

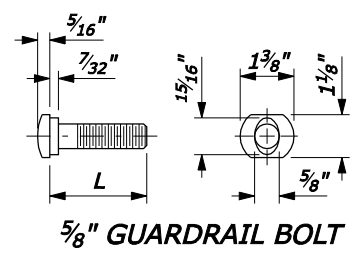
3/4" x 2 1/2" post bolt slot at 6'-3" spacing, center to center

15 1/16" x 1 1/8" splice bolt slot. 8 required, each end rail element

RAIL ELEMENT ELEVATION

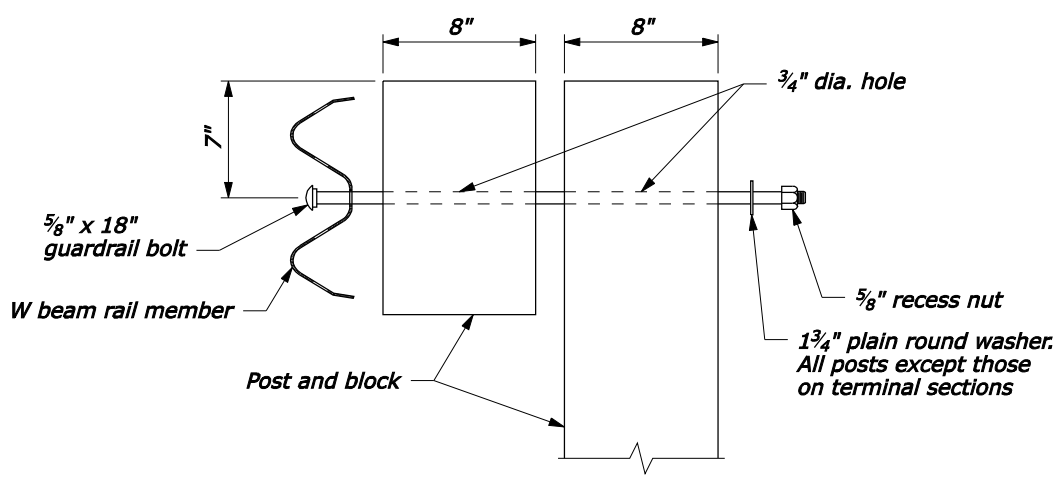
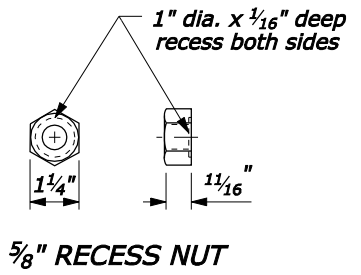
SECTION A-A

W BEAM RAIL MEMBERS



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

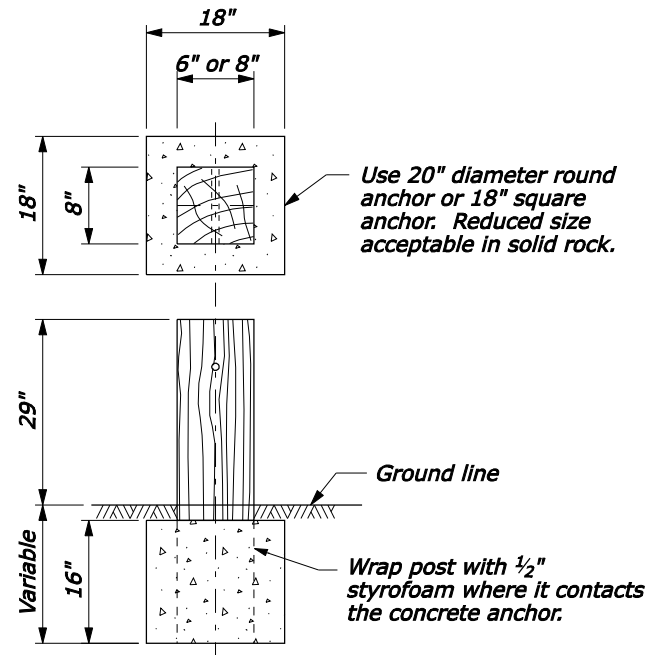
GUARDRAIL BOLT AND RECESS NUT



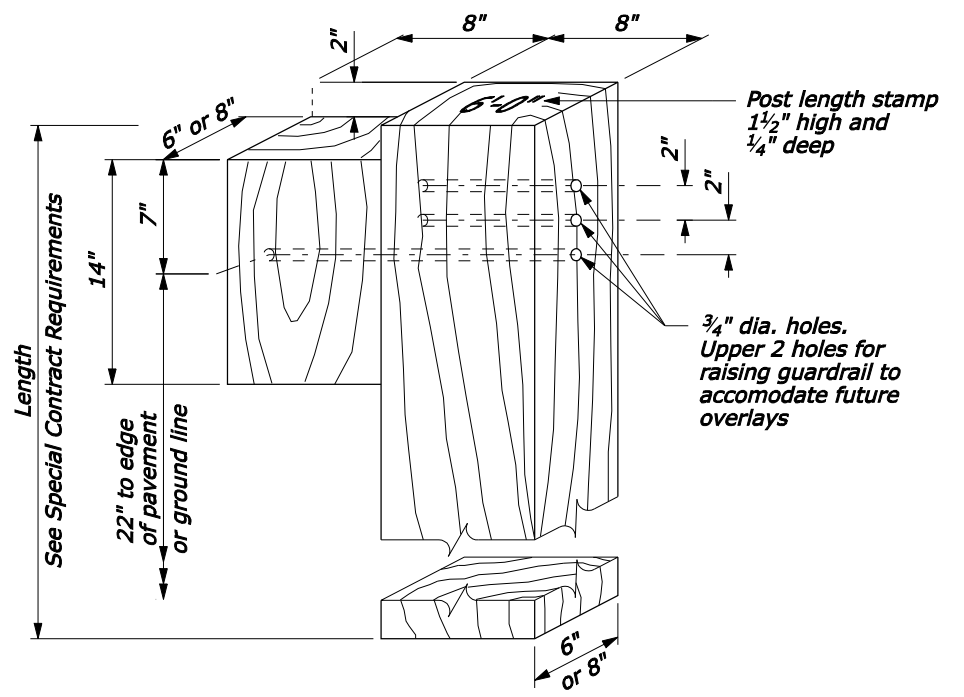
POST BOLT ASSEMBLY

NOTE:

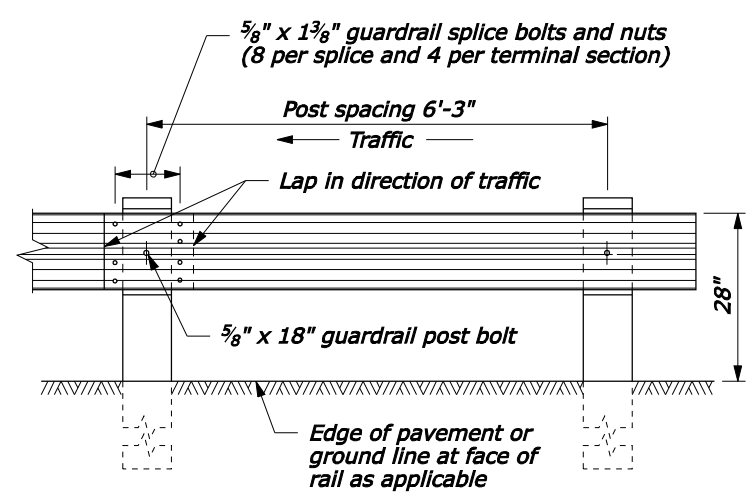
1. Use no more than 3 short guardrail posts in a row.
2. If directed to use alternate hole arrangement, post above ground shall be 31" tall.
3. See Special Contract Requirements when 7'-0" or longer posts are specified.
4. Install reflector tab between post bolt and rail, every fourth post. Alternate reflector tab shapes are acceptable.
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.



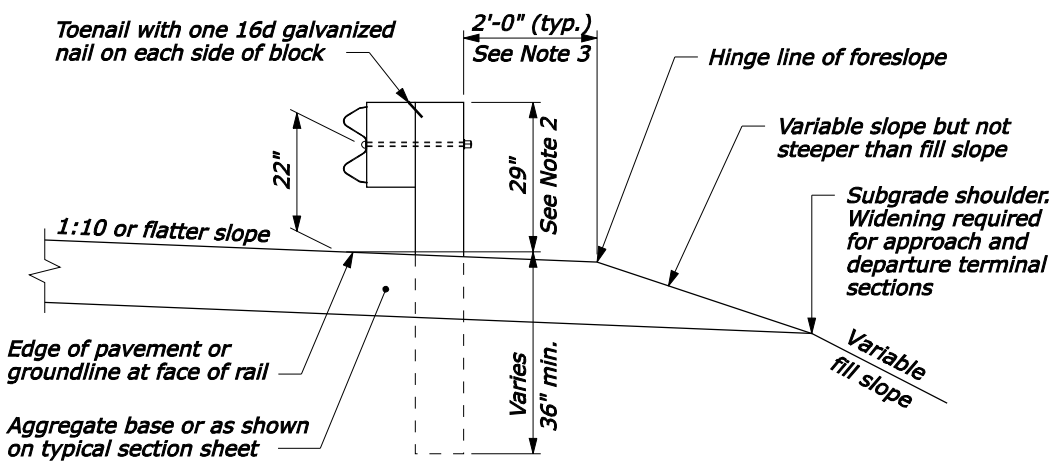
CONCRETE ANCHOR FOR SHORT GUARDRAIL POST
(See Note 1 and 2)



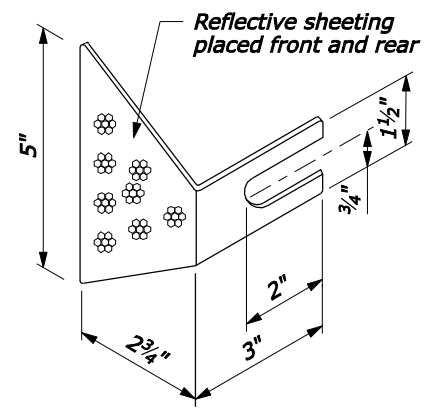
ALTERNATE HOLE ARRANGEMENT POST AND BLOCK DETAIL



POST SPACING STANDARD POST SECTION



TYPICAL GUARDRAIL CROSS SECTION



REFLECTOR TAB
(See Note 4)

NO SCALE

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

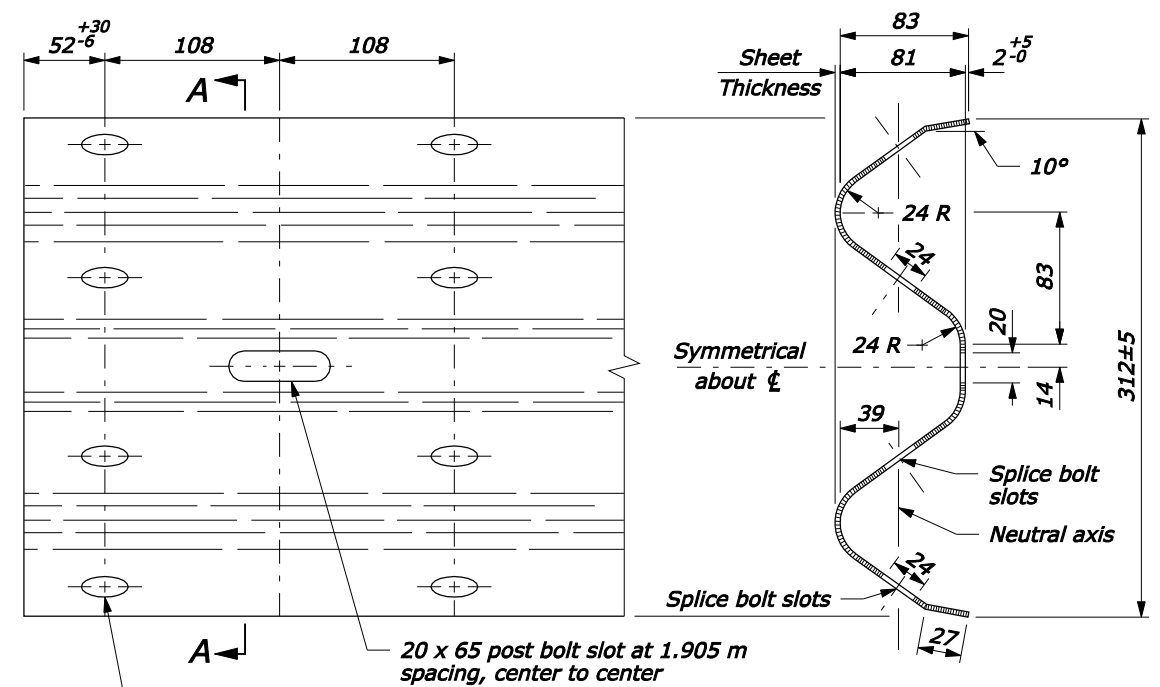
U.S. CUSTOMARY STANDARD

**G4 W-BEAM GUARDRAIL
WOOD POSTS**

STANDARD APPROVED FOR USE 1/1994
REVISED: 4/1994 6/2005

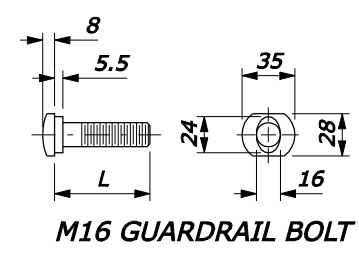
STANDARD
617-10

F:\StandDraw\61710.dgn [US Customary] 12-Mar-2007 06:44 AM



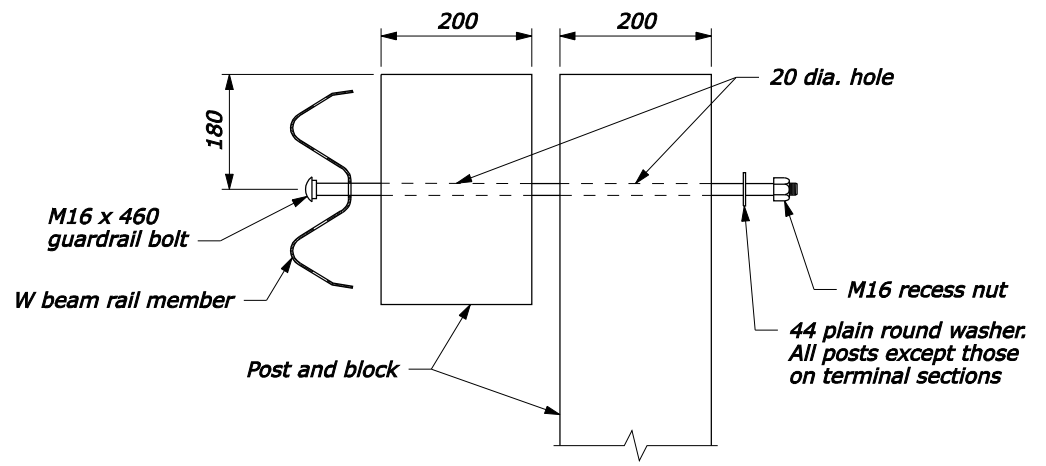
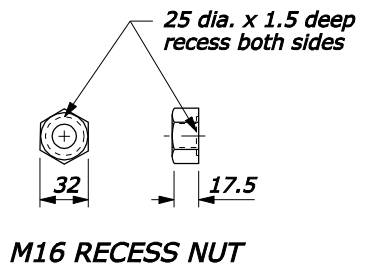
RAIL ELEMENT ELEVATION

W BEAM RAIL MEMBERS

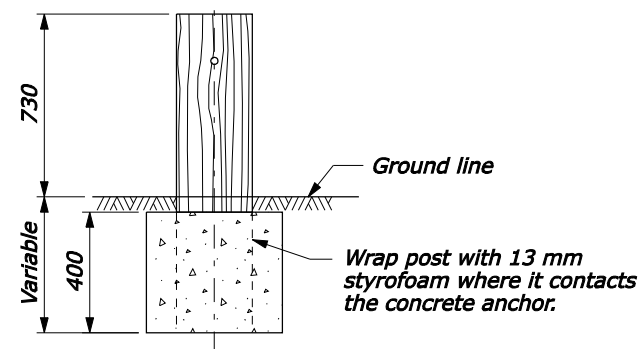
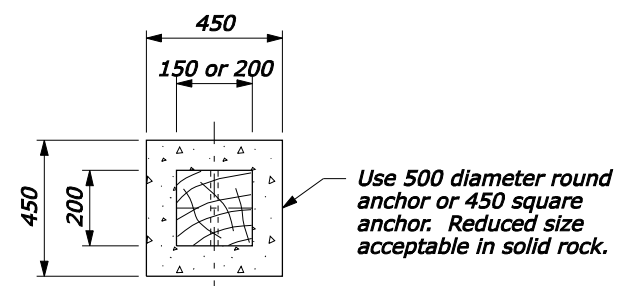


L	Thread Length
35	30 minimum
50	45 minimum
255	100 minimum
460	100 minimum
640	100 minimum

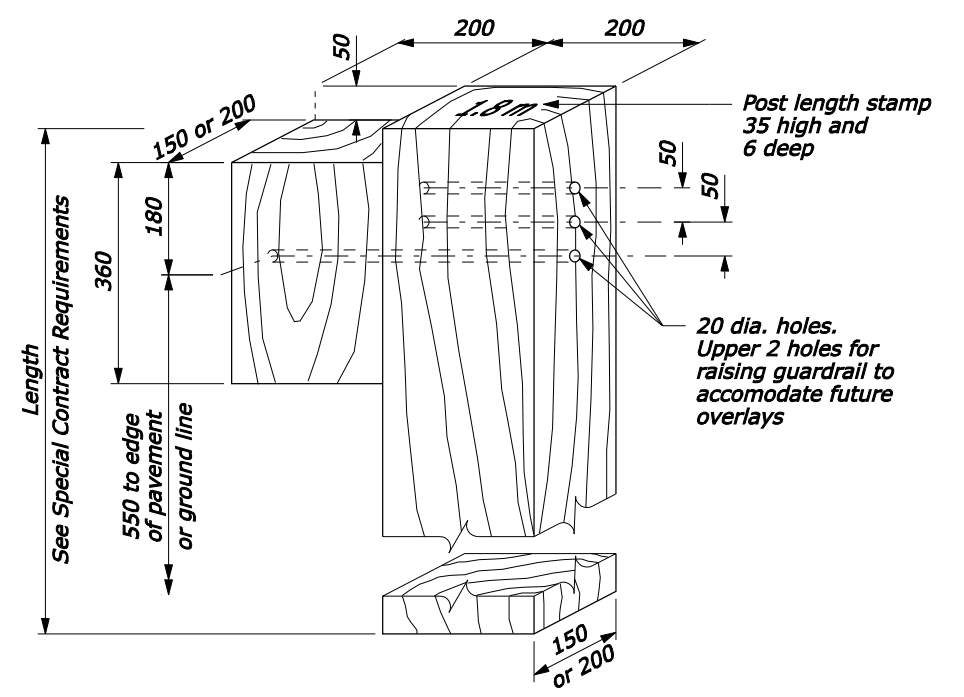
GUARDRAIL BOLT AND RECESS NUT



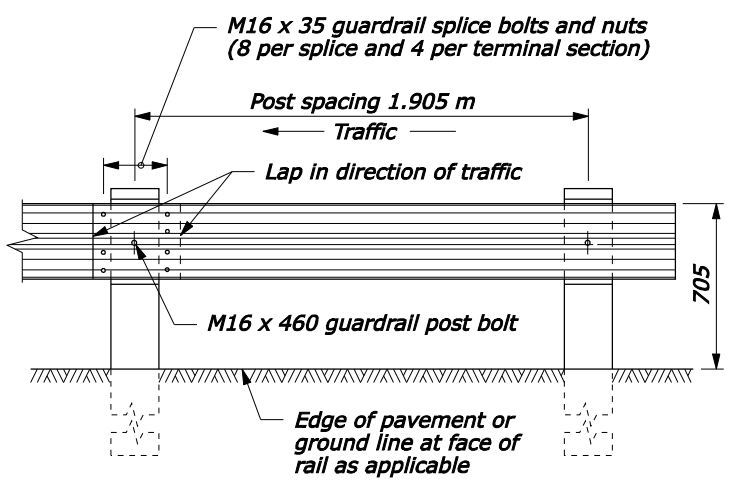
POST BOLT ASSEMBLY



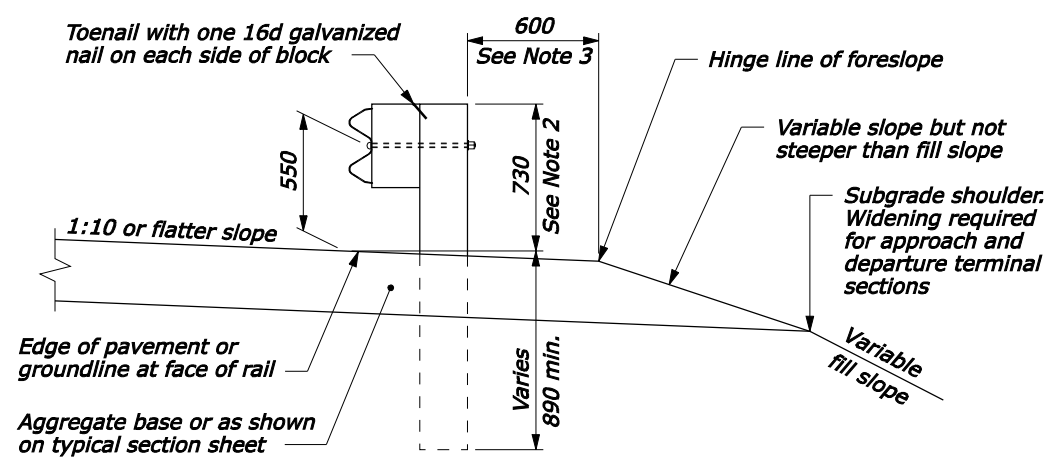
CONCRETE ANCHOR FOR SHORT GUARDRAIL POST
(See Note 1 and 2)



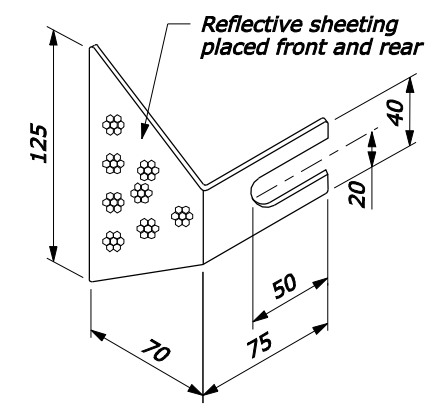
ALTERNATE HOLE ARRANGEMENT POST AND BLOCK DETAIL



POST SPACING STANDARD POST SECTION



TYPICAL GUARDRAIL CROSS SECTION



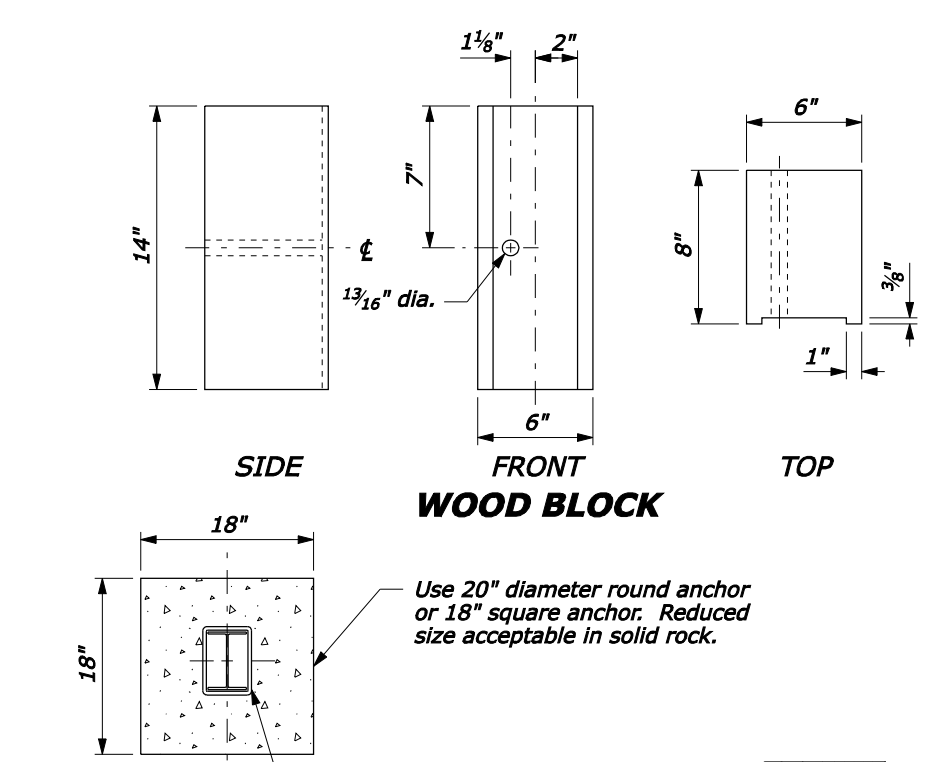
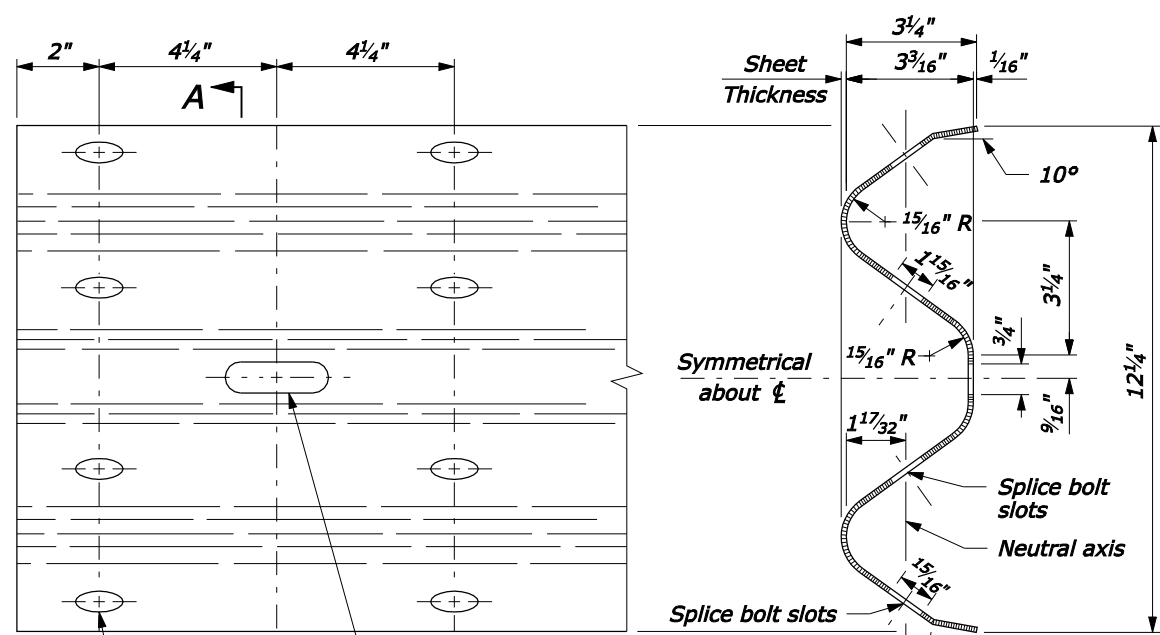
REFLECTOR TAB
(See Note 4)

NO SCALE

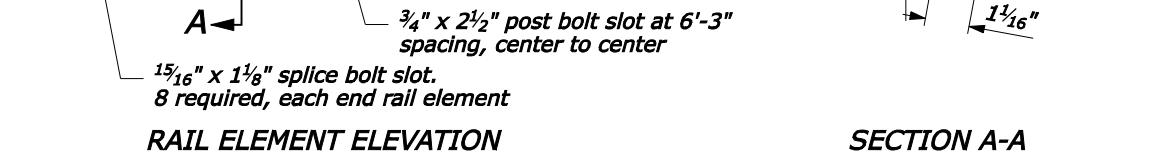
- NOTE:**
1. Use no more than 3 short guardrail posts in a row.
 2. If directed to use alternate hole arrangement, post above ground shall be 780 mm tall.
 3. See Special Contract Requirements when 2.1 m or longer posts are specified.
 4. Install reflector tab between post bolt and rail, every fourth post. Alternate reflector tab shapes are acceptable.
 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.

