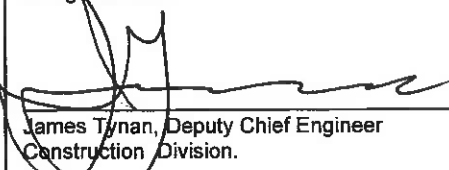


To: SUPERSEDED ^{BY} <i>EB02-024</i> <i>EFFECTIVE 7/11/02</i>		New York State Department of Transportation ENGINEERING INSTRUCTION	EI 00-003
Title: Rustic Box Beam Median Barrier and Guide Rail End Assemblies.			
Distribution: ☐ Manufacturers (18) ☐ Surveyors (33) ☒ Main Office (30) ☒ Consultants (34) ☐ Local Govt. (31) ☐ Contractors (39) ☒ Regions/Agencies (32) ☐ _____ ()		Approved:  Phillip J. Clark, Deputy Chief Engineer Design Division <i>01/24/00</i> Date  James Tynan, Deputy Chief Engineer Construction Division <i>1-18-00</i> Date	

ADMINISTRATIVE INFORMATION. This engineering instruction is effective with the letting of May 4, 2000. Some contracts let earlier should incorporate the appropriate of either the one or two page note, however.

PURPOSE. The purpose of this engineering instruction is to announce modifications to "§710-24, Box Beam End-Assembly Type III and Box Beam Median Barrier End-Assembly, Type C." The modifications require painted rustic end assemblies for both median barrier and guide rail applications. The paint will be applied to exposed galvanized surfaces. Concealed galvanized surfaces remain unpainted. Previously, end assemblies fabricated from weathering type steels were required, however, the sole fabricator of these end terminals has expressed concerns regarding the safety of these end assemblies constructed of weathering type steels, and has declined to provide them.

The paint is to be applied in accordance with §740-03, Painting Galvanized Surfaces. This is a new section which was issued recently under EB 99-089. It will be necessary to treat this as extra work, requiring either an agreed price or determination of reimbursement by means of force account.

TRANSMITTED MATERIALS. This engineering instruction transmits two proposal insert notes modifying §710-24, Box Beam End-Assembly Type III and Box Beam Median Barrier End Assembly, Type C. These are paid for under Pay Items 606.1253 M and 606.1453 M, respectively. The shorter of the two notes should be used to modify those contracts having the above items that were let including Addenda 2. The first two paragraphs of this note will be stocked as a "shelf note" by DQAB. The longer note should be used to modify contracts that were let without Addenda No. 2. For convenience, the new §740-03 is included in the notes.

CONTACT PERSON. Larry Brown of the Design Quality Assurance Bureau, (518) 457-4093.

RUSTIC BOX BEAM END ASSEMBLIES TYPE III
AND
RUSTIC BOX BEAM MEDIAN BARRIER END ASSEMBLIES, TYPE C
(For contracts that contain Addenda 2)

Make the following changes to the Standard Specifications of January 2, 1995:

Addenda No. 2, Page VII 26, Lines 48 to 51. *Replace* these lines (last sentence of last paragraph under Materials Requirements) with the following: "The materials and construction requirements of Box Beam End Assemblies, Type III (Rustic) and Box Beam Median Barrier End Assembly, Type C (Rustic) shall be the same as Box Beam End Assemblies, Type III and Box Beam Median Barrier End Assembly, Type C except exposed galvanized metal surfaces shall be painted in accordance with §740-03 Painting Galvanized Surfaces."

Note. §740-03 was distributed with EB 99-089, but is reproduced here for convenience.

"740-03 PAINTING GALVANIZED SURFACES

Scope. This specification covers the procedures required for painting galvanized surfaces.

Painting. Unless noted otherwise in the Contract Documents all visible portions, after erection, of the galvanized system shall be painted with one coat of finish paint in accordance with the following:

- a. Color shall be in accordance with the Contract Documents or as ordered by the Engineer. For a "rustic" appearance, if no color is mentioned in the Contract Documents, the color of the finish coat shall be Weathered Brown and conform to Federal Color Standard No. 595a, Color 20059.
- b. Paint shall be one of the products on the Department's Approved List titled "Moisture-Curing Urethane Paint Systems, C. Finish Paint". Acceptance shall be based on the appearance of the paint on the Approved List.
- c. All galvanized surfaces to be painted shall first be cleaned of oil, grease and similar contaminants by hand wiping with solvent in accordance with SS PC-SP1, solvent cleaning.
- d. After solvent cleaning, all galvanized surfaces to be painted shall be lightly abraded by brush blast methods in accordance with ASTM D2092-95 Method G - Abrasive Blast Cleaning or an approved equal as approved by the Engineer. The purpose of the abrasive blasting is to roughen the surface, not to remove material.
- e. Paint shall be applied using brushes or rollers in accordance with the Manufacturer's instructions to a minimum dry film thickness as given in the approved list. Manufacturer's instructions for mixing and paint application shall be supplied to the Engineer at least one week prior to the beginning of any painting work."

