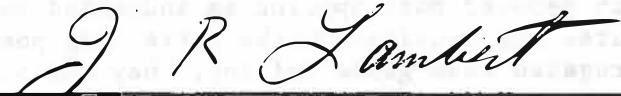


TO:		<b>ENGINEERING INSTRUCTION</b>	
<b>SUPERSEDED BY EI 95-013 EFFECTIVE 3/7/95</b>		NEW YORK STATE DEPARTMENT OF TRANSPORTATION	
		SUBJECT: GUIDE RAILING WITH EXTRA LONG POSTS	
		Subject Code: 7.27-3-606	
Distribution:		30 Main Office	32 Regions
		34 Special	
APPROVED:		Code: <u>EI 89-29</u>	Date: <u>10/24/89</u>
 J.R. LAMBERT, Deputy Chief Engr., Fac. Des. Div., Rm. 405-5		Supersedes:	

Attached is a copy of the following main office special specifications for Guide Railing with Extra Long Posts.

- 15606.0103 Cable Guide Railing With Extra Long Posts
- 15606.0151 Cable Guide Railing With Extra Long Posts (Rustic Posts)
- 15606.1001 Box Beam Guide Railing With Extra Long Posts
- 15606.1051 Box Beam Guide Railing With Extra Long Posts (Rustic)
- 15606.1100 Box Beam Guide Railing With Extra Long Posts (Shop Curved)
- 15606.1151 Box Beam Guide Railing With Extra Long Posts (Shop Curved) (Rustic)
- 15606.2000 Corrugated Beam Guide Railing With Extra Long Posts
- 15606.2050 Corrugated Beam Guide Railing With Extra Long Posts (Rustic)
- 15606.2001 Corrugated Beam Guide Railing With Extra Long Posts (Shop Curved)
- 15606.2051 Corrugated Beam Guide Railing With Extra Long Posts (Shop Curved) (Rustic)
- 15606.3203 Heavy Post Blocked-Out Corrugated Beam Guide Railing With Extra Long Posts
- 15606.3231 Heavy Post Blocked-Out Corrugated Beam Guide Railing With Extra Long Posts (Shop Curved)
- 15606.3250 Heavy Post Blocked-Out Corrugated Beam Guide Railing With Extra Long Posts (Rustic)
- 15606.3251 Heavy Post Blocked-Out Corrugated Beam Guide Railing With Extra Long Posts (Shop Curved) (Rustic)

The new items for guide railing with extra long posts will become effective with the letting of March 29, 1990 .

Subject: GUIDE RAILING WITH EXTRA LONG POSTS

These items use an extra long, 7 foot, guide railing post in place of the standard 5' 3" long S3 X 5.7 and 5'-6" long W6 X 8.5 or W6 X 9 guide railing posts shown on the standard sheets. The soil plate on the extra long S3 X 5.7 post used with cable, corrugated beam, and box beam guide railing is 48 inches from the top of the post rather than the 35 inches shown for the standard systems. The heavy post blocked-out guide rail systems do not require a soil plate except with reduced post spacing as indicated on the standard sheets. When soil plates are required on the extra long post for the heavy post blocked-out corrugated beam guide railing, they are placed 42 inches from the top of the post. The attached specifications handle use and location of soil plates and no action is required by the designer.

Warrants And Designer Information:

Guide railing with extra long posts is for use on projects where the standard 18 inch offset from the back of the post to the shoulder break can not be achieved. In no case shall the extra long posts be placed past the shoulder break. The following table should be used to determine when the extra long post is required. Note that extra long posts are utilized with 1:1.5 slopes even with no reduction in post offset.

		S3 X 5.7 Post				W6 X 8.5 or W 6 X 9 Post			
Offset**	Inches	0"	6"	12"	18"	0"	6"	12"	18"
Slope									
1:3		7'0"	5'3"*	5'3"	5'3"	7'0"	7'0"	5'6"*	5'6"
1:2.5		7'0"	7'0"	5'3"*	5'3"	7'0"	7'0"	7'0"	5'6"
1:2		7'0"	7'0"	7'0"	5'3"	7'0"	7'0"	7'0"	5'6"
1:1.5		***	7'0"	7'0"	7'0"	7'0"	7'0"	7'0"	7'0"

\* In sandy or weak soil use 7'0" post  
 \*\* Offset from back of post to shoulder break  
 \*\*\* Not recommended

When guide railing with extra long S3 X 5.7 posts is utilized, the designer shall consider the deflection of the rail system to be 1.3 times the design deflection stated in Chapter 10 of the Highway Design Manual. This change in deflection does not apply to any of the heavy post systems.

The designer should note that the extra long guide rail posts are up to 21" longer than the standard guide rail post. Therefore, care in locating underground obstructions such as utilities, shallow culverts, and rock should be exercised.

Subject: GUIDE RAILING WITH EXTRA LONG POSTS

Historical Information:

The new specification and the guidelines for their use were developed by the Department based on the recommendations in Research Report No. FHWA-RD-88-193 "Force-Deflection Characteristics of Guardrail Posts"; findings from field inspections of guide rail installed at or near the shoulder break; and an analysis of soil volumes behind soil plates and posts necessary for posts to develop their full strength.

Research report FHWA-RD-88-193 indicates that 7 foot long W 6 X 8.5 and W 6 X 9 posts installed according to the recommendations contained in the table under Warrants and Designer Information will develop the full strength of the posts. Testing indicates that deflections of heavy posts systems remain essentially unchanged.

