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ENGINEERING INSTRUCTION

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

SUBJECT: BRIDGE DESIGN MANUAL
DESIGN CRITERIA FOR BRIDGES
G4S GUIDE RAIL ATTACHMENTS TO BRIDGE RAILING

Subject Code: 7.35-4 and 7.35-6

Distribution: [31] Main Office [33] Regions [34] Special

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Supersedes:
SEE NOTE:

The attached BDD Sheets and Specification were developed to standardize W-beam attachments to bridge railing and are for use only when there is a strong post (W6 x 9) guide rail system on the approach. A transition from weak post (S3 x 5.7) to strong post is not permissible.

Attachments made to other types of bridge railing conforming to AASHTO (other than what is shown on the BDD Sheets) are permissible provided the mounting height, connection, and rigidity are similar. When preparing details for conditions not covered by the BDD Sheets, contact the Special Design Unit of the Structures Division for assistance.

The attachments are:

1. BDD Sheet 82-45 - "Details for Mounting G4S Guide Rail On Existing Two-Rail Steel Bridge Railing".

2. BDD Sheet 82-46 - "Details For Mounting G4S Guide Rail On Existing Three-Rail Steel Bridge Railing And Pylons".

3. BDD Sheet 82-47 - "Details For Mounting G4S Guide Rail On Existing Four-Rail Steel Bridge Railing".

4. A revision to Section 587 of the New York State Department of Transportation's Standard Specifications which establishes specifications for the work covered by the above BDD Sheets.

NOTE: Copies of this Engineering Instruction were inadvertently distributed without an E.I. Number, with a date of "July , 1982"; those copies of this Engineering Instruction are superseded by this issuance.

Attachments

SECTION 587-BRIDGE RAILING RECONSTRUCTION

Make the following changes to Section 587:

Page 5-114, Under 587-1, Add the following:

E. The furnishing and installing of a corrugated beam guide railing transition assembly. This assembly is composed of heavier-than-normal guide rail posts, offset beams, stiffening channels, corrugated beam guide railing, fasteners and other materials, all combined in such a manner that there is a smooth, unbroken, straight transition between the highway corrugated beam guide railing and the existing bridge railing, or barrier.

For purposes of this Section, the assembly will be referred to as Corrugated Beam Transition Assembly.

Corrugated beam transition assemblies may be attached to steel bridge railing, concrete parapets, or concrete safety shapes.

Page 5-114, Under 587-2, Add the following:

587-2.03, Corrugated Beam Transition Assembly. All corrugated beam material shall conform to the requirements of Subsection 710-20, "Corrugated Beam Guide Railing And Mall Barrier". All remaining materials shall conform to the requirements of Subsection 710-23, "Steel Bridge And Culvert Railing", except that:

1) Offset beams and stiffening channels shall conform to ASTM A-36.

2) All bolts, nuts, and washers shall conform to ASTM A-307.

3) All components shall be galvanized in accordance with the requirements of Subsection 719-01. If required by the Contract Plans, the components shall be painted to match the existing railing. Painting shall be done in accordance with Subsections 740-01 and 740-03, except that:

   A. Painting with rollers will not be permitted.

   B. Spray painting will be allowed only if the components are painted at a location away from the work site, acceptable to the Engineer.

4) Shop drawings will not be required. Approval of the system shall be made by the Engineer.

Page 5-115, Under 587-3, Add the following:

587-3.05, Corrugated Beam Transition Assembly. Posts, railing, end assemblies, and rail transitions shall be erected in the position and manner indicated on the Contract Plans. Installation shall be done by methods acceptable to the Engineer.

Posts shall be driven, unless otherwise specified by the Engineer. The driving shall be accomplished with approved equipment and methods that will leave the posts in their final position, free of any distortion, burring, or other damage. When posts are driven through asphalt concrete, or a bituminous-treated material, the Contractor shall take care to prevent damage to the paved or treated areas. Large holes and voids caused by driving the posts shall be filled and compacted with a bituminous-treated material, or asphalt concrete similar to that damaged. The small area adjacent to the post disturbed during installation, or where gaps exist at the post after pavement repairs, shall be sealed with a bituminous material approved by the Engineer. When anchoring devices are required for assembly installations, they shall be grouted with 721-03; Epoxy Polysulfide Grout, or 701-05; Concrete Grouting Material.