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 REVISED: 8/1997 6/2005	STANDARD M617-10

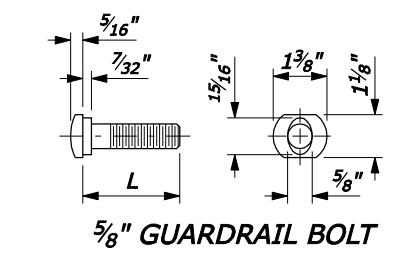
F:\StandDraw\std61710.dgn [Metric] 12-Mar-2007 06:45 AM



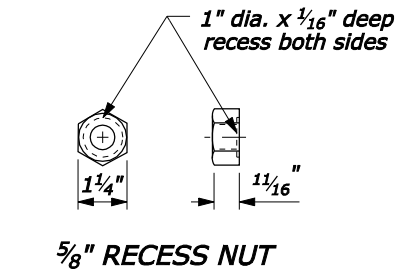
- NOTE:**
1. Use no more than 3 short guardrail posts in a row.
 2. If directed to use alternate hole arrangement, post above ground shall be 33 inches tall.
 3. See Special Contract Requirements when 7'-0" or longer posts are specified.
 4. Install reflector tab between post bolt and rail, every fourth post. Alternate reflector tab shapes are acceptable.
 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.



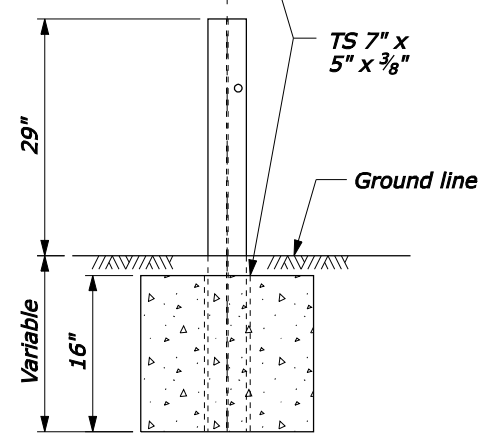
W BEAM RAIL MEMBERS



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

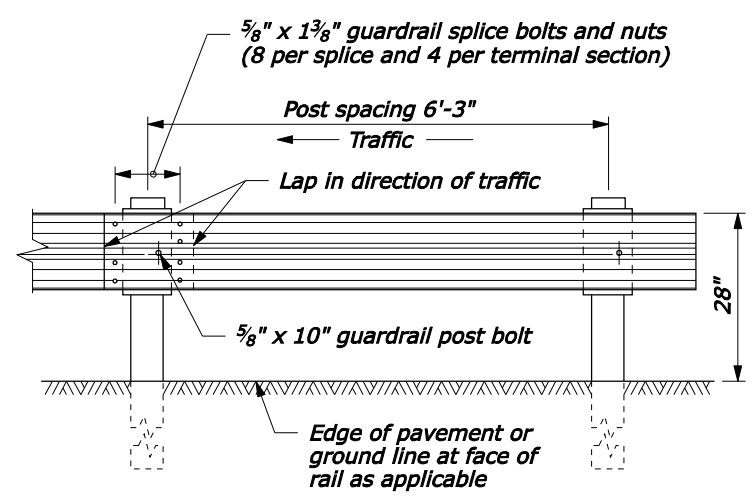
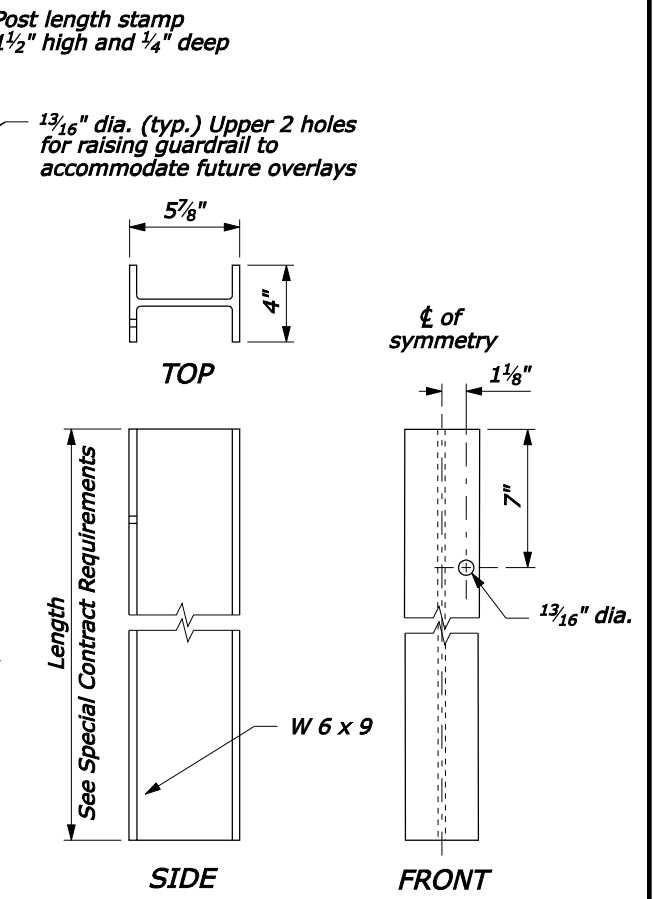
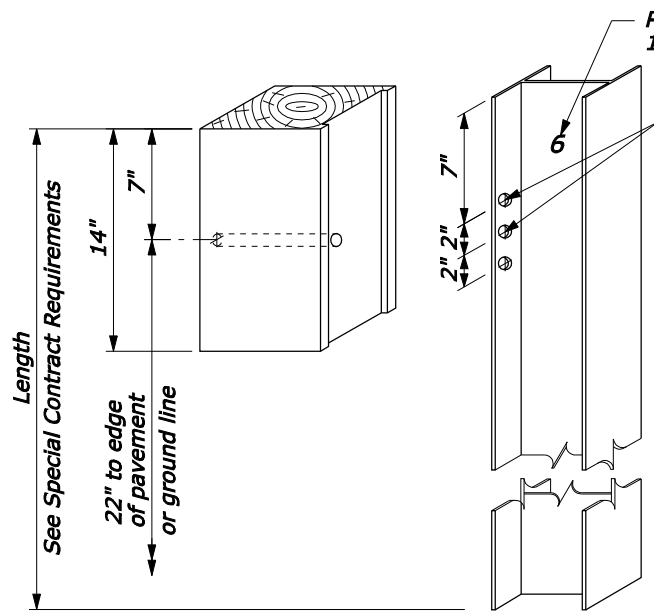


GUARDRAIL BOLT AND RECESS NUT

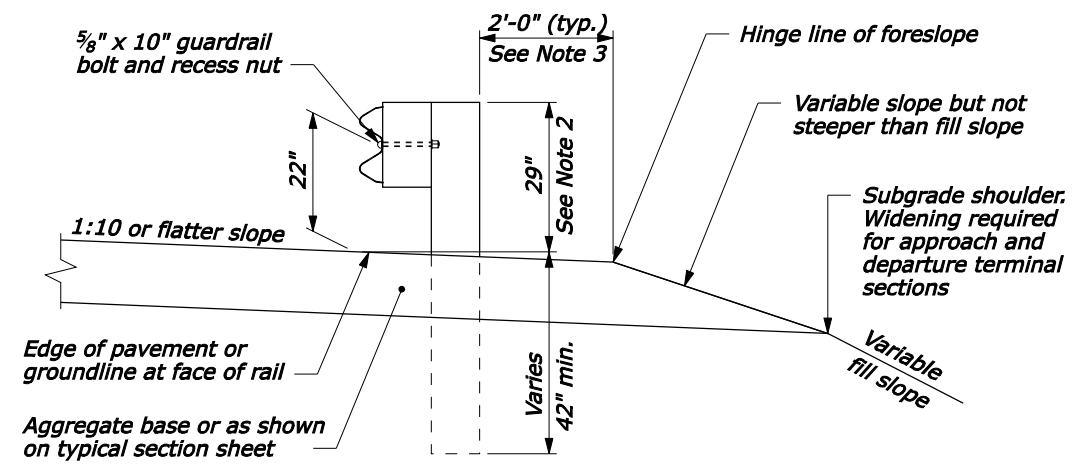


CONCRETE ANCHOR FOR SHORT GUARDRAIL POST

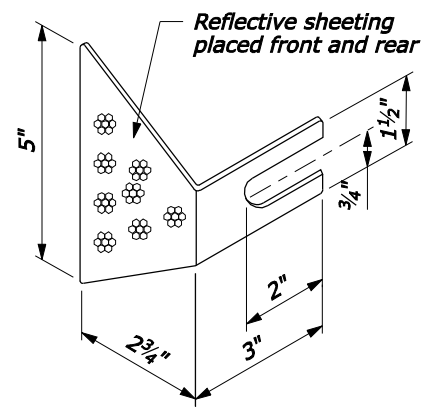
(See Note 1 and 2)



POST SPACING STANDARD POST SECTION



TYPICAL GUARDRAIL CROSS SECTION



REFLECTOR TAB

(See Note 4)

NO SCALE

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

U.S. CUSTOMARY STANDARD

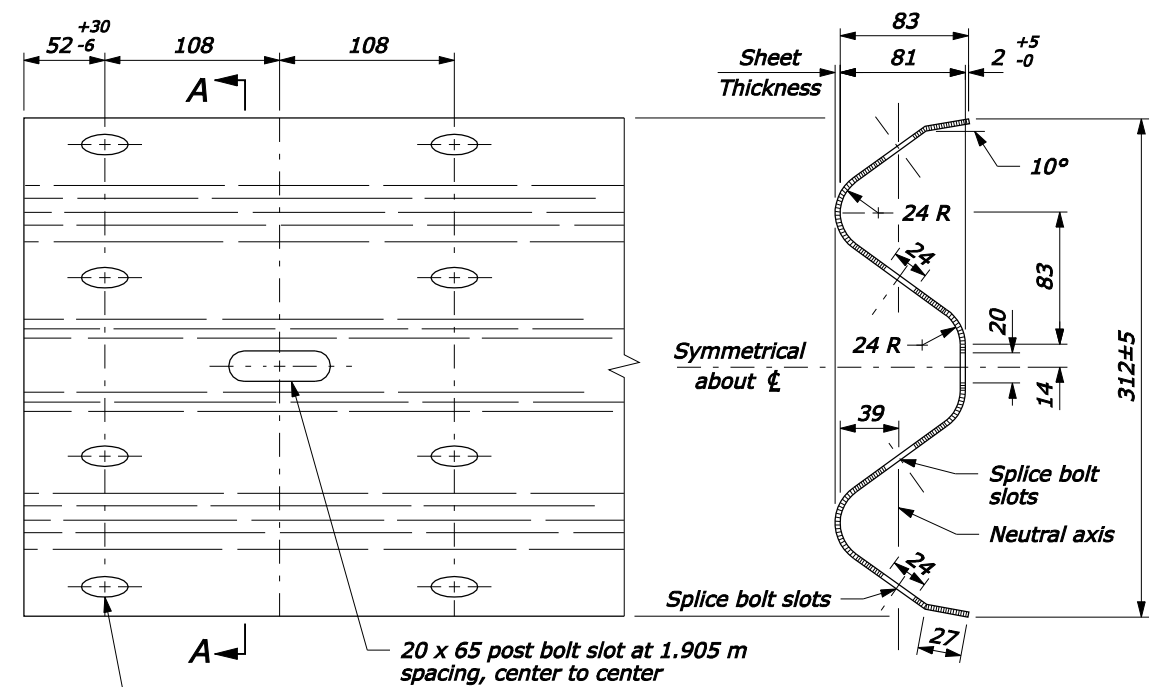
G4 W-BEAM GUARDRAIL STEEL POSTS

STANDARD APPROVED FOR USE 1/1994

REVISD: 4/1994 6/2005
DRAFT: 3/2007

STANDARD 617-11

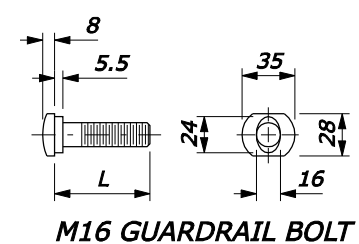
F:\StdDraw\61711.dgn [US Customary] 12-Mar-2007 06:48 AM



RAIL ELEMENT ELEVATION

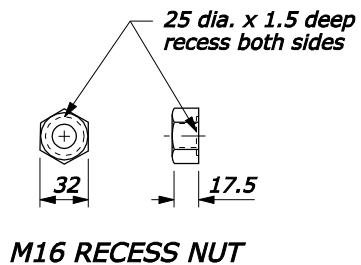
SECTION A-A

W BEAM RAIL MEMBERS

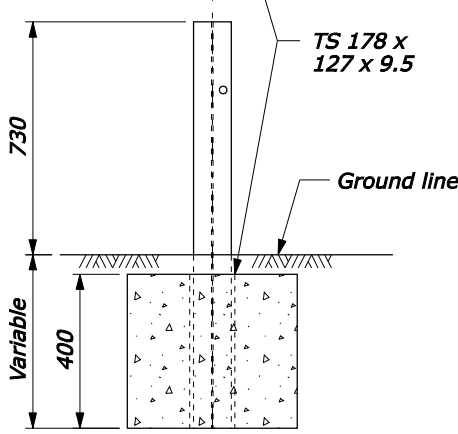


L	Thread Length
35	30 minimum
50	45 minimum
255	100 minimum
460	100 minimum
640	100 minimum

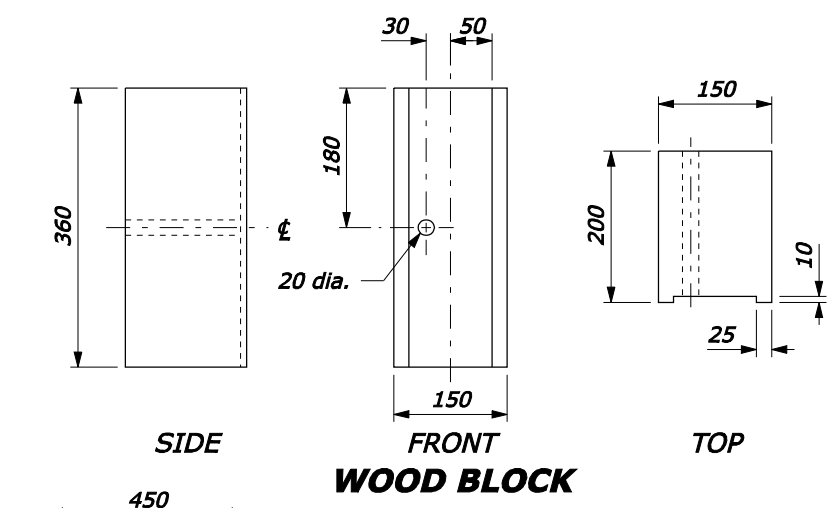
GUARDRAIL BOLT AND RECESS NUT



M16 RECESS NUT

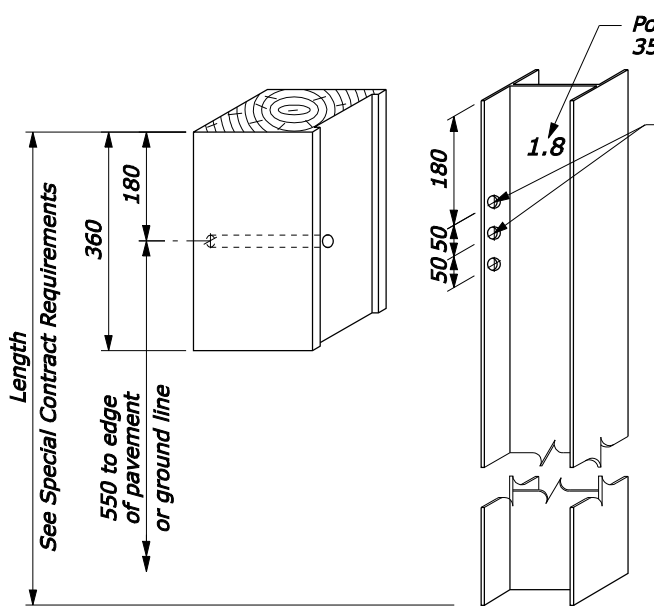


CONCRETE ANCHOR FOR SHORT GUARDRAIL POST
(See Note 1 and 2)

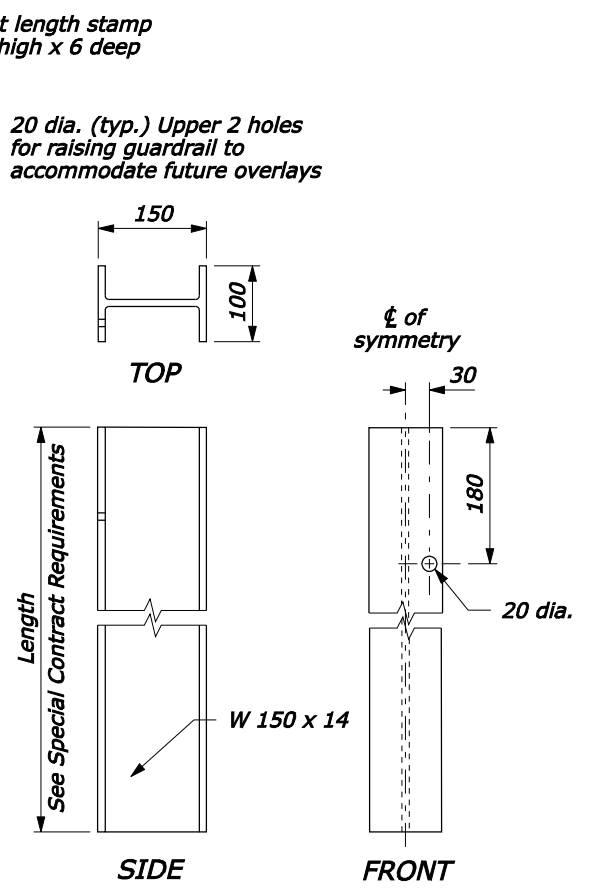


WOOD BLOCK

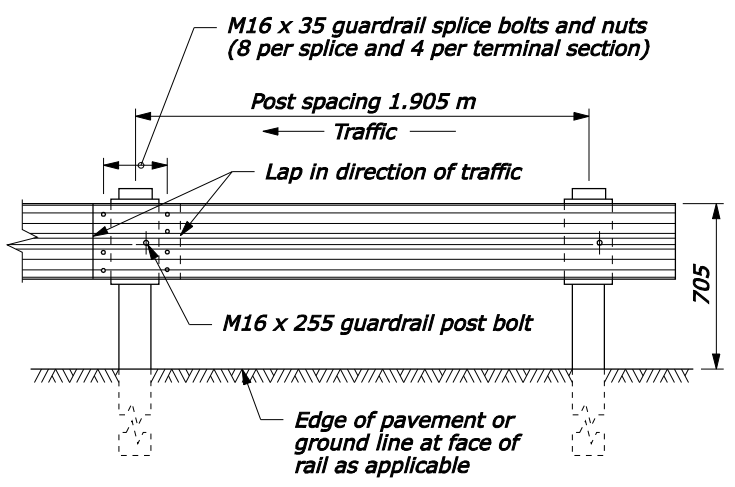
Use 500 diameter round anchor or 450 square anchor. Reduced size acceptable in solid rock.



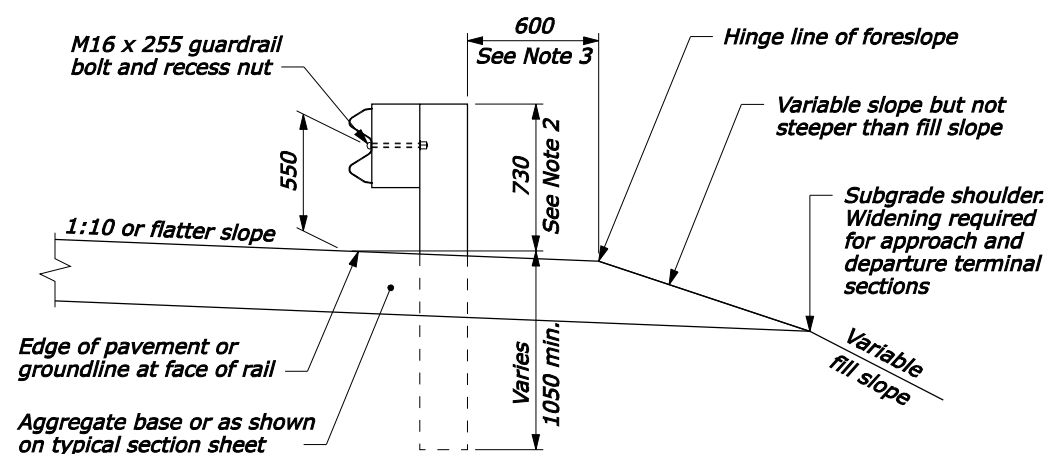
ALTERNATE HOLE ARRANGEMENT POST AND BLOCK DETAIL



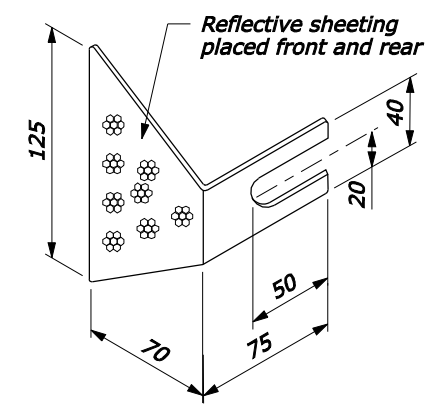
STRUCTURAL SHAPE POST



POST SPACING STANDARD POST SECTION



TYPICAL GUARDRAIL CROSS SECTION



REFLECTOR TAB
(See Note 4)

NO SCALE

NOTE:

1. Use no more than 3 short guardrail posts in a row.
2. If directed to use alternate hole arrangement, post above ground shall be 840 mm tall.
3. See Special Contract Requirements when 2.1 m or longer posts are specified.
4. Install reflector tab between post bolt and rail, every fourth post. Alternate reflector tab shapes are acceptable.
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.

