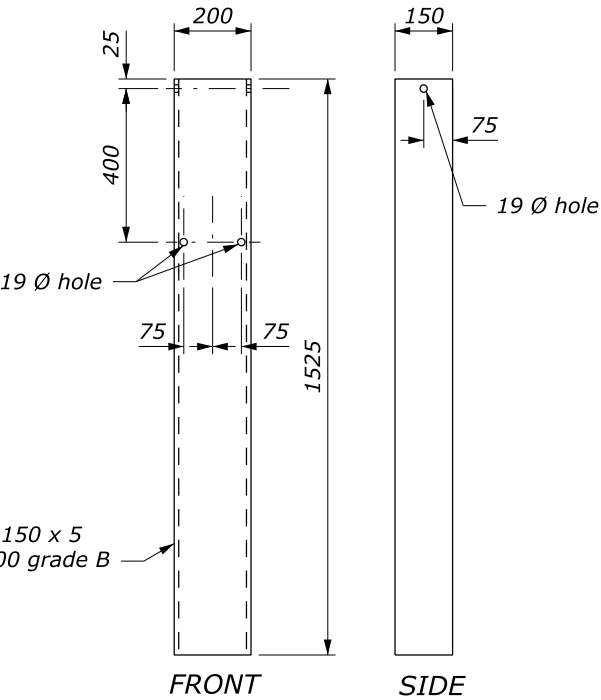
TERMINAL POST



POST SLEEVE

SOIL PLATE

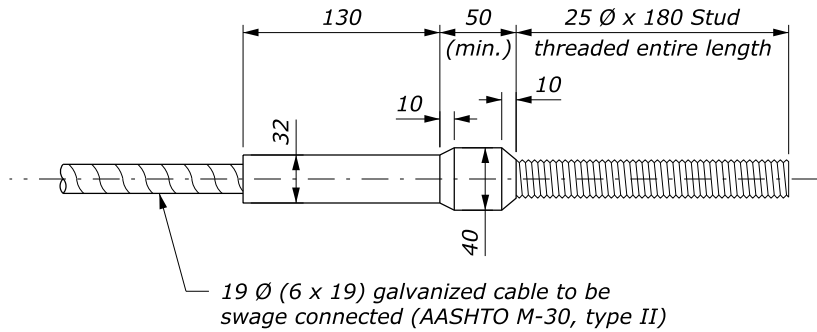
(2 REQUIRED)



FRONT

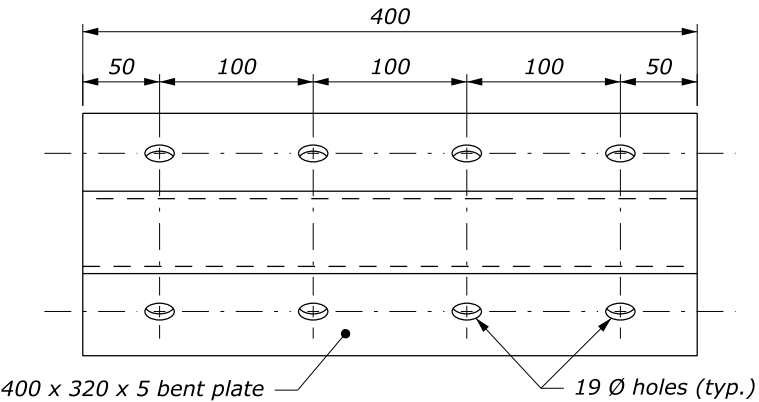
SIDE

STEEL TUBE ANCHOR



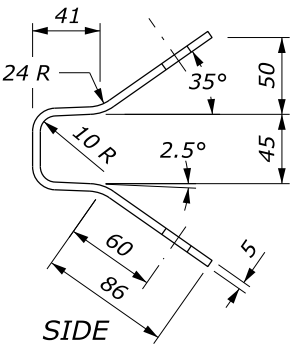
CABLE ASSEMBLY

(Standard swaged fitting and stud)



FRONT

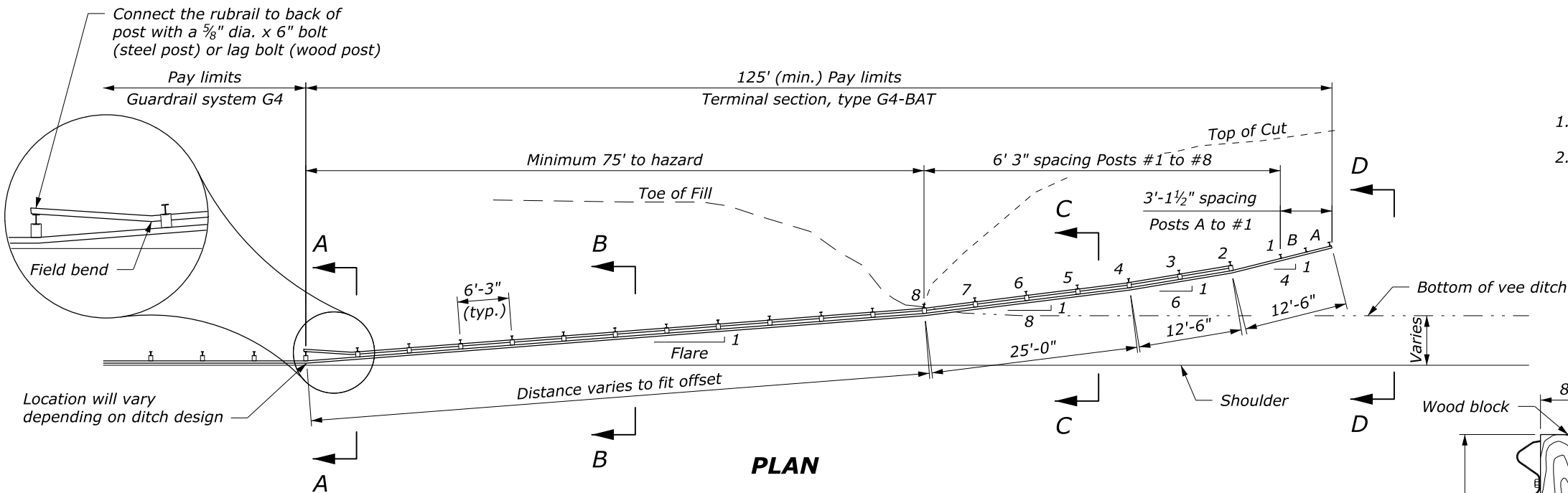
GUARDRAIL ANCHOR PLATE



SIDE

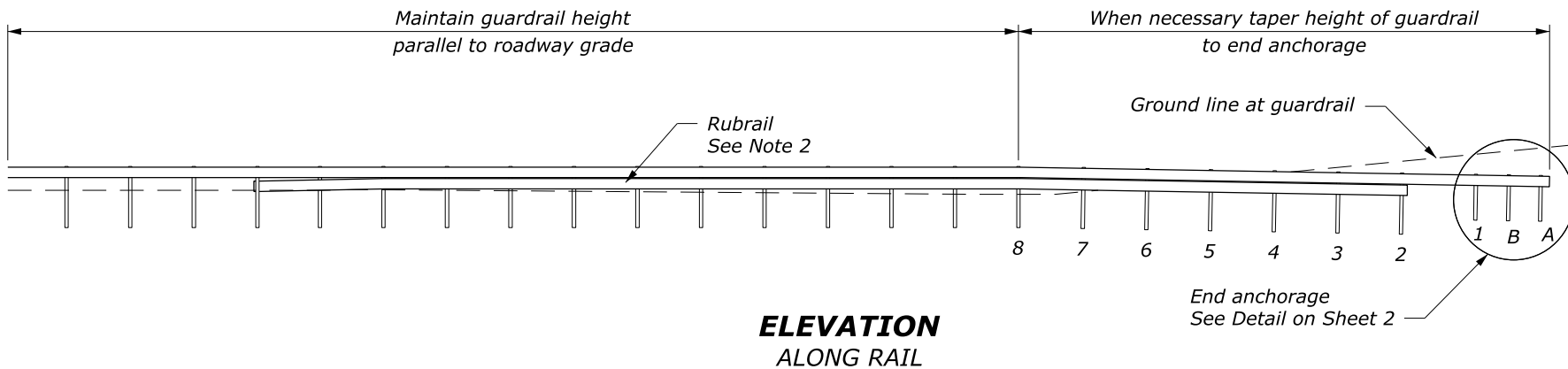
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
G4 W-BEAM GUARDRAIL MELT, LST & CRT ANCHORAGE ASSEMBLY DETAILS	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 8/1997 12/1998 6/2005	M617-15
DRAFT: 5/2014	



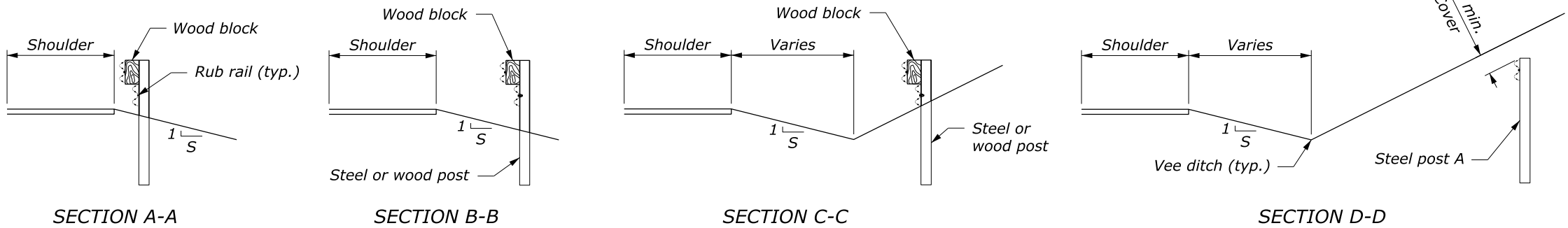
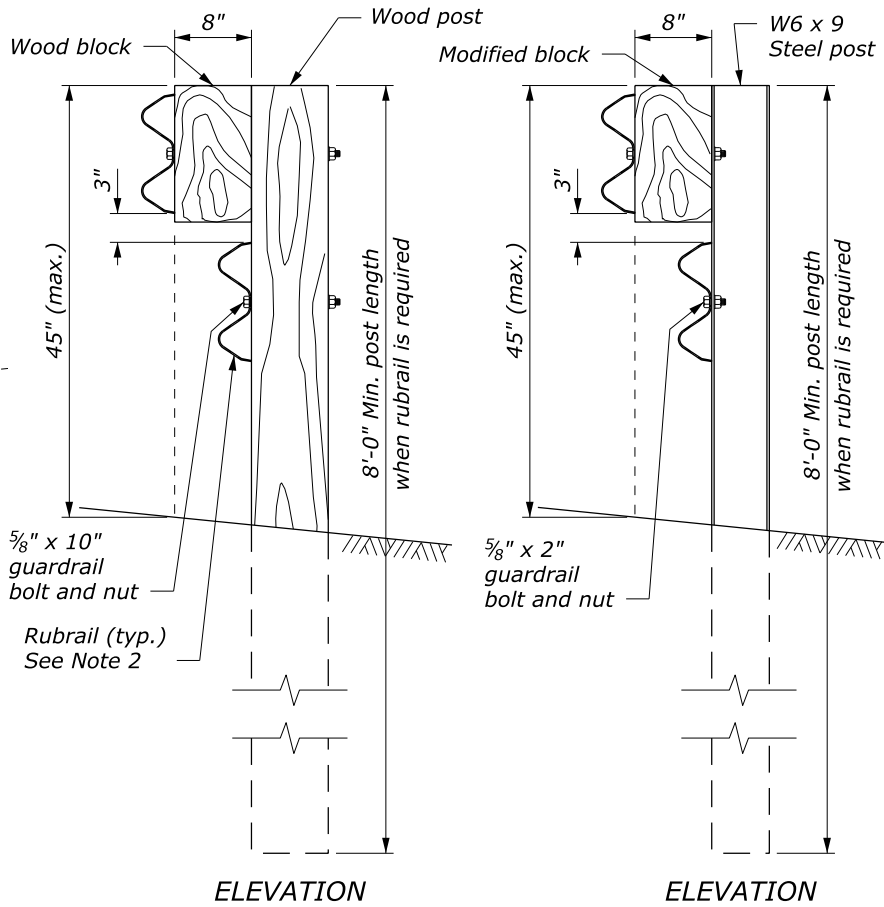
NOTE:

1. See Standards 617-10 and 617-11 for other details.
2. Hold the height of the W-beam rail constant in relation to the roadway shoulder elevation until the barrier crosses the ditch bottom. Add the rubrail when the distance from the ground to the bottom of the W-beam exceeds 18".