**BOX BEAM END ASSEMBLY, TYPE III
AND
BOX BEAM MEDIAN BARRIER END ASSEMBLY, TYPE C**
(For contracts that do not contain Addenda No.2)

Make the following changes to the Standard Specifications of January 2, 1995:

Page 7-112, line 20. Replace this line with the following:

"710-24 Box Beam End Assembly Type III and Box Beam Median Barrier End Assembly, Type C

SCOPE. These specifications cover the material and quality requirements for Box Beam End Assembly Type III and Box Beam Median Barrier End Assembly, Type C. When specified, these end assemblies are used to terminate the ends of box beam guide rails and box beam median barriers. Box Beam End Assemblies Type III and Box Beam Median Barrier End Assembly, Type C are fabricated in accordance with these specifications, the manufacturer's instructions, and the approved Materials Details.

MATERIALS REQUIREMENTS. Materials used in the fabrication of the Box Beam End Assemblies Type III and Box Beam Median Barrier End Assembly, Type C shall conform with the following requirements:

Foundation Tubes, Nose Assembly, Outer Tube, Telescoping Section and Intermediate Spacer Block	ASTM A500, Gr. B
Wood and Timber Posts and Timber Blockouts	§710-13
Fasteners, except shear bolts on posts 6, 7, & 8	ASTM A307
Shear bolts on posts 6, 7, & 8	SAE Grade 0
Rubber Pad	Hard Rubber Division II Sect 18.2
Steel Posts, Shelf Angles, and other metal parts	ASTM A36M
Galvanized Coatings and Repair Methods	§719-01

The Cable Assembly shall consist of galvanized steel cable, 6 X 19 mm, with 19 mm threaded rod swaged to both ends.

The composite tube shall be MMFG Extren series 500 pulltruded fiberglass structural tubes and shall exhibit the following properties:

1. Tube shall be manufactured using the pulltrusion process. Tubing shall be manufactured of glass fiber reinforced resin with a glass resin ratio of 50%. The resin shall be isophthallic polyester. Glass reinforcement shall include the following three varieties:
 - A. Surface mat shall be used on all exterior surfaces.
 - B. Continuous glass strand rovings shall be used internally.
 - C. Continuous strand mats shall be used internally
2. The composite material shall exhibit the following minimum mechanical properties:
 - A. Ultimate Tensile Strength: Ultimate Tensile strength shall be longitudinally 207 000 kPa and transversely 48 300 kPa measured from coupons. Bending strength of the full section shall be 138 000 kPa.
 - B. Ultimate Compressive Strength shall be as given above except Transversely shall be 105 500 kPa.
 - C. Ultimate Shear Strength shall be 31 050 kPa.
 - D. Modulus of Elasticity shall be 17 300 000 kPa
 - E. Barcol Hardness shall be 50.
3. The energy dissipation properties of the alternate fiberglass epoxy composite tube shall

**BOX BEAM END ASSEMBLY, TYPE III
AND
BOX BEAM MEDIAN BARRIER END ASSEMBLY, TYPE C**
(For contracts that do not contain Addenda No.2)

be evaluated using static compressive testing. Each test specimen shall be 610 mm long with a 102 mm long tulip shape cut into one end of the test specimen. The test specimen shall be crushed statically at a rate of 50 mm per minute and the total crush length shall be not less than 305 mm. A minimum of three static compressive tests shall be conducted. The results of each test shall meet the following static energy dissipation properties:

First Stage Energy Absorber

Average Crush Force	80 kN $\pm$ 9kN
Maximum Compressive Force	115 kN
Allowable Compressive Force Variation	$\pm$ 11 kN

Second Stage Energy Absorber

Average Crush Force,	182 $\pm$ 13 kN
Maximum Compressive Force	245 kN
Allowable Compressive Force Variation	$\pm$ 22.3 kN

The materials and construction requirements of Box Beam End Assemblies, Type III (Rustic) and Box Beam Median Barrier End Assembly, Type C (Rustic) shall be the same as Box Beam End Assemblies, Type III and Box Beam Median Barrier End Assembly, Type C except exposed galvanized metal surfaces shall be painted, after erection, in accordance with §740-03 Painting Galvanized Surfaces.

BASIS OF ACCEPTANCE. Box Beam End Assembly Type III and Box Beam Median Barrier End Assembly, Type C will be accepted at the site of the work by the Engineer on the basis of the manufacturer's name appearing on the approved list, conformance of the delivered articles with the approved Materials Details, and upon the manufacturer's certificate of compliance with these specifications. The supplier shall provide two copies of the approved Materials Details through the Contractor to the Engineer as part of the evidence of acceptability for the material at least ten days prior to the use of the product.

"740-03 PAINTING GALVANIZED SURFACES

Scope. This specification covers the procedures required for painting galvanized surfaces.

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- a. Color shall be in accordance with the Contract Documents or as ordered by the Engineer. For a "rustic" appearance, if no color is mentioned in the Contract Documents, the color of the finish coat shall be Weathered Brown and conform to Federal Color Standard No. 595a, Color 20059.
- b. Paint shall be one of the products on the Department's Approved List titled "Moisture-Curing Urethane Paint Systems, C. Finish Paint". Acceptance shall be based on the appearance of the paint on the Approved List.
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- d. After solvent cleaning, all galvanized surfaces to be painted shall be lightly abraded by brush blast methods in accordance with ASTM D2092-95 Method G - Abrasive Blast Cleaning or an approved equal as approved by the Engineer. The purpose of the abrasive blasting is to roughen the surface, not to remove material.
- e. Paint shall be applied using brushes or rollers in accordance with the Manufacturer's instructions to a minimum dry film thickness as given in the approved list. Manufacturer's instructions for mixing and paint application shall be supplied to the Engineer at least one week prior to the beginning of any painting work."