

<p>TO:</p> <p>MAIN OFFICE REGIONAL OFFICE</p> <p>SUPERSEDED BY EI 81-029 EFFECTIVE 10/1/1981</p>	<p style="text-align: center;">ENGINEERING INSTRUCTION</p> <p style="text-align: center;">NEW YORK STATE DEPARTMENT OF TRANSPORTATION</p> <p>SUBJECT: BDD SHEET 78-44 "PROTECTIVE SCREENING ON NEW OR EXISTING STEEL RAILING" AND ITEM NO. <u>15607.0610</u>.</p> <p>Subject Code: 7.35</p>
<p>Distribution:</p> <p><input checked="" type="checkbox"/> Main Office <input checked="" type="checkbox"/> Regions <input type="checkbox"/> Special</p> <p>APPROVED: <u>J. V. Laurigan</u></p>	<p>Code: <u>EI 78-42</u></p> <p>Date: <u>July 25, 1978</u></p> <p>Supersedes: <u>BDD 77-44</u></p>

Attached are the following:

1. Specification Item No. 15607.0610 - "Protective Screening For Bridges (Steel Chain Link Fence - Aluminum Coated)".
2. Revised BDD Sheet 78-44 - "Protective Screening On New Or Existing Steel Railing".

The revised details on BDD Sheet 78-44 and the Specification Item No. 15607.0610 shall be used as guidelines wherever fencing is added to bridge railings. The details may have to be modified for installations on railing types not shown. If assistance is needed in preparing details for railing types not shown, contact the Special Design Unit of the Structures Subdivision.

The "Design Criteria For Bridges 77-1", distributed by EI 77-39, is not affected by this Engineering Instruction.

ITEM NO. 15607.0610 - PROTECTIVE SCREENING FOR BRIDGES
(STEEL CHAIN LINK FENCE-ALUMINUM COATED)

DESCRIPTION:

The work shall consist of furnishing and installing protective screening, including all hardware and construction systems necessary to complete the work. Protective screening shall be installed at the locations indicated on the Contract Plans.

MATERIALS:

Materials used for this work shall conform to the following requirements:

<u>PART</u>	<u>REQUIREMENTS</u>
Steel Fence Fabric (Aluminum Coated)	710-04
Posts, Rails, Braces, and Fittings	710-10.01 (See Below)
Angles and Plates	ASTM A36
U-Bolts	ASTM A307
Nuts and Bolts	ASTM A307
Pipe Supports	ASTM A53

The materials used for the posts, rails, and braces, shall conform to to Subsection 710-10.01, or the following:

Class B Steel Tubing. Posts, rails, and braces shall be manufactured by cold-rolling and electric-resistance welding of steel strip conforming to ASTM A569 or ASTM A607. All tubing shall be given corrosion protection by in-line application of hot-dip galvanizing, followed by a chromate conversion coating and an electrostatically sprayed thermoplastic acrylic coating on the outside surface. The inside surface shall be given corrosion protection by in-line application of a zinc-rich paint after fabrication.

The protective coatings shall conform to the following requirements:

External Surfaces.

- A. Hot-Dip. The external surface shall be hot-dip galvanized with "Special High Grade" or "High Grade" slab zinc conforming to ASTM B6. The weight of the coating shall not be less than 0.8 oz. per square foot.
- B. Chromate Conversion Coating. The chromate conversion coating shall specifically be designed for use as a pretreatment of galvanized surfaces. The coating shall be applied prior to the application of the thermoplastic acrylic coating at the Manufacturer's recommended rate.
- C. Thermoplastic Acrylic Coating. The thermoplastic acrylic coating shall be electrostatically applied with a minimum dry film thickness of 0.3 Mils.

Internal Surfaces. The internal surfaces of the steel tubing shall be coated with a zinc-rich coating and shall have a minimum dry film thickness of 0.3 Mils. The zinc-rich coating shall contain not less than 80% zinc dust, by weight, and shall be capable of providing galvanic protection.

MATERIALS: (CONTD)

All material, except fence fabric, shall be galvanized, Unless otherwise specified, galvanizing shall be in accordance with the requirements of Subsection 719-01, type as applicable.

Standard-formed steel posts and rails shall be fabricated from steel having a minimum yield strength of 35 ksi, and a minimum of 12 percent elongation for a 2-inch gauge length.

All edges of the fence fabric shall be "knuckled" (wire ends bent back upon themselves to eliminate sharp wire ends).