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

**G4 W-BEAM GUARDRAIL
STEEL POSTS**

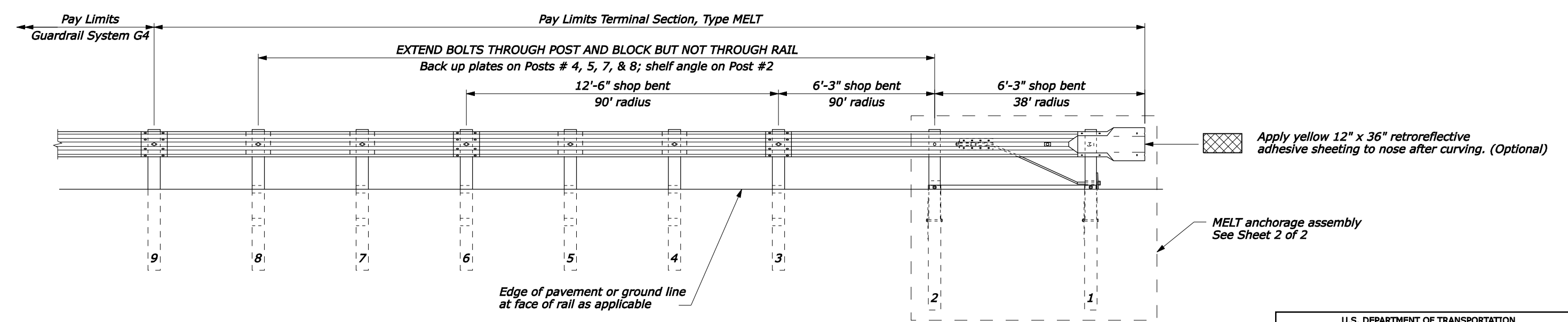
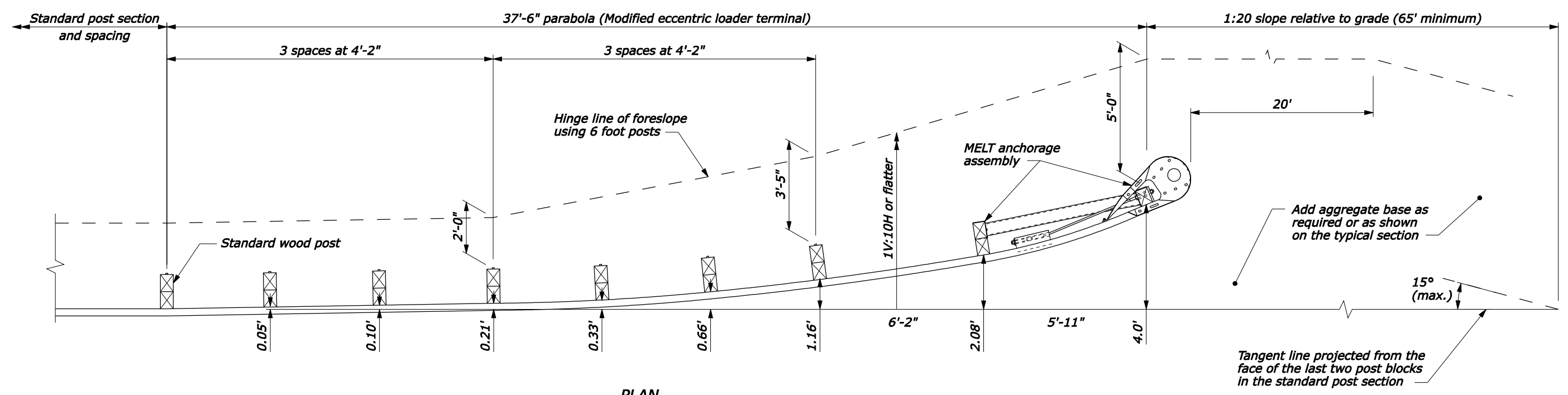
STANDARD APPROVED FOR USE 3/1996
REVISED: 6/1997 12/1998 6/2005
DRAFT: 3/2007

STANDARD
M617-11

12-Mar-2007 06:46 AM F:\StandDraw\std61711.dgn [Metric]

NOTE:

1. See Standard 617-15 for other details.
2. Do not use terminal where speeds are in excess of 45 MPH.

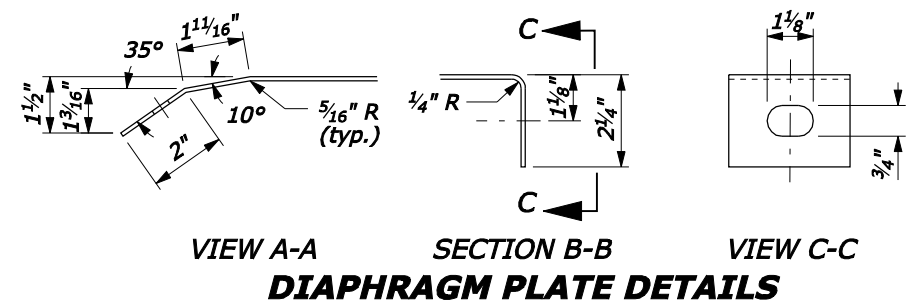


APPROACH & DEPARTURE FLARE WITH MODIFIED ECCENTRIC LOADER TERMINAL

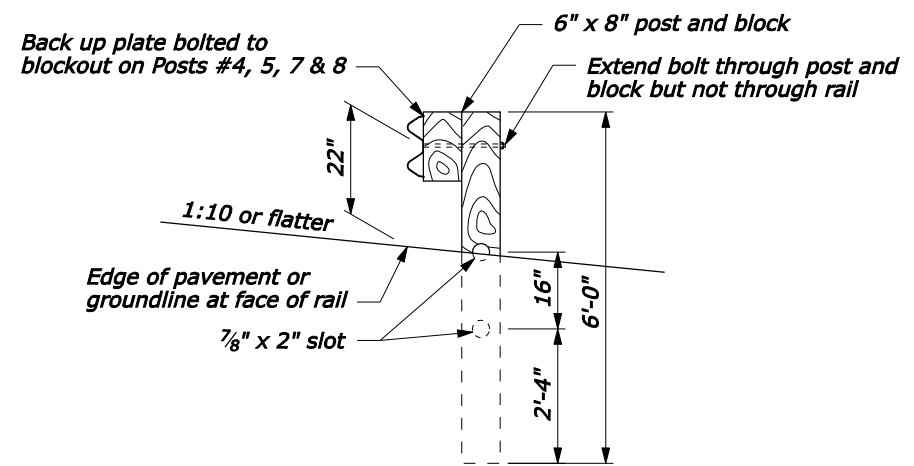
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD G4 W BEAM GUARDRAIL MODIFIED ECCENTRIC LOADER TERMINAL, TYPE MELT Sheet 1 of 2	
STANDARD APPROVED FOR USE 1/1994	STANDARD
REVISED: 4/1994 6/2005	617-12
DRAFT: 3/2007	

F:\StdDraw\61712.dgn [US Customary] 12-Mar-2007 09:43 AM



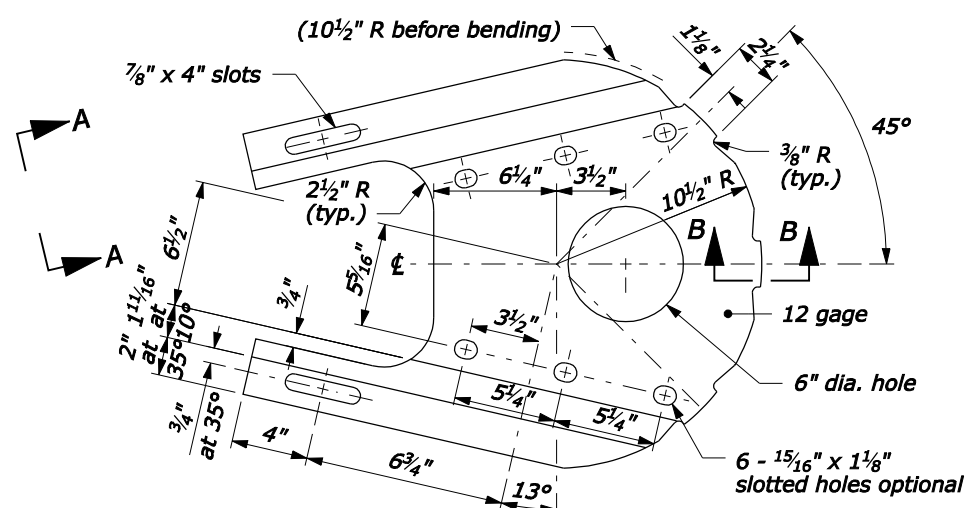
VIEW A-A SECTION B-B VIEW C-C
DIAPHRAGM PLATE DETAILS



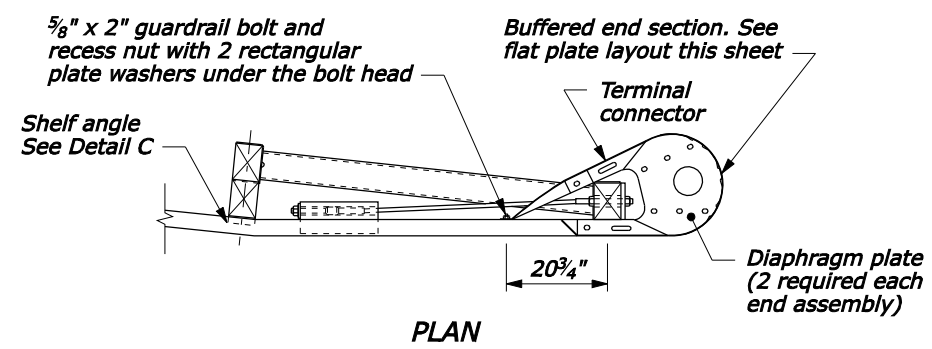
BREAKAWAY LINE POST AND BLOCK
POST #3 - 8

NOTE:

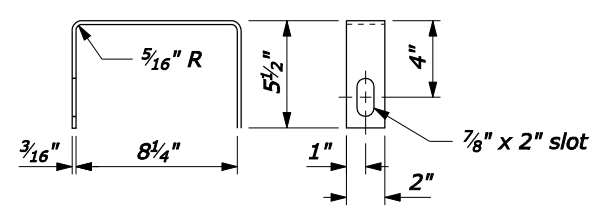
1. See Standard 617-15 for other details.
2. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.



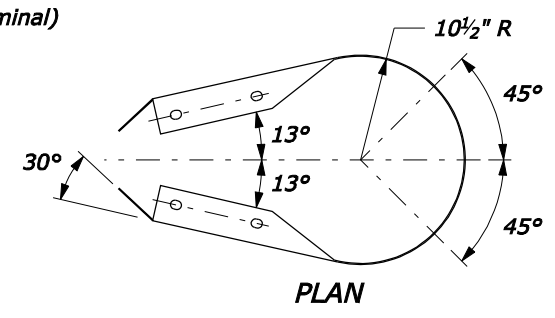
DIAPHRAGM PLATE
(2 required each terminal)



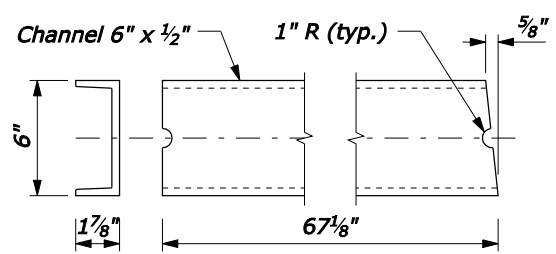
W-BEAM BACK UP PLATE
POSTS #4, 5, 7, & 8



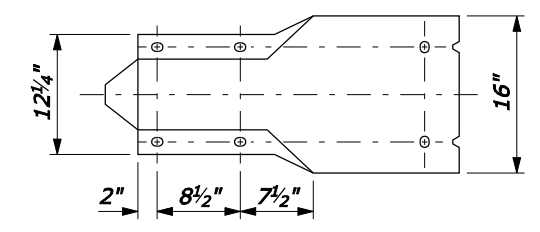
YOKE DETAILS



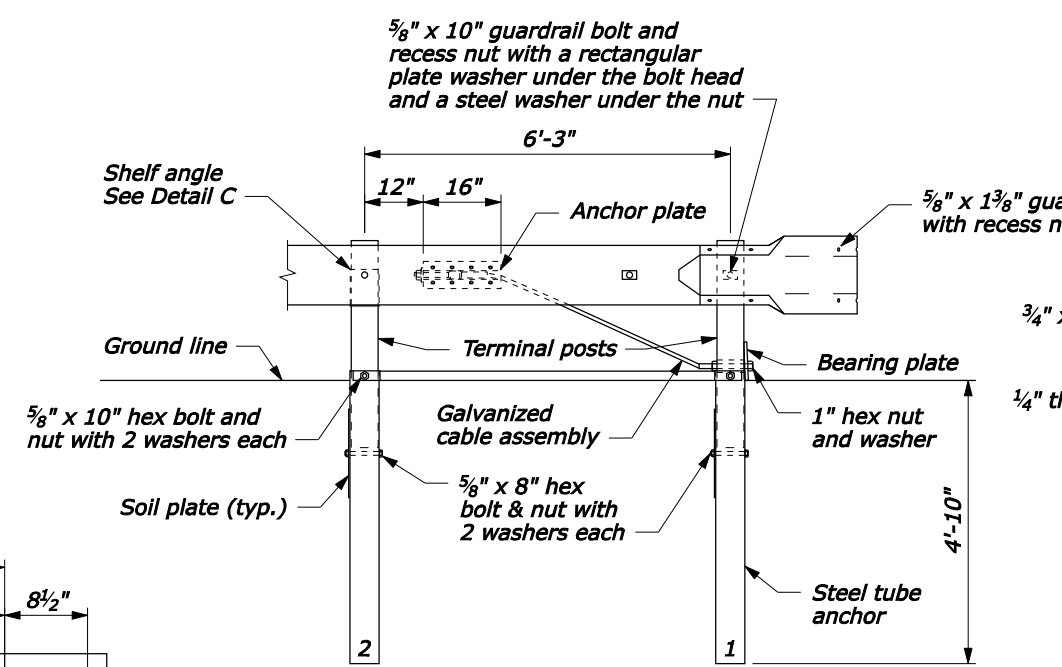
PLAN



STRUT DETAILS

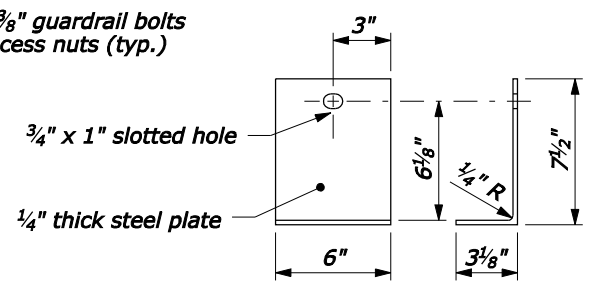


ELEVATION

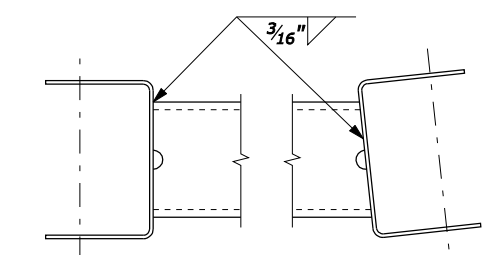


ELEVATION

ANCHORAGE ASSEMBLY

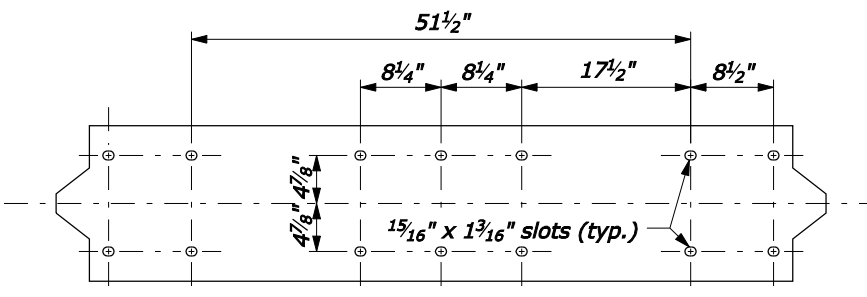


DETAIL C
POST #2 SHELF ANGLE



Shown with legs down. For opposite hand, install legs up.

STRUT AND YOKE ASSEMBLY



BUFFERED END SECTION
FLAT PLATE LAYOUT

NO SCALE

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

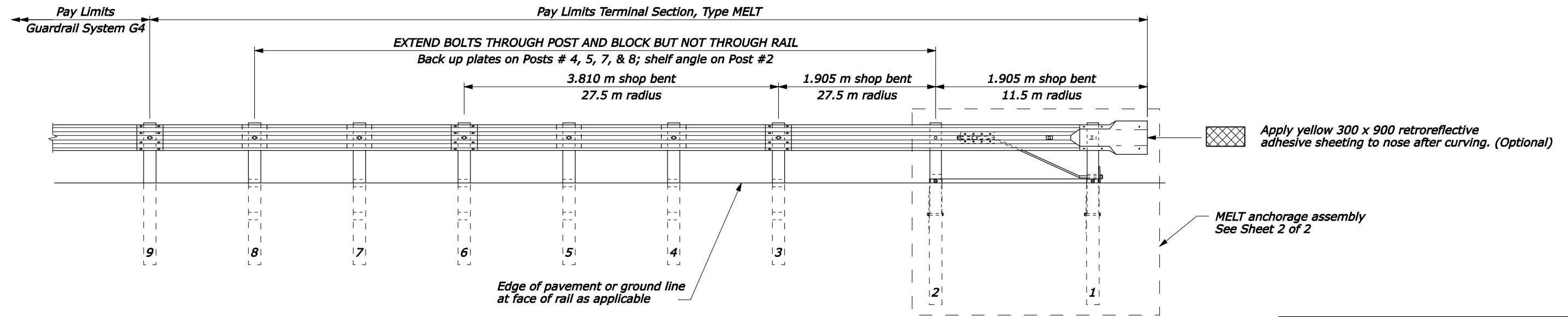
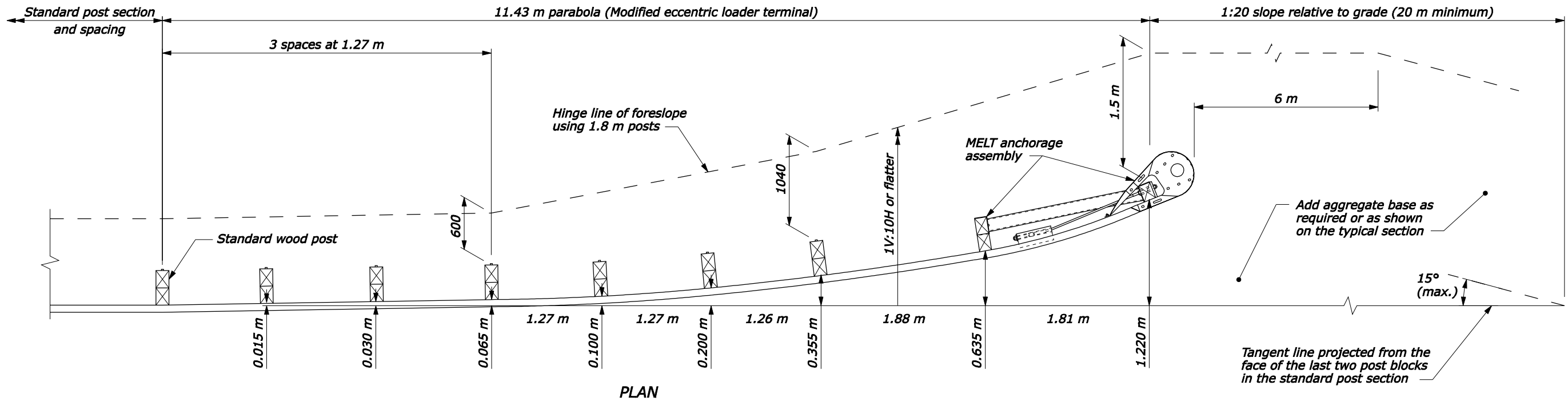
U.S. CUSTOMARY STANDARD
**G4 W BEAM GUARDRAIL
MODIFIED ECCENTRIC LOADER
TERMINAL, TYPE MELT**
Sheet 2 of 2

STANDARD APPROVED FOR USE 1/1994	STANDARD
REVISED: 4/1994 6/2005	617-12
DRAFT: 3/2007	

12-Mar-2007 09:44 AM F:\StdDraw\y661712.dgn [US Customary]

NOTE:

1. See Standard M617-15 for other details.
2. Do not use terminal where speeds are in excess of 70 km/h [45 MPH].
3. Dimensions without units are millimeters.

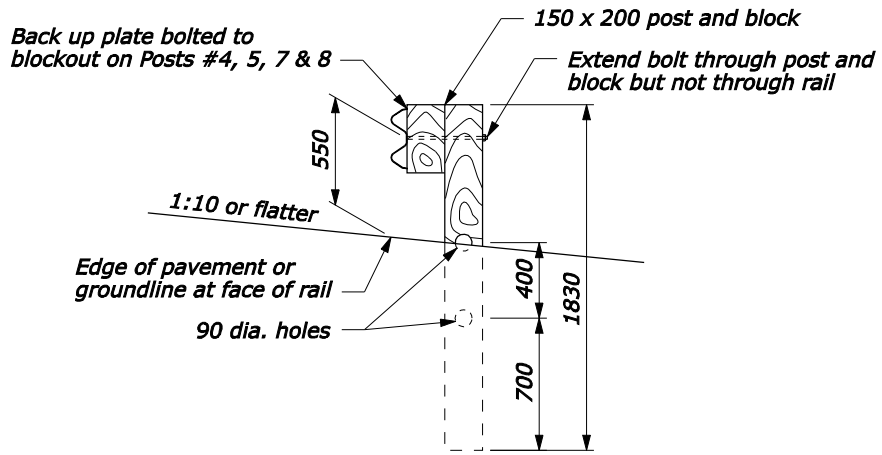
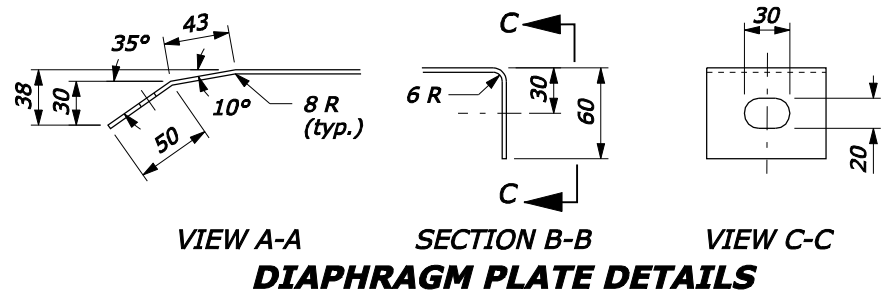


**APPROACH & DEPARTURE FLARE
WITH MODIFIED ECCENTRIC LOADER TERMINAL**

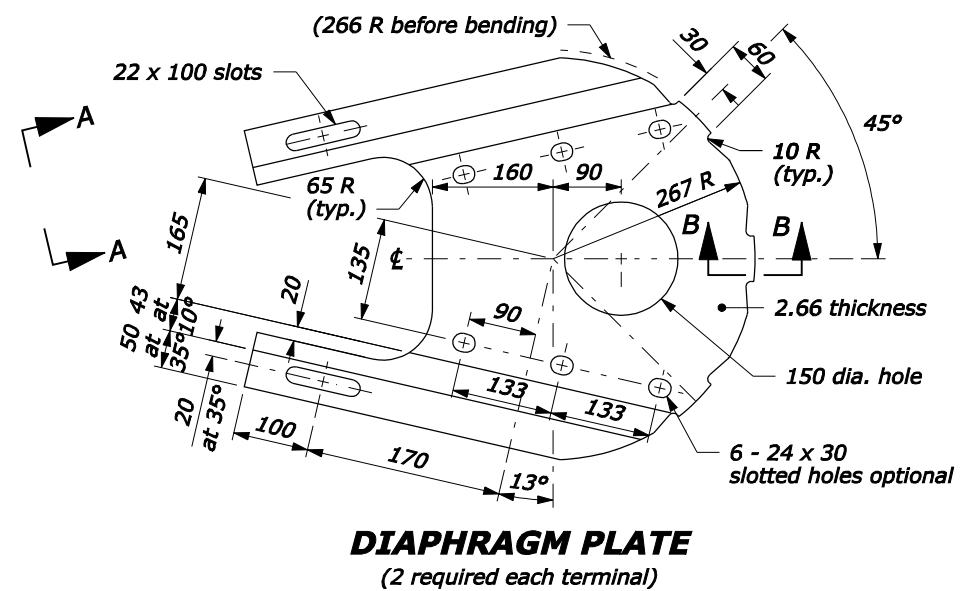
NO SCALE

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	STANDARD
REVISED: 12/1998 6/2005 DRAFT: 3/2007	M617-12

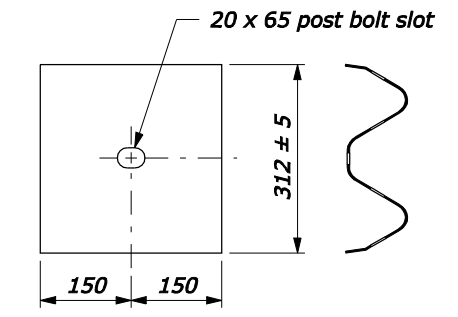
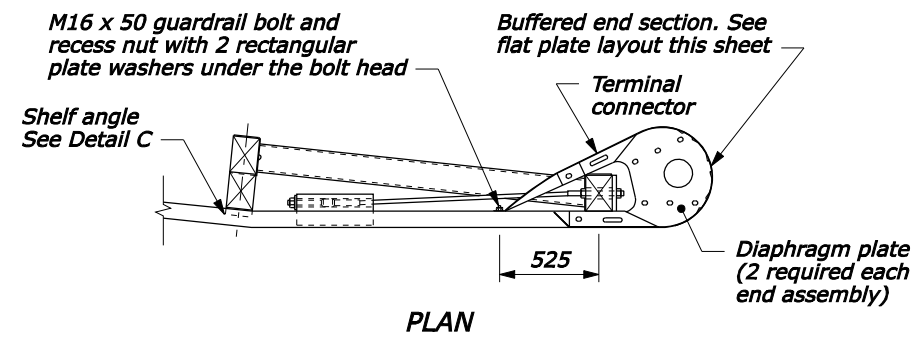
12-Mar-2007 06:50 AM F:\StandDraw\std61712.dgn [Metric]