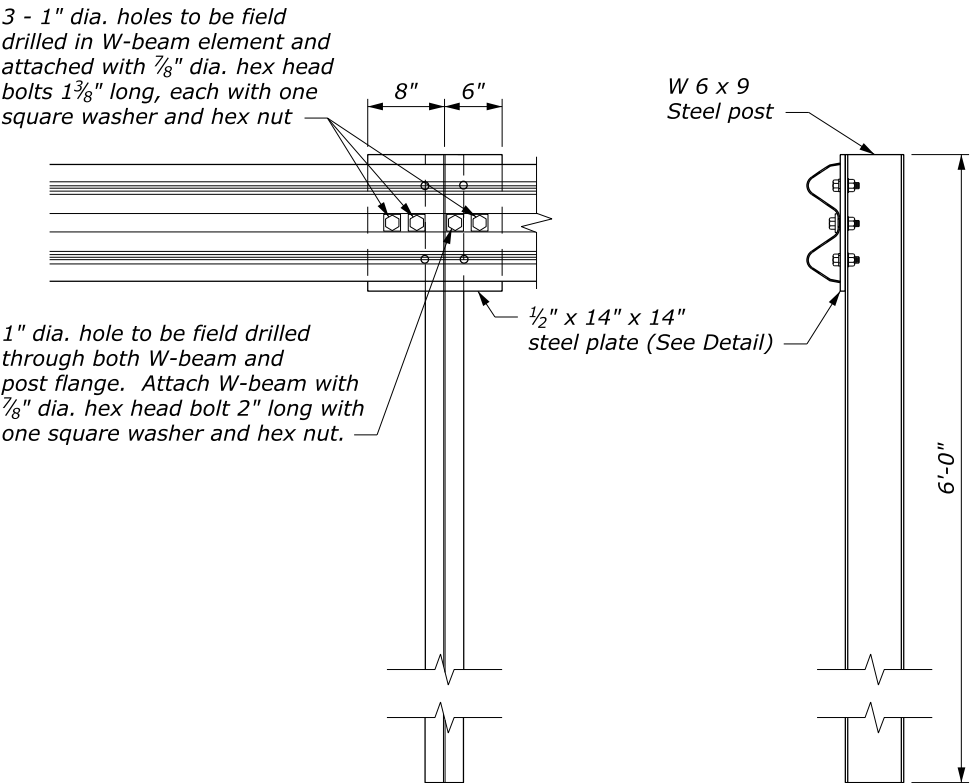


GUARDRAIL FLARE	
DESIGN SPEED MPH	FLARE
70	15
60	14
55	12
50	11
45	10
< 35	8

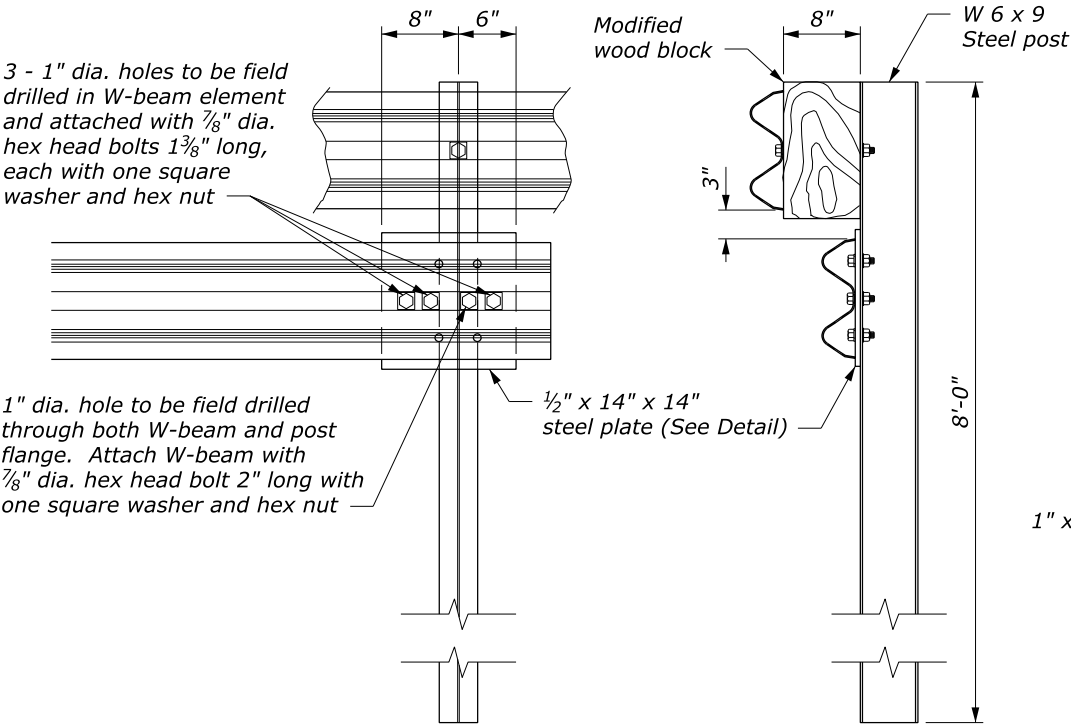
POST OFFSETS FROM VEE DITCH BOTTOM	
POST	DISTANCE
A	8'
#2	5'
#4	3'
#8	0



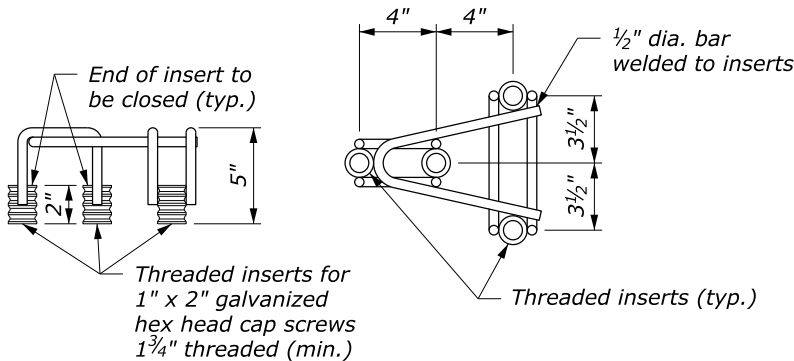
NO SCALE



**SPECIAL RAIL TO POST CONNECTION
AT POSTS A, B, AND 1**



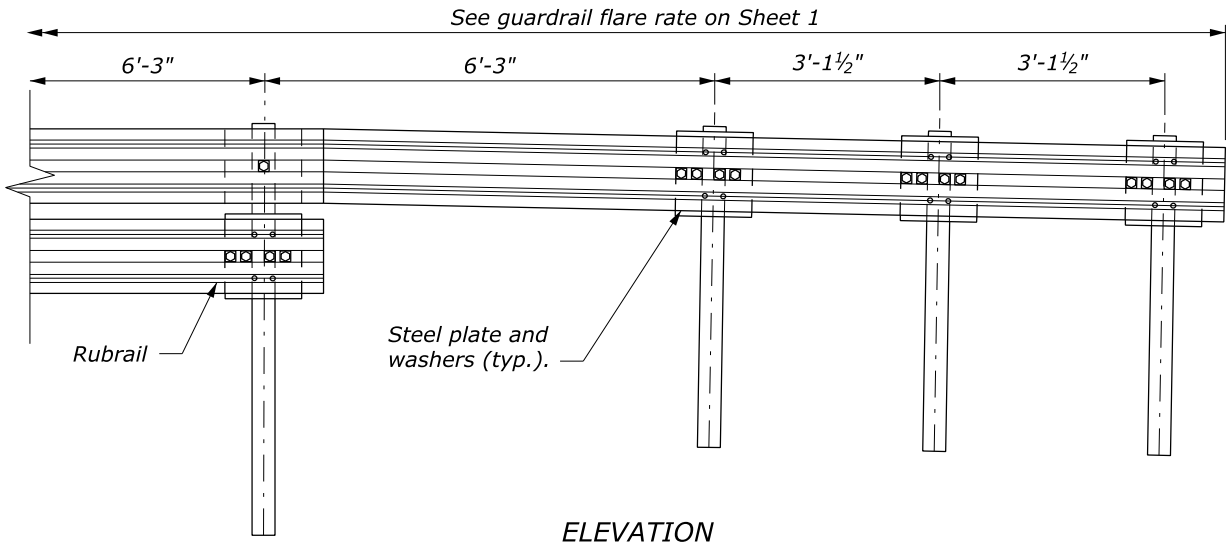
**SPECIAL RUBRAIL TO POST
CONNECTION AT POST 2**



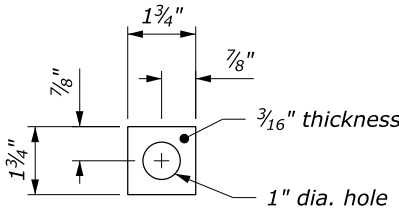
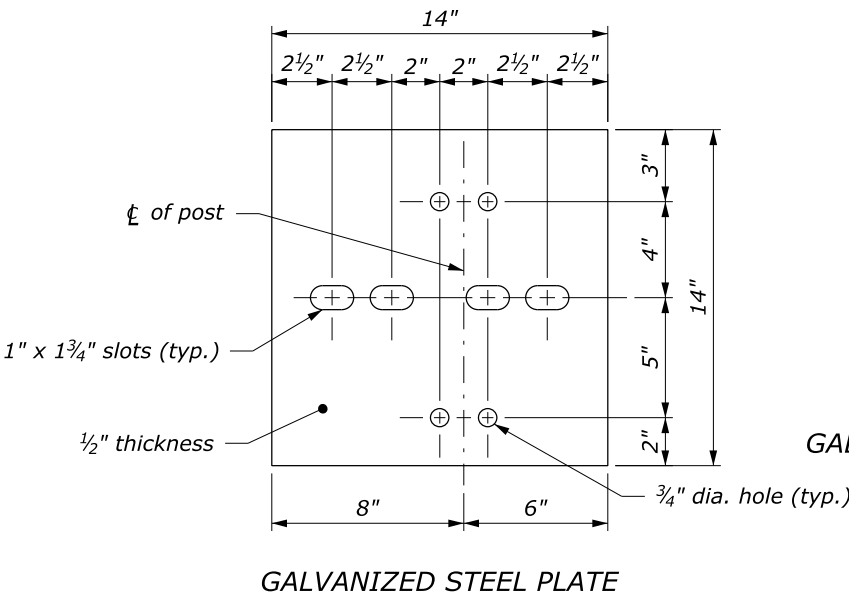
FRAMEWORK FOR THREADED INSERTS

NOTE:

1. See Standard 617-10 and 617-11 for block detail and attachment.
2. See Sheet 1 of 2 for terminal layout.
3. For posts #3 and higher, match post material of adjacent guardrail run, unless otherwise noted.
4. Use zinc rich paint to coat field drilled holes.

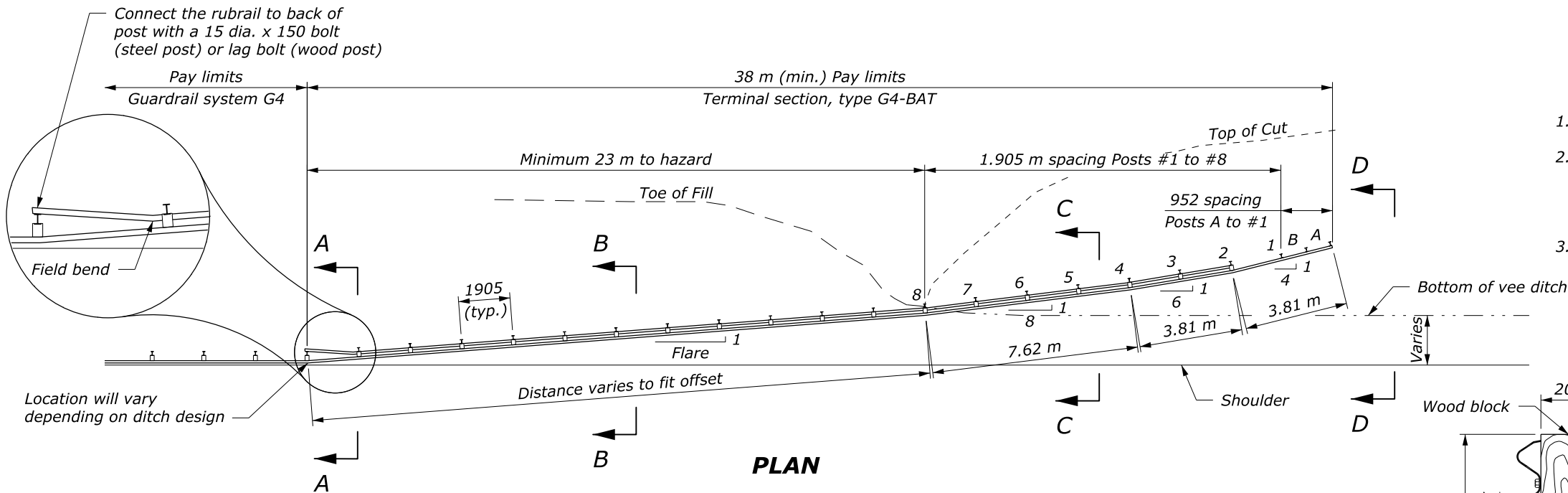


**END ANCHORAGE DETAIL
POSTS A, B, 1, 2**



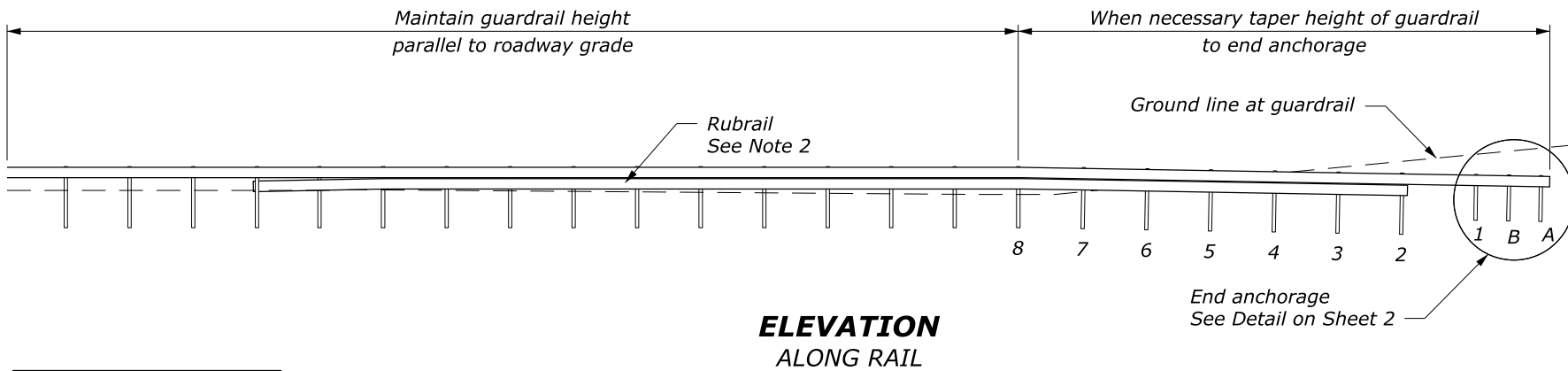
STEEL PLATE AND WASHER

NO SCALE



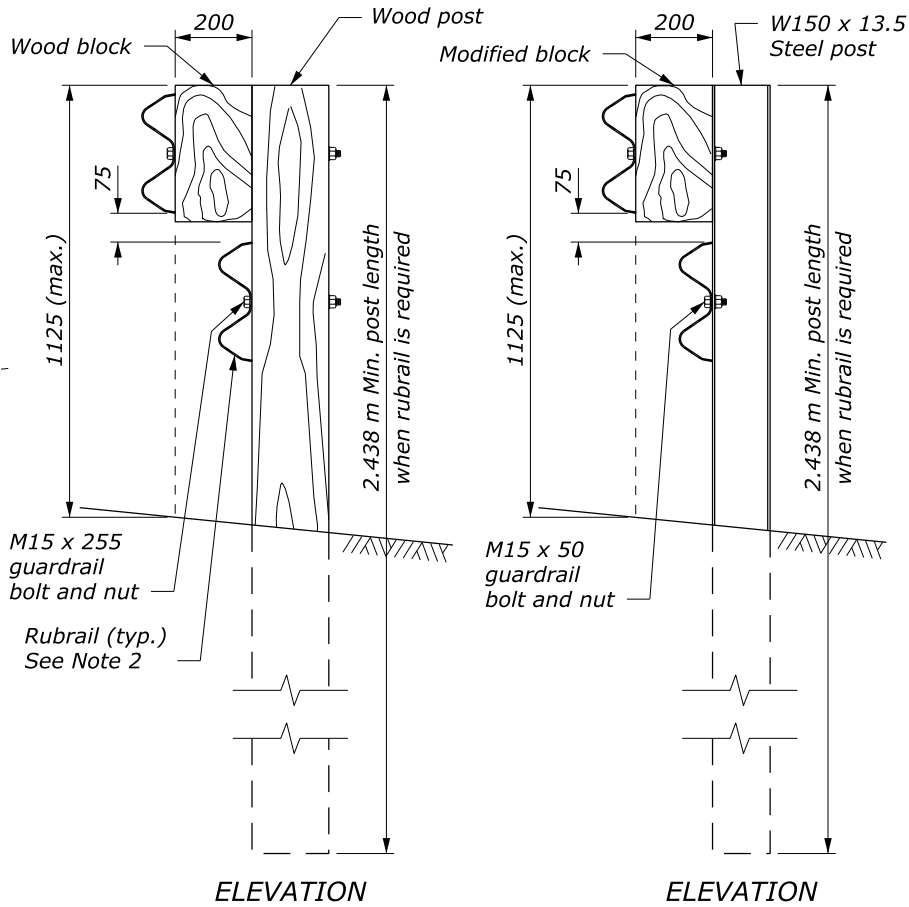
NOTE:

1. See Standards M617-10 and M617-11 for other details.
2. Hold the height of the W-beam rail constant in relation to the roadway shoulder elevation until the barrier crosses the ditch bottom. Add the rubrail when the distance from the ground to the bottom of the W-beam exceeds 457 mm.
3. Dimensions without units are millimeters.



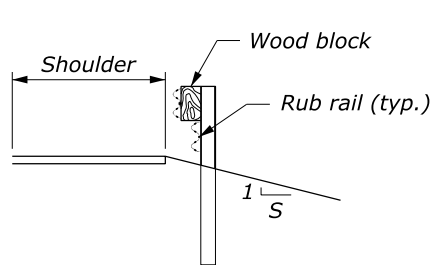
GUARDRAIL FLARE	
DESIGN SPEED km/h	FLARE
110	15
100	14
90	12
80	11
70	10
< 60	8