Unless otherwise noted on the plans:

1. Posts shall be a nominal 2½" size (2.875" O.D.). Minimum weight per foot shall be 5.79 lbs. for Schedule 40 Pipe and 4.64 lbs. for Class B Steel Tubing.
2. Top and Bottom rails shall be a nominal 1½" size (1.66" O.D.). Minimum weight per foot shall be 2.27 lbs. for Schedule 40 Pipe and 1.83 lbs. for Class B Steel Tubing.
3. Pipe supports shall be 1½" nominal size Schedule 80 Pipe.

CONSTRUCTION DETAILS:

Fence fabric shall be firmly attached to the posts, rails, and braces. All wire shall be stretched taut and be installed to the required elevations.

The posts shall be fastened to the structure in accordance with the details indicated on the Contract Plans. Posts shall be set parallel to the bridge railing posts.

All the top rails shall pass through the base of the post caps and shall form a continuous brace from end-to-end of each stretch of fence fabric. Top rail lengths shall be joined with sleeve couplings. At expansion joints of the structure, expansion sleeves shall be used. Top rails shall be securely fastened to terminal posts by means of rail end connectors approved by the Engineer. Horizontal braces shall be provided at all terminal posts, midway between the top and bottom rails, and shall extend from the terminal post to the first adjacent intermediate post. Braces shall be securely fastened to the intermediate posts by brace ends and brace bands. Braces shall be securely fastened to the terminal posts by rail end connectors, approved by the Engineer. Braces shall be made from the same material as the top and bottom rails.

All welding shall meet the requirements of Section 203, Welding, of the New York State Steel Construction Manual.

Field welding shall be allowed only where indicated on the Contract Plans or where ordered by the Engineer.

CONSTRUCTION DETAILS: (CONTD)

All finished surfaces of welds, and surfaces from which the galvanizing has been removed, shall be repaired in accordance with the requirements of Subsection 719-01. Any galvanizing repair shall be done at the Contractor's expense.

Unless otherwise noted on the plans:

1. The fabric shall be securely fastened to all terminal posts by 1/4" x 3/4" tension bars with 11 gauge pressed steel bands spaced approximately 14 inches apart.
2. Fabric shall be attached to top and bottom rails with 6 gauge tie wires at 2-foot centers.
3. The fabric shall be securely fastened to all vertical posts by 6 gauge aluminum ties at 12" centers.
4. If a tension wire is required by the Contract Documents, the fabric shall be attached to it with 6 gauge aluminum ties.

METHOD OF MEASUREMENT:

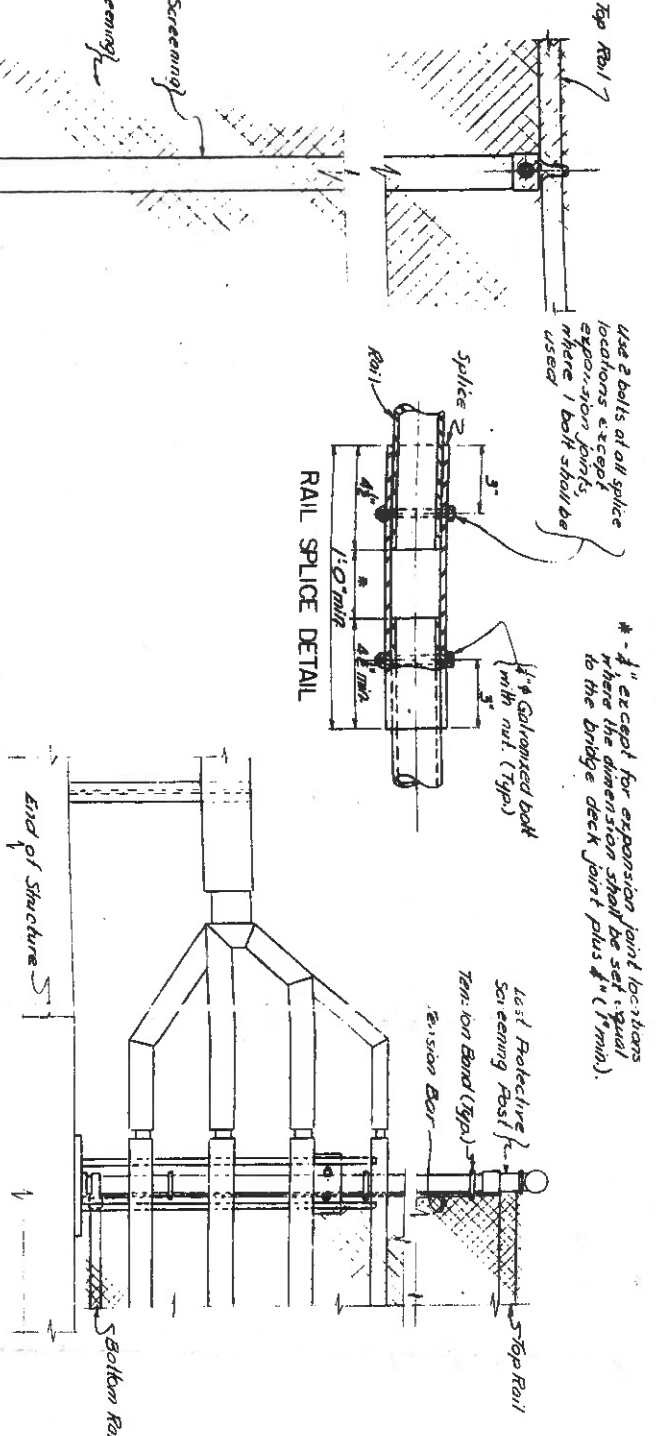
Measurement will be taken as the number of linear feet of protective screening installed.