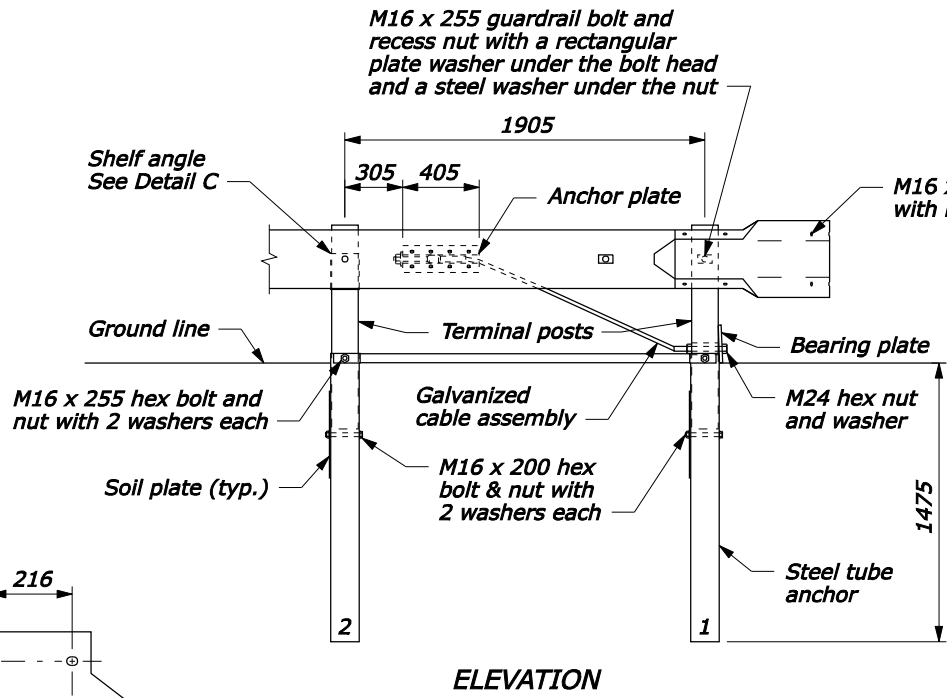
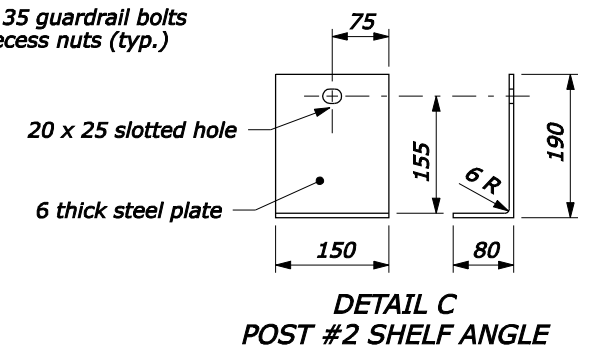
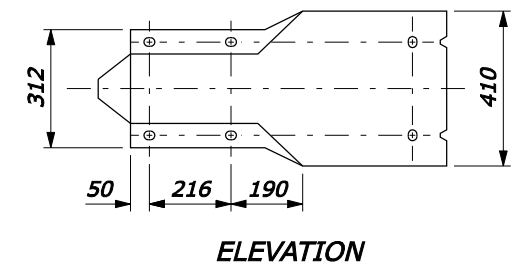
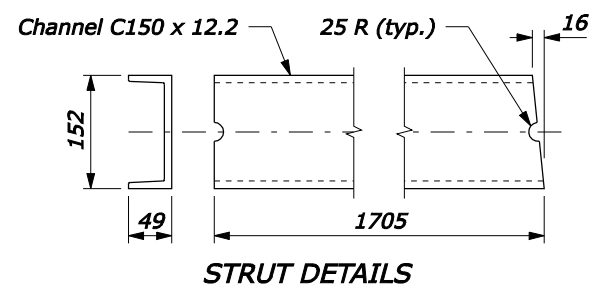
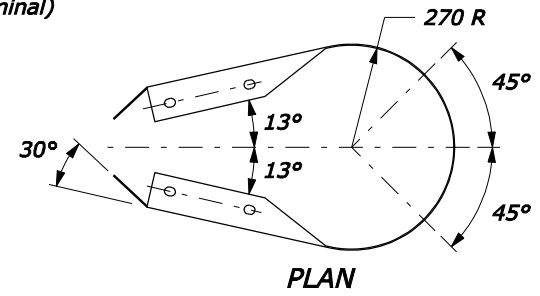
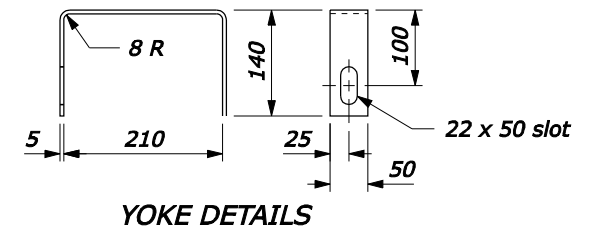
- NOTE:**
1. See Standard M617-15 for other details.
 2. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.
 3. Furnish hardware in metric sizes shown. Equivalent U.S.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



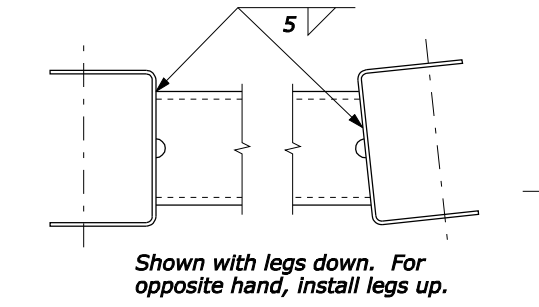
BREAKAWAY LINE POST AND BLOCK
POST #3 - 8



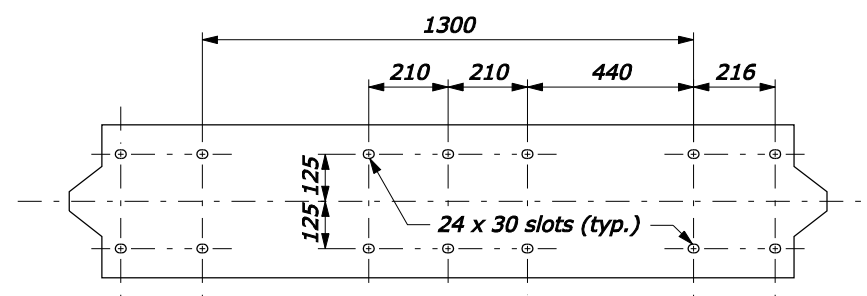
W-BEAM BACK UP PLATE
POSTS #4, 5, 7, & 8



ANCHORAGE ASSEMBLY



STRUT AND YOKE ASSEMBLY



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

METRIC STANDARD
**G4 W BEAM GUARDRAIL
MODIFIED ECCENTRIC LOADER
TERMINAL, TYPE MELT**
Sheet 2 of 2

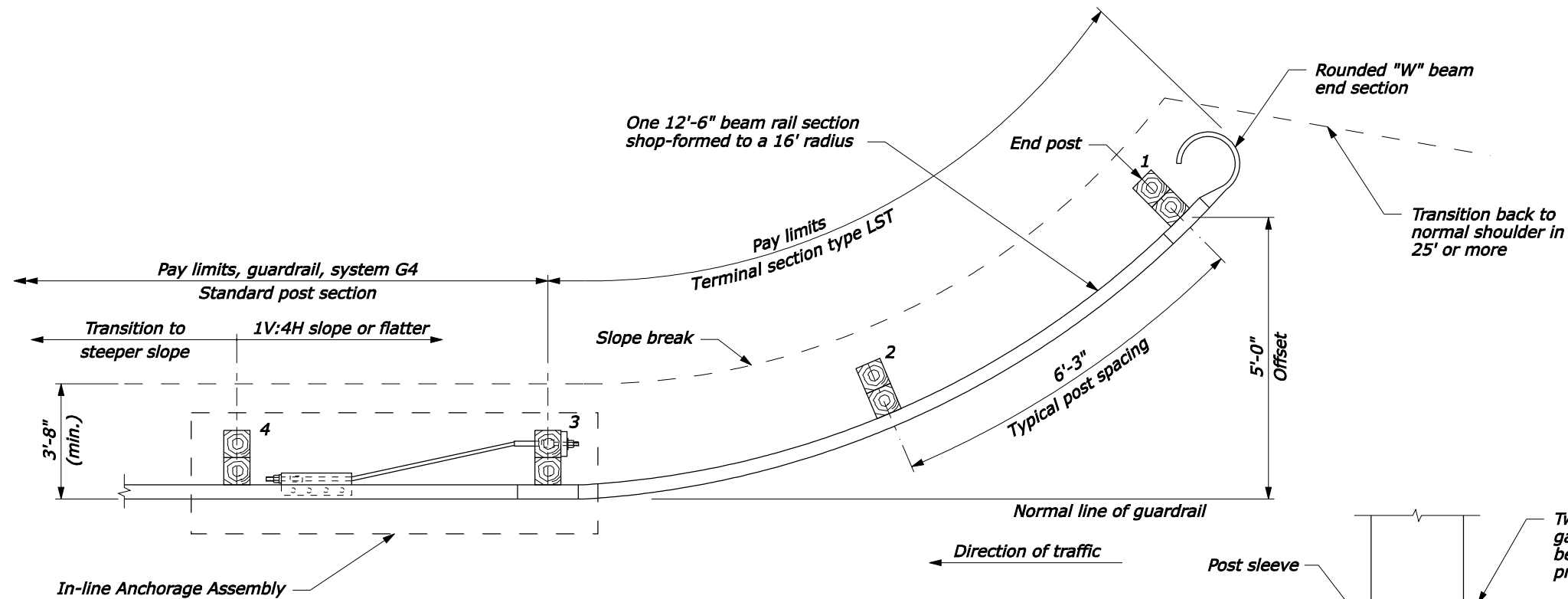
STANDARD APPROVED FOR USE 3/1996
REVISED: 8/1997 6/2005
DRAFT: 3/2007

STANDARD
M617-12

NO SCALE

12-Mar-2007 06:51 AM

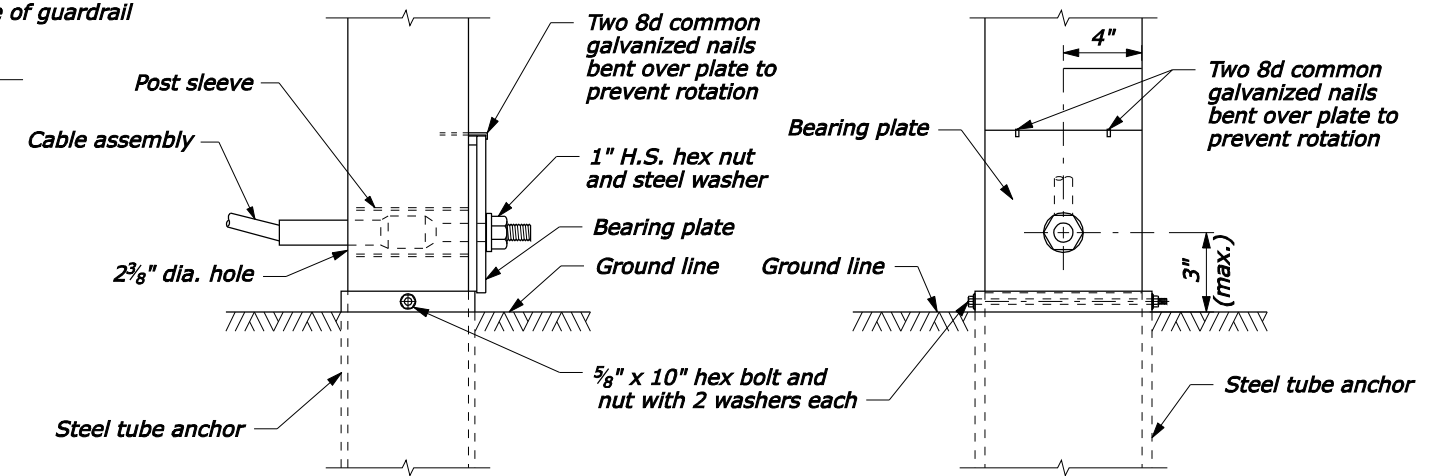
F:\StandDraw\std61712.dgn [Metric]



PLAN

NOTE:

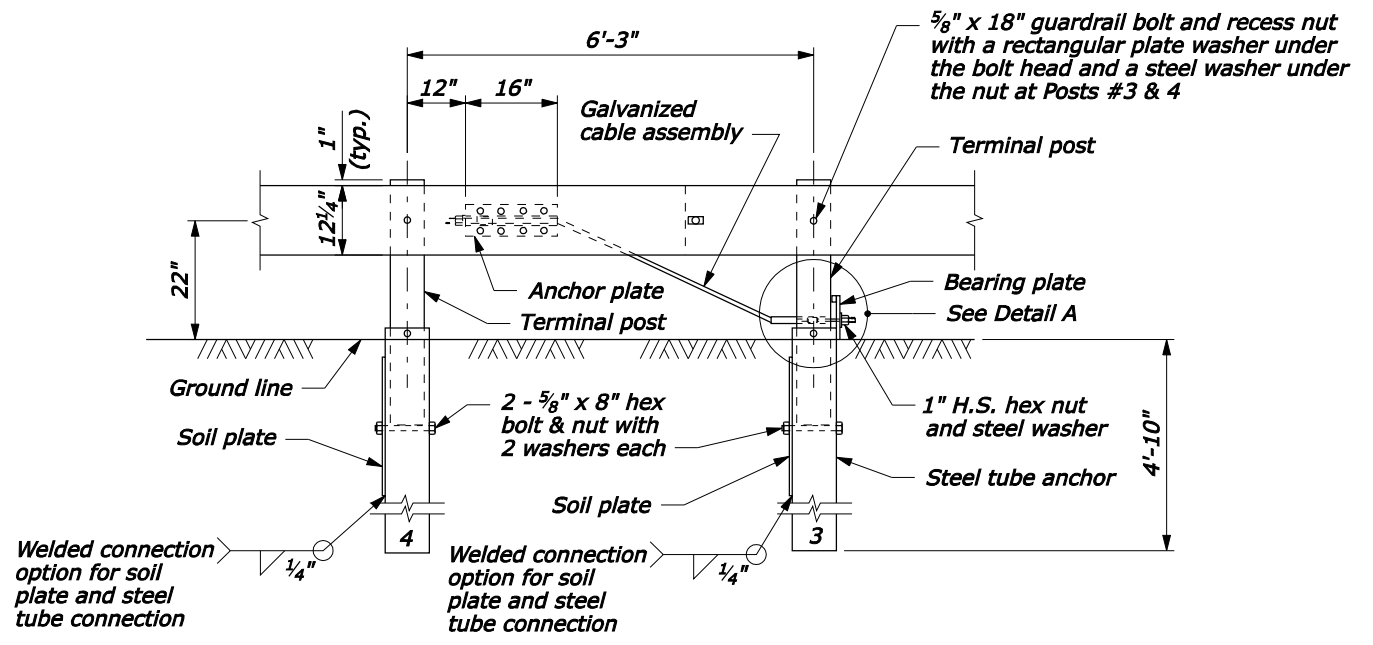
1. Pay limits for terminal section type LST include the in-line anchorage assembly at the last two posts of G4 guardrail.
2. Use offset from face of rail to slope break as shown unless otherwise shown on plan.
3. Posts 1 and 2 are standard guardrail posts. See Standard 617-10 for details.
4. See Standard 617-15 for other details.
5. Do not use LST terminal where speeds are in excess of 45 MPH.



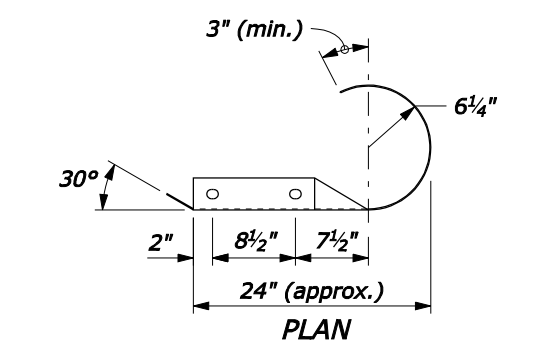
FRONT

RIGHT SIDE

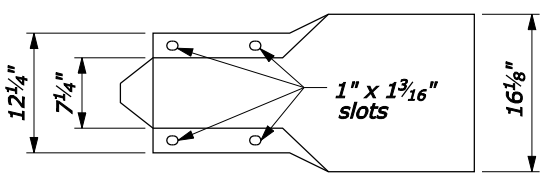
DETAIL A



IN-LINE ANCHORAGE ASSEMBLY ELEVATION



PLAN

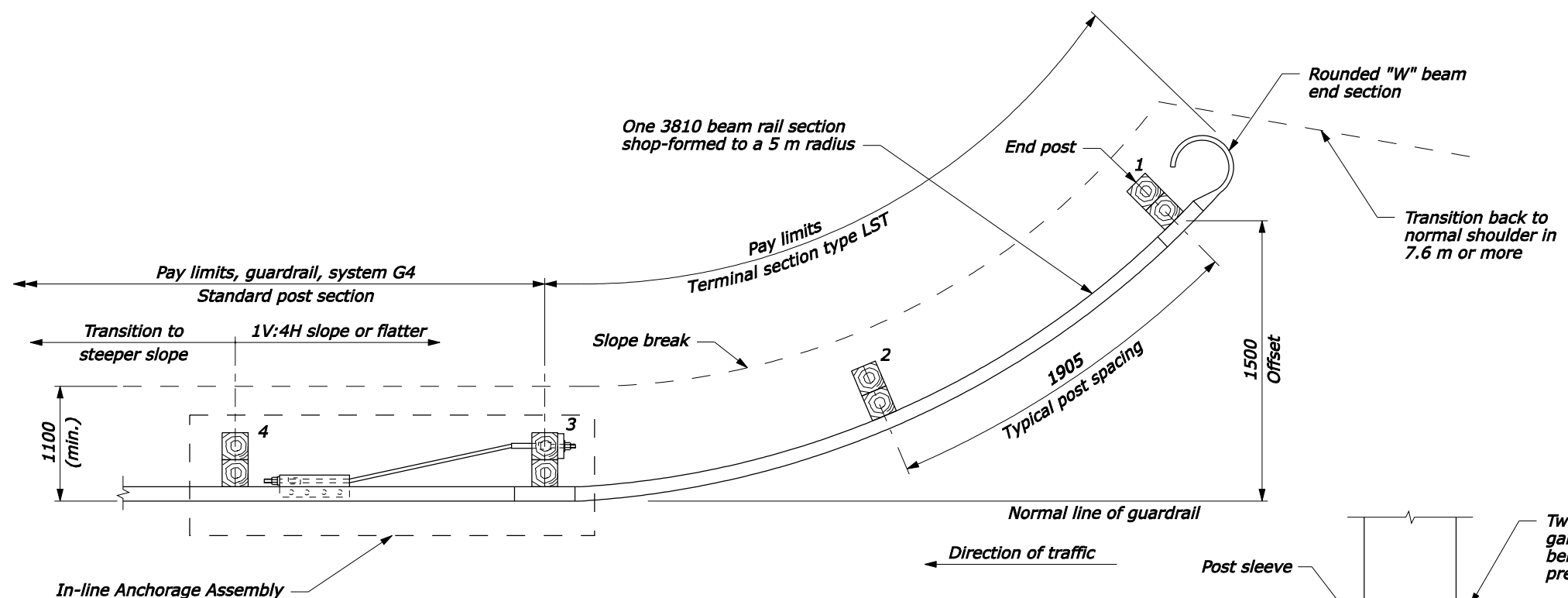


ELEVATION ROUND END SECTION

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 617-14
REVISED: DRAFT: 2/2007	

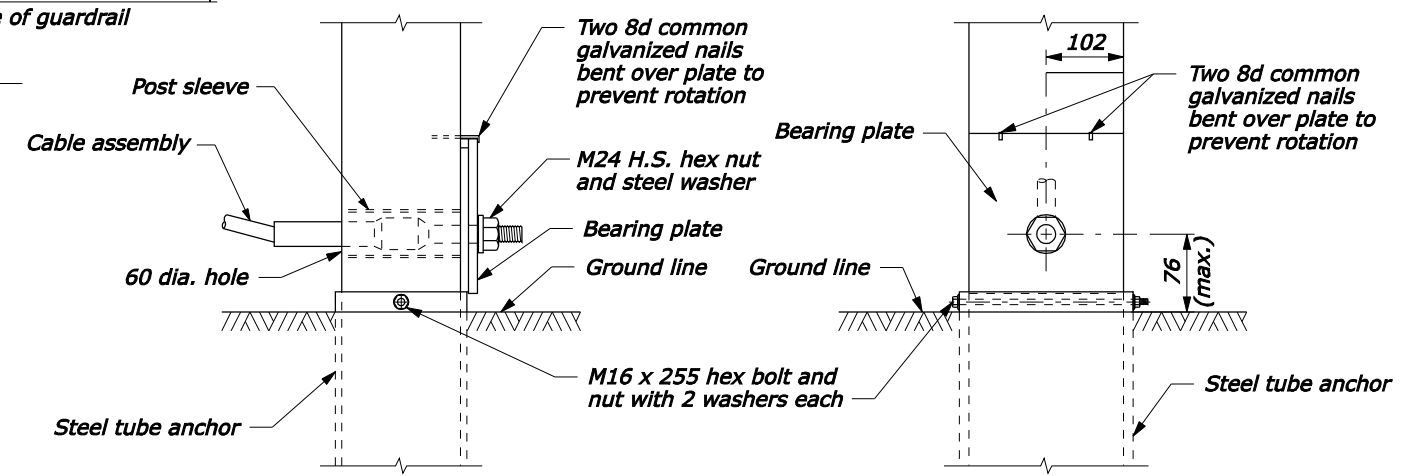
F:\StdDraw\std61714.dgn [US Customary] 26-Feb-2007 09:26 AM



PLAN

NOTE:

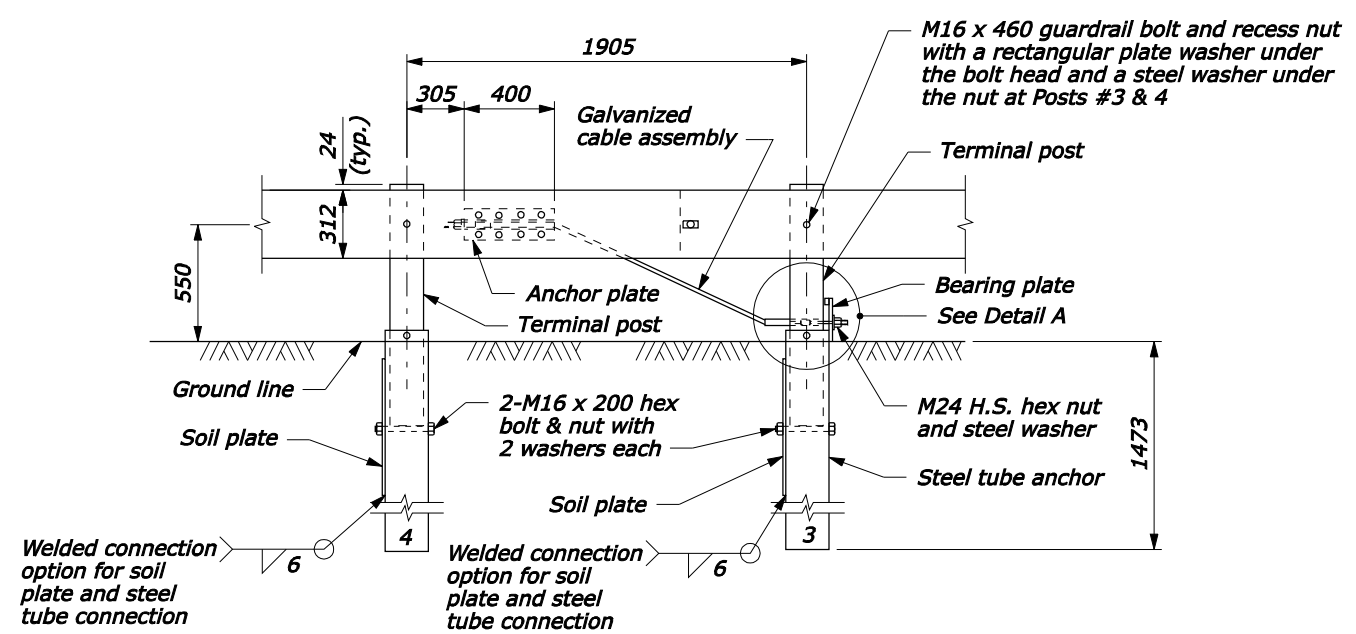
1. Pay limits for terminal section type LST include the in-line anchorage assembly at the last two posts of G4 guardrail.
2. Use offset from face of rail to slope break as shown unless otherwise shown on plan.
3. Posts 1 and 2 are standard guardrail posts. See Standard M617-10 for details.
4. See Standard M617-15 for other details.
5. Do not use LST terminal where speeds are in excess of 70 km/h [45 MPH].
6. Dimensions without units are millimeters.



