TO:

SUPERSEDED BY EI 86-001 EFFECTIVE 5/15/86

ENGINEERING INSTRUCTION

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

SUBJECT: RUSTIC GUIDE RAIL AND MEDIAN BARRIER

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This EI transmits pay item specifications, a special note and a material specification for rustic guide rail and median barrier. The material specification gives an option for the post types and their treatment. Posts may be ASTM A-36 steel with an overall coating of fusion bonded epoxy or ASTM A588 steel with the embedded post portion either galvanized or fusion bonded epoxy coated.

EI 84-25 and the various weathering steel guide rail pay items it transmitted are superseded. The policy for selecting the use of rustic barrier systems in the Catskill Park and the Adirondack Park Agency jurisdiction are revised and restated as follows:

CATSKILL PARK (from EI 84-25)

As a result of discussions with the Catskill Council, Deputy Commissioner Carlson has established the following policy to improve the esthetics of highways in Catskill Park:

> On Construction contracts, only rustic barrier systems will be specified for new installations within the boundaries of the Catskill Park. It will not be necessary to paint or replace existing guide rail just for esthetic purposes. However, if it is necessary to replace guide rail for other reasons, the replacement will be made with a rustic guide rail system.

ADIRONDACK PARK (from EI 76-67)

F. Types of Guide Rail

> Use cable guide rail when deflection room will permit. When cable guide rail is used along a fill slope steeper than 1 on 2, the post spacing shall be a maximum of 8'. When 7' deflection room (cable guide with 4' post spacing) is not available, rustic box beam guide rail shall be used with a post spacing as required for the available deflection room. On all rustic guide rail and rustic median barrier, reflective markers will be attached to the rail every 96 feet.

Designers must obtain approval of the Preliminary Plan Review Bureau in order to use rustic barrier systems outside the boundaries of the above named Parks.

The above stated policy and the attachments will be in effect for all contracts on and after October 31, 1985.

RUSTIC GUIDE RAIL AND MEDIAN BARRIER

Make the following changes to the Standard Specifications of January 2, 1985:

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Under Section 606-2 Materials add:

GUIDE RAIL AND MEDIAN BARRIER SYSTEMS (Rustic) 710-25

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Add the following as subsection 606-2.07 Rustic Barrier.

"Rustic Barriers. Materials for rustic box beam and corrugated beam guide rail and median barrier systems respectively shall meet the requirements of 710-25.

When rustic posts are specified for cable barriers the posts shall meet the requirements for posts of 710-25."

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Add the following as subsection 606-3.17 Rustic Barrier.

"In order to develop the inherent properties of rustic barrier to its maximum the Contractor shall remove all mill scale from the surfaces of all weathering Steel that will be exposed to view from the roadway. All surfaces are to be free of mud, grease, oil and paint. When either materials or finished products are in storage or transit, all necessary precautions shall be taken to prevent water stains and other surface adulteration that will deter from ultimately achieving the uniform and sound weathering characteristics of the base metal.

Care shall be taken during the field erection of the barrier system to avoid surface scratches and gouges. The Contractor is put on notice that cleanliness is most important in obtaining the early and uniform weathered surface. Where soilage is too severe to be removed by hand cleaning, the soiled areas shall be cleaned by other methods such as power brush cleaning in a manner approved by the Engineer.

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Add the following to the subsection for payment items:

606.0150	CABLE GUIDE RAILING (Rustic Posts)	Linear Foot

606.0250	ANCHORAGE UNITS FOR CABLE GUIDE RAILING (Rustic Posts)	Each
606.0350	ANCHORAGE UNITS FOR CABLE GUIDE RAILING-(Driveways) (Rustic Posts)	Each
606.1050	BOX BEAM GUIDE RAILING (Rustic)	Linear Foot
606.1150	BOX BEAM GUIDE RAILING (Shop Curved) (Rustic)	Linear Foot
606.1250	BOX BEAM MEDIAN BARRIER (Rustic)	Linear Foot
606.1350	BOX BEAM MEDIAN BARRIER (Shop Curved) (Rustic)	Linear Foot
606.1450	BOX BEAM GUIDE RAILING END ASSEMBLY (Rustic)	Each
606.1550	BOX BEAM MEDIAN BARRER END ASSEMBLY, TYPE A (Rustic)	Each
606.1650	BOX BEAM MEDIAN BARRER END ASSEMBLY, TYPE B (Rustic)	Each
606.1850	BOX BEAM CULVERT RAILING (Rustic)	Linear Foot
606.2050	CORRUGATED BEAM GUIDE RAILING (Rustic)	Linear Foot
606.2150	CORRUGATED BEAM MALL BARRIER (Rustic)	Linear Foot
606.2250	ANCHORAGE UNITS FOR CORRUGATED BEAM GUIDE RAILING (Rustic)	Each
606.2350	ANCHORAGE UNITS FOR CORRUGATED BEAM GUIDE RAILING (Driveway) (Rustic)	Each