Measurement will be taken along the bottom of the bottom rail, center-to-center of terminal posts.

BASIS OF PAYMENT:

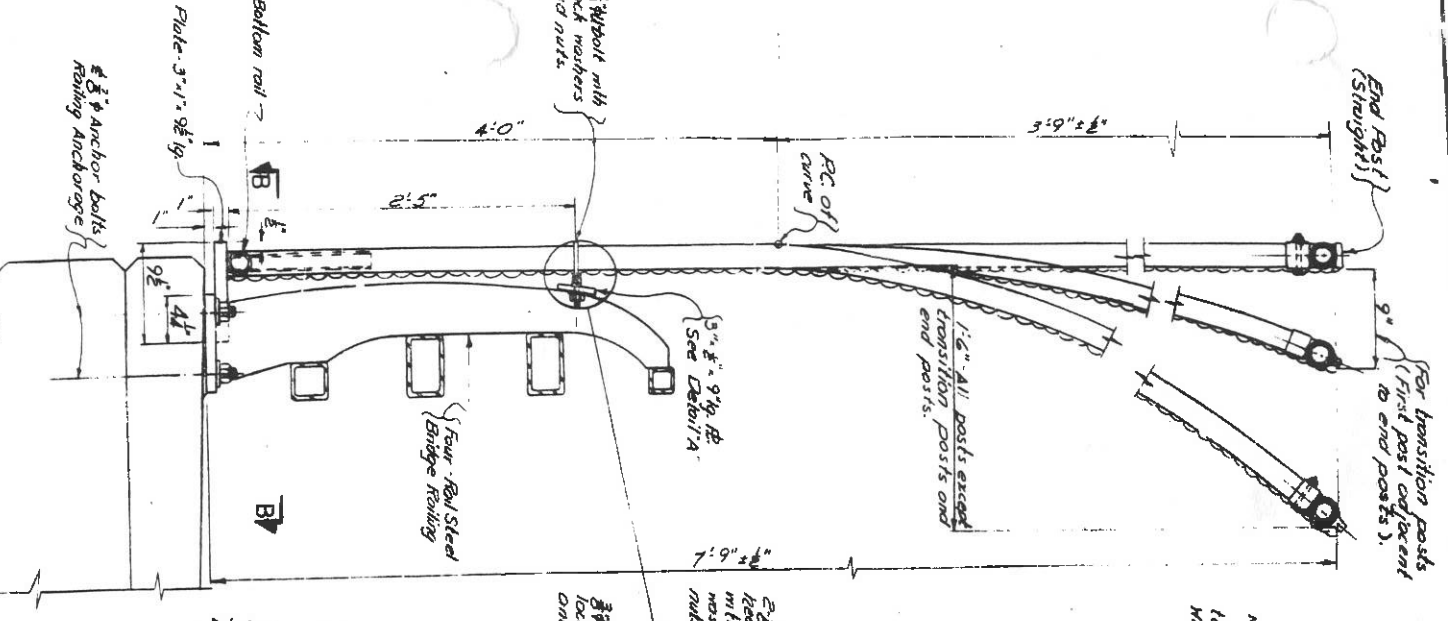
The unit price bid per linear foot shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work.

Note: If wire mesh sqgs. due to curvatures, use tension wire A.O.B.E.