POST OFFSETS FROM VEE DITCH BOTTOM	
POST	DISTANCE
A	2400
#2	1500
#4	900
#8	0

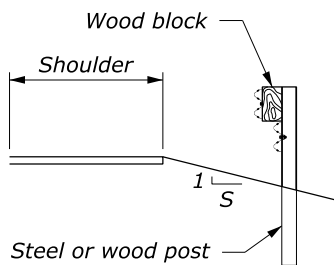


**WOOD POST
AND BLOCK DETAIL**

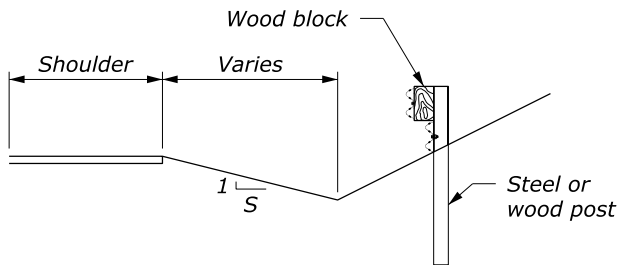
**STEEL POST
AND BLOCK DETAIL**



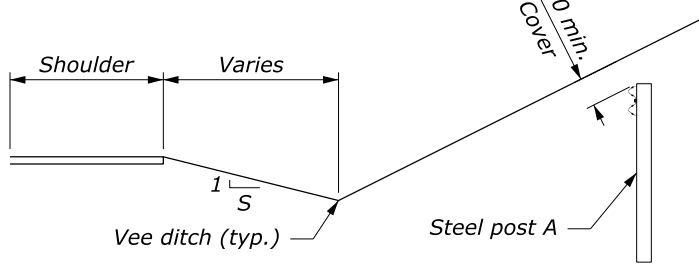
SECTION A-A



SECTION B-B



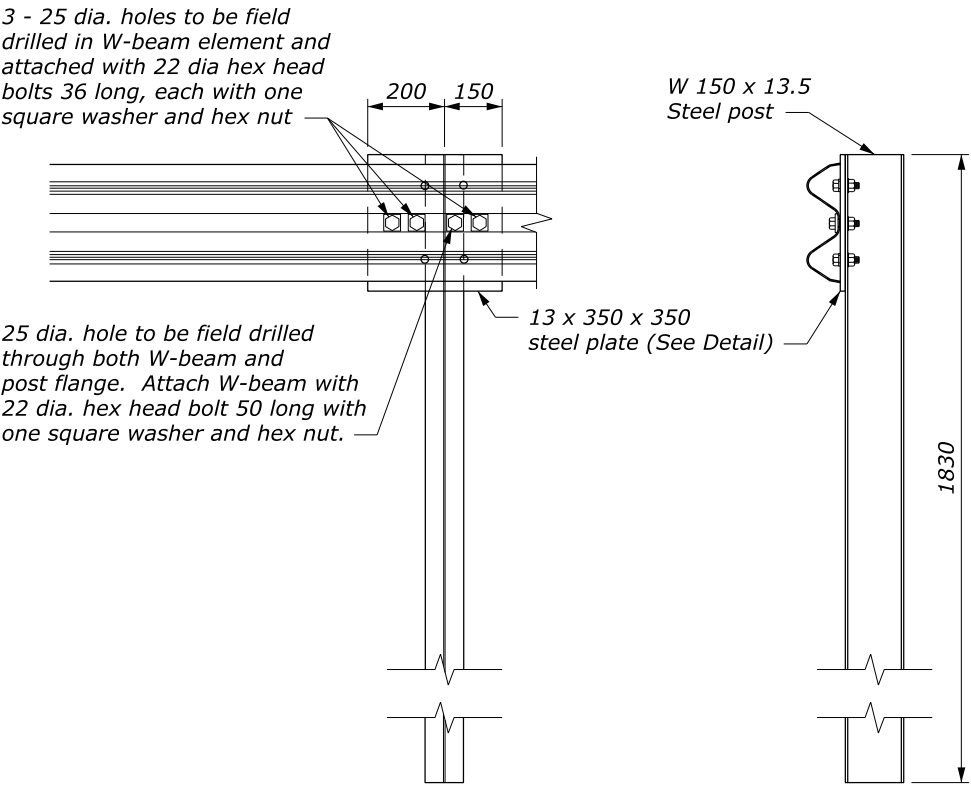
SECTION C-C



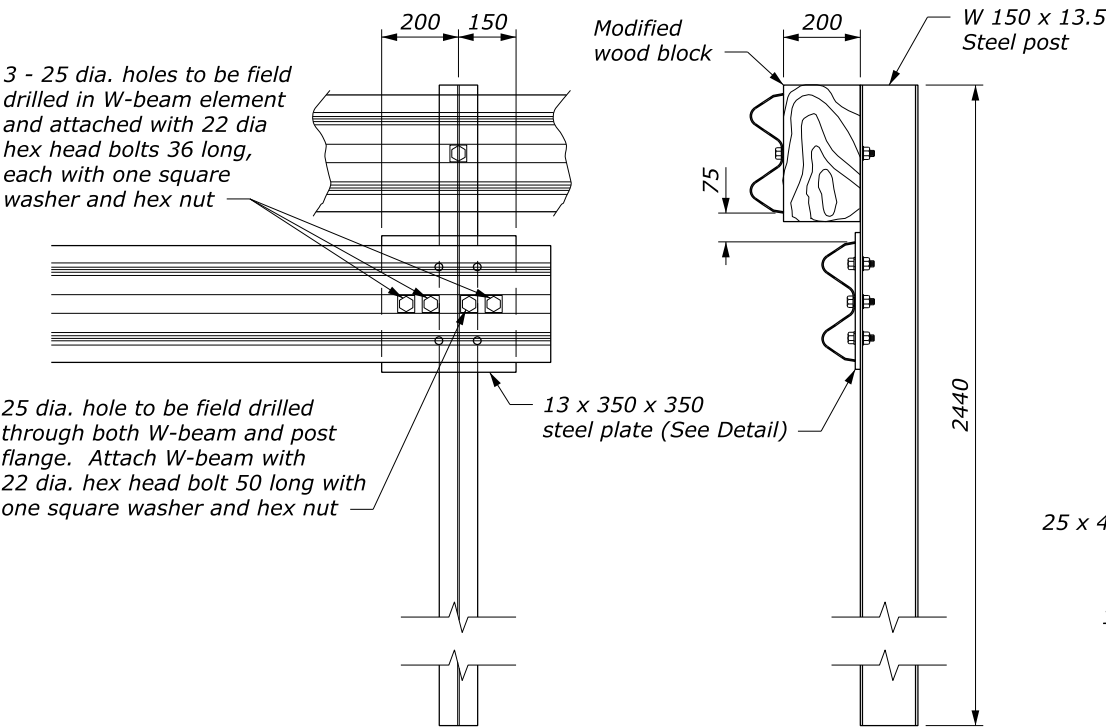
SECTION D-D

NO SCALE

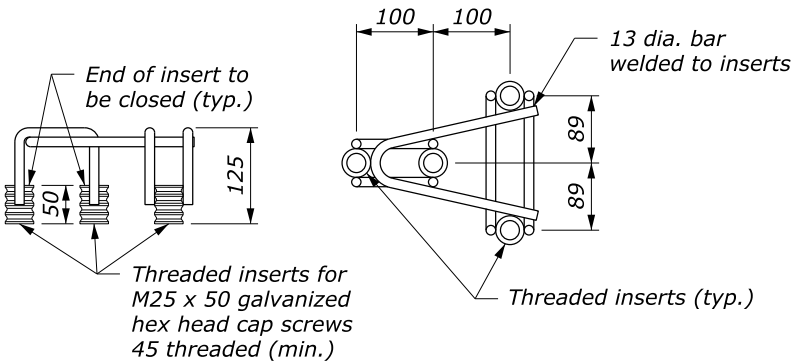
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD G4 W-BEAM GUARDRAIL BACK SLOPE ANCHOR TERMINAL TYPE G4-BAT Sheet 1 of 2	
STANDARD APPROVED FOR USE 3/1996 REVISED: 6/1997 6/2005 DRAFT: 5/2014	STANDARD M617-17



**SPECIAL RAIL TO POST CONNECTION
AT POSTS A, B, AND 1**



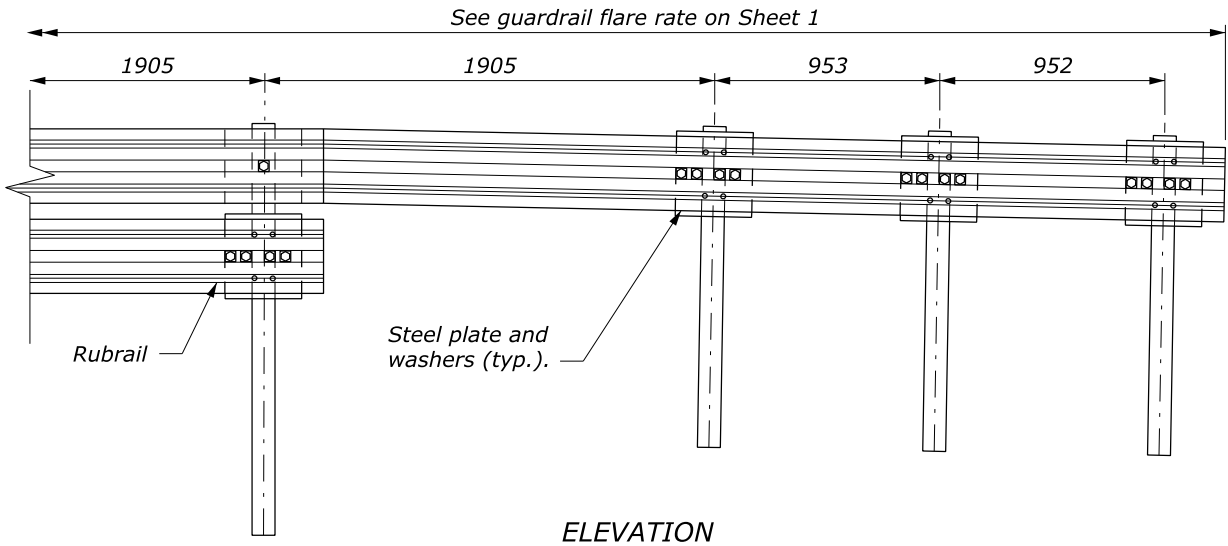
**SPECIAL RUBRAIL TO POST
CONNECTION AT POST 2**



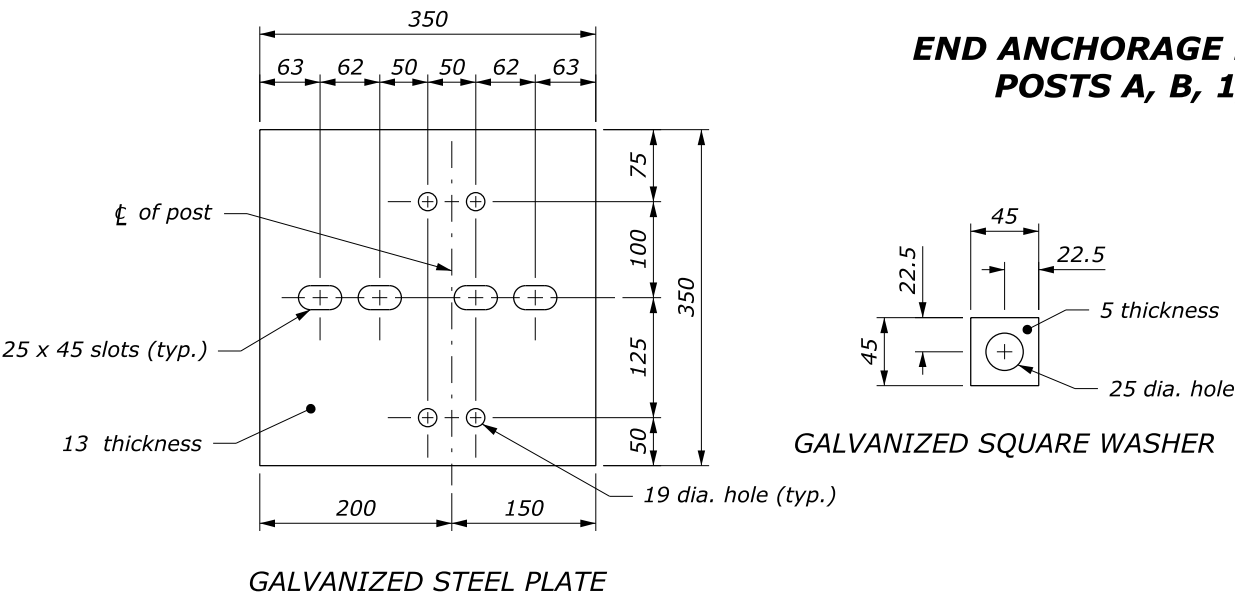
FRAMEWORK FOR THREADED INSERTS

NOTE:

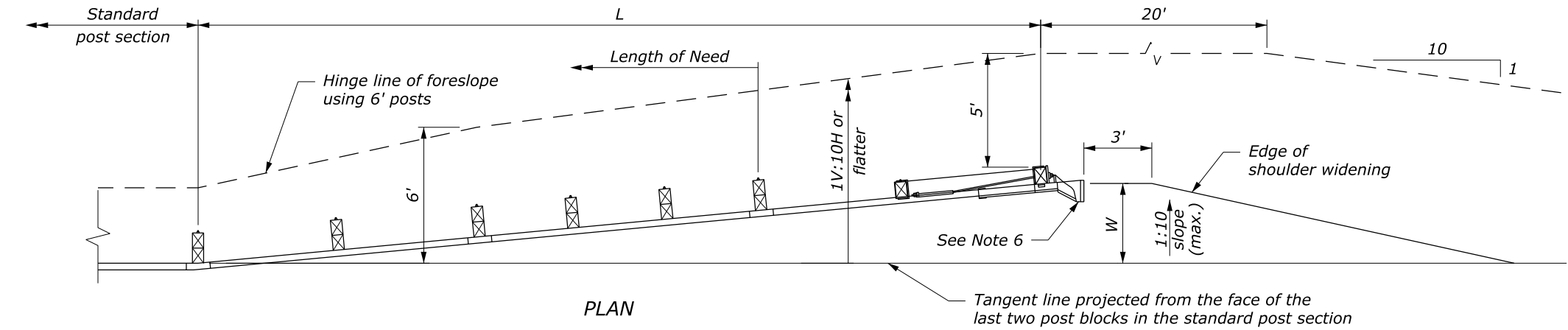
1. See Standard M617-10 and M617-11 for block detail and attachment.
2. See Sheet 1 of 2 for terminal layout.
3. For posts #3 and higher, match post material of adjacent guardrail run, unless otherwise noted.
4. Use zinc rich paint to coat field drilled holes.
5. Dimensions without units are millimeters.



**END ANCHORAGE DETAIL
POSTS A, B, 1, 2**

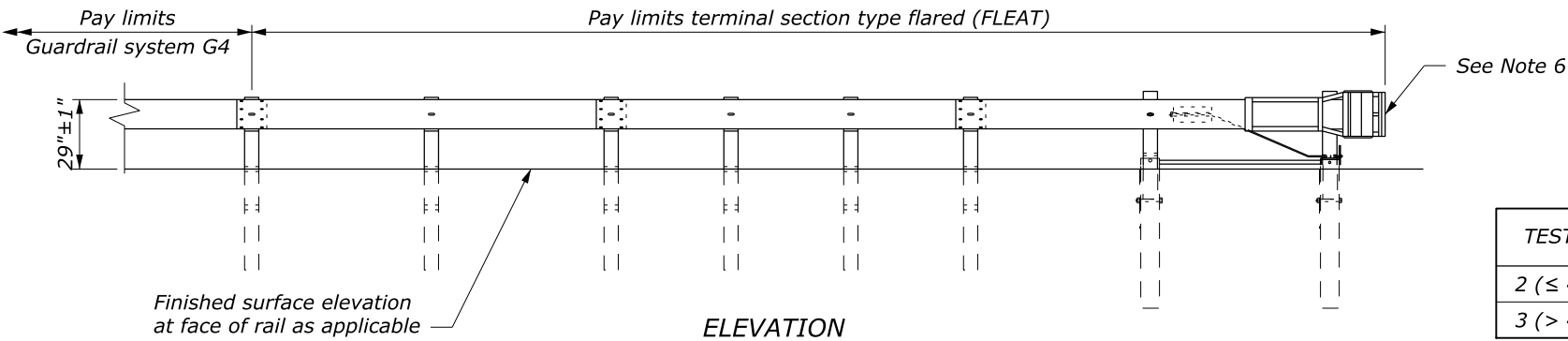


NO SCALE



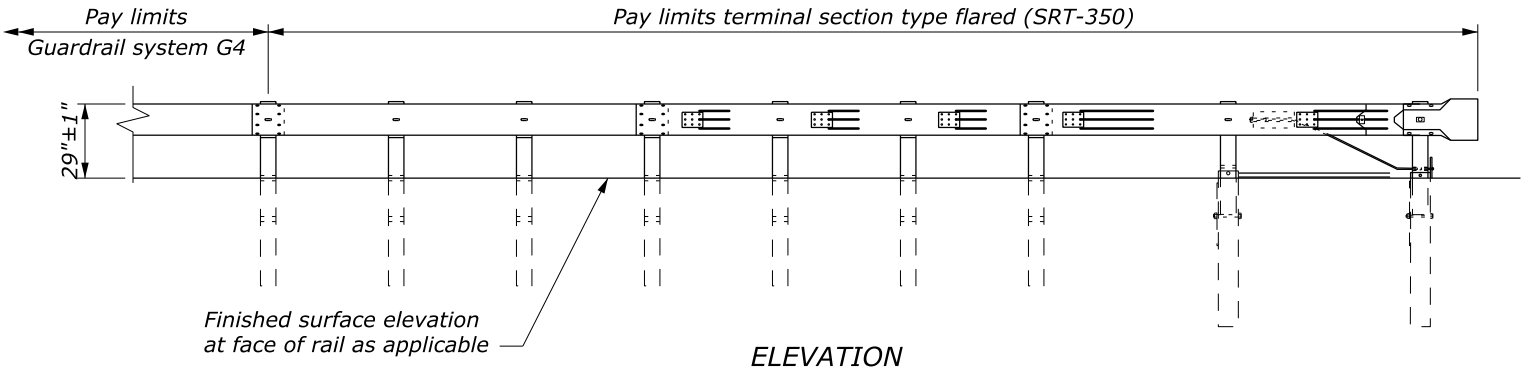
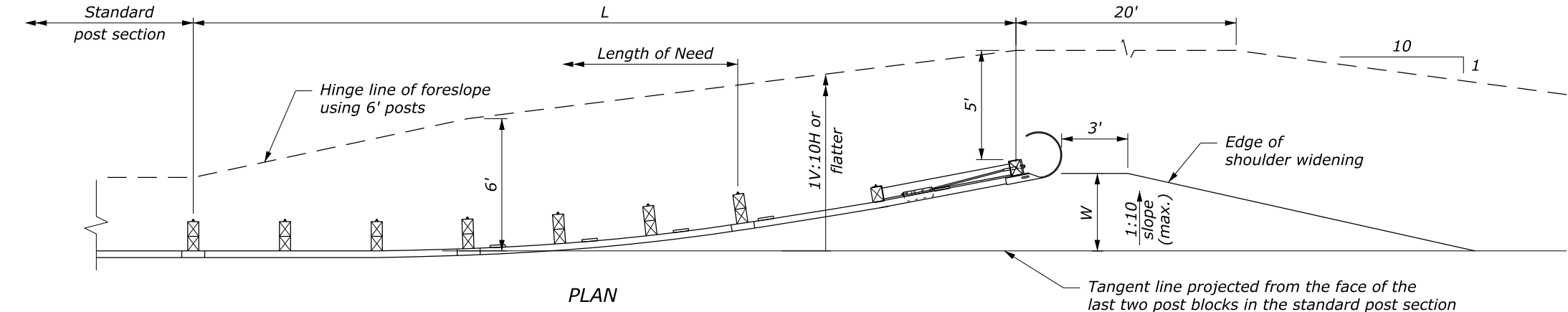
NOTE:

1. Use details shown as a general guide since manufacturer's details vary. Install a flared G4 W-beam guardrail terminal that meets NCHRP-350 or MASH requirements per manufacturer's recommendations. Ensure that terminal meets appropriate test level for the project.
2. When placing terminal on a curve and post offsets would result in the rail encroaching onto the shoulder (e.g., the inside of a curve), install the posts so that the face of the rail is at the edge of the shoulder.
3. Pave widened shoulder on both ends of guardrail runs when indicated on the plans.
4. See manufacturer's drawings for other details.
5. Construction of widening for terminal installation is incidental to the terminal.
6. A flat attenuator terminal head is shown. A rounded W-beam rail end section may be used.
7. Install a reflectorized object marker according to the manufacturer's recommendations.