606.2450	ANCHORAGE UNITS FOR CORRUGATED BEAM MALL BARRIER (Rustic)	Each
606.2550	SPECIAL ANCHORAGE UNITS FOR CORRUGATED BEAM MALL BARRIER (Rustic)	Each
606.3250	HEAVY POST BLOCKED-OUT CORRUGATED BEAM GUIDE RAILING (Rustic)	Linear Foot
606.3350	HEAVY POST BLOCKED-OUT CORRUGATED BEAM MEDIAN BARRIER (Rustic)	Linear Foot
606.3450	ANCHORAGE UNITS FOR HEAVY POST BLOCKED-OUT CORRUGATED BEAM GUIDE RAILING (Rustic)	Each
606.3550	ANCHORAGE UNITS FOR HEAVY POST BLOCKED-OUT CORRUGATED BEAM MEDIAN BARRIER (Rustic)	Each
606.3650	HEAVY POST BLOCKED-OUT CORRUGATED BEAM GUIDE RAILING CONNECTIONS TO WALLS (Trailing Ends)(Rustic)	Each
606.8150	GUIDE RAIL TRANSITION CORRUGATED BEAM TO BOX BEAM (One or Two-Way Operation) (Rustic)	Each
606.8250	GUIDE RAIL TRANSITION BOX BEAM TO CORRUGATED BEAM (One-way only) (Rustic)	Each
606.8350	GUIDE RAIL TRANSITION CABLE TO BOX BEAM (One or Two-way Operation) (Rustic Posts and Box Beam)	Each
606.8450	GUIDERAIL TRANSITION BOX BEAM to CABLE (One-Way Only) (Rustic Posts and Box Beam)	Each
606.8550	MEDIAN BARRIER TRANSITION CORRUGATED BEAM TO 6 x 8 BOX BEAM (Rustic)	Each

710-25 - GUIDE RAIL AND MEDIAN BARRIER SYSTEMS (Rustic)

SCOPE: This specification covers the material and quality requirements for rustic barrier systems fabricated from structural and high-strength low alloy structural steel that in a reasonable time after erection in a rural environment of average atmosphere, develop a uniform, permanent, and tightly adhering protective oxide coating.

MATERIAL REQUIREMENTS: Except as modified herein, all requirements of 710-20 - CORRUGATED BEAM GUIDE RAILING AND MALL BARRIER and 710-21 - BOX BEAM GUIDE RAILING AND MEDIAN BARRIER shall apply including Drop Weight Tear Testing. Galvanizing shall not be required unless specifically stated otherwise.

A. Box Beam Rail - The base metal for the structural shape, plate and bar components of box beam guide rail and median barrier shall meet the requirements of ASTM A242 or A588.

The fabrication of structural tube shall comply with ASTM A500, Grade B. The mechanical properties of the finished tube shall conform to the requirements of ASTM A500, Grade B except that the minimum elongation in two (2) inches shall be 21 percent. Splice plates shall be fabricated of ASTM A36 steel ready for assembly before galvanizing and galvanized in accordance with §719-01, Type 1 (ASTM A123).

B. Corrugated Beam Rail - The base metal for the corrugated beam rail shall meet the requirements of ASTM A606, Type 4.

C. Welds - All welds shall develop the strength of, and exhibit the same corrosion resistance characteristics as, the base metal used for the structural shape, plate and bar components.

D. Other Components - Other components of high strength, low alloy steel guide rail systems shall conform to the following requirements:

1. Soil Plates - Soil plates shall be made of either ASTM A-36, ASTM A242, ASTM A588, or ASTM A606 Type 4 and shall be galvanized or epoxy coated in accordance with the applicable requirements in this specification.

2. Miscellaneous Hardware - The base metal of all accessory hardware including blockouts, back-up plates, rail connecting angles, bolts, nuts and washers shall be fabricated from steel having corrosion resistance of approximately 4 times carbon structural steel without copper. Hardware to be excepted from this requirement is listed below and shall be supplied in conformance to the requirements as detailed on the standard sheets, and galvanized in accordance with Section 719-01 Type 1 (ASTM A123).

a. All bolts less than ½" diameter and their associated washers and nuts.

b. 1 3/4" x 1 3/4" square washers; 3" x 1 3/4" washers.

c. 3/4" diameter anchor rods, nuts and washers associated with concrete anchors.

d. Other miscellaneous nuts, bolts, washers and connectors not exposed to view.

High strength bolts, nuts and washers specified on the standard sheets as ASTM A325 shall conform to ASTM A325, Type 3. Commercially available anti-seizing compound shall be applied to the threads of corrosion resistant bolts used in rail splices.