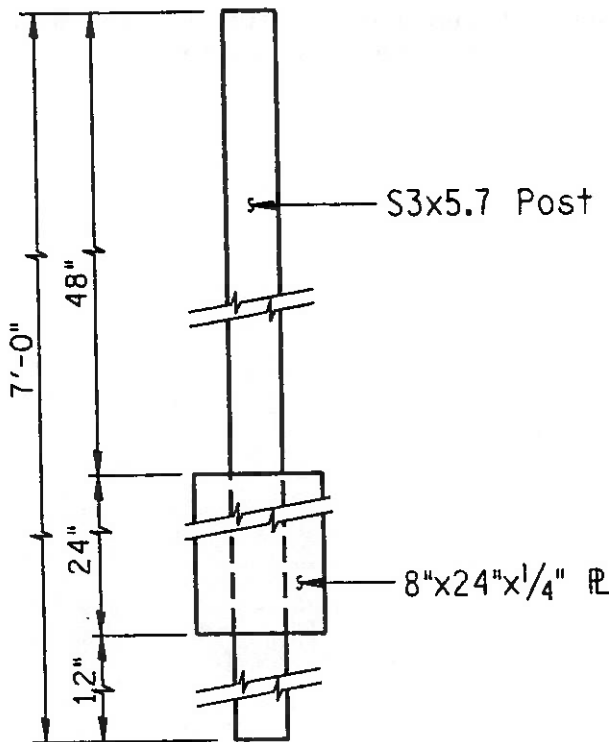
Field inspection of standard light post systems placed at or near the shoulder break revealed that erosion at shoulder rounding often exposed 4 to 6 inches of the soil plate and inadequate soil support allowed the guide rail to lean back away from the roadway. An analysis of soil volumes behind soil plates resulted in lowering the soil plate 13 inches in order to achieve adequate soil resistance to effect post bending. Due to the increased length of the moment arm from the rail to the top of the soil plate, we have increased the deflections of the light post systems with 7' posts by 30 percent. This may be conservative for standard post spacing but should be essentially correct with reduced post spacings. We assumed that post bending for the S3 X 5.7 post will occur near the top of the depressed soil plate.



Note: See the Guide Railing Standard Details for welding and punching details.

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( Rustic Posts )
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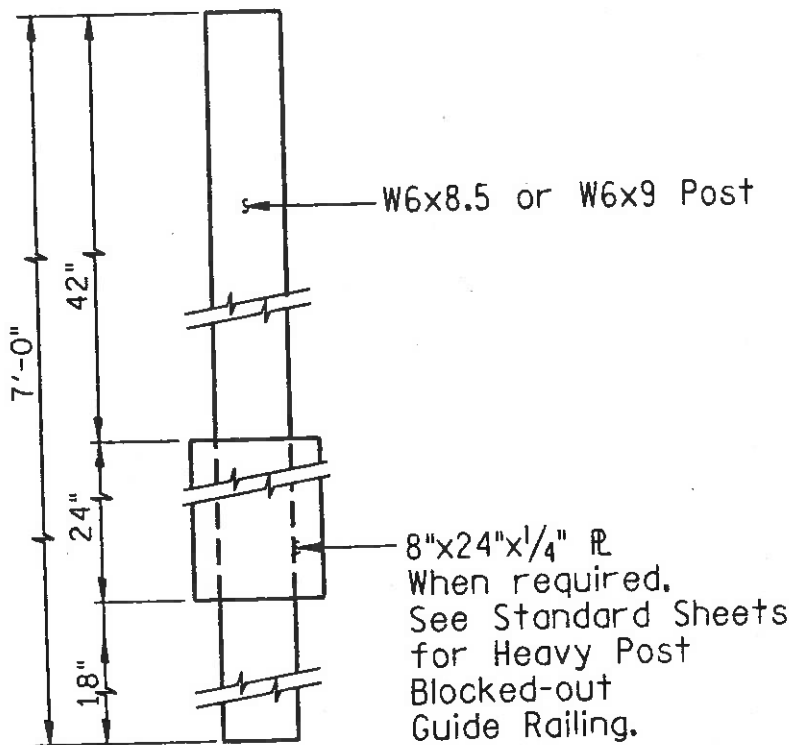
All the provisions of Section 606 of the Standard Specifications pertaining to cable, box beam, and corrugated beam guide railing shall apply except the post shall conform to the following overall dimensions:



Note: See the Guide Railing Standard Sheets for welding and punching details.

- 15606.3203 Heavy Post Blocked-Out Corrugated Beam Guide Railing With Extra Long Posts
- 15606.3231 Heavy Post Blocked-Out Corrugated Beam Guide Railing With Extra Long Posts (Shop Curved)
- 15606.3250 Heavy Post Blocked-Out Corrugated Beam Guide Railing With Extra Long Posts (Rustic)
- 15606.3251 Heavy Post Blocked-Out Corrugated Beam Guide Railing With Extra Long Posts (Shop Curved) (Rustic)

All the provisions of Section 606 of the Standard Specifications pertaining to heavy post blocked-out corrugated beam guide railing shall apply except the post shall conform to the following overall dimensions:



Note: See the Heavy Post Blocked-out Guide Rail Standard Sheets for welding and punching details.

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10/24/89