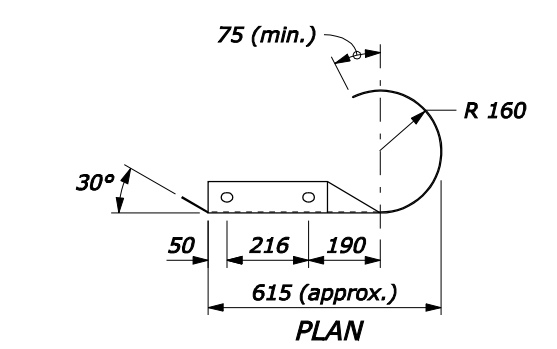
FRONT

RIGHT SIDE

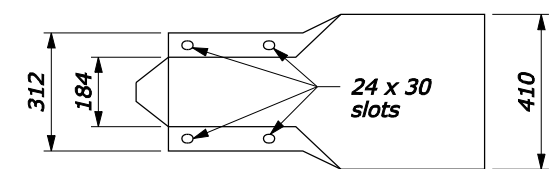
DETAIL A



IN-LINE ANCHORAGE ASSEMBLY ELEVATION



PLAN

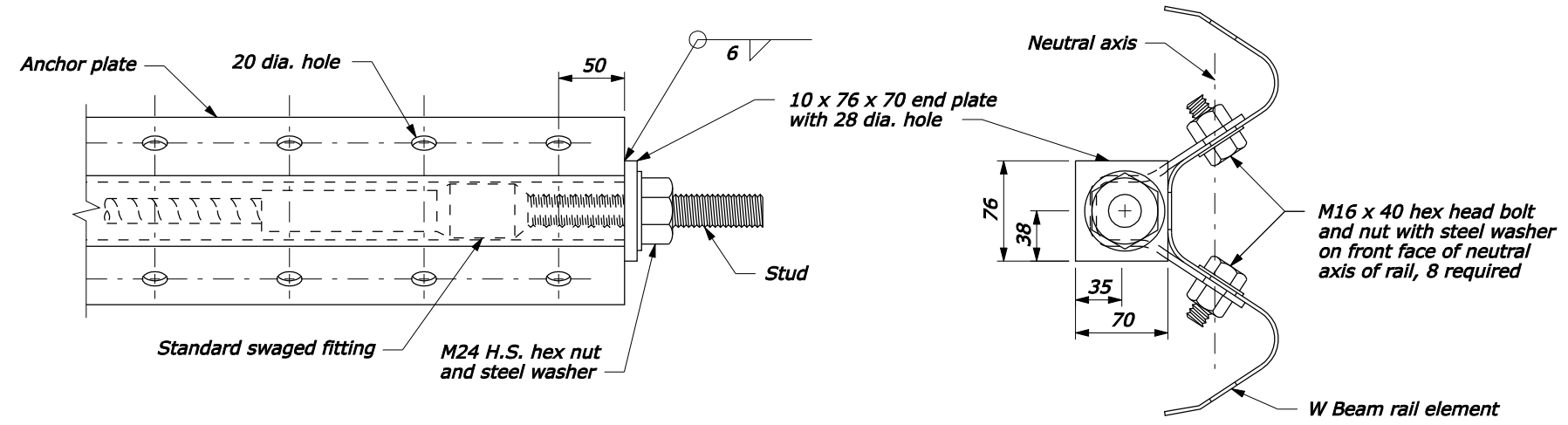


ELEVATION ROUND END SECTION

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	STANDARD
REVISED: DRAFT: 2/2007	M617-14

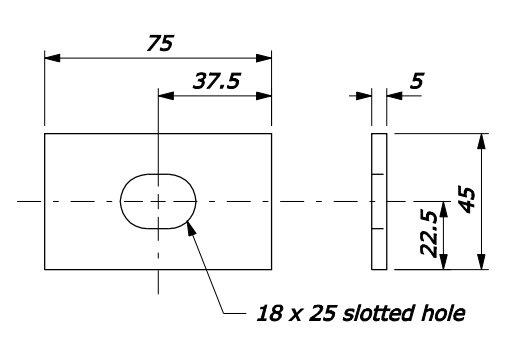
F:\StandDraw\std61714.dgn [Metric] 26-Feb-2007 09:25 AM



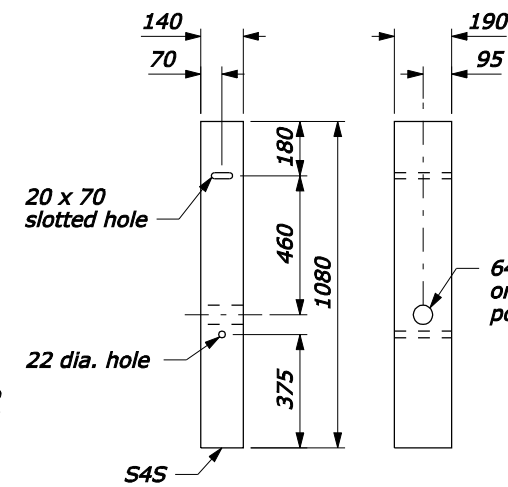
ANCHOR PLATE DETAILS FOR LST ANCHORAGE ASSEMBLY

NOTE:

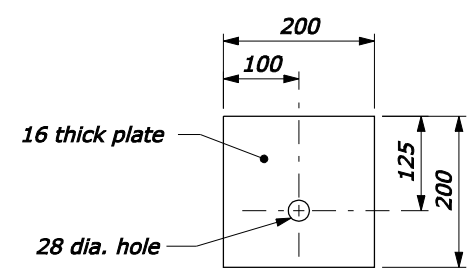
1. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.
2. Furnish hardware in the metric sizes shown. Equivalent U.S. Customary sizes may be used when metric sizes are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



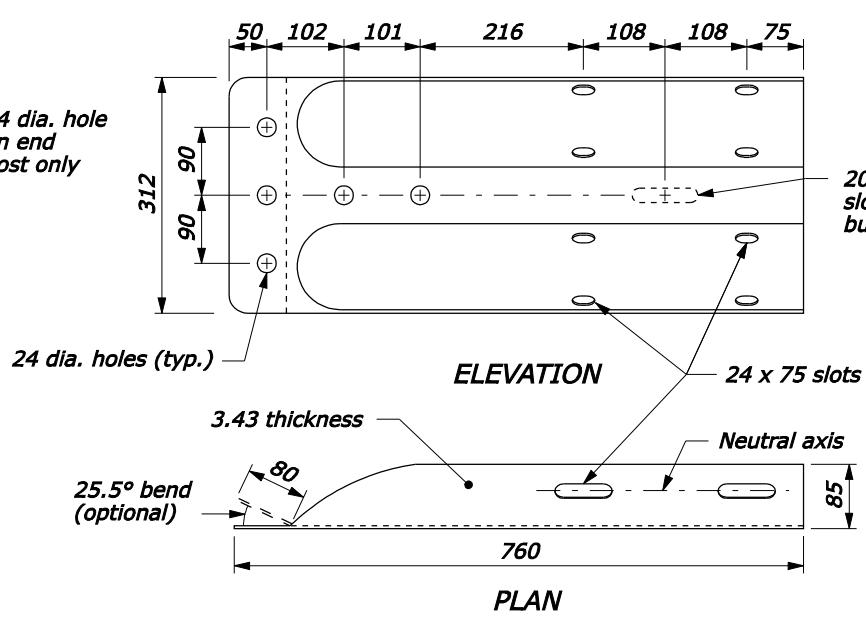
RECTANGULAR PLATE WASHER
(Use to attach the section to the post of anchorage assembly)



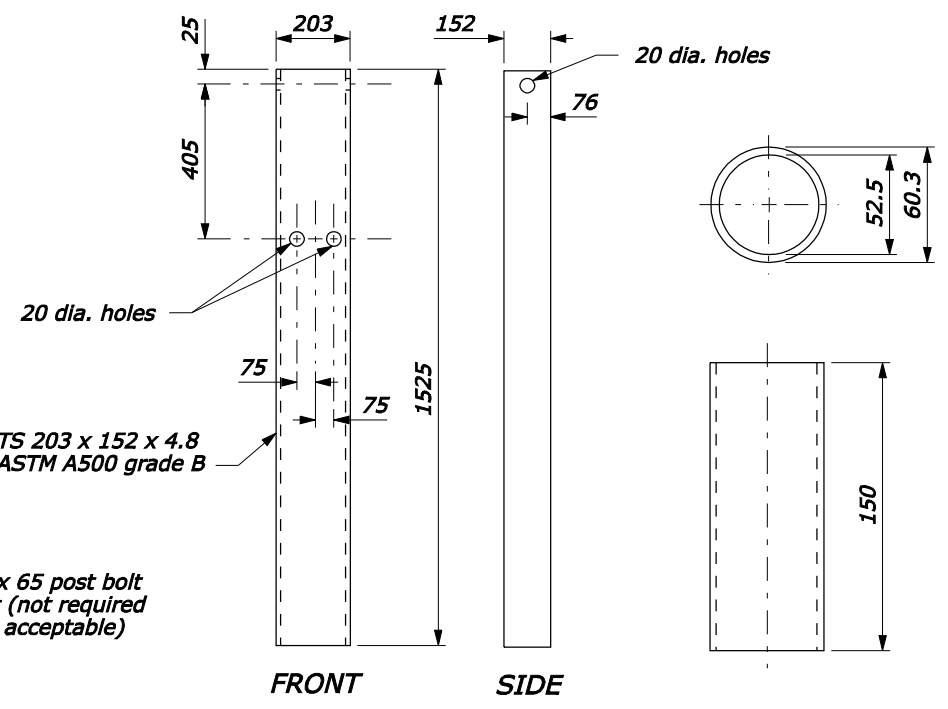
TERMINAL POST



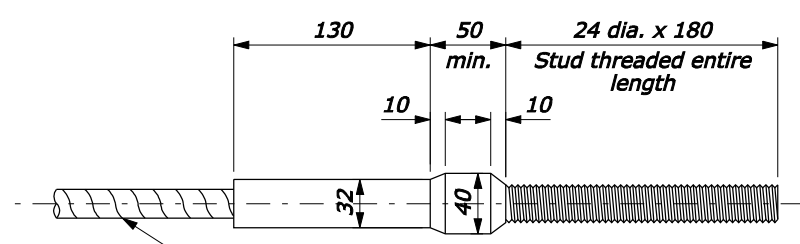
BEARING PLATE



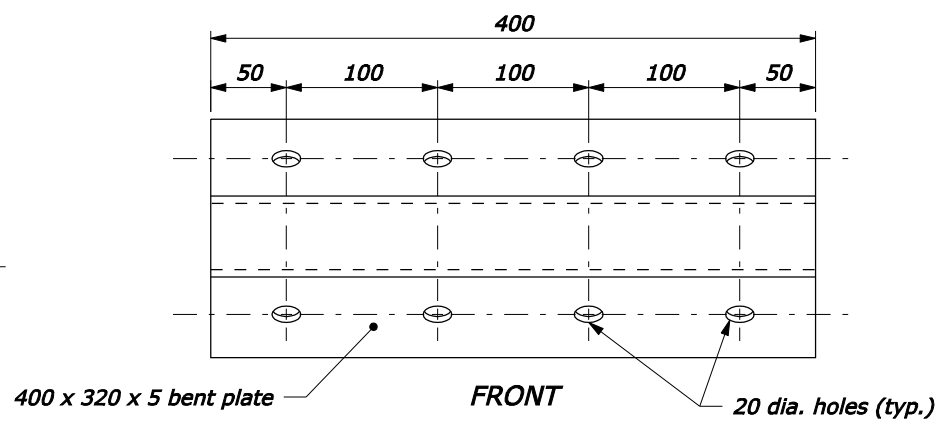
TERMINAL CONNECTOR



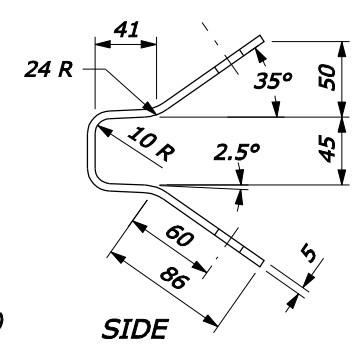
STEEL TUBE ANCHOR POST SLEEVE



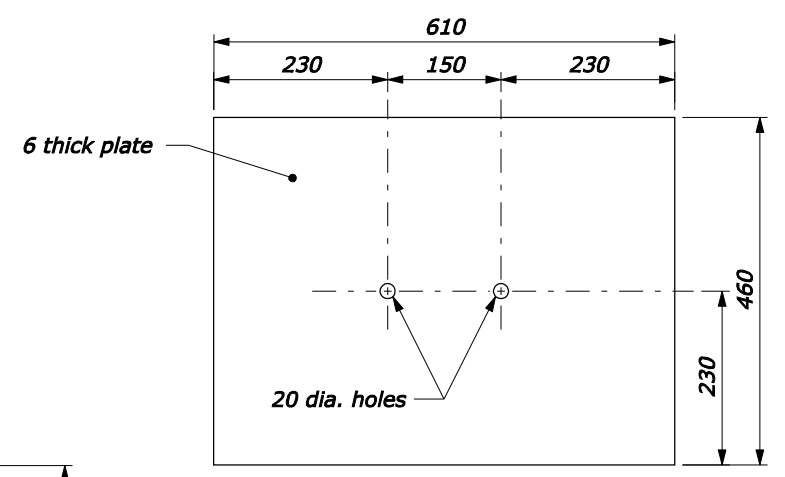
CABLE ASSEMBLY
(Standard swaged fitting and stud)



GUARDRAIL ANCHOR PLATE



SOIL PLATE
(2 REQUIRED)

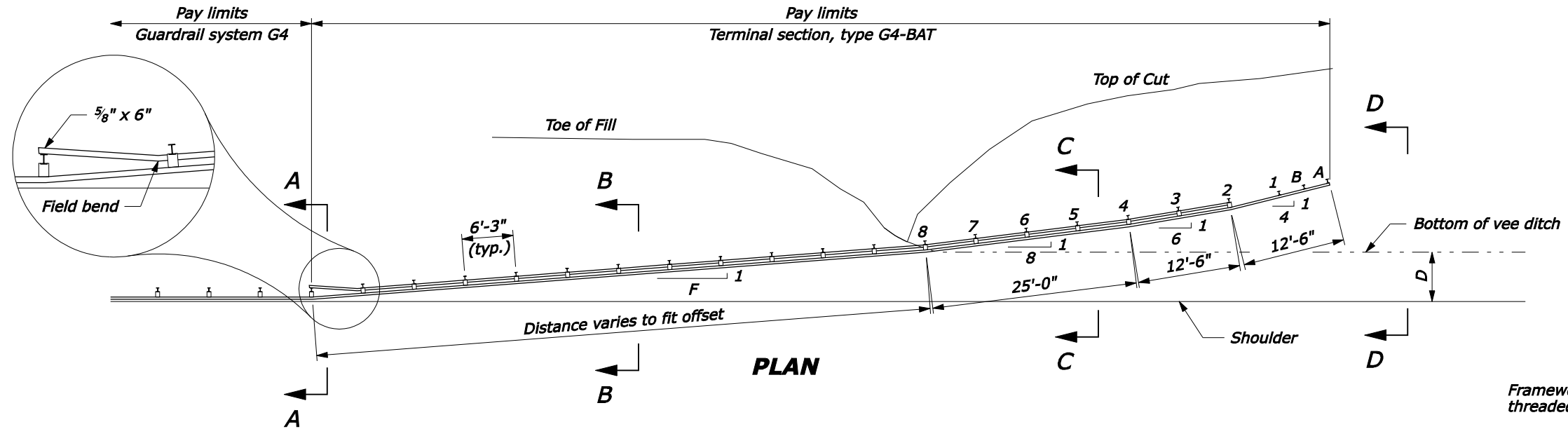


U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY
METRIC STANDARD
**G4 W BEAM GUARDRAIL
MELT, LST & CRT ANCHORAGE
ASSEMBLY DETAILS**

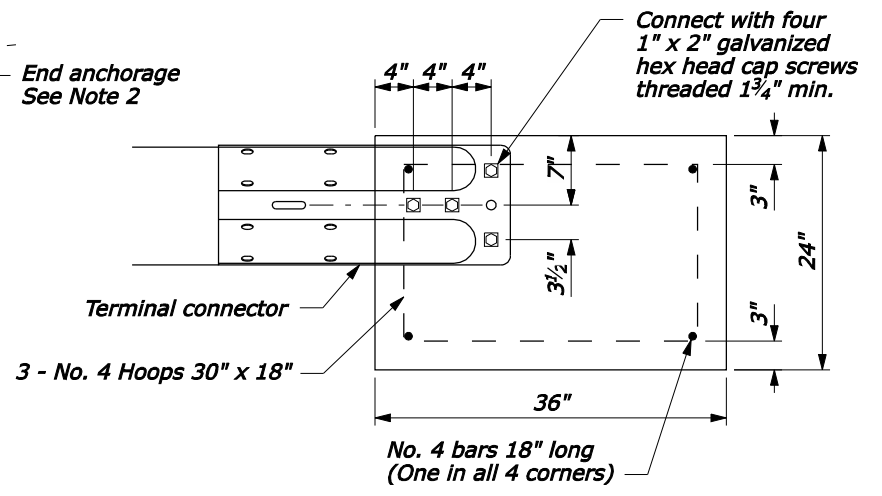
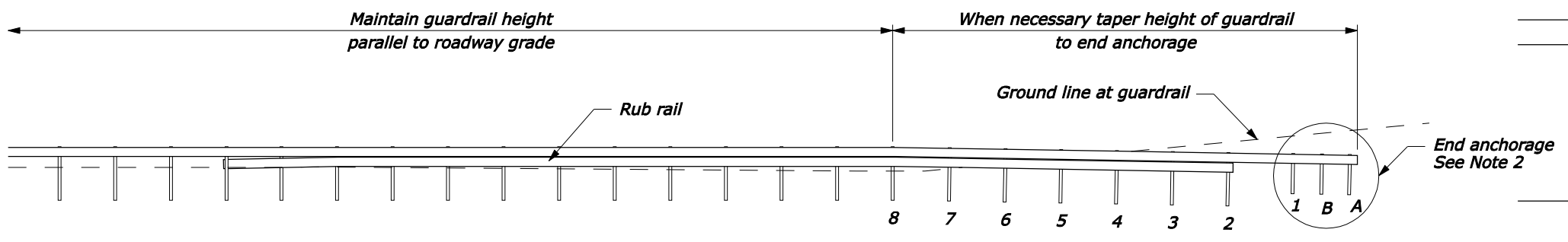
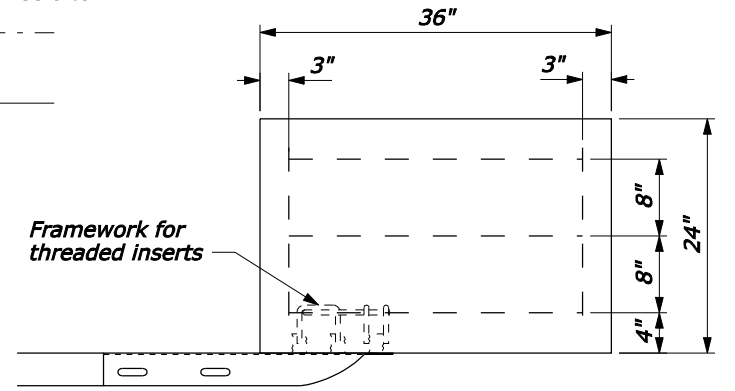
STANDARD APPROVED FOR USE 3/1996
REVISOR: 8/1997 12/1998 6/2005
DRAFT: 3/2007
STANDARD
M617-15

NO SCALE

12-Mar-2007 07:18 AM F:\StandDraw\std61715.dgn [Metric]



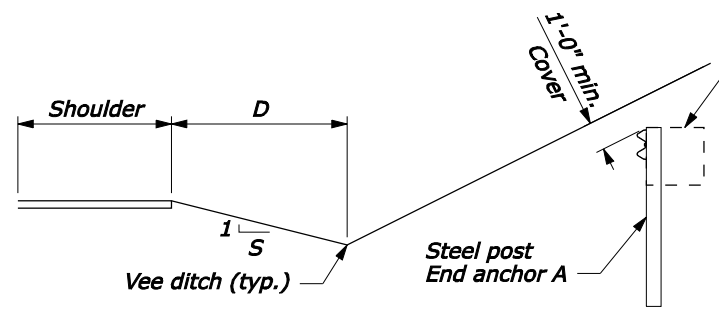
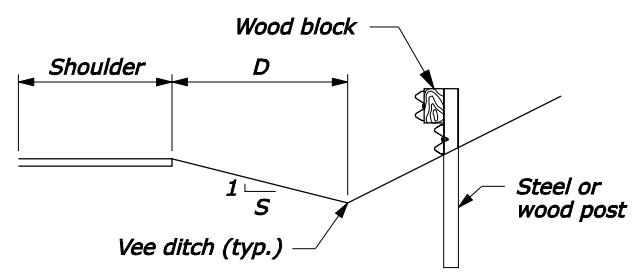
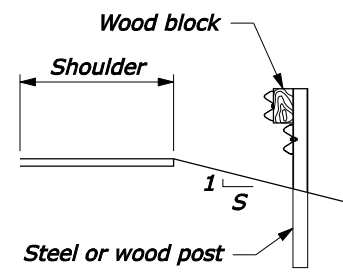
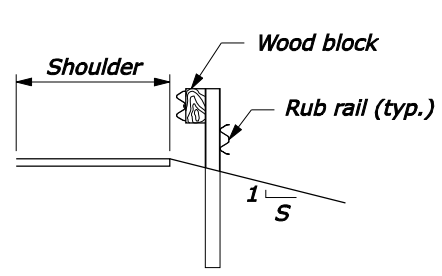
- NOTE:**
1. See sheet 2 of 2 for post and block details.
 2. When alternate concrete block anchor end terminal is used, remove Posts A and B.
 3. Add rub rail when clearance between bottom of rail and ground surface exceeds 17½\"/>



GUARDRAIL FLARE		
DESIGN SPEED MPH	F	
	S = 4	S = 6
70	13	15
60	13	13
55	13	12
50	13	11
45	13	10
35	13	9
≤ 30	13	7

CROSS SECTION DIMENSIONS	
DITCH SLOPE (S)	DITCH WIDTH (D)
4	6'-0"
6	8'-10"

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



NO SCALE

ALTERNATE CONCRETE BLOCK ANCHOR

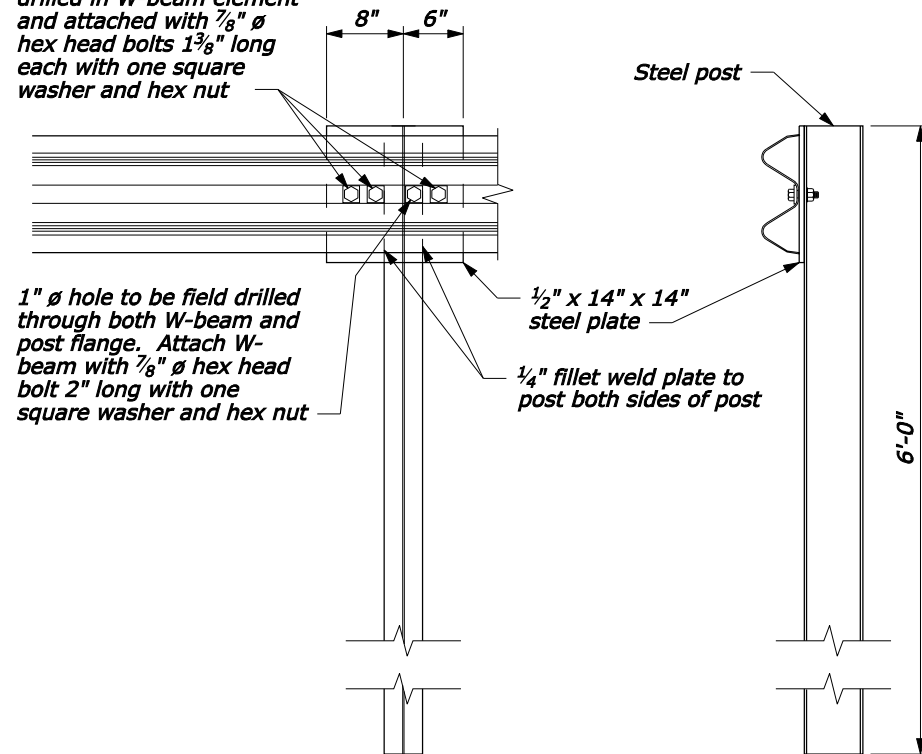
U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION
 FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD
**G4 W-BEAM GUARDRAIL
 BACK SLOPE ANCHOR TERMINAL
 TYPE G4-BAT**
 Sheet 1 of 2

STANDARD APPROVED FOR USE 1/1994	STANDARD
REVISED: 4/1994 6/2005	617-17
DRAFT: 11/2007	

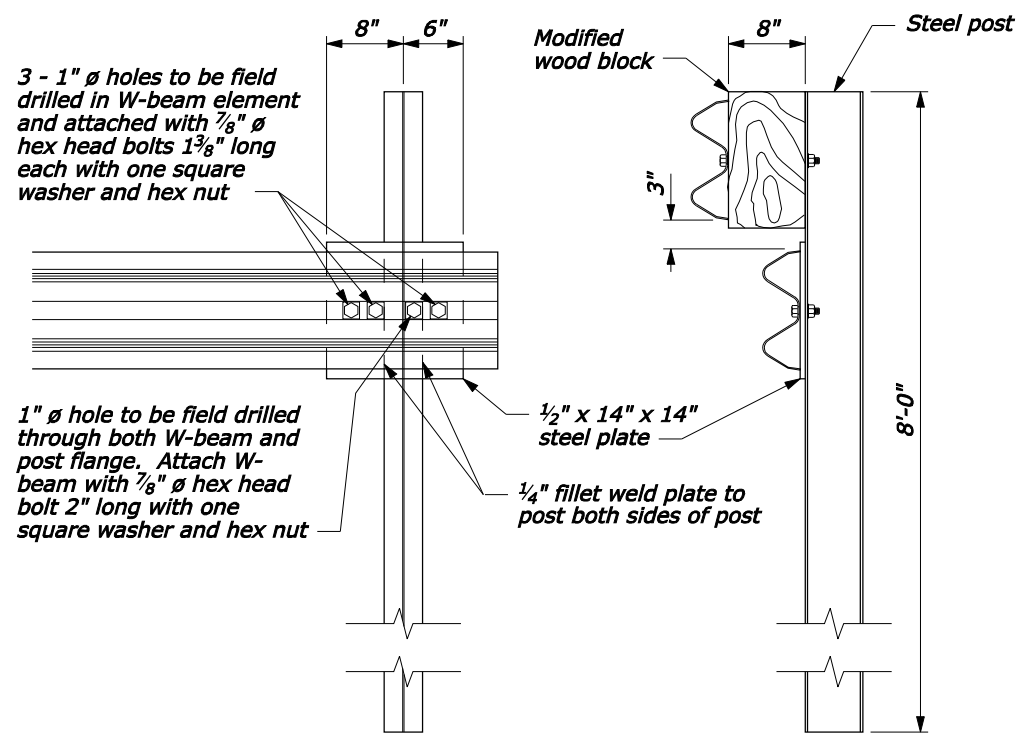
03-Dec-2007 12:47 PM P:\198.145.186.2\std.ph\std\std\61717.dgn [US Customary]

3 - 1" ϕ holes to be field drilled in W-beam element and attached with $\frac{7}{8}$ " ϕ hex head bolts $1\frac{3}{8}$ " long each with one square washer and hex nut

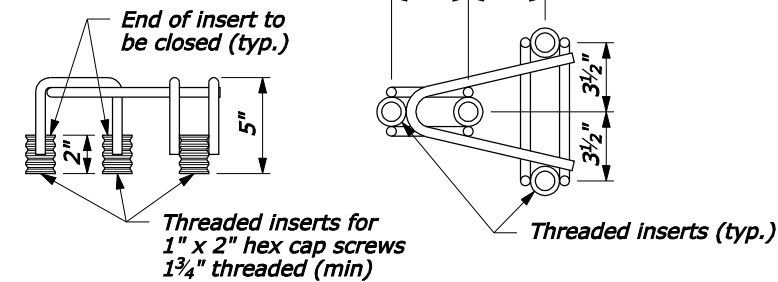


SPECIAL RAIL TO POST CONNECTION AT POSTS A, B, AND 1

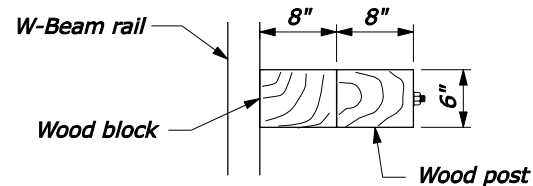
3 - 1" ϕ holes to be field drilled in W-beam element and attached with $\frac{7}{8}$ " ϕ hex head bolts $1\frac{3}{8}$ " long each with one square washer and hex nut



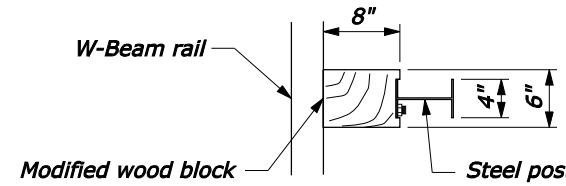
SPECIAL RUBRAIL TO POST CONNECTION AT POST 2