TEST LEVEL	L (ft)	W (ft)
2 (≤ 45 mph)	25.0	1.67-2.67
3 (> 45 mph)	37.5	2.5-4.0

STRAIGHT FLARED OPTION



TEST LEVEL	L (ft)	W (ft)
3 (> 45 mph)	37.5	3.0 or 4.0

PARABOLIC FLARED OPTION

NO SCALE

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

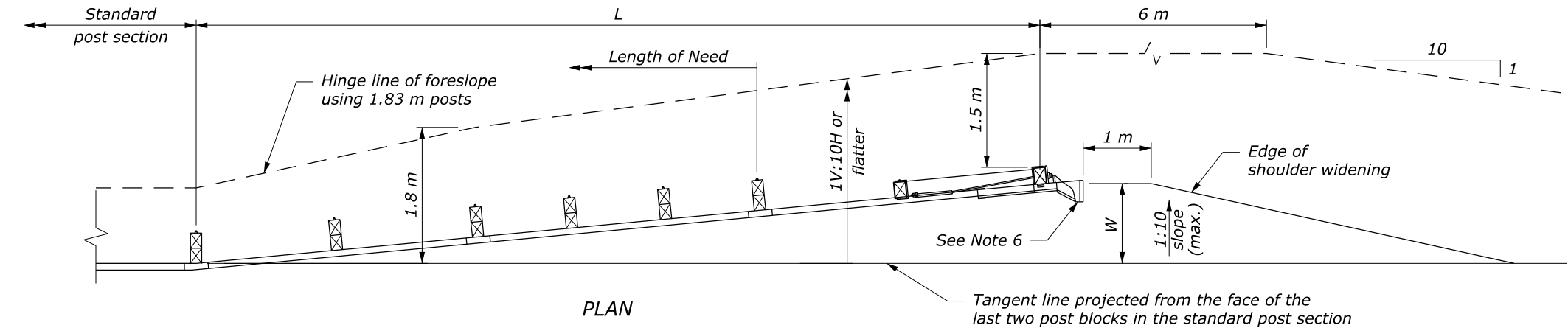
U.S. CUSTOMARY STANDARD

G4 W-BEAM GUARDRAIL
TYPE FLARED TERMINAL

STANDARD APPROVED FOR USE 6/2005

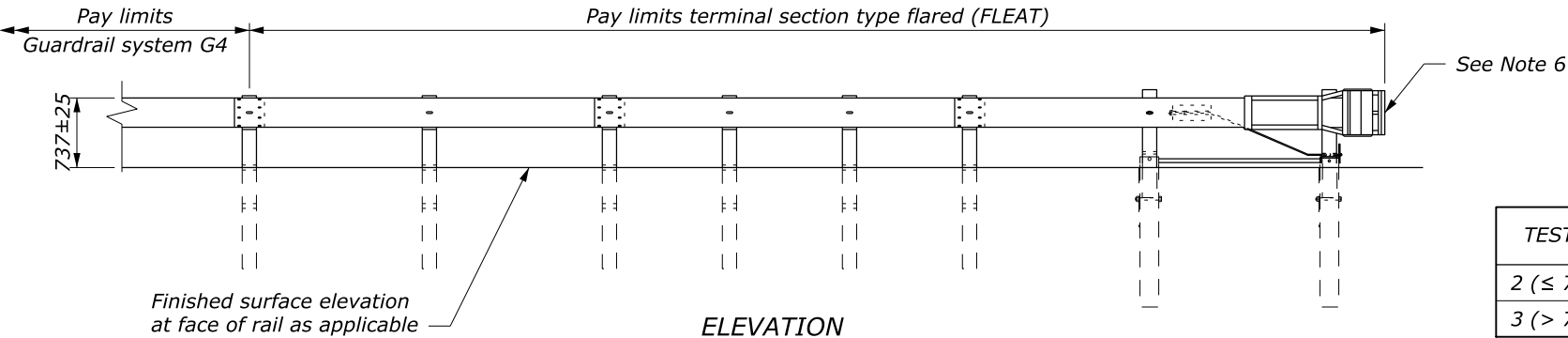
REVISD:
DRAFT: 3/2016

STANDARD
617-19



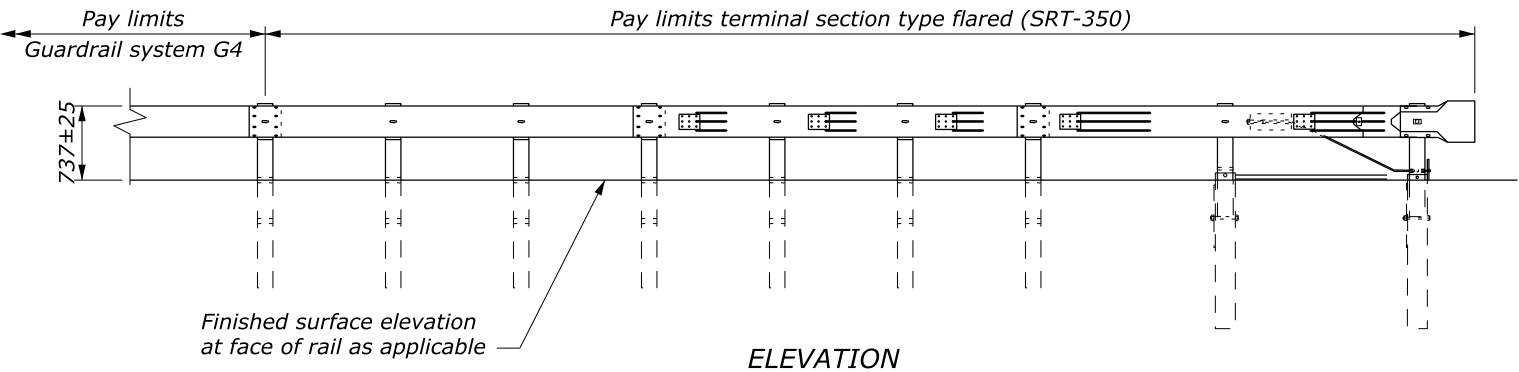
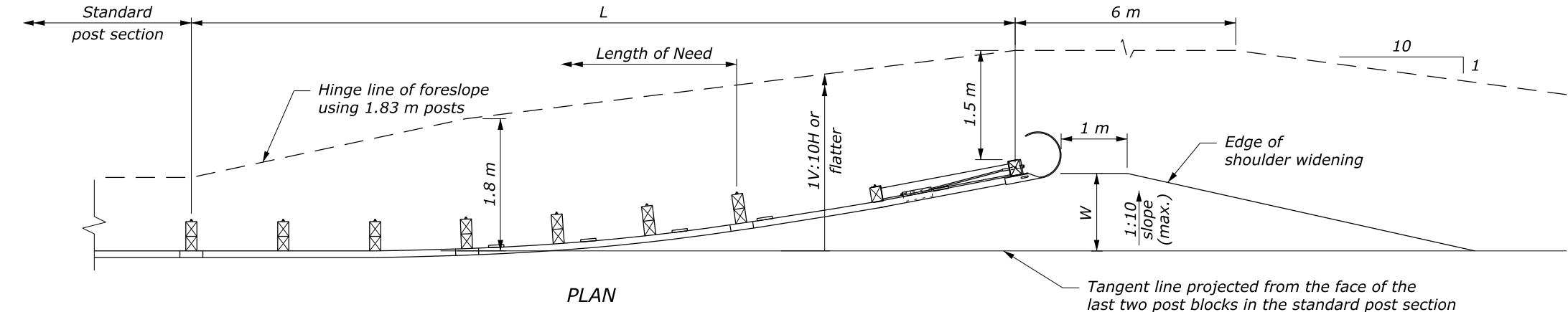
NOTE:

1. Use details shown as a general guide since manufacturer's details vary. Install a flared G4 W-beam guardrail terminal that meets NCHRP-350 or MASH requirements per manufacturer's recommendations. Ensure that terminal meets appropriate test level for the project.
2. When placing terminal on a curve and post offsets would result in the rail encroaching onto the shoulder (e.g., the inside of a curve), install the posts so that the face of the rail is at the edge of the shoulder.
3. Pave widened shoulder on both ends of guardrail runs when indicated on the plans.
4. See manufacturer's drawings for other details.
5. Construction of widening for terminal installation is incidental to the terminal.
6. A flat attenuator terminal head is shown. A rounded W-beam rail end section may be used.
7. Install a reflectorized object marker according to the manufacturer's recommendations.
8. Dimensions without units are millimeters.



TEST LEVEL	L (m)	W (m)
2 (≤ 70 km/h)	7.62	0.51-0.81
3 (> 70 km/h)	11.43	0.76-1.22

STRAIGHT FLARED OPTION



TEST LEVEL	L (m)	W (m)
3 (> 70 km/h)	11.43	0.9 or 1.22

PARABOLIC FLARED OPTION

NO SCALE

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

METRIC STANDARD

G4 W-BEAM GUARDRAIL
TYPE FLARED TERMINAL

STANDARD APPROVED FOR USE 6/2005

REVISD:
DRAFT: 3/2016

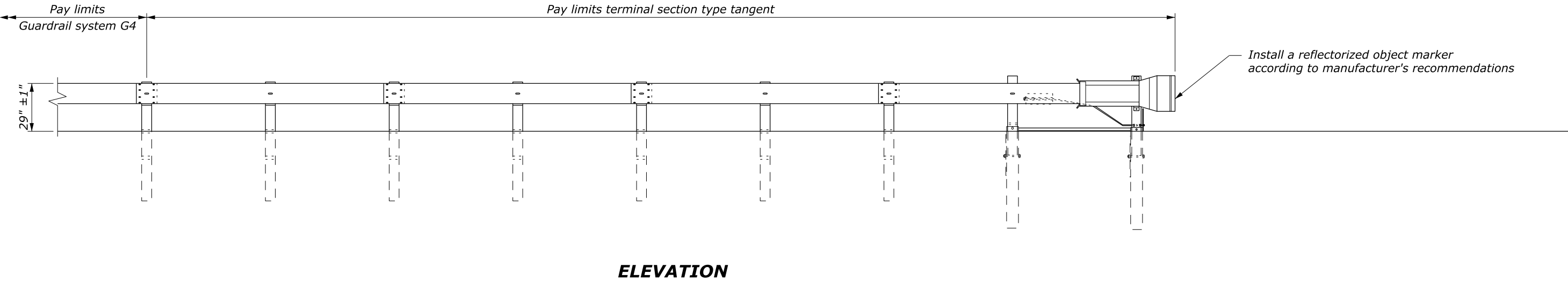
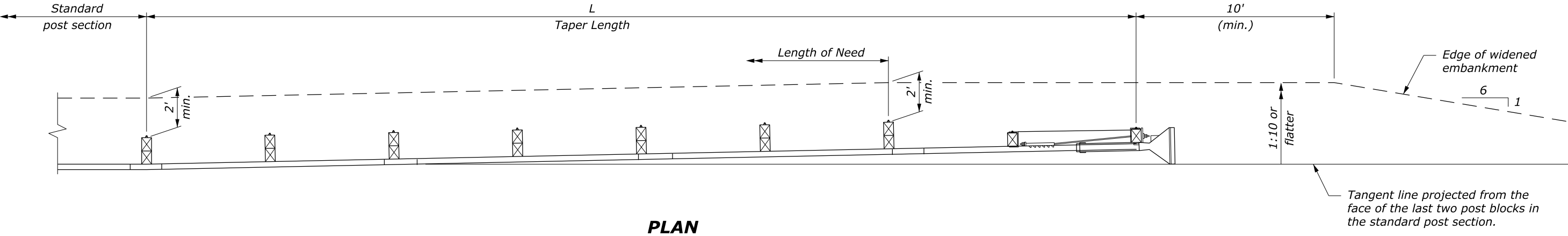
STANDARD
M617-19

c:\myfiles\pw_production\dms67487\Std617-20.dgn [USC] 15 March 2016 8:54 AM

STATE	PROJECT	SHEET NUMBER

NOTE:

1. Use details shown as a general guide since manufacturer's details may vary. Install a tangent G4 W-beam guardrail terminal that meets NCHRP-350 or MASH requirements per manufacturer's recommendations. Ensure that terminal meets appropriate test level for the project.
2. Install terminal at a 1:25 taper or flatter, to position the end farther away from the edge of the shoulder, or use a taper per manufacturer's recommendations.
3. See manufacturer's drawings for other details.



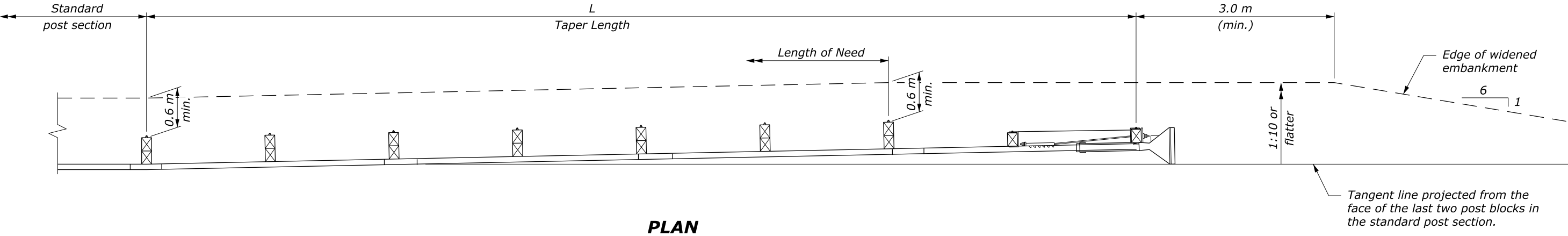
TEST LEVEL	L (ft)
2 (≤ 45 mph)	25
3 (> 45 mph)	37.5 or 50

NO SCALE

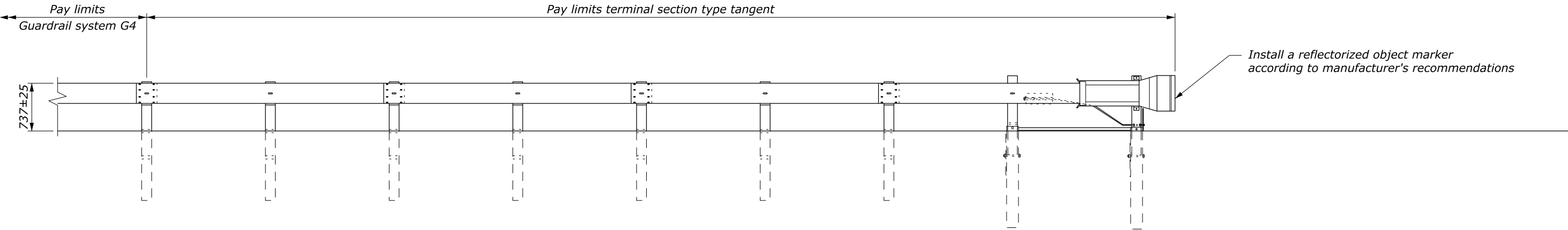
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
G4 W-BEAM GUARDRAIL TYPE TANGENT TERMINAL	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED: DRAFT: 3/2016	617-20

NOTE:

1. Use details shown as a general guide since manufacturer's details may vary. Install a tangent G4 W-beam guardrail terminal that meets NCHRP-350 or MASH requirements per manufacturer's recommendations. Ensure that terminal meets appropriate test level for the project.
2. Install terminal at a 1:25 taper or flatter, to position the end farther away from the edge of the shoulder, or use a taper per manufacturer's recommendations.
3. See manufacturer's drawings for other details.
4. Dimensions without units are millimeters.