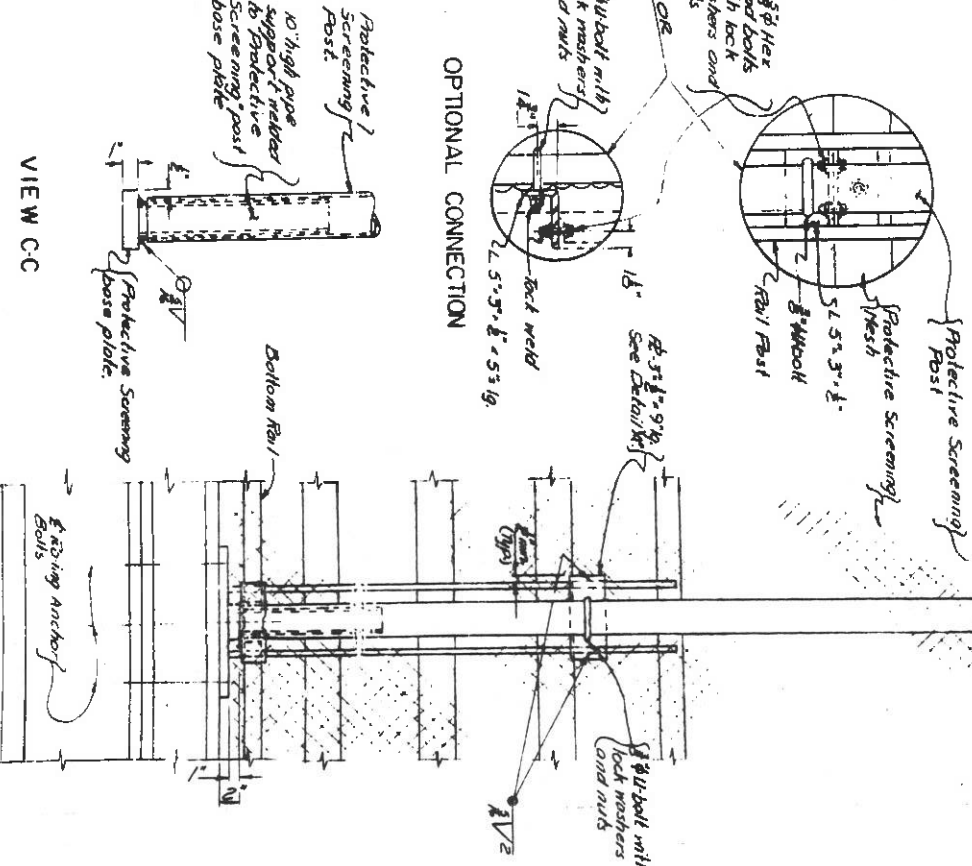


TYPICAL ELEVATION-CHAIN LINK PROTECTIVE SCREENING END

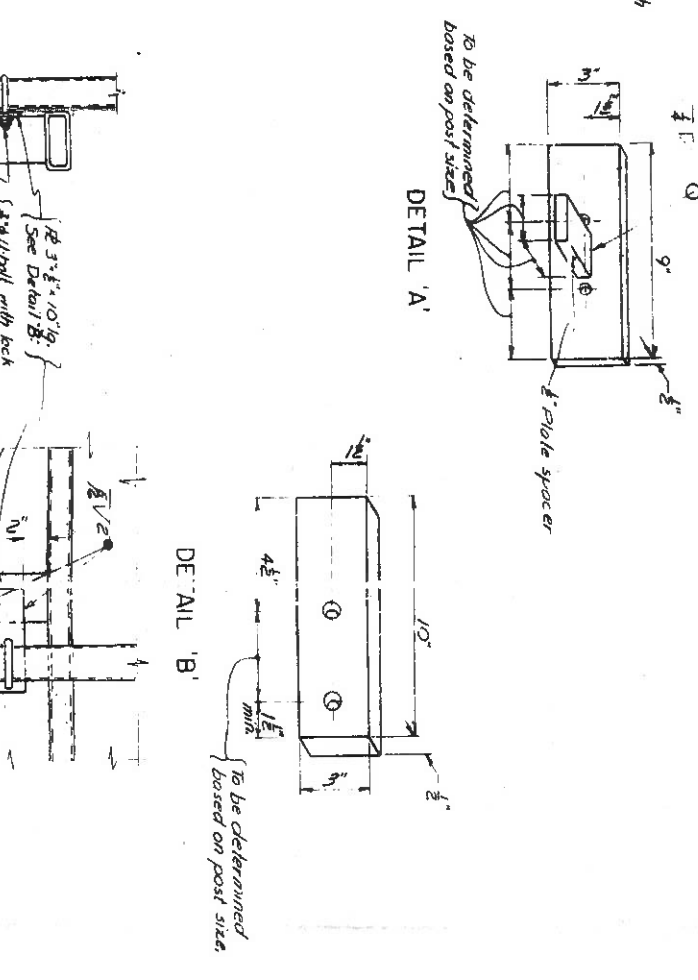
Notes:
 No weld shall start or stop within 1/2" of the edge of any plate.
 The similar details for installation on rollings other than those shown on this sheet, if there are further problems, contact the D.C.E.(S).
 The Protective Screening Posts shall be placed on the railing posts so that the spacing of the Protective Screening Posts do not exceed a 10'-0". Spacing shall be as nearly uniform as possible. There shall always be a Protective Screening Post at the first and last railing post, regardless of the Protective Screening Post spacing on the bridge.