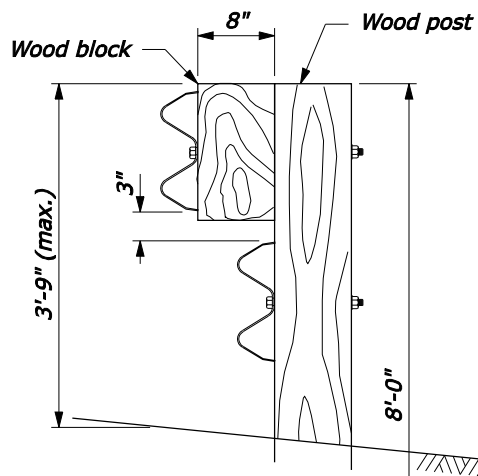
FRAMEWORK FOR THREADED INSERTS



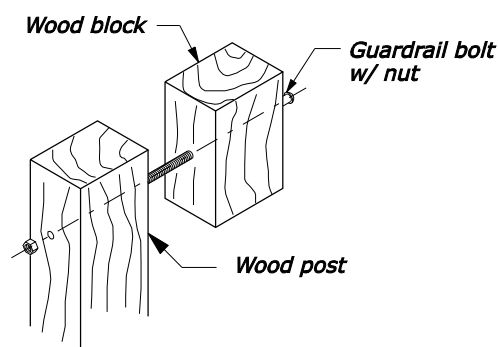
PLAN



PLAN

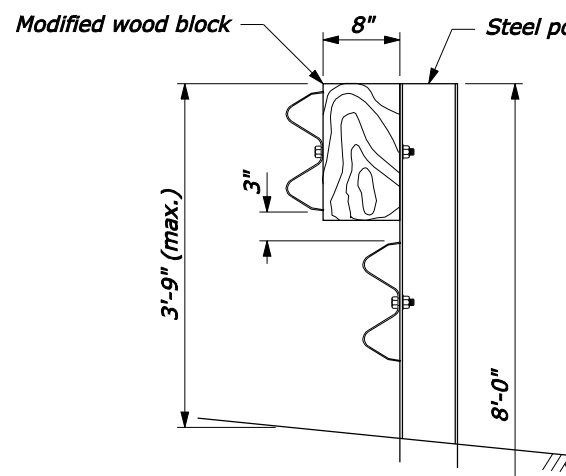


ELEVATION



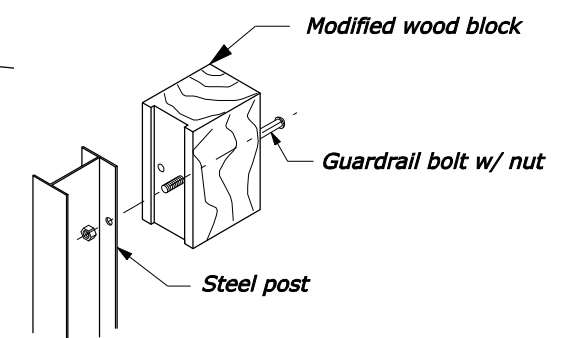
EXPLODED VIEW (Rail and washer not shown)

WOOD POST AND BLOCK DETAIL



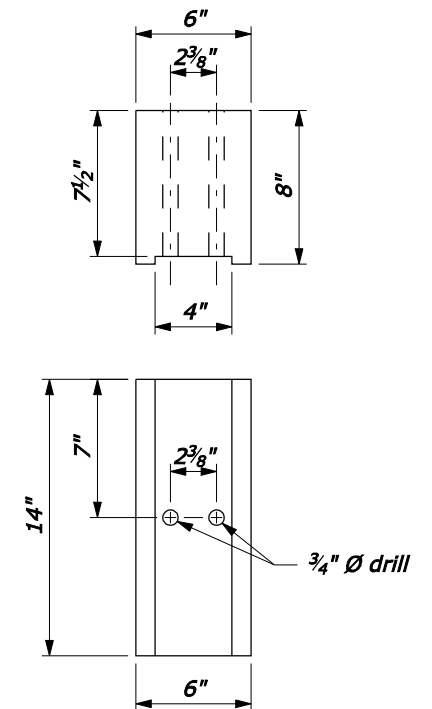
ELEVATION

STEEL POST AND BLOCK DETAIL



EXPLODED VIEW (Rail and washer not shown)

MODIFIED WOOD BLOCK

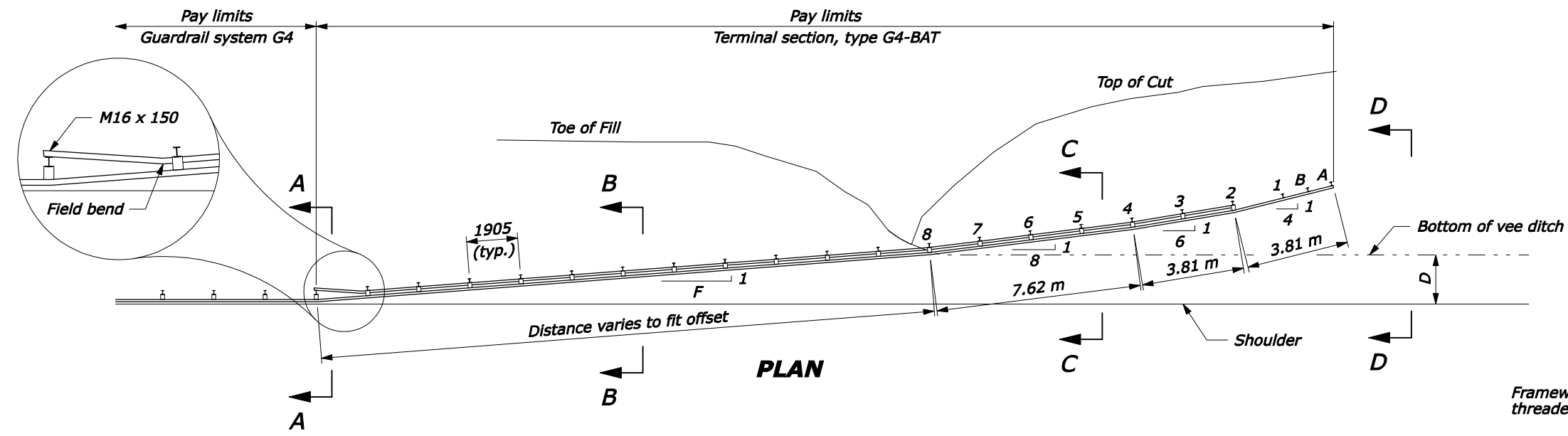


NOTE:

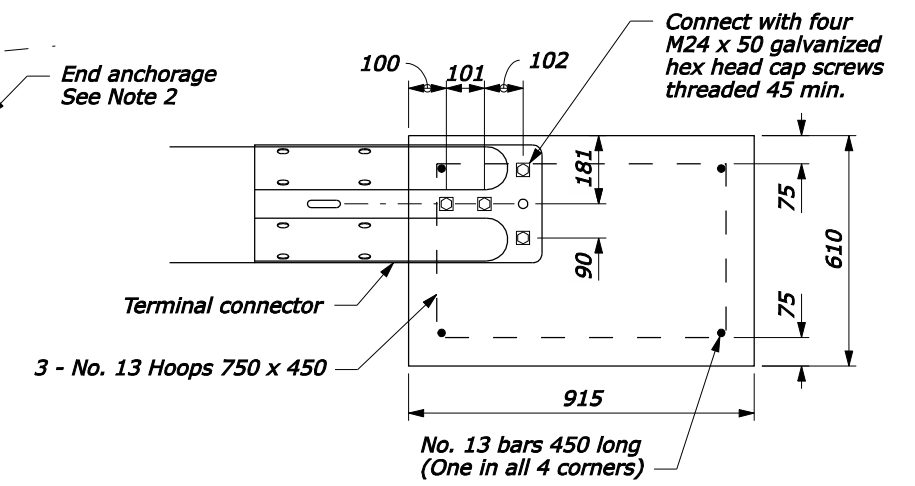
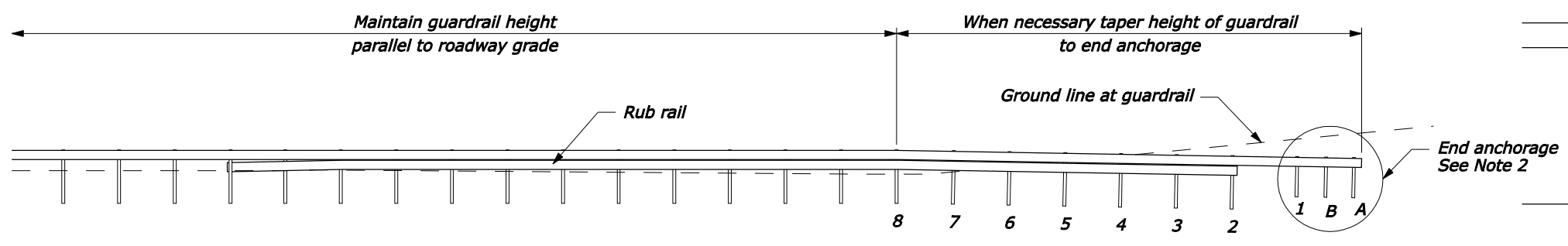
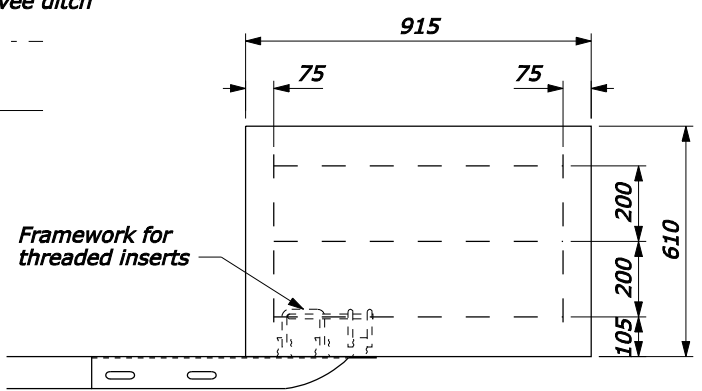
1. See sheet 1 of 2 for terminal layout.
2. For posts #3 and higher match post material of adjacent guardrail run unless otherwise noted.

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD G4 W-BEAM GUARDRAIL BACK SLOPE ANCHOR TERMINAL TYPE G4-BAT Sheet 2 of 2	
STANDARD APPROVED FOR USE 1/1994	STANDARD
REVISED: 4/1994 6/2005 DRAFT: 11/2007	617-17



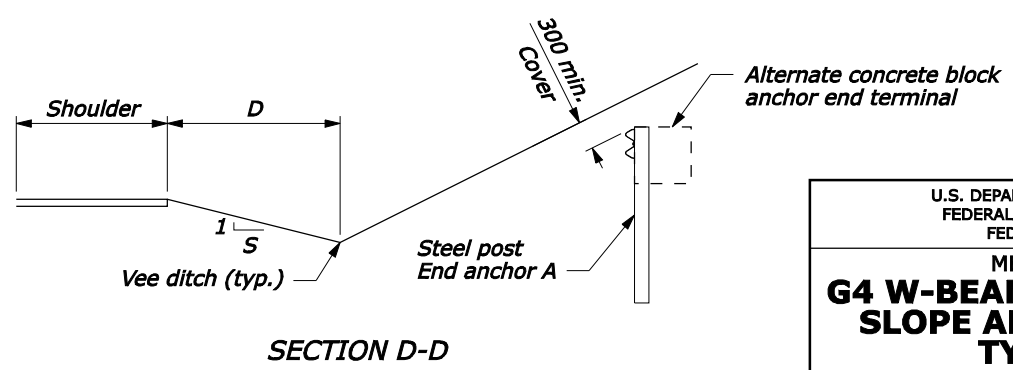
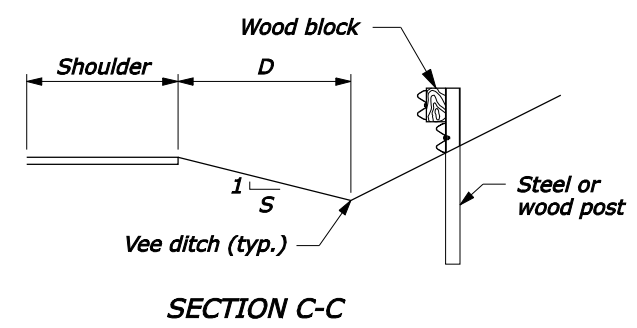
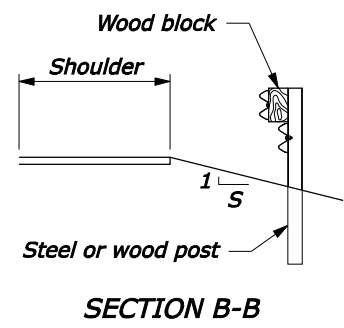
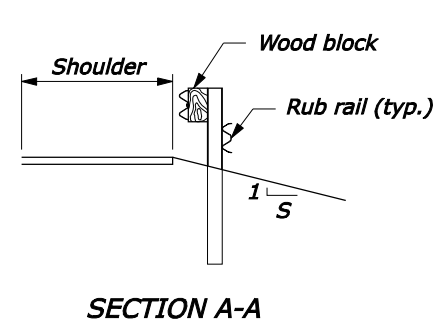
- NOTE:**
1. See sheet 2 of 2 for post and block details.
 2. When alternate concrete block anchor end terminal is used, remove Posts A and B.
 3. Add rub rail when clearance between bottom of rail and ground surface exceeds 445 mm.
 4. Dimensions without units are millimeters.



GUARDRAIL FLARE		
DESIGN SPEED km/h	F	
	S = 4	S = 6
110	13	15
100	13	13
90	13	12
80	13	11
70	13	10
60	13	9
≤ 50	13	7

CROSS SECTION DIMENSIONS	
DITCH SLOPE (S)	DITCH WIDTH (D)
4	1830
6	2700

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



ALTERNATE CONCRETE BLOCK ANCHOR

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

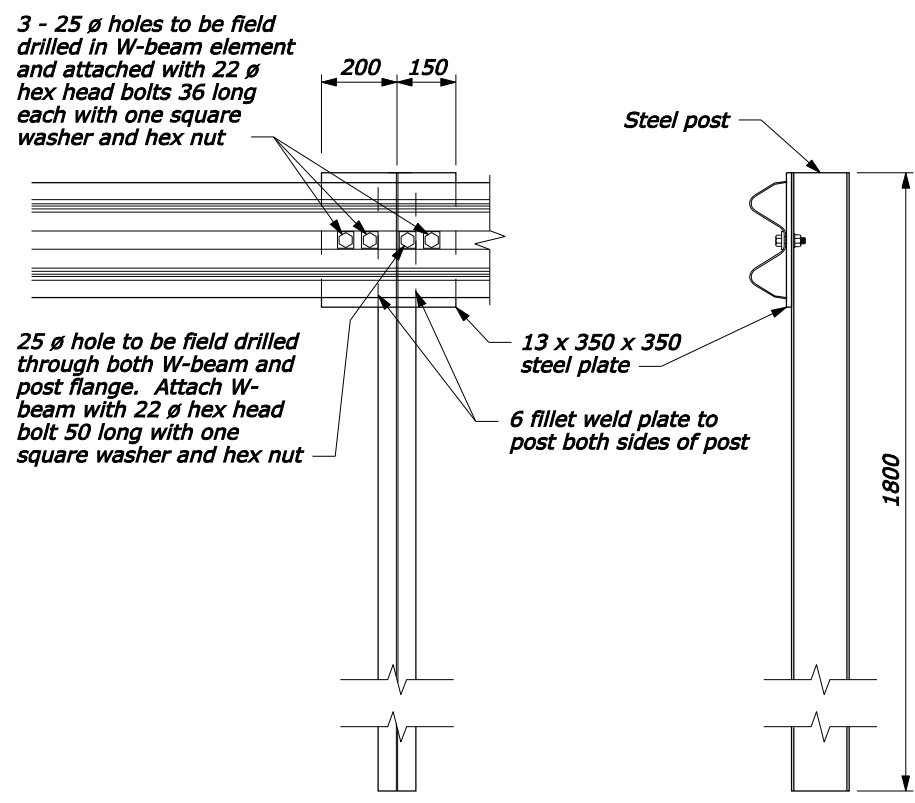
METRIC STANDARD
G4 W-BEAM GUARDRAIL BACK SLOPE ANCHOR TERMINAL TYPE G4-BAT
 Sheet 1 of 2

STANDARD APPROVED FOR USE 3/1996
 REVISED: 6/1997 6/2005
 DRAFT: 11/2007

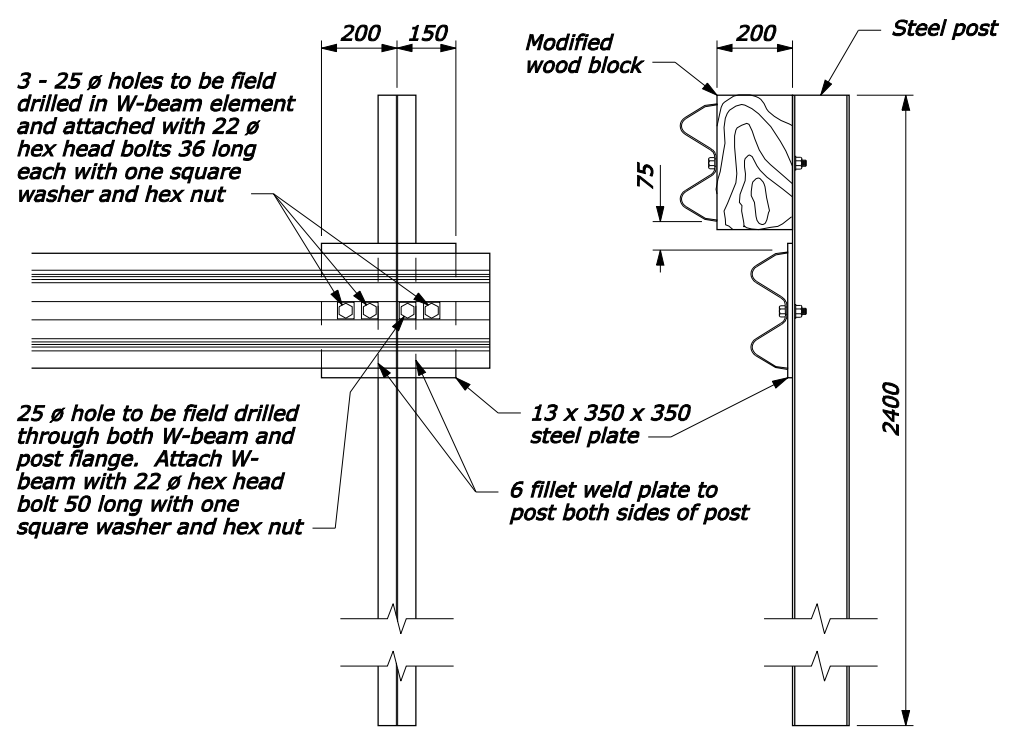
STANDARD M617-17

NO SCALE

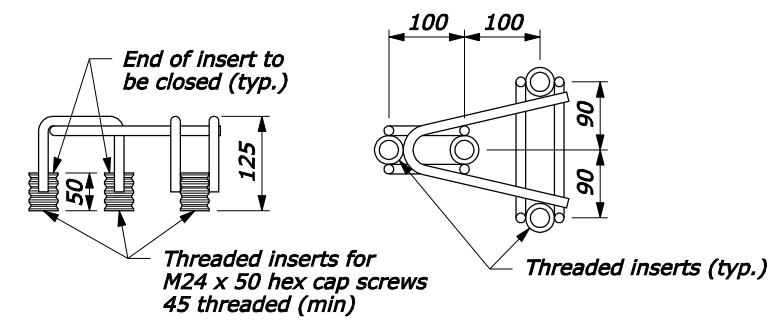
03-Dec-2007 01:44 PM f:\196.145.188.2\scd_plan\1661717.dgn [Metric]



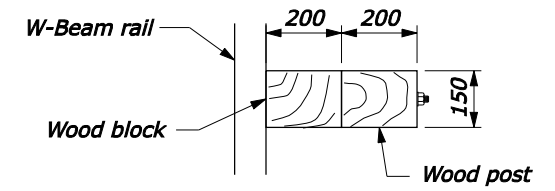
SPECIAL RAIL TO POST CONNECTION AT POSTS A, B, AND 1



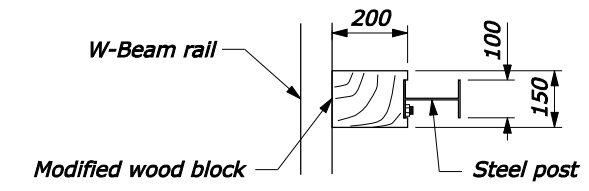
SPECIAL RUBRAIL TO POST CONNECTION AT POST 2



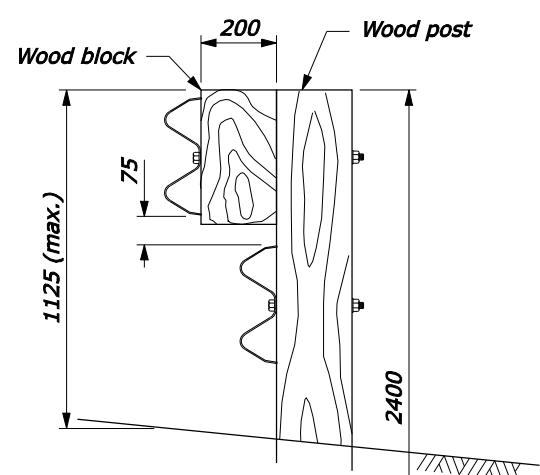
FRAMEWORK FOR THREADED INSERTS



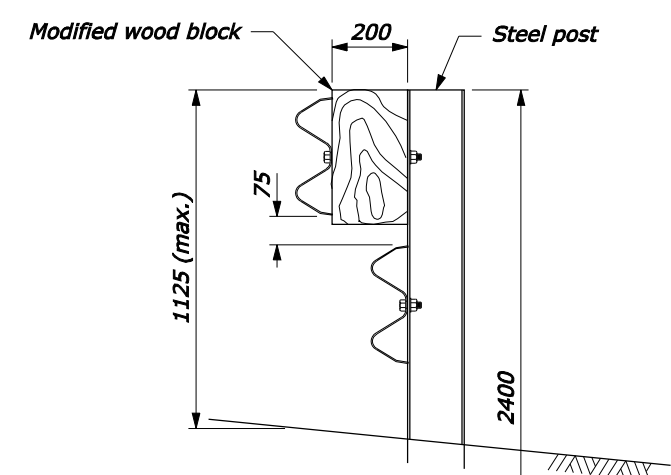
PLAN



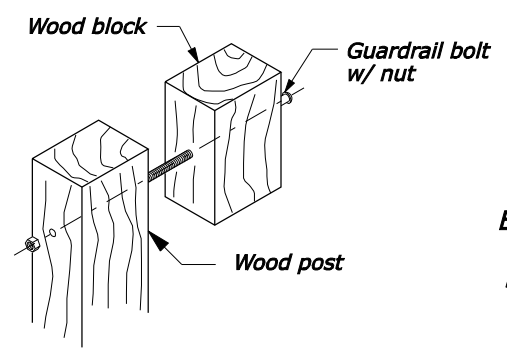
PLAN



ELEVATION

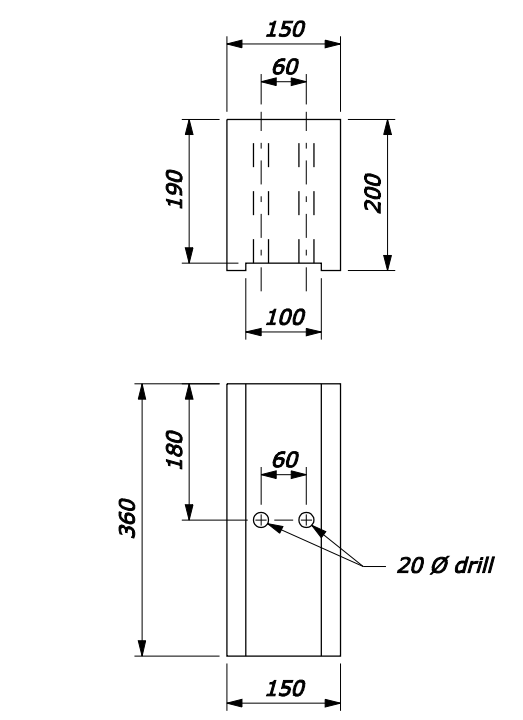


ELEVATION

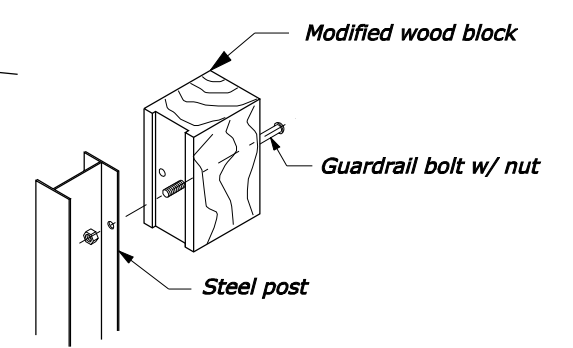


EXPLODED VIEW (Rail and washer not shown)

WOOD POST AND BLOCK DETAIL



MODIFIED WOOD BLOCK



EXPLODED VIEW (Rail and washer not shown)