PLAN



ELEVATION

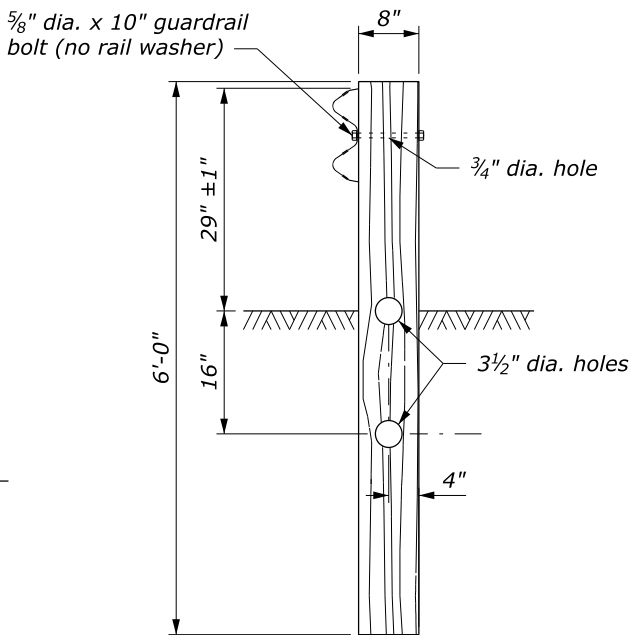
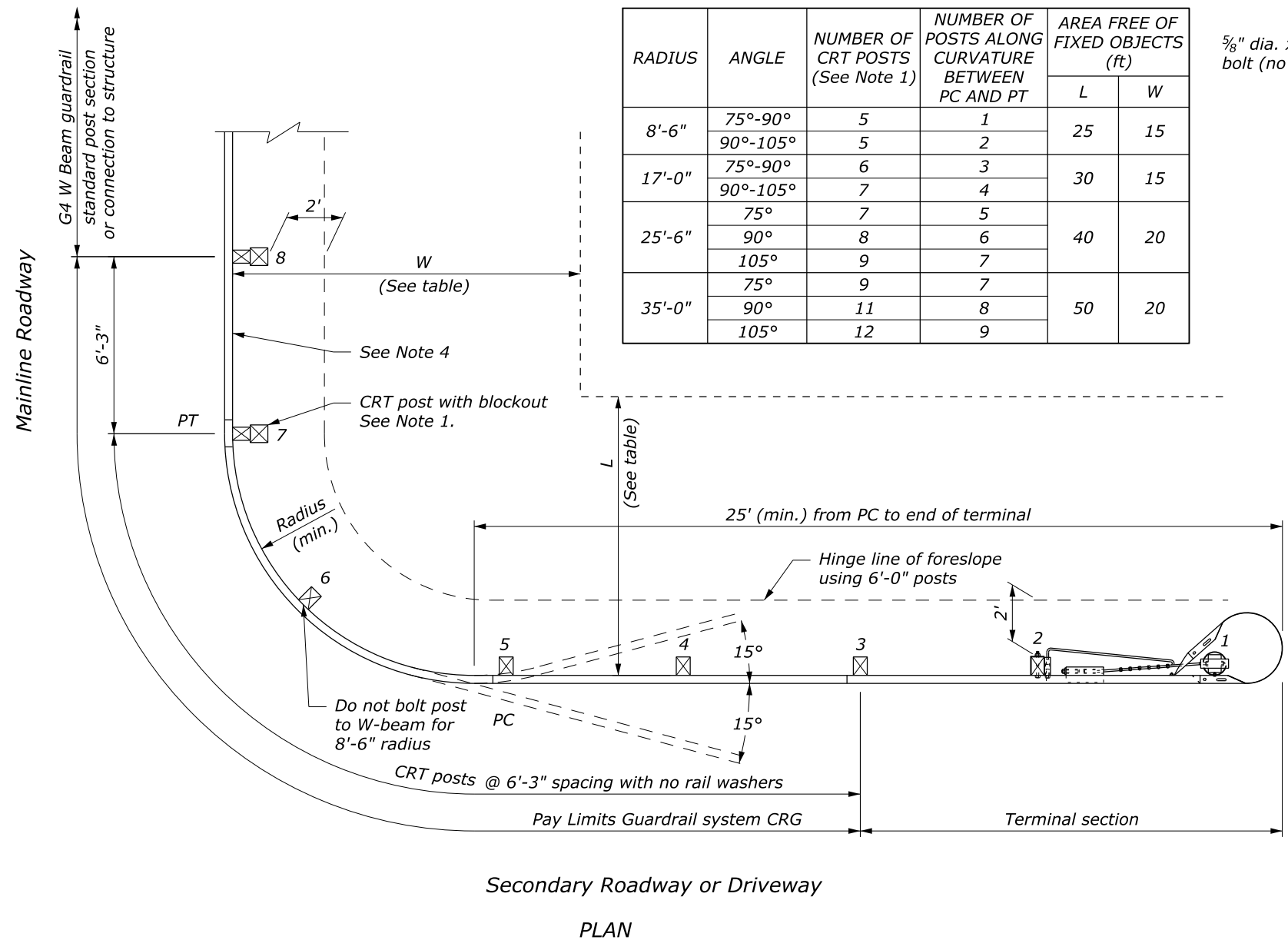
TEST LEVEL	L (m)
2 (≤ 70 km/h)	7.62
3 (> 70 km/h)	11.43 or 15.24

NO SCALE

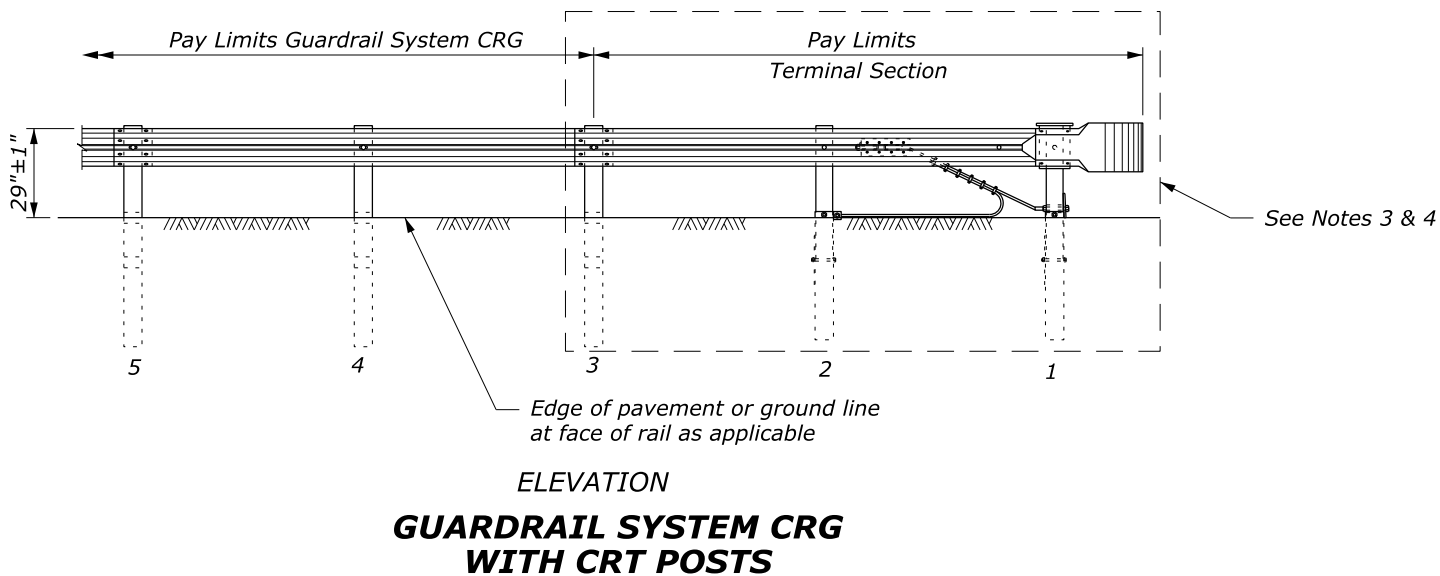
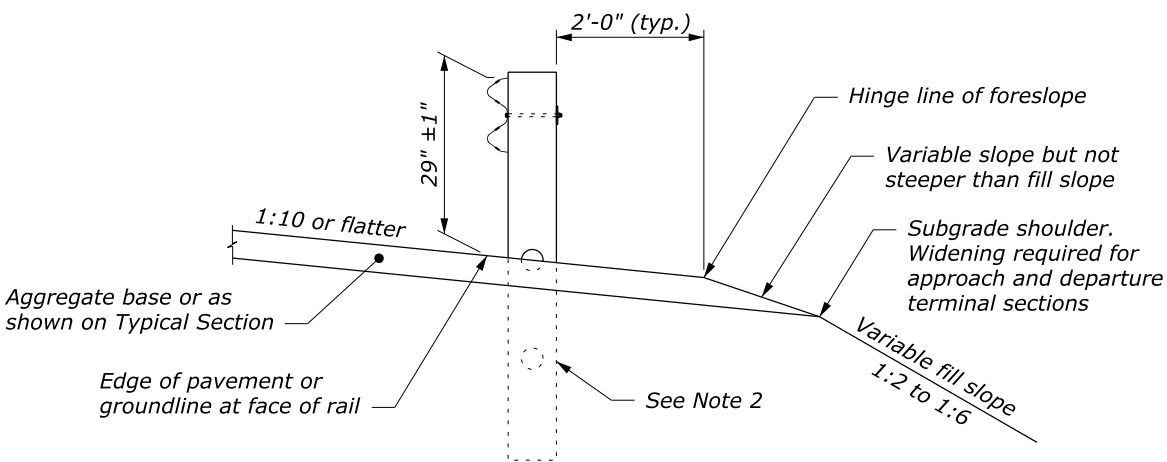
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
G4 W-BEAM GUARDRAIL TYPE TANGENT TERMINAL	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED: DRAFT: 3/2016	M617-20

c:\myfiles\pw_production\dms67487\Std617-21.dgn [USC]
15 March 2016 7:54 AM

STATE	PROJECT	SHEET NUMBER

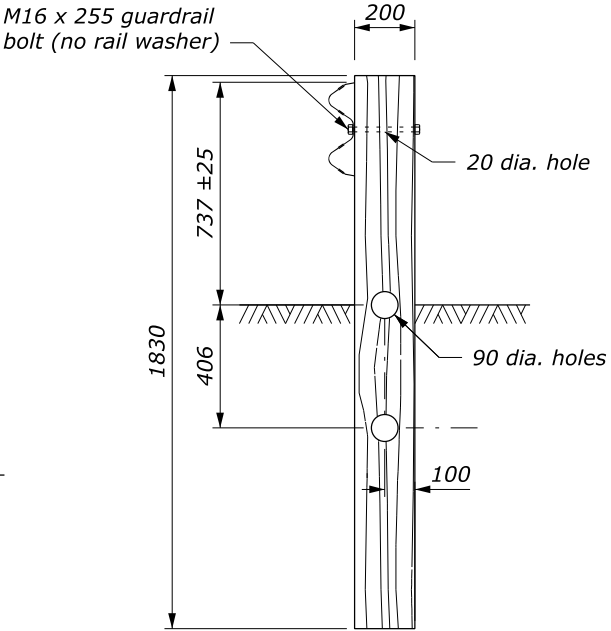
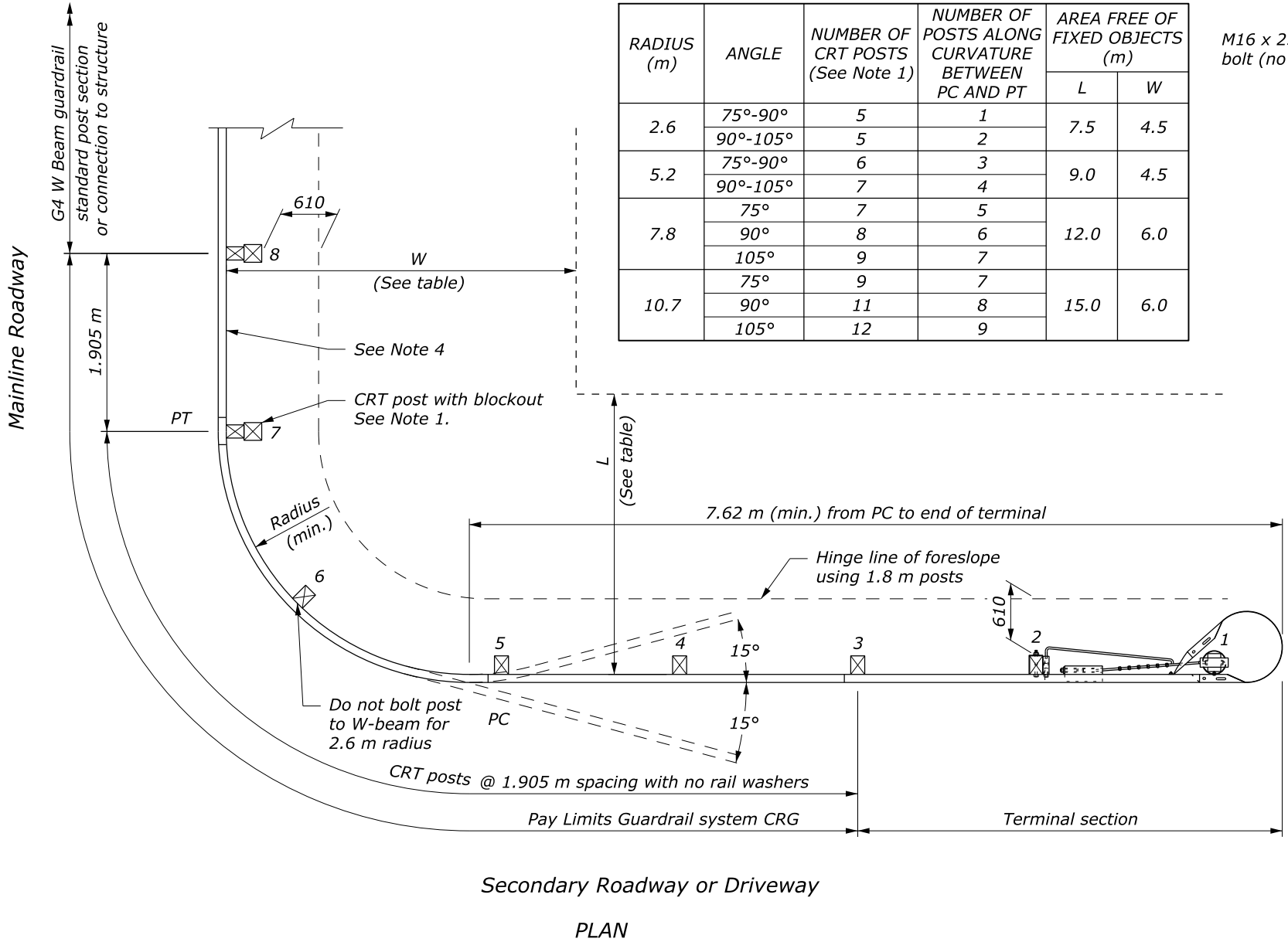


- NOTE:**
- CRT posts include those posts between the terminal and PT, plus the post with block at Post #7. See Standard 617-10 for block details.
 - See Special Contract Requirements when 7 foot or longer posts are specified.
 - See Standard 617-22 for terminal section, Type CRT details. The use of the CRT terminal is limited to driveways, service roads, and low speed minor road approaches. Use the appropriate TL-2 or TL-3 terminal on all other roadway approaches.
 - If the CRG will be connected to transition rail at Post 8, add a standard post and block midway between Posts 7 and 8.
 - Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.