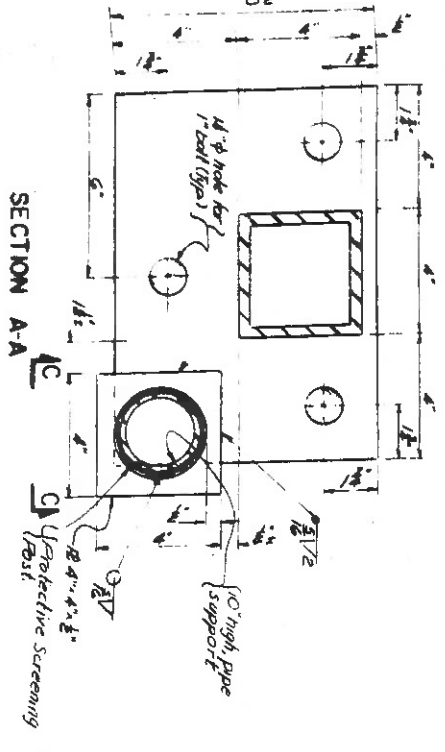
EXAMPLE OF INSTALLATION ON A 4-RAIL STEEL RAILING



OPTIONAL CONNECTION

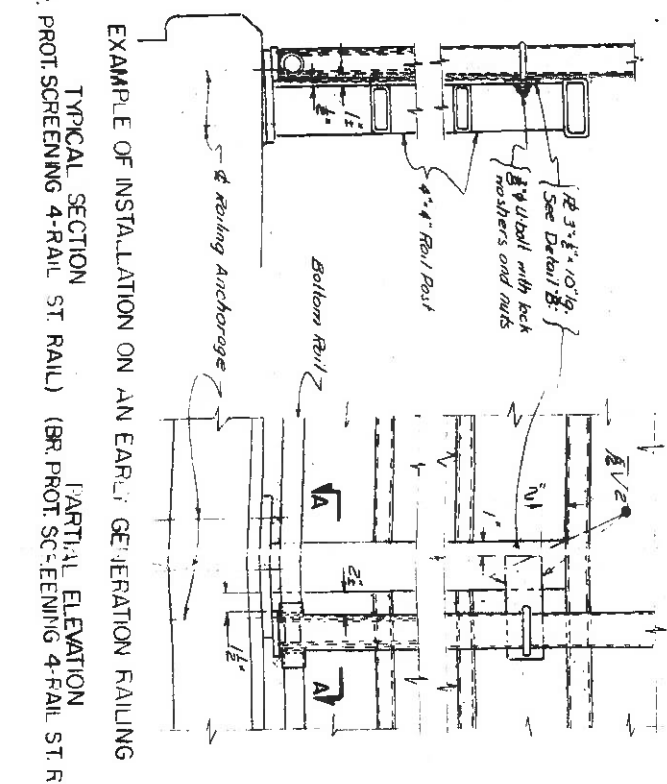


PARTIAL ELEVATION (BR. PROT. SCREENING 4-RAIL ST. RAIL)



SECTION A-A

SECTION B-B



EXAMPLE OF INSTALLATION ON AN EARLY GENERATION RAILING

TYPICAL SECTION (BR. PROT. SCREENING 4-RAIL ST. RAIL)

APPROVED
 1/24/78
 State of New York
 Department of Transportation
 Division of Design and Construction

STATE OF NEW YORK
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF DESIGN AND CONSTRUCTION

PROTECTIVE SCREENING ON
 NEW OR EXISTING STEEL RAILING

DATE ISSUED: _____ OF _____
 DRAWING NO. _____
 SHEET NO. _____

PDD78-44