STEEL POST AND BLOCK DETAIL

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 2 of 2

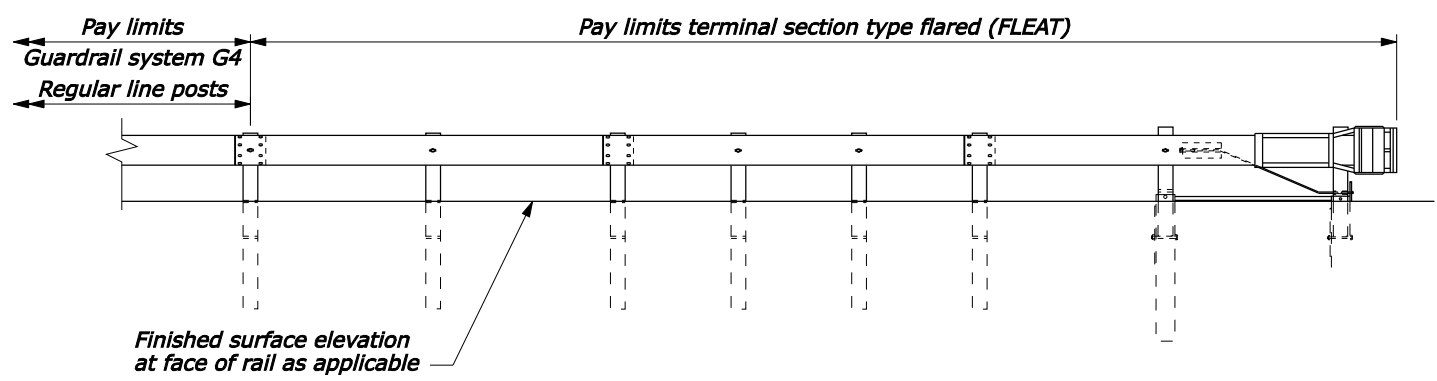
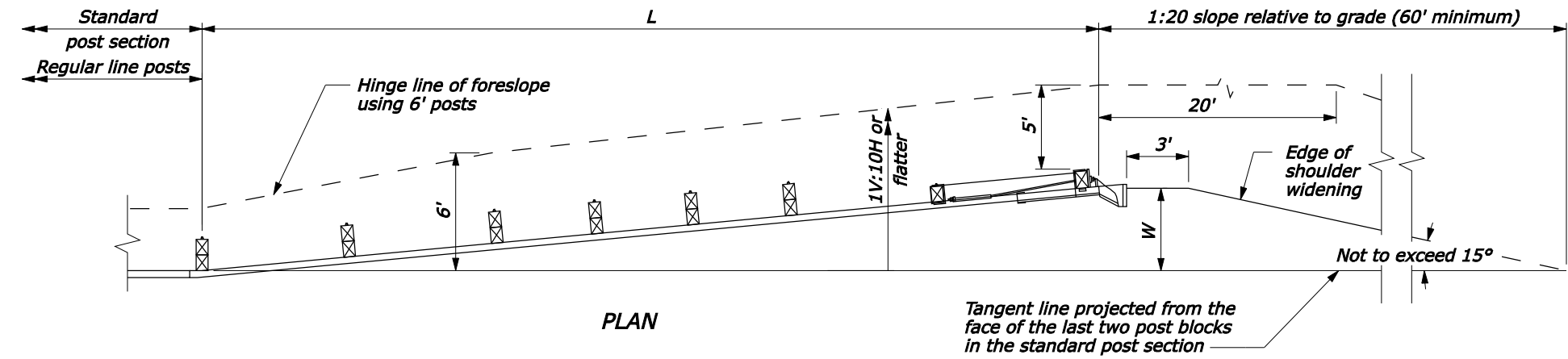
STANDARD APPROVED FOR USE 3/1996

REVISOR: 6/1997 6/2005
DRAFT: 11/2007

STANDARD M617-17

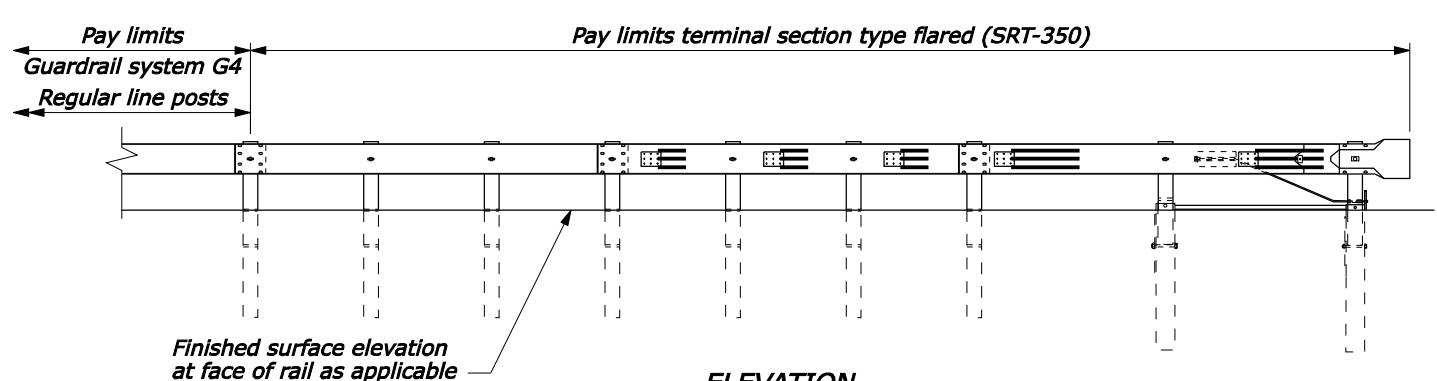
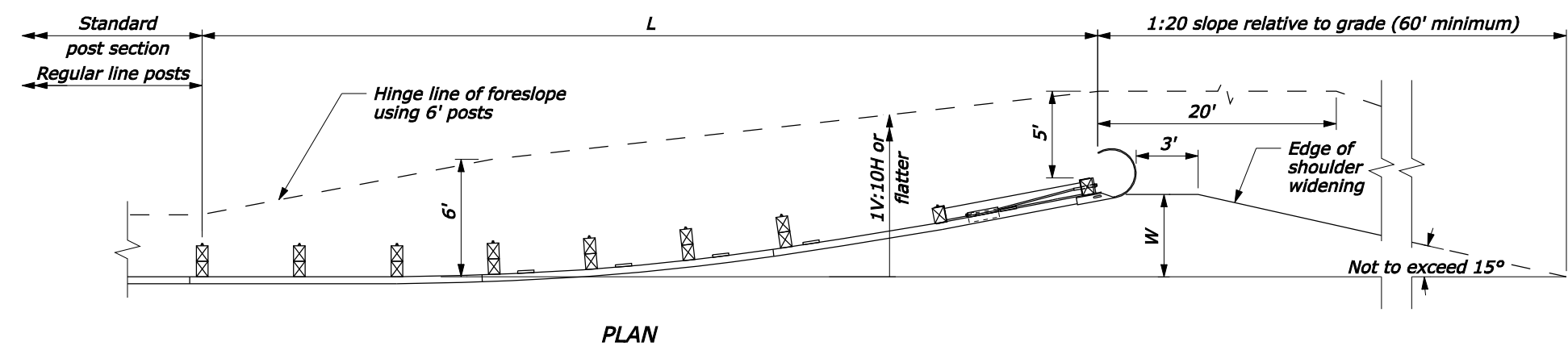
NO SCALE

03-Dec-2007 01:44 PM fpp://196.145.188.2/scl_plan/s61717.dgn [Metric]



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

- NOTE:**
1. Install a flared G4 W-beam guardrail terminal that meets NCHRP-350 requirements per manufacturer's recommendations. Ensure that terminal meets appropriate test level for the project.
 2. Where terminal is placed 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.

NO SCALE

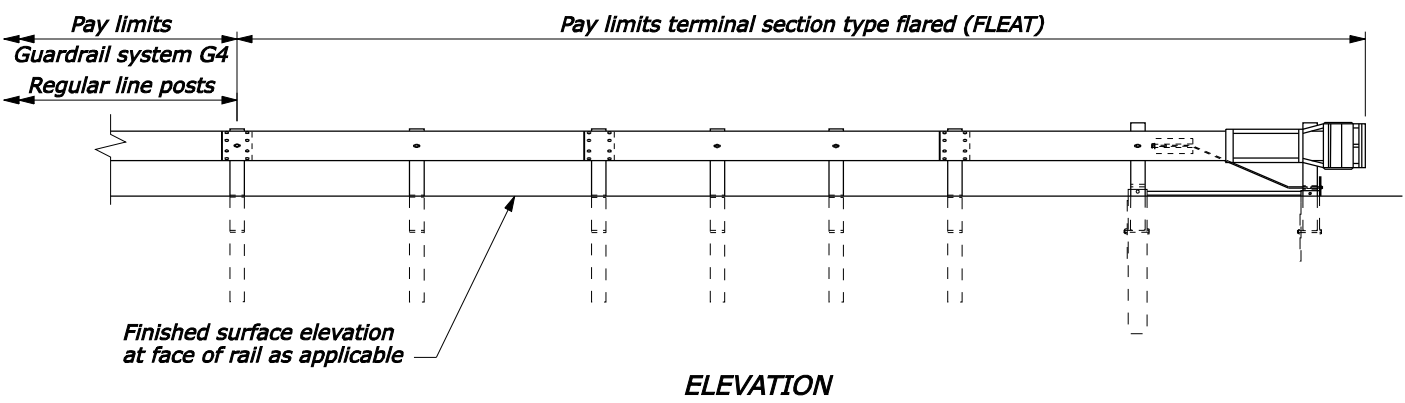
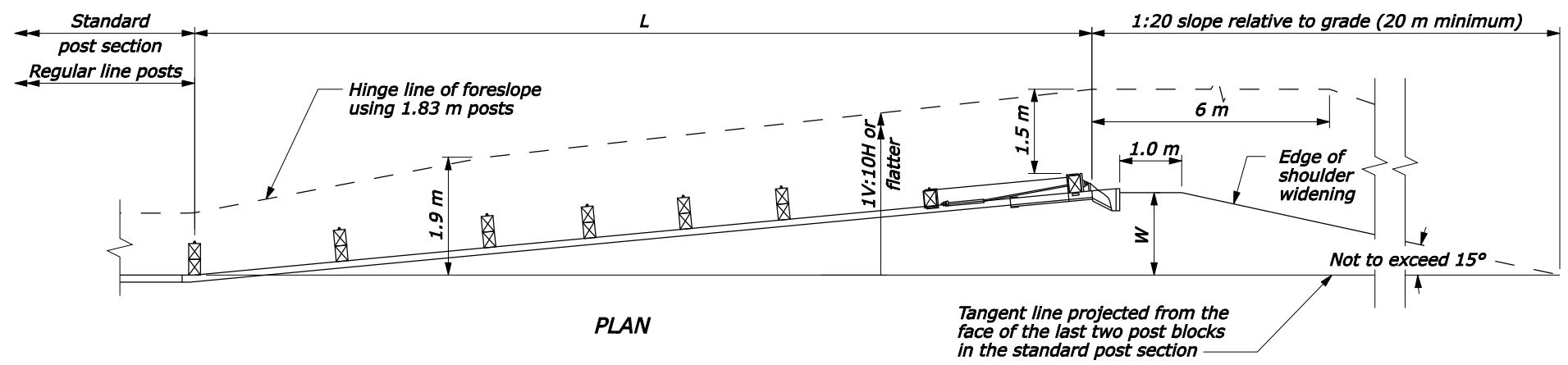
U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION
 FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD

**G4 W BEAM GUARDRAIL
 TYPE FLARED TERMINAL**

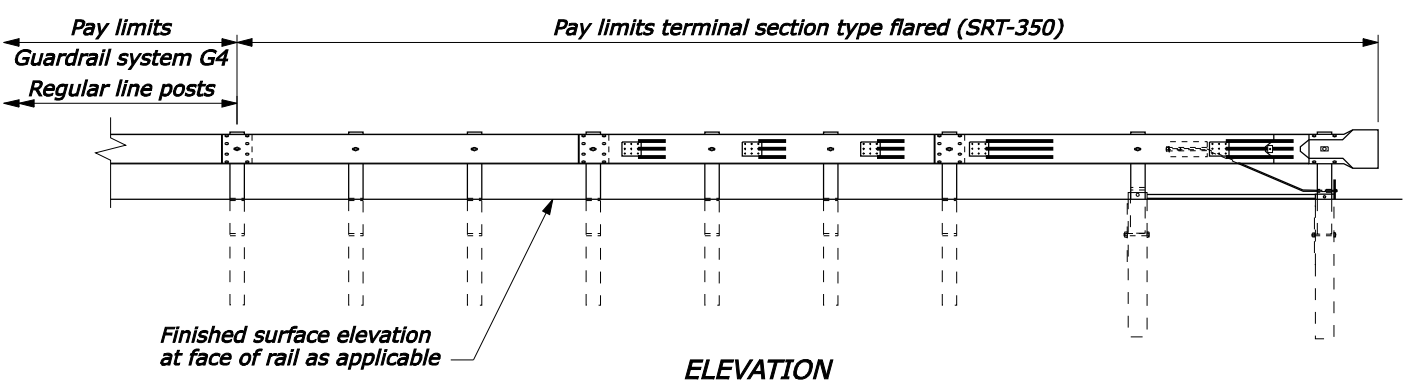
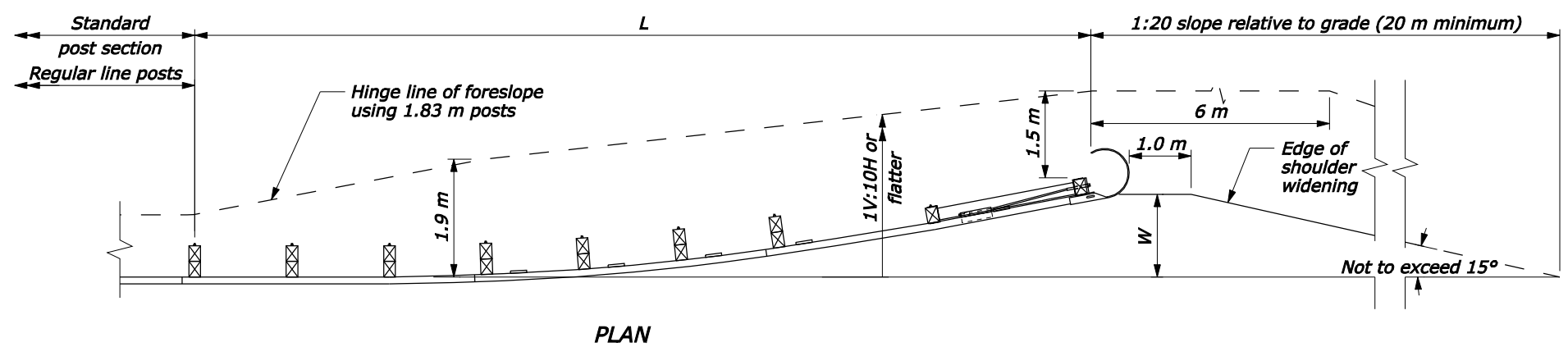
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED: DRAFT: 2/2007	617-19

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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

NOTE:

1. Install a flared G4 W-beam guardrail terminal that meets NCHRP-350 requirements per manufacturer's recommendations. Ensure that terminal meets appropriate test level for the project.
2. Where terminal is placed 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.

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

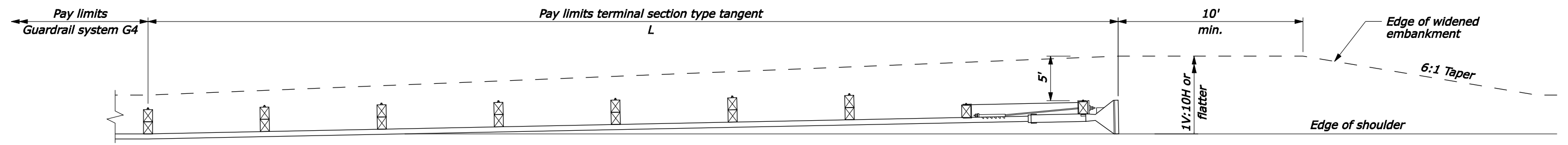
REVISOR: 2/2007

STANDARD M617-19

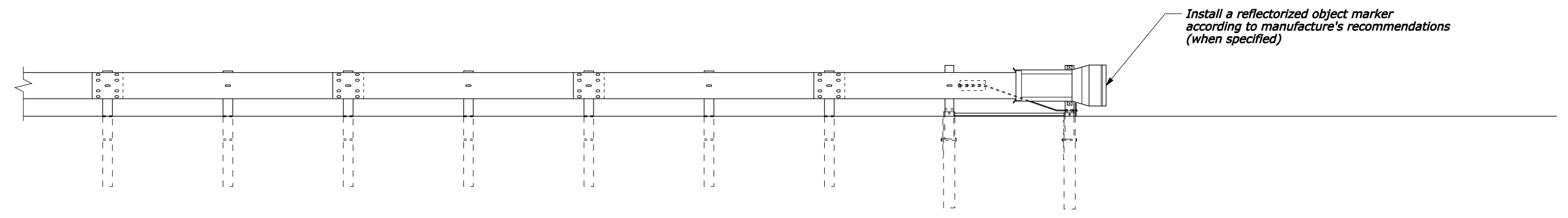
26-Feb-2007 02:38 PM F:\StandDraw\std61719.dgn [Metric]

NOTE:

1. Install a tangent G4 W-beam guardrail terminal that meets NCHRP-350 requirements per manufacturer's recommendations. Ensure that terminal meets appropriate test level for the project.
2. Install terminal at a 1:50 taper, ensuring that end piece is entirely off shoulder.
3. See manufacturer's drawings for other details.



PLAN



ELEVATION

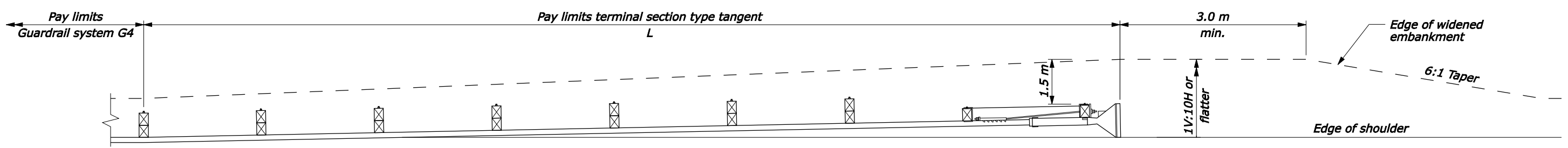
TEST LEVEL	L (ft)
2 (≤ 45 mph)	25
3 (> 45 mph)	37.5 or 50

NO SCALE

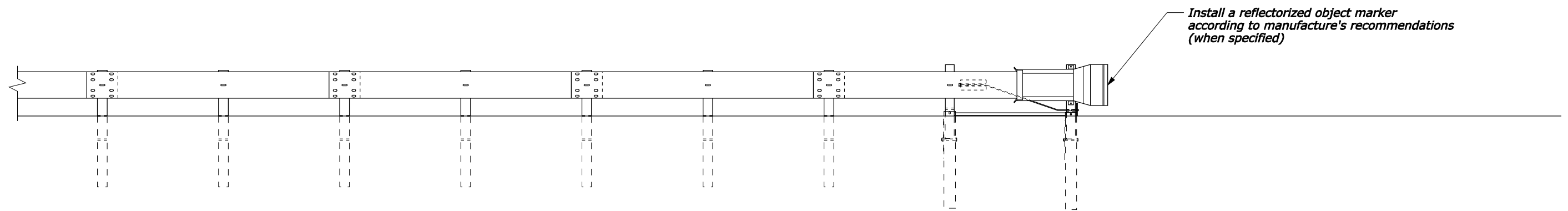
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
G4 W BEAM GUARDRAIL TYPE TANGENT TERMINAL	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED: DRAFT: 2/2007	617-20

NOTE:

1. Install a tangent G4 W-beam guardrail terminal that meets NCHRP-350 requirements per manufacturer's recommendations. Ensure that terminal meets appropriate test level for the project.
2. Install terminal at a 1:50 taper, ensuring that end piece is entirely off shoulder.
3. See manufacturer's drawings for other details.



PLAN

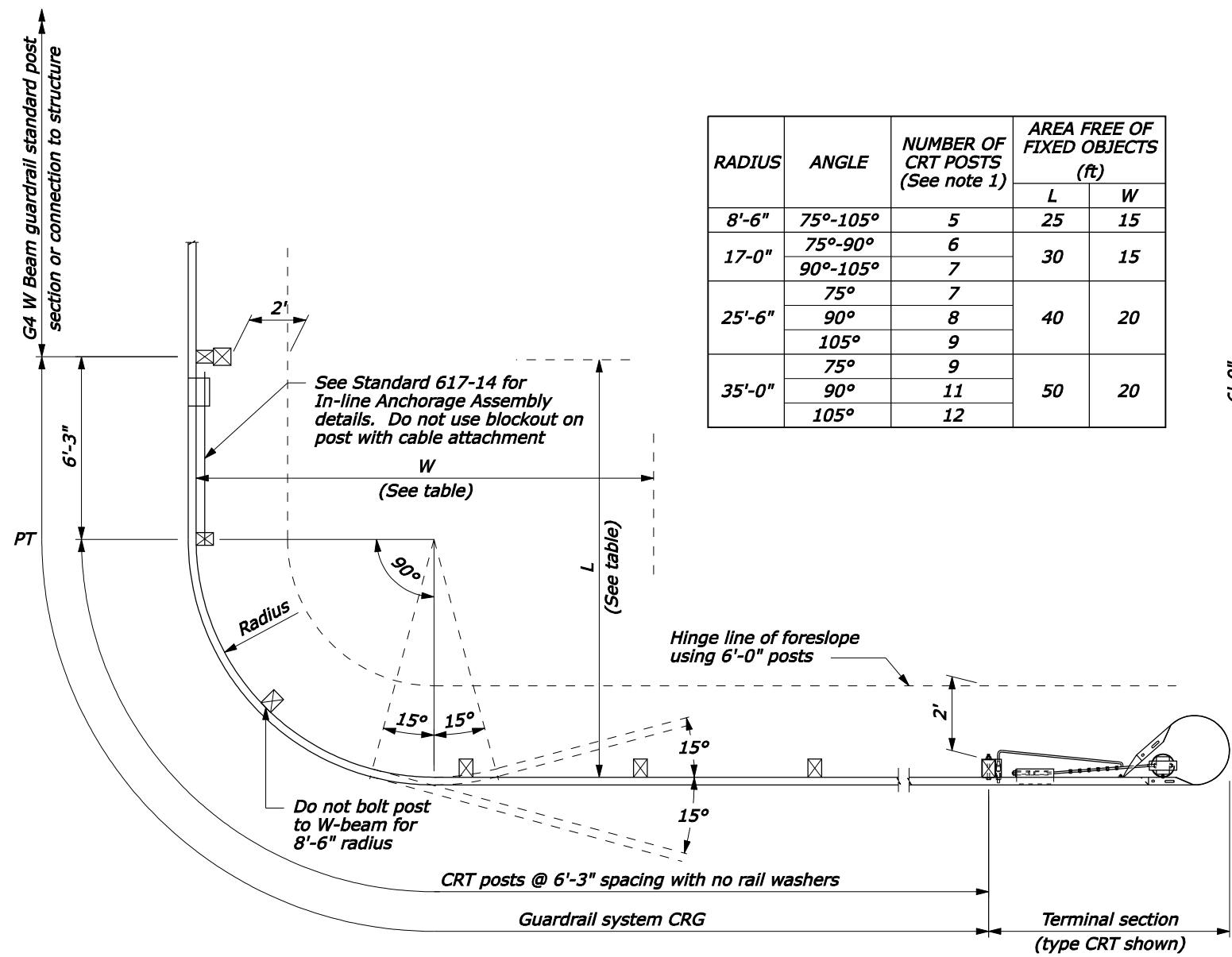


ELEVATION

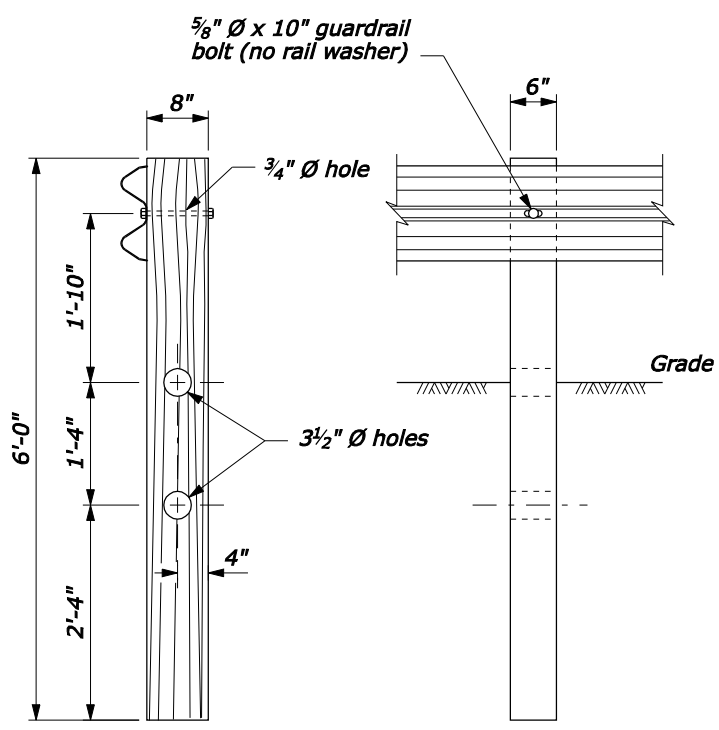
TEST LEVEL	L (m)
2 (≤ 70 km/h)	7.62
3 (> 70 km/h)	11.43 or 15.24

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: 2/2007	M617-20

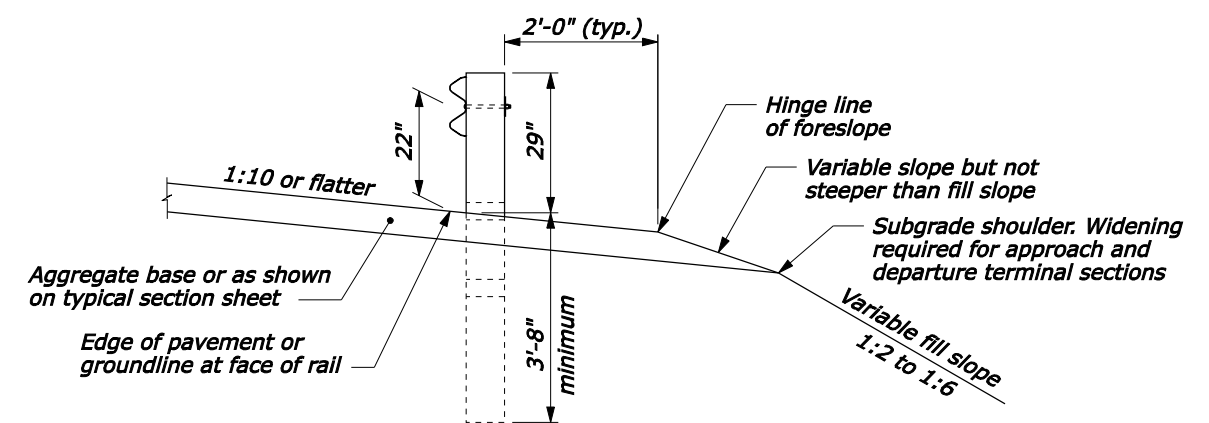


RADIUS	ANGLE	NUMBER OF CRT POSTS (See note 1)	AREA FREE OF FIXED OBJECTS (ft)	
			L	W
8'-6"	75°-105°	5	25	15
17-0"	75°-90°	6	30	15
	90°-105°	7		
25'-6"	75°	7	40	20
	105°	9		
35'-0"	75°	9	50	20
	90°	11		
	105°	12		

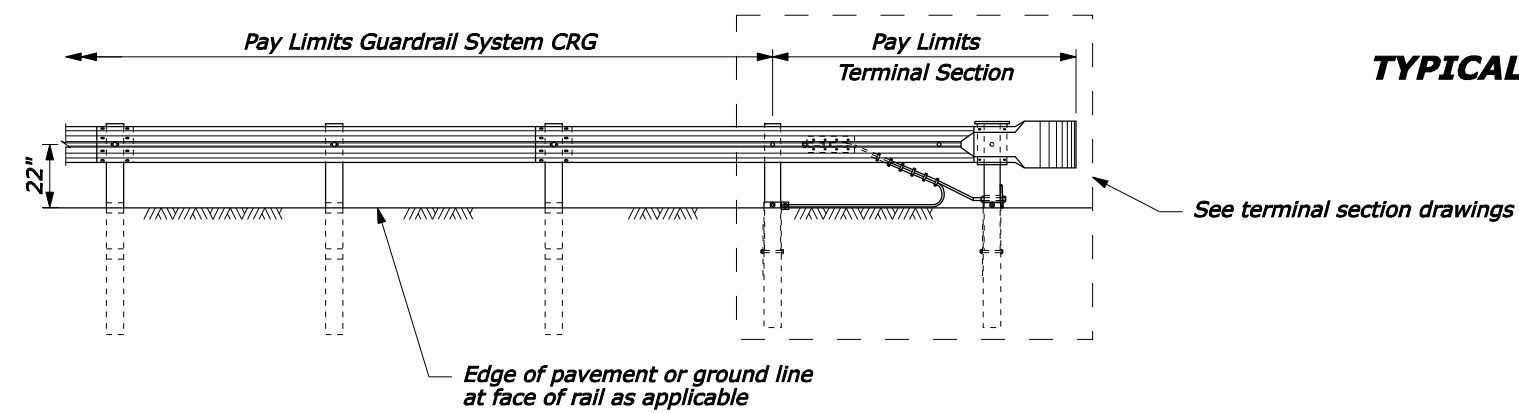


CRG POST DETAIL

- NOTE:**
1. CRT posts include those posts between the terminal and PT, plus the post w/blockout at the In-line anchor.
 2. See Standard 617-22 for terminal section, Type CRT details. The use of this terminal is limited to driveways, road approaches and low speed minor road connections. Do not use on mainline roadways.
 3. 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.