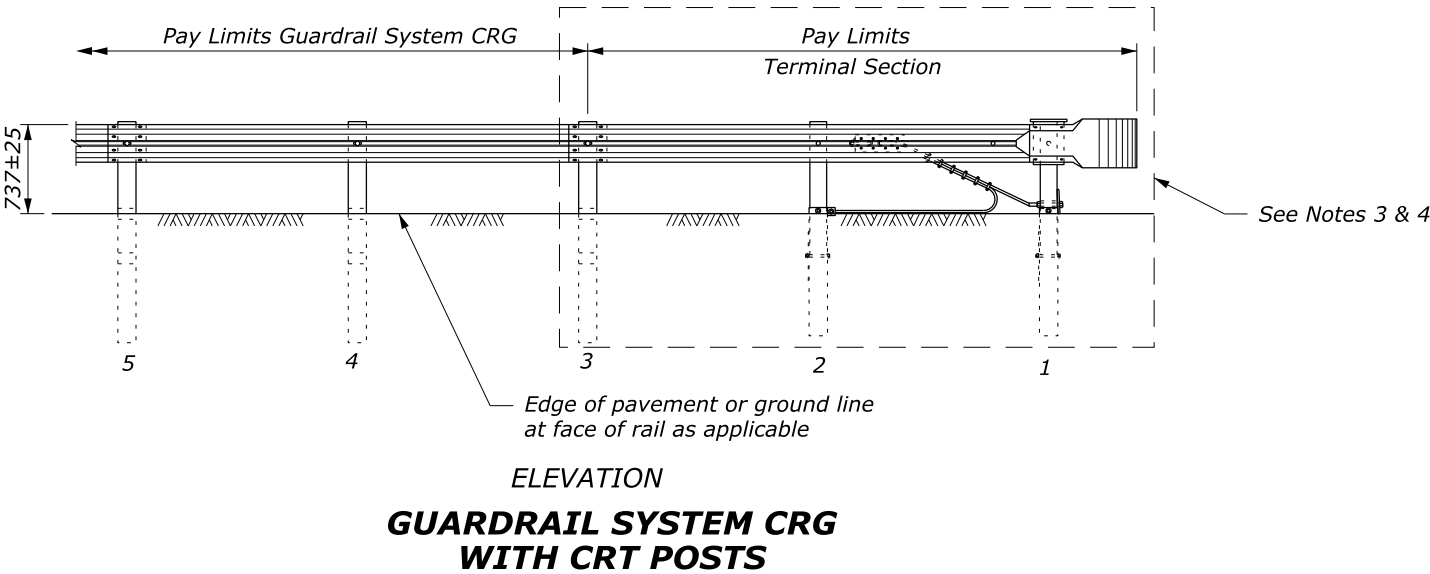
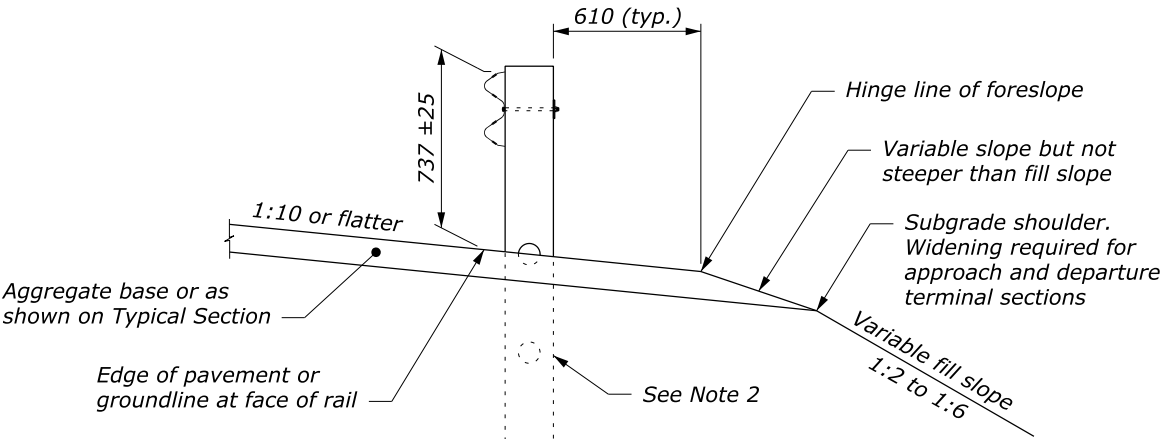
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
CRG W-BEAM GUARDRAIL WOOD POSTS	
STANDARD APPROVED FOR USE 1/1994 REVISED: 4/1994 6/2005 DRAFT: 3/2016	STANDARD 617-21

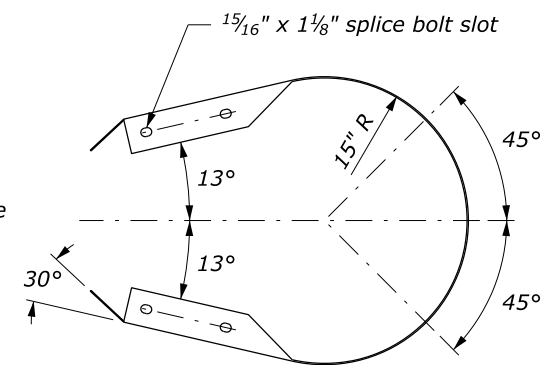
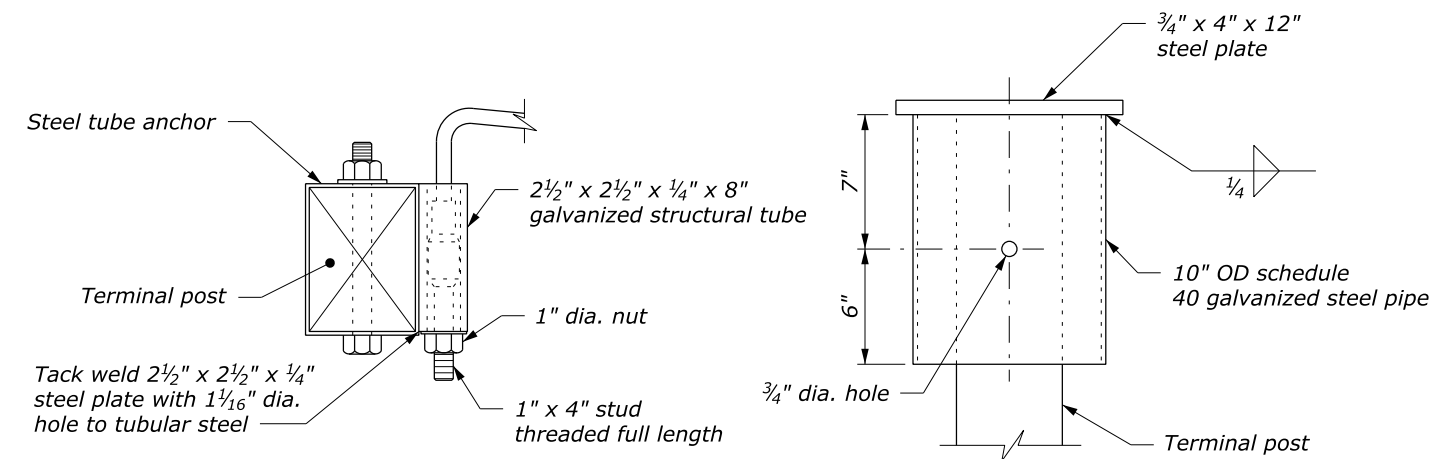


NOTE:

1. CRT posts include those posts between the terminal and PT, plus the post with block at Post #7. See Standard M617-10 for block details.
2. See Special Contract Requirements when 2 meter or longer posts are specified.
3. See Standard M617-22 for terminal section, Type CRT details. The use of the CRT terminal is limited to driveways, service roads, and low speed minor road approaches. Use the appropriate TL-2 or TL-3 terminal on all other roadway approaches.
4. If the CRG will be connected to transition rail at Post 8, add a standard post and block midway between Posts 7 and 8.
5. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.
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.

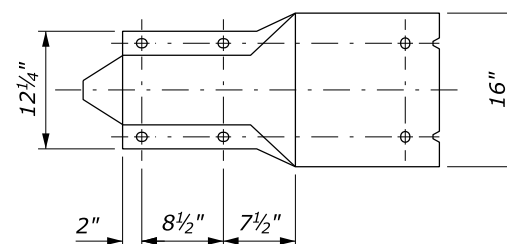
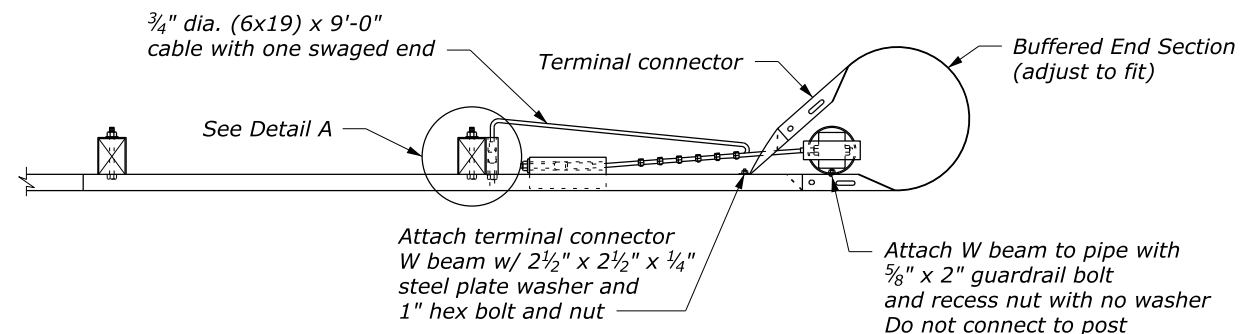


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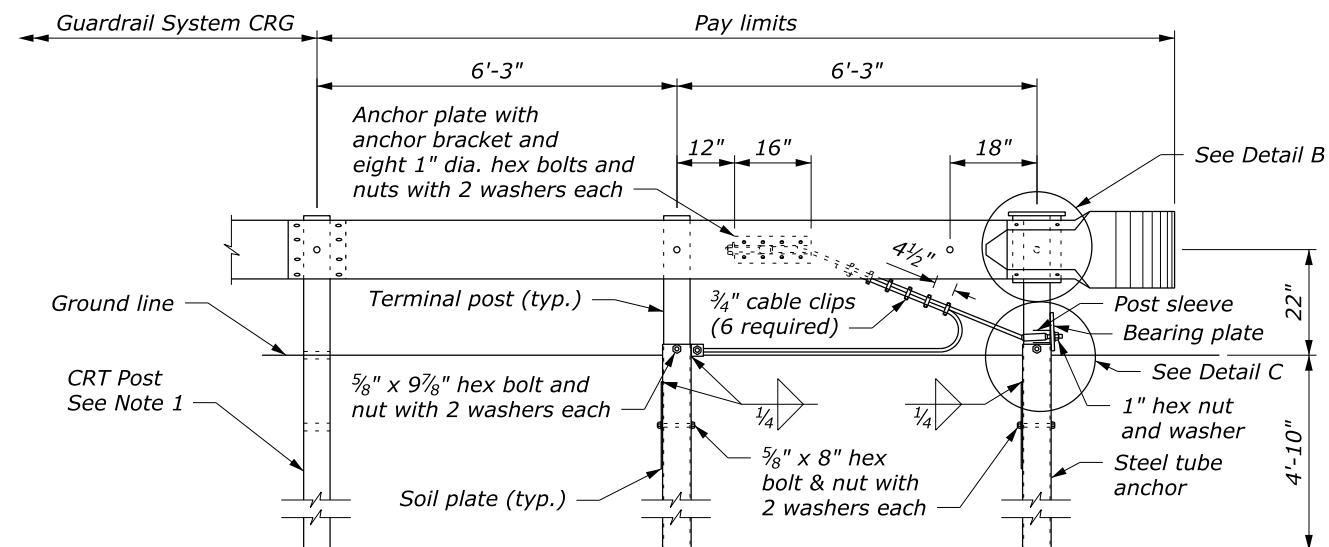


NOTE:

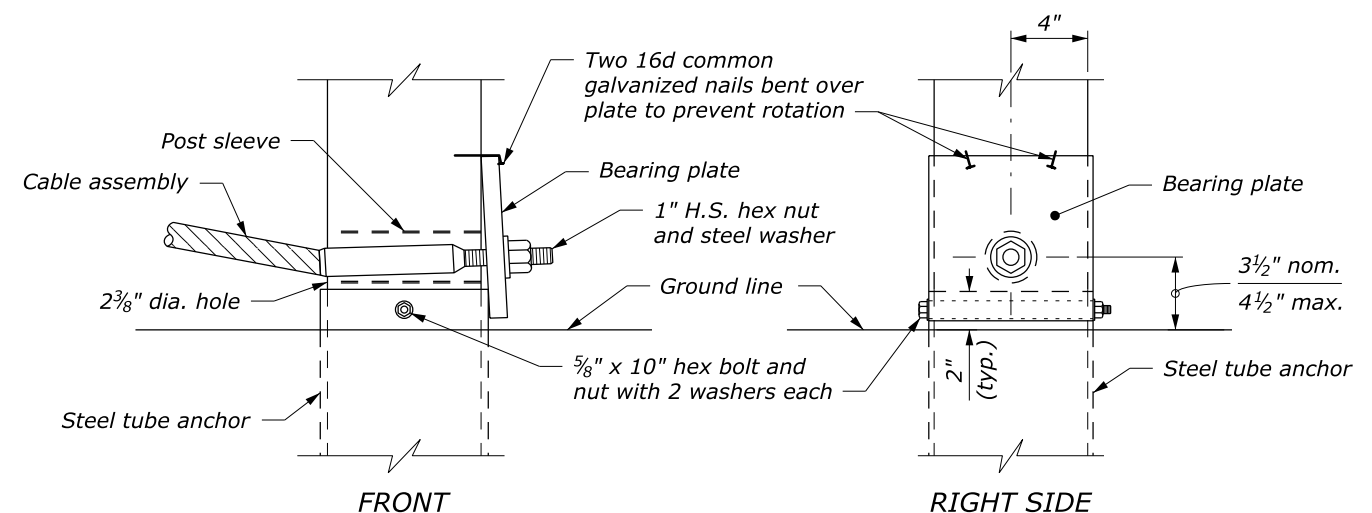
1. See Standards 617-15 and 617-21 for other details.
2. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.



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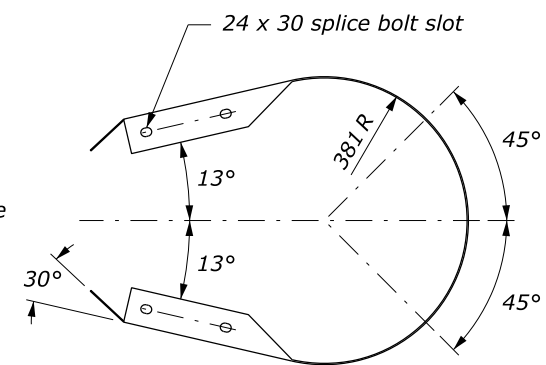
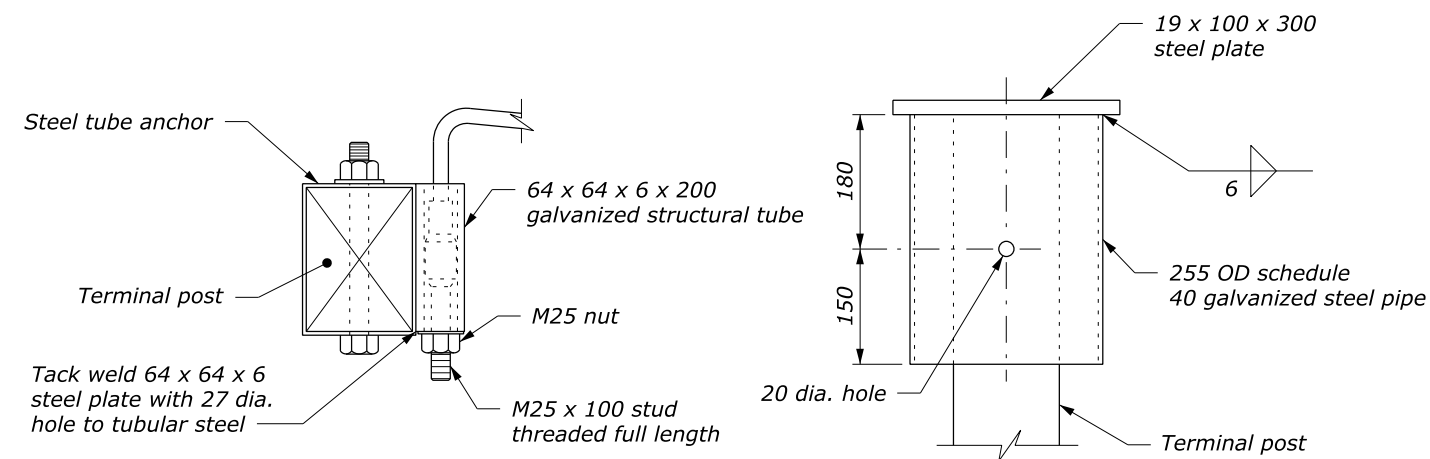


ANCHORAGE ASSEMBLY

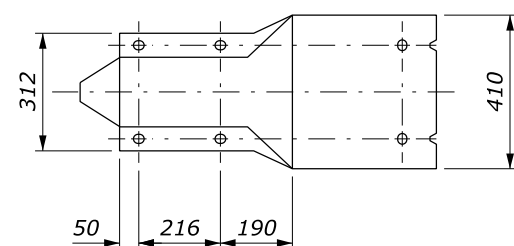


NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
G4 W-BEAM GUARDRAIL CABLE RELEASING TERMINAL TYPE CRT, WOOD POSTS	
STANDARD APPROVED FOR USE 1/1994	STANDARD
REVISED: 4/1994 6/2005 DRAFT: 2/2014	617-22