As an alternate to driving posts on unpaved surfaces, and where site conditions are such that driving is not possible, the Contractor shall carefully excavate for all post holes. Post holes and post foundation structures shall be back-filled and backfilled material compacted in accordance with § 203-3.15, Fill And Backfill At Structures, Culverts, Pipes, Conduits, And Direct Burial Cables.

On structures and paved surfaces, base plates for posts shall be anchored as shown on the plans.

If the work of assembly installation abuts the work of shoulder stabilization, the two operations shall be coordinated such that there is little, or no, interference between them.

All posts shall be aligned to a tolerance of 1/4 inch for plumb and grade line.

Inspection Of Railing - Immediately prior to erection, the railing shall be inspected for damage. Bends or kinks in the railing, not specifically required by the Contract Documents, shall constitute sufficient cause for rejection. Straightening of such bends or kinks shall not be allowed.

Bending or curving railing panels or rails, in order to fit alignment requirements, in the field, shall not be permitted. The Engineer may order some bending or curving to allow for necessary minor adjustments.

Inspection Of Galvanizing - Damage to galvanizing shall constitute sufficient cause for rejection, except for the following conditions:

1) If the damaged area is not required to be repaired under the provisions of § 710-23, Steel Bridge And Culvert Railing.

2) If the total damaged area of a complete railing panel is less than two percent of the total surface area, or sixteen square inches, whichever is less.

3) If the total damaged area of a single piece (i.e. - post or rail) is six square inches, or less.

Total damaged area, as defined under 2., above, and 3., above, is exclusive of the damaged area, as described under 1., above.

Field Galvanizing For Repair - Field galvanizing repair shall be allowed to be performed upon damaged areas meeting the requirements of 2. and 3., above. Field galvanizing repair shall be made by painting zinc repair material onto the damaged area in accordance with the requirements of § 719-01, Galvanized Coatings And Repair Methods.

All finished surfaces of welds and adjacent surfaces or rails and posts upon which galvanizing has been removed, due to any field welding operation, shall be field galvanized.

Any railing panel with a total damaged area in excess of the amount specified or any single piece with a total damaged area in excess of the amount specified shall be rejected and replaced.

Field Welding - Field welding shall not be permitted unless noted in the Contract Documents.

Erection - All railing shall be installed in accordance with the Contract Plans.

Positioning Railing - Railing shall be erected so that the rails are parallel to the roadway, except in those sections where it is necessary to vertically transition the highway barrier to the bridge railing, or barrier.

Inspection - All erection shall be subject to the inspection of the Engineer who shall be given all facilities required for a visual inspection of workmanship and materials.

The Contractor shall exercise care in attaching the guide rail to the bridge rail so as not to damage the rails, posts, joints, or splices. Any damage to the material attributable to the Contractor's operation shall require that the material be repaired, or replaced. The decision to repair, or replace, shall rest solely with the Engineer.

Page 5-115, Under 587-4, Add the following:

Payment for the Corrugated Beam Transition Assembly will be made on the number of linear feet installed. Measurement will be taken along the topmost edge of the Corrugated Beam Guide Rail. Measurement will be taken between the pay limits indicated on the Contract Plans, or established, in writing, by the Engineer.

Page 5-116, Under 587-5, Add the following:

587-5.02, Corrugated Beam Transition Assembly. The unit price bid shall include the cost of all labor, materials, and equipment necessary to properly complete the work.

ITEM NO.	ITEM	PAY UNIT
587.2001	Corrugated Beam Transition Assembly-Two-Rail Steel Bridge Railing	L.F.
587.2002	Corrugated Beam Transition Assembly-Four-Rail Steel Bridge Railing	L.F.
587.2003	Corrugated Beam Transition Assembly-Discontinuous Steel Bridge Railing	L.F.
587.2004	Corrugated Beam Transition Assembly-Concrete Parapets Or Safety Shapes	L.F.