TYPICAL GUARDRAIL CROSS SECTION

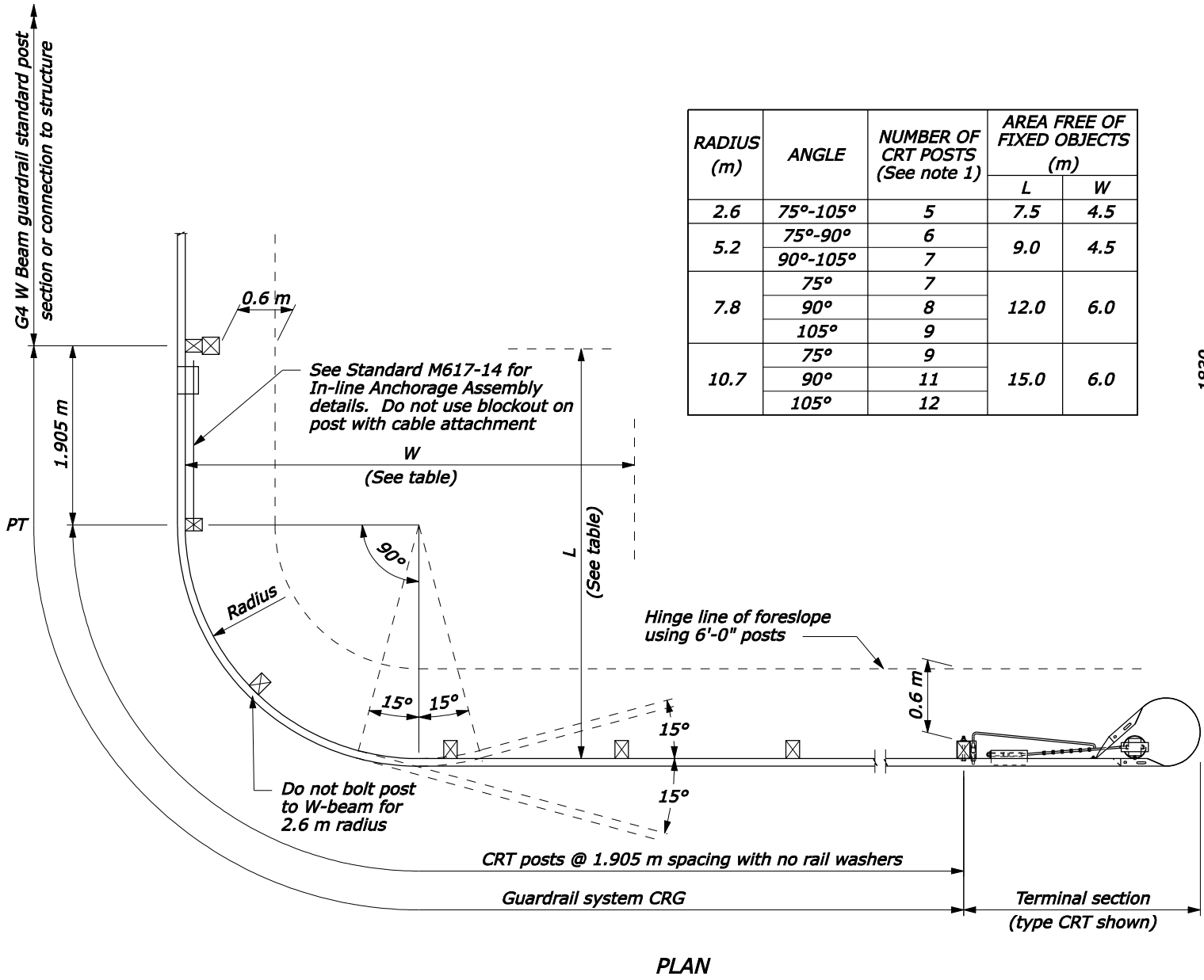


ELEVATION
GUARDRAIL SYSTEM CRG WITH CRT POSTS

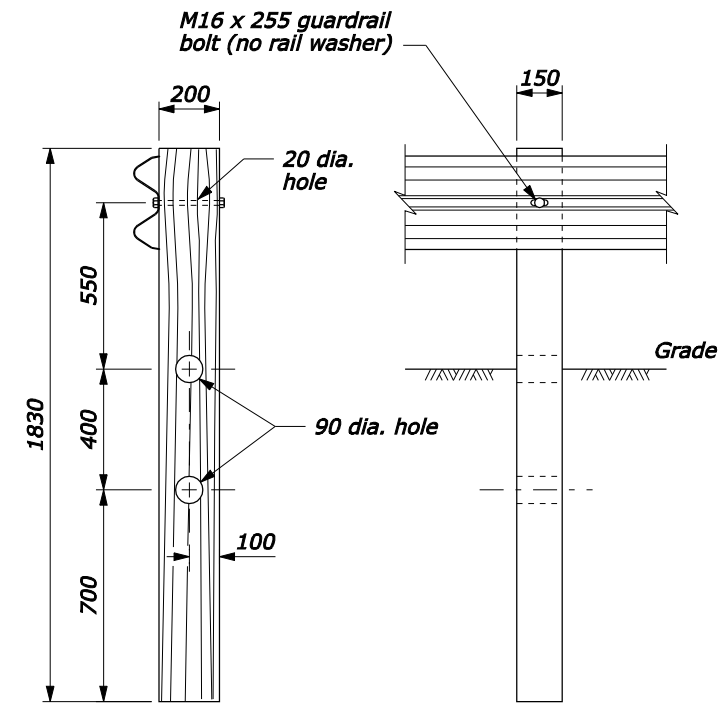
NO SCALE

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	STANDARD
REVISED: 4/1994 6/2005	617-21
DRAFT: 3/2006	

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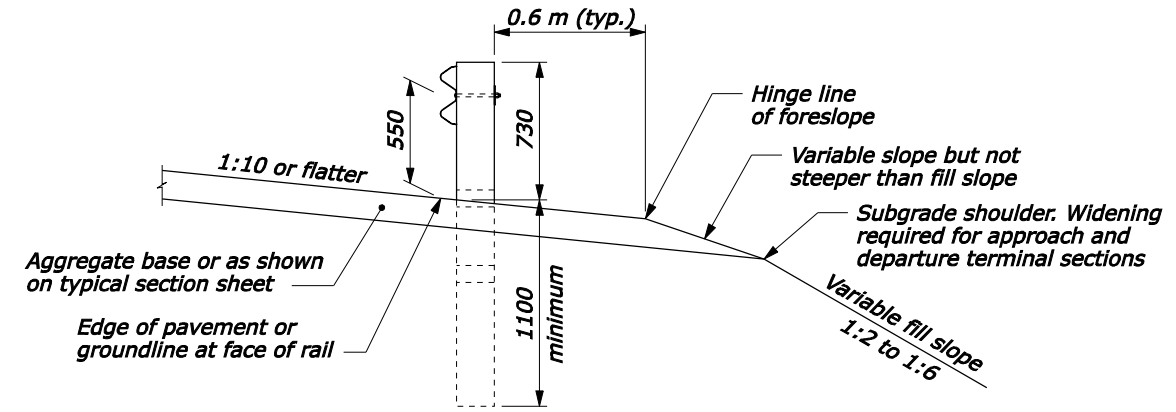


RADIUS (m)	ANGLE	NUMBER OF CRT POSTS (See note 1)	AREA FREE OF FIXED OBJECTS (m)	
			L	W
2.6	75°-105°	5	7.5	4.5
	75°-90°	6	9.0	4.5
5.2	90°-105°	7	12.0	6.0
	75°	7		
	105°	9		
7.8	75°	7	15.0	6.0
	90°	8		
	105°	9		
10.7	75°	9	15.0	6.0
	90°	11		
	105°	12		

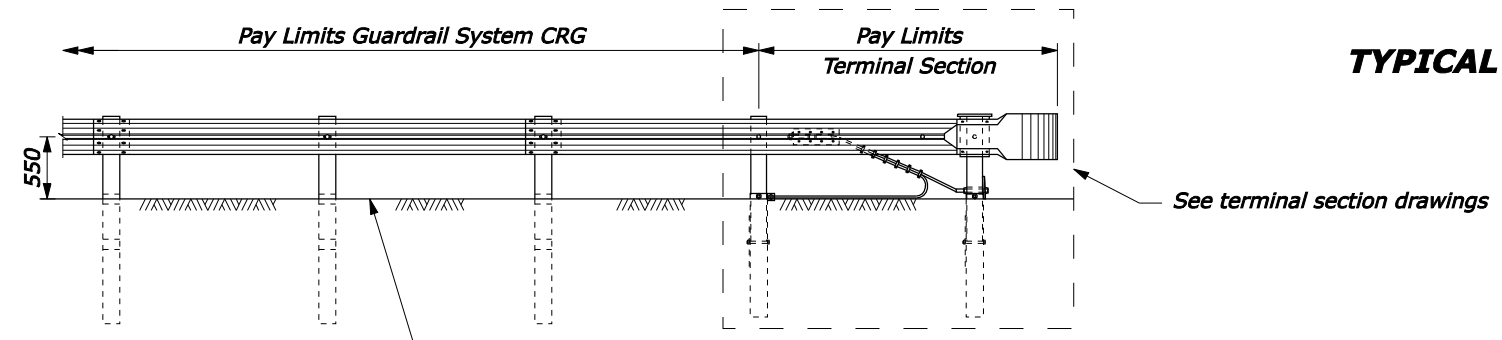


CRG POST DETAIL

- NOTE:**
1. CRT posts include those posts between the terminal and PT, plus the post w/blockout at the In-line anchor.
 2. See Standard M617-22 for terminal section, Type CRT details. The use of this terminal is limited to driveways, road approaches and low speed minor road connections. Do not use on mainline roadways.
 3. 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.
 4. Furnish hardware in the metric sizes shown. Equivalent US Customary sizes may be used when metric sizes are not available.
 5. Dimensions without units are millimeters.



TYPICAL GUARDRAIL CROSS SECTION

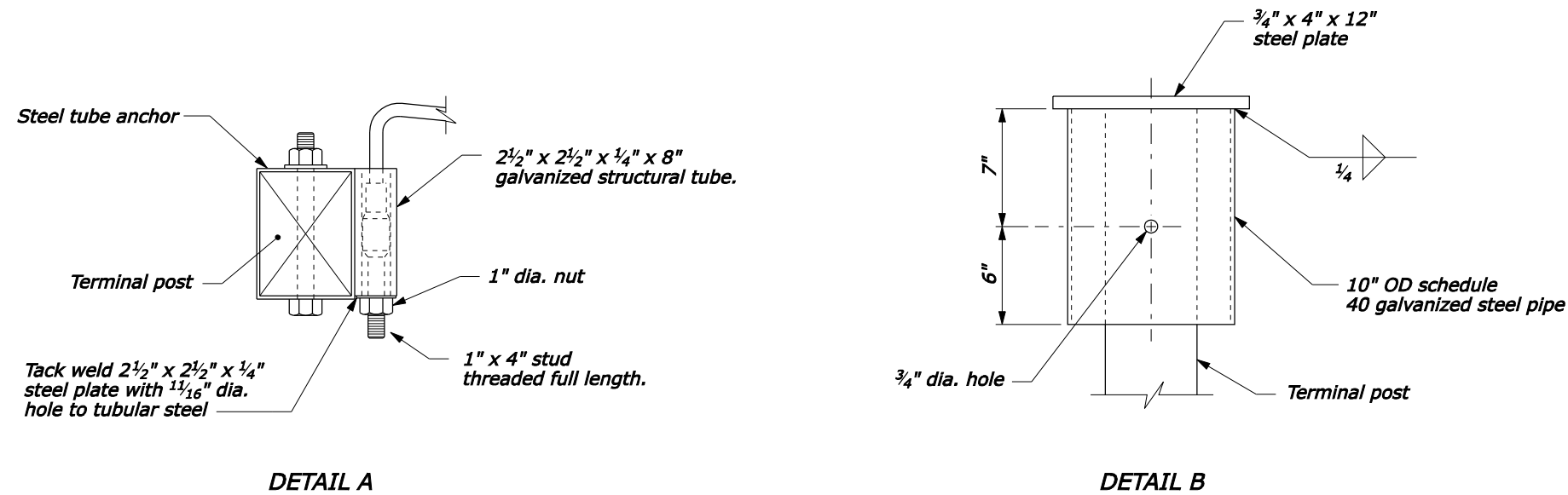


ELEVATION
GUARDRAIL SYSTEM CRG WITH CRT POSTS

NO SCALE

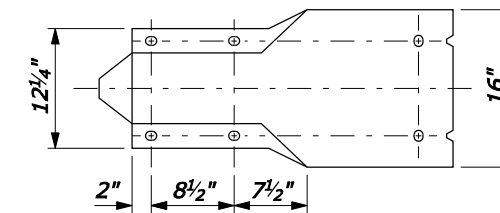
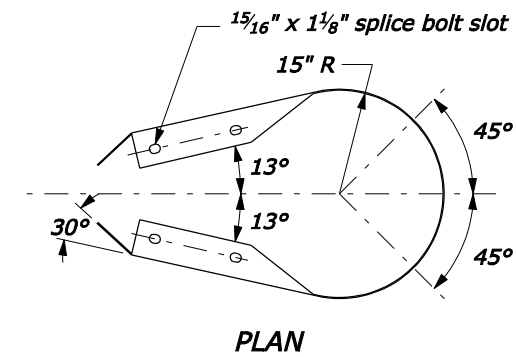
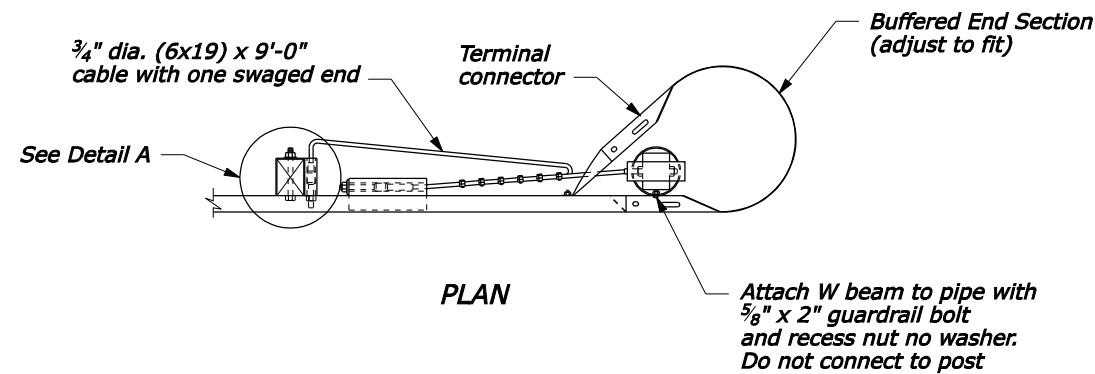
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
CRG W-BEAM GUARDRAIL WOOD POSTS	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 12/1998 6/2005 DRAFT: 3/2006	M617-21

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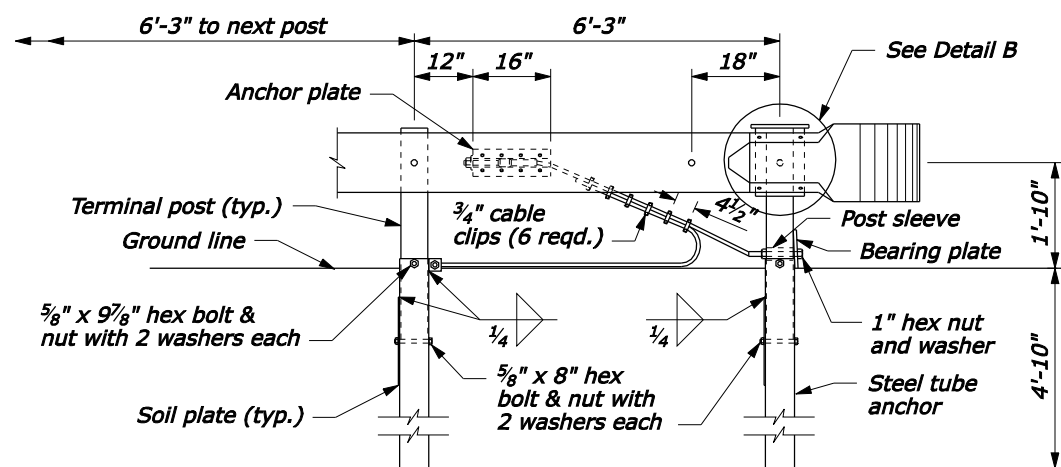


NOTE:

1. See Standard 617-15 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.



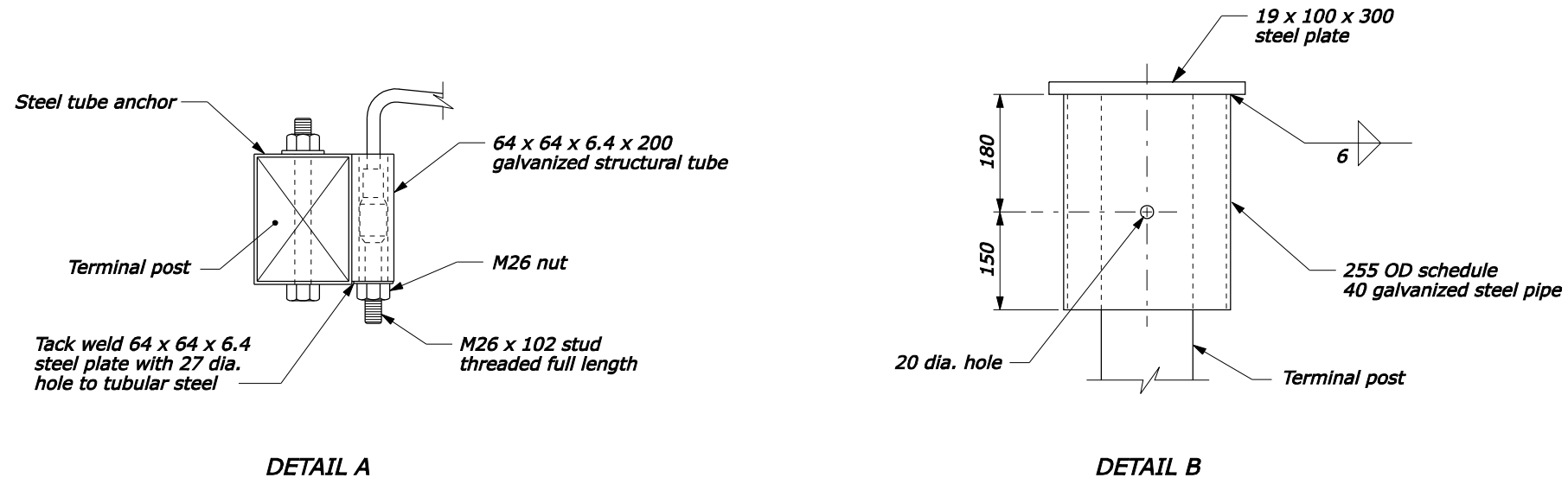
**ELEVATION
BUFFERED END SECTION**



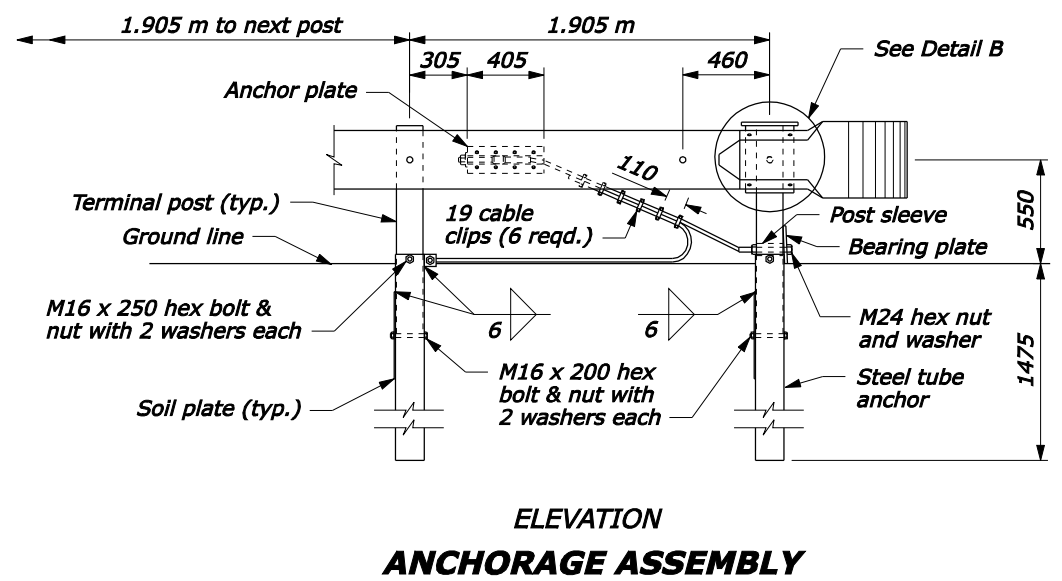
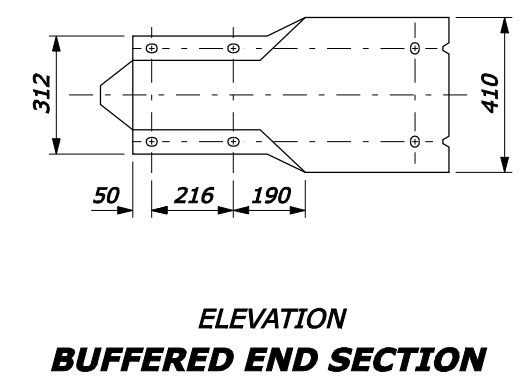
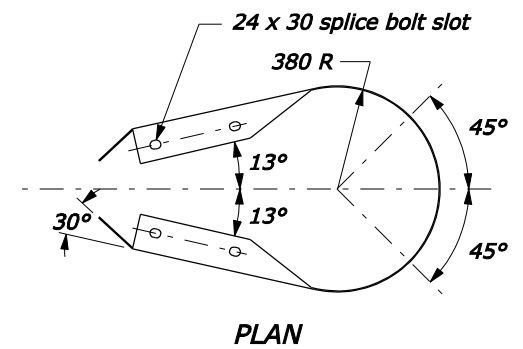
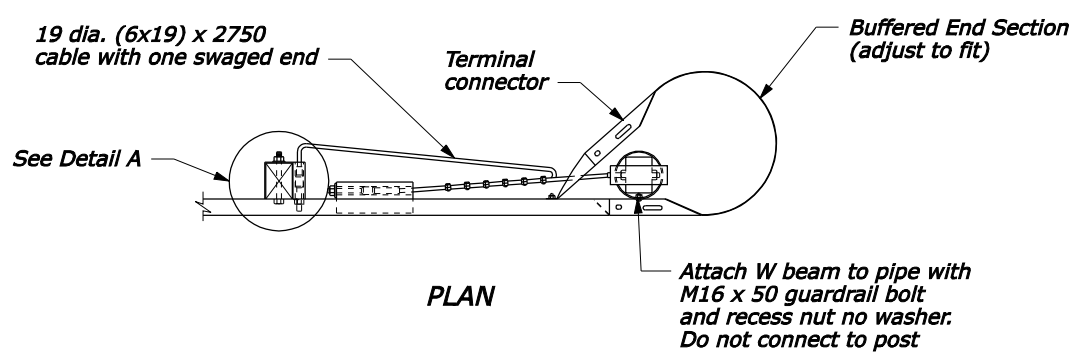
**ELEVATION
ANCHORAGE ASSEMBLY**

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD CRG W-BEAM GUARDRAIL CABLE RELEASING TERMINAL TYPE CRT, WOOD POSTS	
STANDARD APPROVED FOR USE 1/1994	STANDARD
REVISED: 4/1994 6/2005 DRAFT 3/2006	617-22



- NOTE:**
1. See Standard M617-15 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 not available.
 4. Dimensions without units are millimeters.



NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
CRG W-BEAM GUARDRAIL CABLE RELEASING TERMINAL TYPE CRT, WOOD POSTS	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 6/2005 DRAFT: 3/2006	M617-22

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