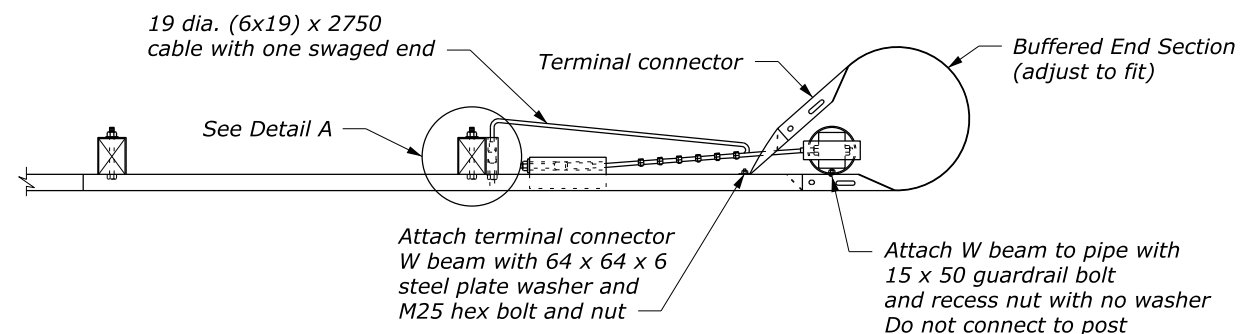


PLAN

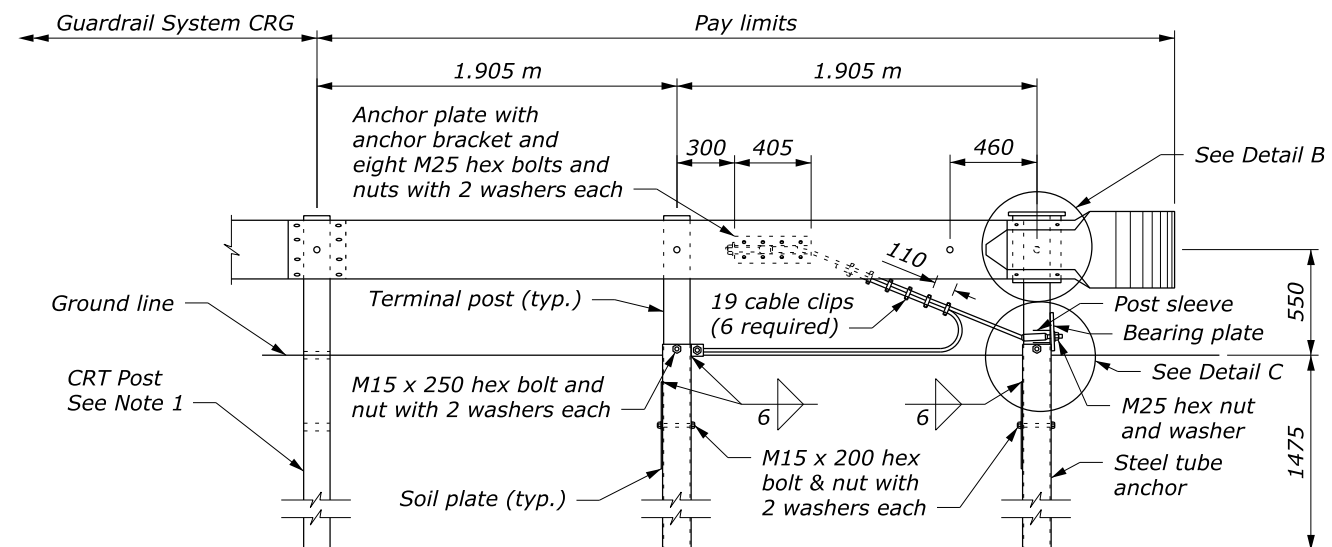


ELEVATION

BUFFERED END SECTION

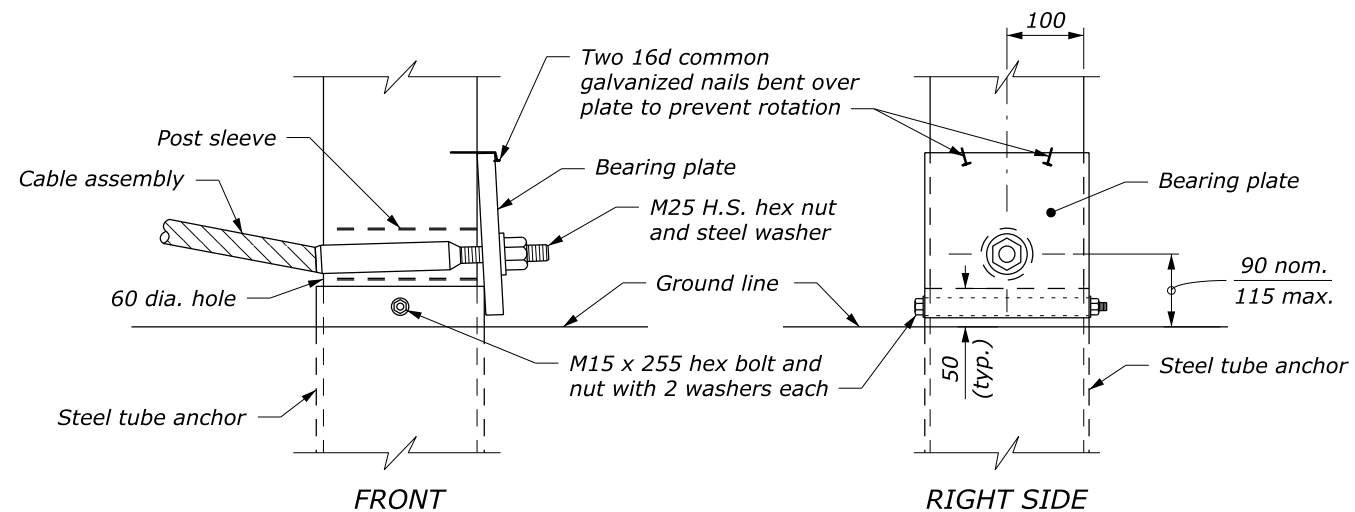


PLAN



ELEVATION

ANCHORAGE ASSEMBLY



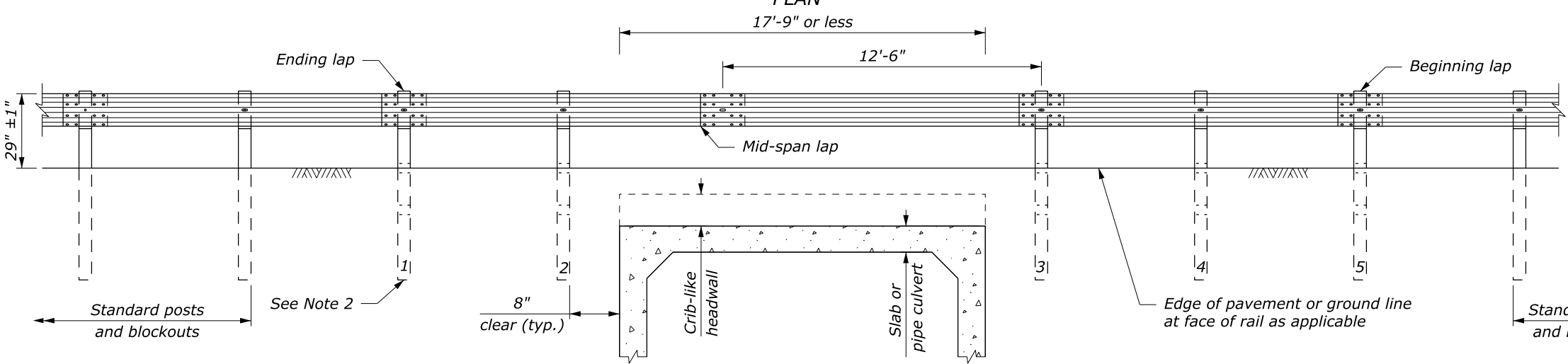
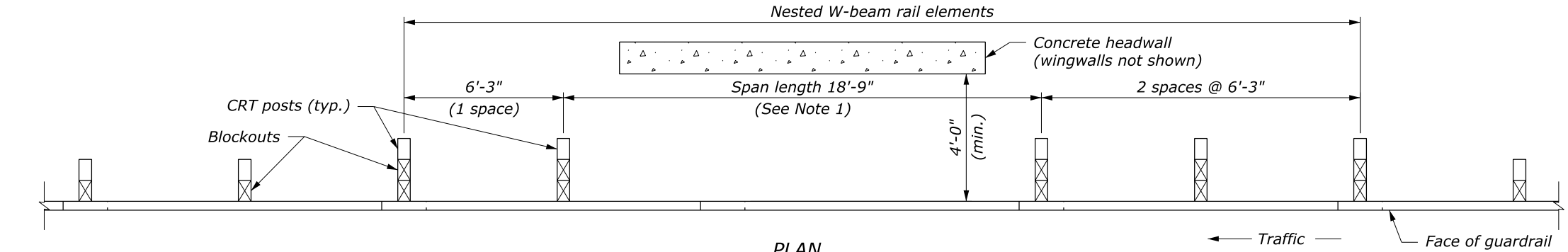
DETAIL C
POST ASSEMBLY

NO SCALE

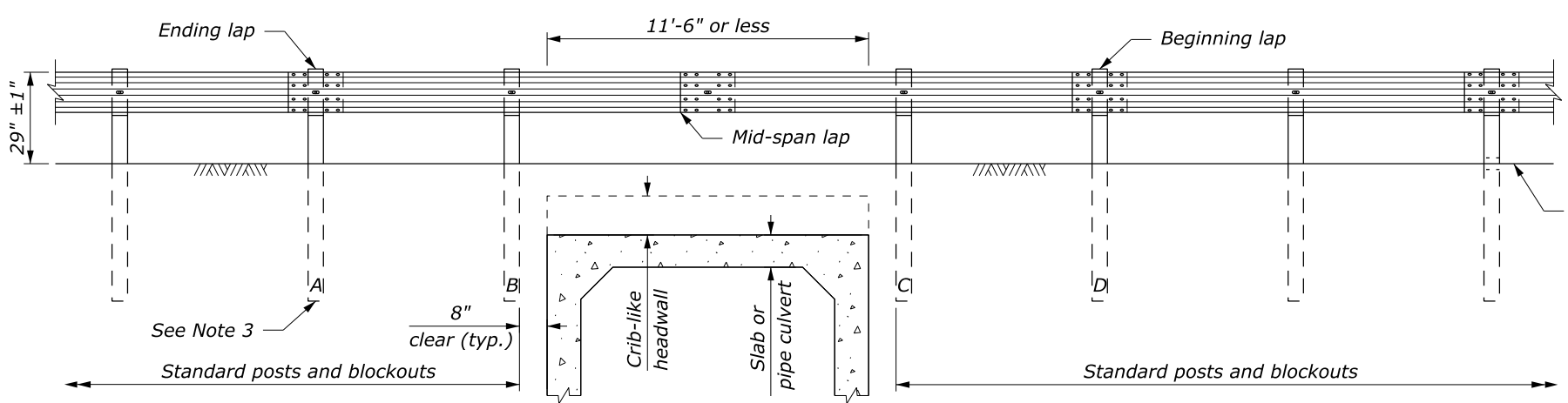
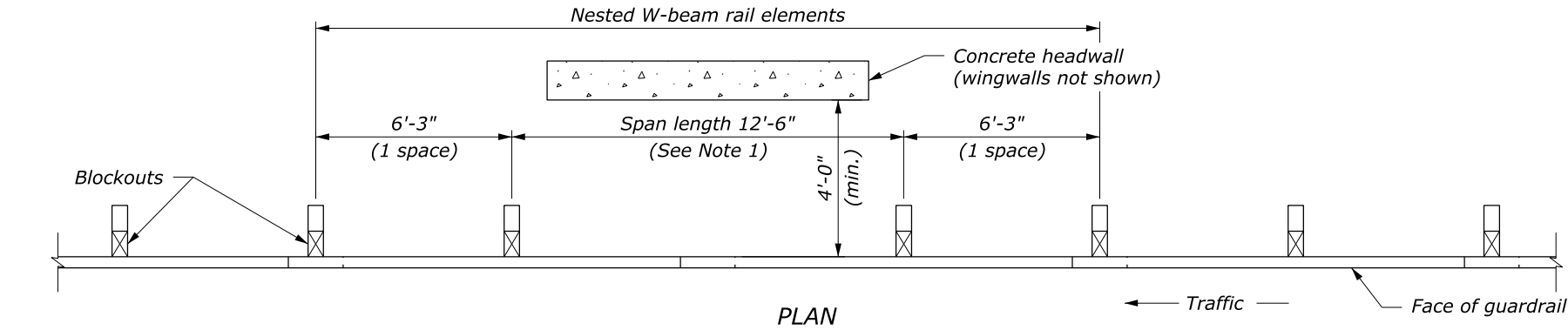
NOTE:

1. See Standards M617-15 and M617-21 for other details.
2. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.
3. Furnish hardware in the metric sizes shown. Equivalent US Customary sizes may be used when metric sizes are unavailable.
4. Dimensions without units are millimeters.

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
G4 W-BEAM GUARDRAIL CABLE RELEASING TERMINAL TYPE CRT, WOOD POSTS	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 6/2005 DRAFT: 2/2014	M617-22



ELEVATION
18'-9" GUARDRAIL SPAN



ELEVATION
12'-6" GUARDRAIL SPAN

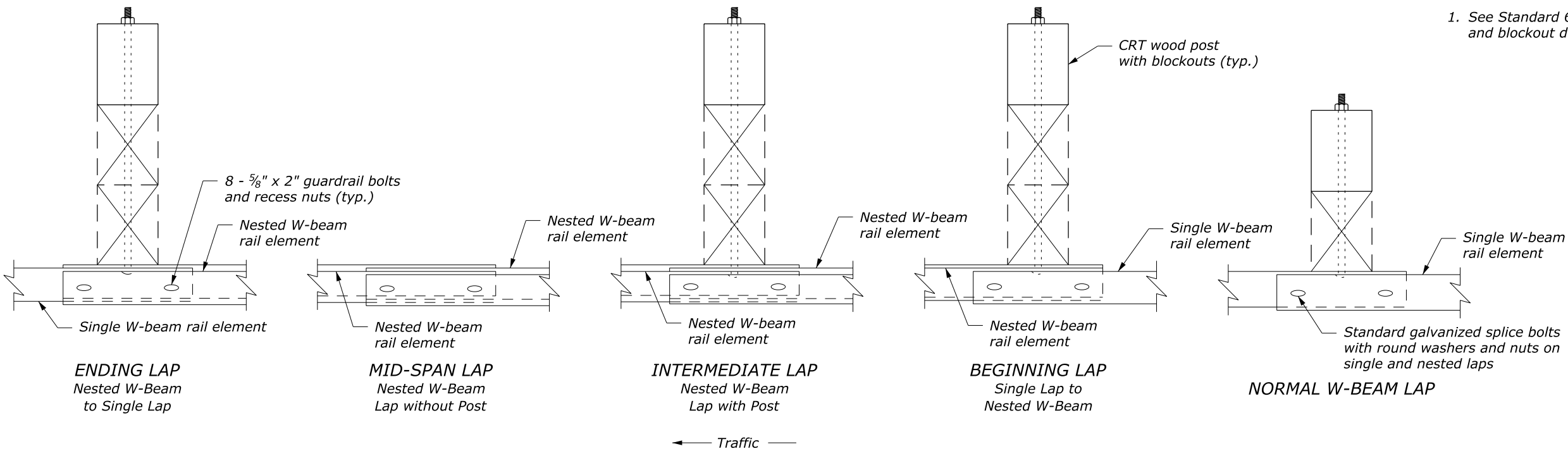
NOTE:

1. 25'-0" rail lengths may be used to eliminate the intermediate lap without a post. Do not place a lap without a post unless needed due to gap length.
2. Posts 1 thru 5 are CRT posts with two blockouts. All other posts are wood or steel.
3. Posts A thru D are standard wood posts with one blockout. All other posts are wood or steel.
4. See Sheet 2 of 2 for additional details.