E. Epoxy Coating Material.

1. The epoxy coating materials shall be a powdered polyamide epoxy resin suitable for fusion bonding. The finish shall not be glossy. A dull or matted finish shall be supplied.

2. The color of the epoxy coating shall be a reasonable visual match to the brown color of Federal Color Standard 595 - plate numbers 10075, 10079, and 10091. Fifteen (15) days prior to commencement of coating operations, three (3) 4 inch by 6 inch coated metal plates shall be submitted to the Director, Materials Bureau for determination as to acceptability of the color match.

   The epoxy coating shall not fade, change color or chalk appreciably when subjected to a 30 hour exposure (20 minute cycle) in the high intensity ultra violet weatherometer model DMC-RHC. Each cycle (continuously repeating) starts with 17 minutes of light followed by 3 minutes of light and waterspray.

3. Upon approval of the product and the color match, the epoxy coating will be placed on a Department "Approved List" of Materials.

F. Posts - Posts shall conform to any of the following requirements:

1. ASTM A36 steel with a fusion bonded polyamide epoxy coating throughout meeting the epoxy requirements of this specification.

2. ASTM A588 steel with the embedded portion of the post galvanized in accordance with Section 719-01, Type 1 (ASTM A123). The posts shall be prepared in accordace with

standard galvanizing industry practice. The lower 32 inches of light posts and the lower 39 inches of heavy posts shall be galvanized.

3. ASTM A588 steel with the embedded portion of the post having a fusion bonded polyamide epoxy coating meeting the epoxy requirements of this specification. The lower 39 inches of the posts, regardless of rail type, shall be epoxy coated.

EPOXY COATING APPLICATION REQUIREMENTS:

A. Coating Applicator - The facilities of the coating applicator and method of application for the epoxy shall be subject to approval by the Director, Materials Bureau. Approval shall be obtainted in accordance with the written procedures of the Materials Bureau. Upon approval, the complete name and address of the coating applicator will be placed on the Department's List of Approved Products titled "Fusion Bonded Coating Applicators."

Coating applicators on the "approved list" for Longitudinal Joint Ties and Steel Reinforcing Bars are approved applicators for epoxy coated posts as described in this specification.

B. Plant Inspection

1. The Department reserves the right to have its authorized representative observe the preparation, coating and testing of the posts. The representative shall have free access to the plant and any work done when access has been denied shall be automatically rejected.

2. If the representative elects, lengths of coated posts may be taken from the production run, on a random basis, for test, evaluation and check purposes by the Materials Bureau.

C. Quality Control - The coating applicator shall be responsible for performing quality control and tests. This will include inspection for compliance with the requirements of Coating Thickness, Continuity of Coating and Coating Cure.

D. Preparation - Posts shall be pickled according to accepted industry standards and then rinsed in a slightly basic solution to remove all traces of pickling residue. The cleaned surfaces shall be free of all residue and millscale. Only the portion of post to be coated need be cleaned. In lieu of the pickling process, posts may be blast cleaned in accordance with the Steel Structures Painting Council - Surface Preparation Specification No. 6 (SSPC-SP6), Commercial Blast Cleaning. The cleaned surface shall be defined by SSPC Vis 1, Pictorial Standards BSa2 or CSa2 as applicable.

E. Coating Thickness - Five (5) mils minimum dry film thickness. Coating thickness measurements shall be conducted by the method outlined in ASTM G12.

F. Continuity of Coating - The coating shall be checked visually after cure for continuity. It shall be free from holes, voids, contamination and damaged areas.

G. Coating Cure - The coating applicator shall check each shipment to determine that the epoxy coating is in a fully-cured condition.

FIELD REPAIR OF DAMAGED COATINGS: Posts with coating breaks, due to handling, that exceed ½ inches in any dimension shall not be incorporated into the work. The Contractor shall set aside such damaged units and may effect a field repair. Coating breaks may be repaired with a patching material approved by the epoxy coating manufacturer. The patching material shall be an epoxy compatible with the epoxy coating. The patching epoxy shall be a color match to the coating epoxy.

BASIS OF ACCEPTANCE:

A. All components of the box beam or corrugated beam guide railing and median barrier shall be accepted in accordance with directives issued by the Department and for conformance with the standard sheets.

B. All epoxy coated posts shall be accepted by the Engineer at the contract site on the basis of the following:

1. The epoxy coating manufacturer's certification that the coating material is identical to that approved by the Materials Bureau.

2. The coating applicator's certification that the posts have been coated and that they conform to the requirements of this specification.

3. The appearance of the name of the coating applicator and epoxy coating material on the Department's Approved List of Products.

C. The manufacturer's certification that the metal used conforms to the requirements of this specification. The ASTM designation and Grade shall be included.