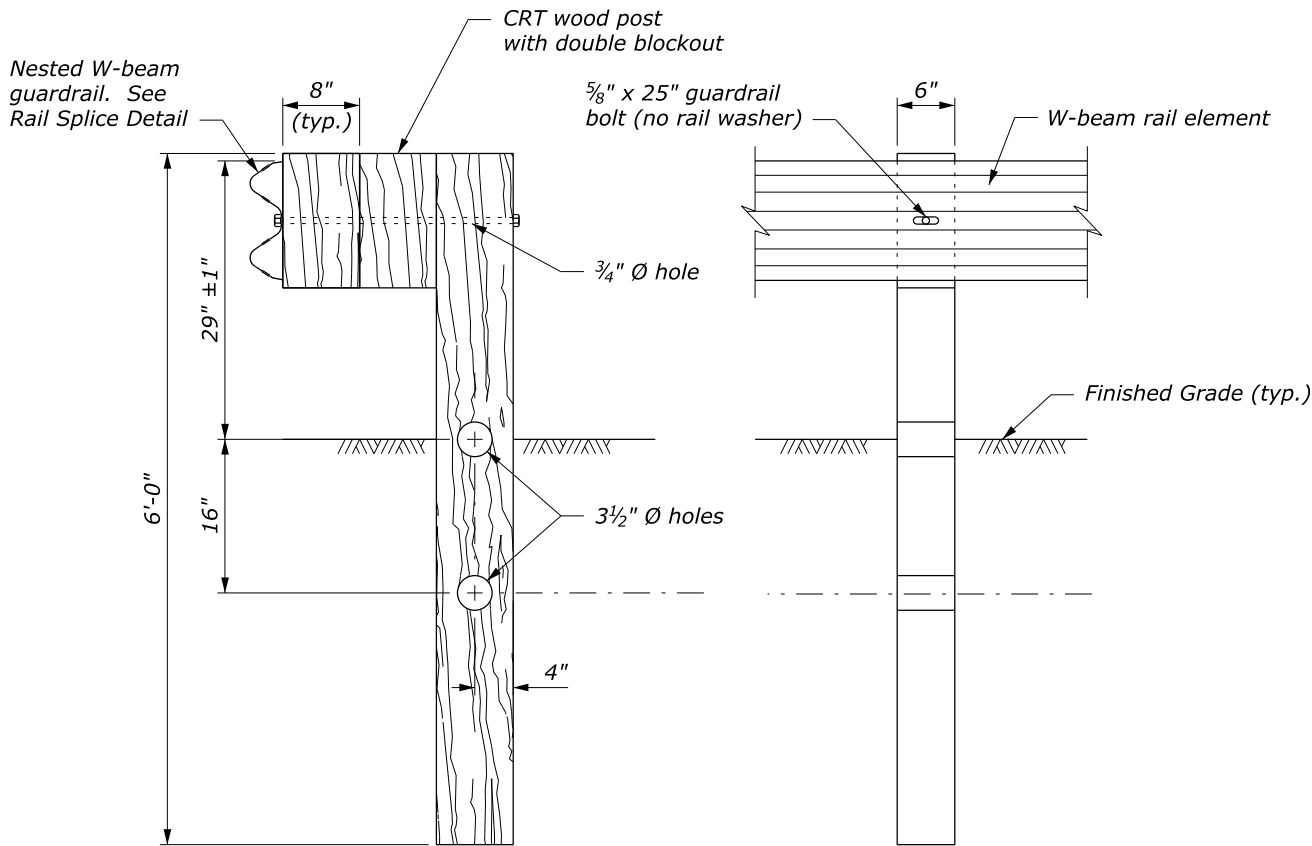
NO SCALE

NOTE:

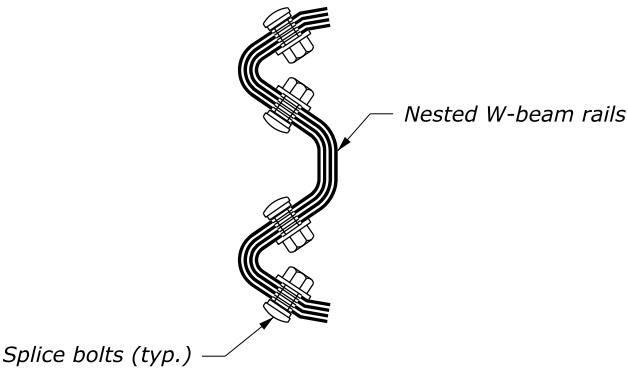
1. See Standard 617-10 for standard wood post and blockout details.



LAPPING DETAILS



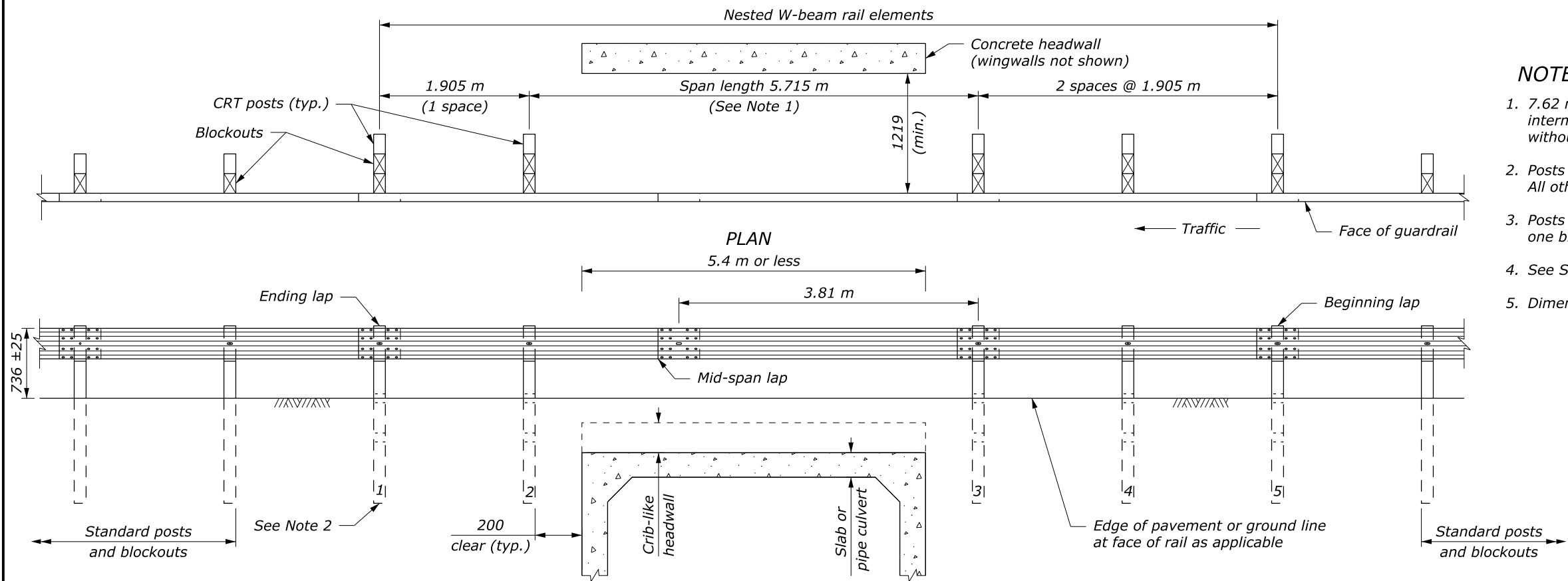
CRT POST DETAIL



RAIL SPLICE DETAIL
AT MID-SPAN LAP

NO SCALE

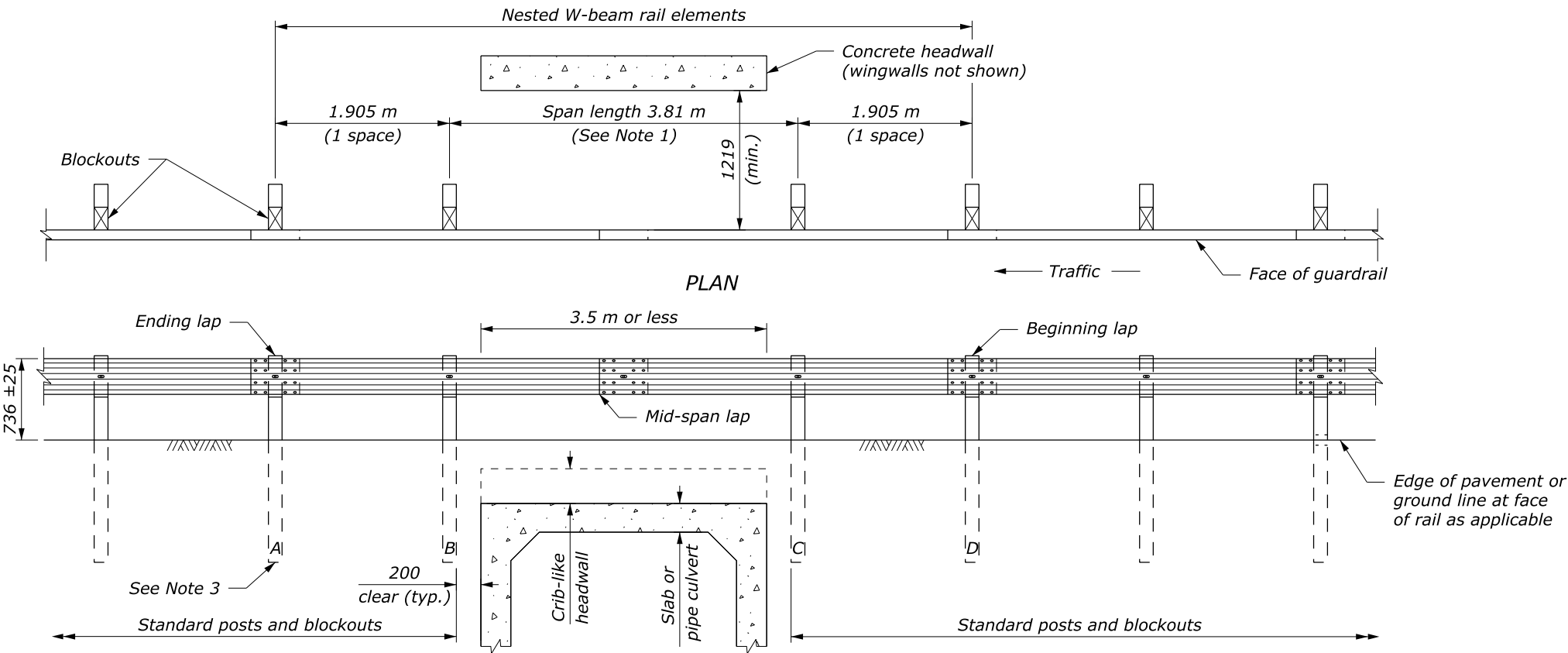
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
G4 W-BEAM GUARDRAIL LONG SPAN SYSTEM, TL-2	
Sheet 2 of 2	
STANDARD APPROVED FOR USE 1/1994	STANDARD
REVISED: 4/1994 6/2005 DRAFT: 9/2014	617-24



NOTE:

1. 7.62 m rail lengths may be used to eliminate the intermediate lap without a post. Do not place a lap without a post unless needed due to gap length.
2. Posts 1 thru 5 are CRT posts with two blockouts. All other posts are wood or steel.
3. Posts A thru D are standard wood posts with one blockout. All other posts are wood or steel.
4. See Sheet 2 of 2 for additional details.
5. Dimensions without units are millimeters.

**ELEVATION
5.715 m GUARDRAIL SPAN**

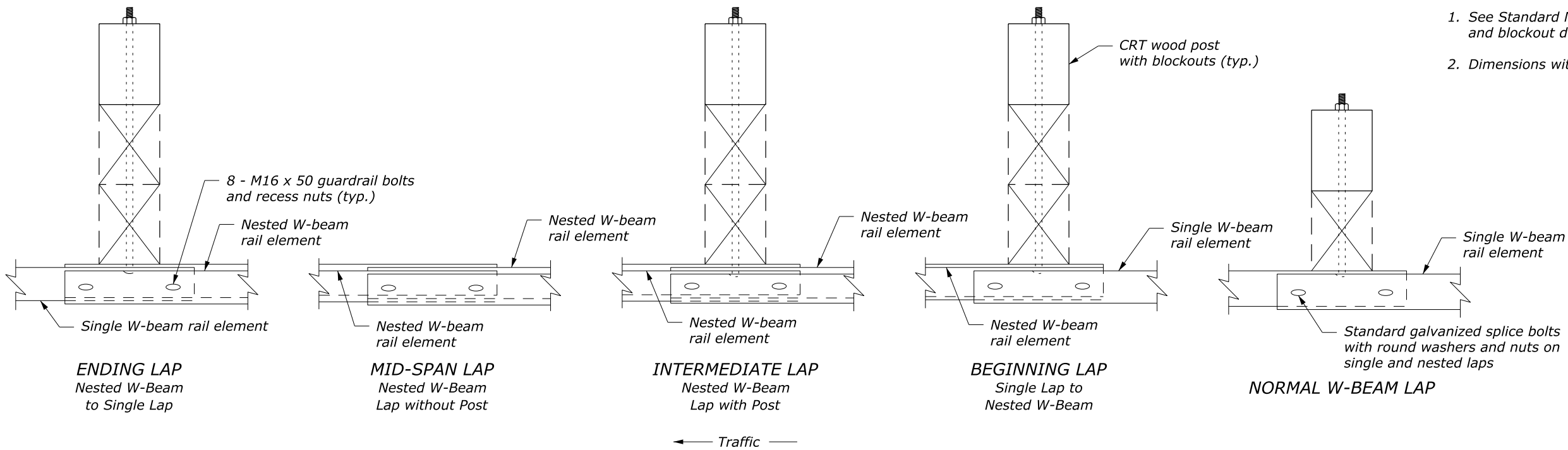


**ELEVATION
3.81 m GUARDRAIL SPAN**

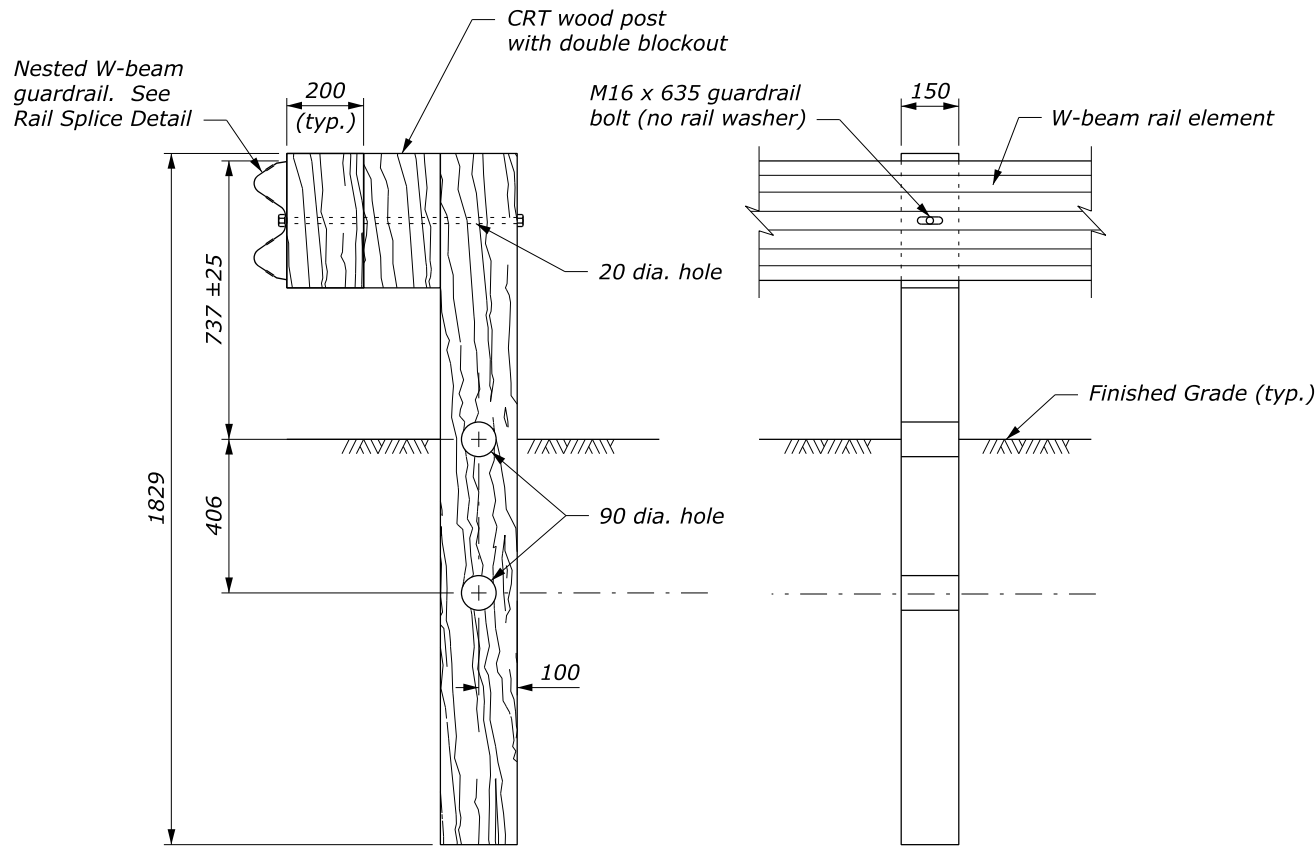
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NOTE:

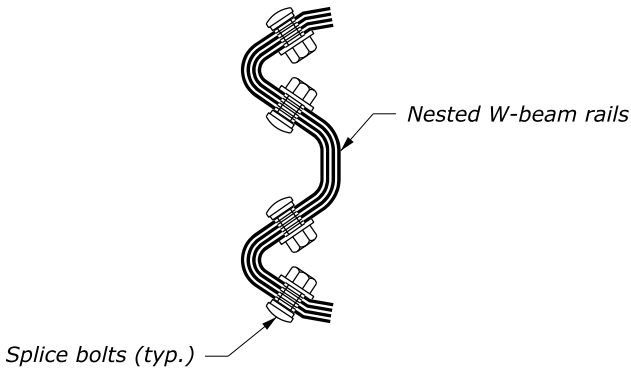
1. See Standard M617-10 for standard wood post and blockout details.
2. Dimensions without units are millimeters.



LAPPING DETAILS



CRT POST DETAIL



RAIL SPLICE DETAIL
AT MID-SPAN LAP

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
G4 W-BEAM GUARDRAIL LONG SPAN SYSTEM, TL-2	
Sheet 2 of 2	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 8/1997 6/2005 DRAFT: 9/2014	M617-24