

Design Standards Letter

Letter Number: **G-1992-18**

Letter Date: **10/14/1992**

Effective Date: **10/14/1992**

Section/Plan No.: **None**

Subject: **Crashworthy Guard Rail Terminals**

Body

Attached are copies of special provisions allowing the use of the ET-2000 end terminal, manufactured by the Syro Steel Company, or the SENTRE end terminal, manufactured by Energy Absorption Products, as equal alternates where it is necessary to use a special end terminal on Type A guard rail.

It is our intent that these special provisions be inserted in contracts where it is believed that a crashworthy end terminal is needed and where it is not feasible to use the standard Breakaway Cable Terminal (BCT).

Using these special provisions whereby the two terminals can be bid as equal alternates, allowing the contractor to select the most economical, will eliminate the necessity for classifying the terminals as experimental and submitting work plans for these items.

The ET-2000 is 50' long with a length of need starting at Post No. 3 while the SENTRE is 17' long with the length of need starting at Post No. 6 resulting in a difference of 37.5' in length of Type A rail required. This is illustrated on the attached sketches. The design should be based on the use of the SENTRE, and if the contractor elects to use the ET-2000, the length of Type A guard rail to which the terminal is attached shall be reduced by 37.5'. This will satisfy the minimum required length of need for the particular installation.

Please advise if you have questions concerning the above.

dd/pr

Press PF1 to view the Special Provision

CRASHWORTHY GUARD RAIL TERMINAL

1.0 Description: This item provides for the furnishing and installation of crashworthy guard rail end terminals as shown on the plans or directed by the engineer.

2.0 Materials and Design: Only new materials shall be used in the fabrication of the terminals. The major items of the installations shall be the best standard products of a manufacturer regularly engaged in the production of this type of end terminal and shall be of the manufacturer's latest approved design. After installation, the end terminal shall redirect traffic face side vehicle impacts within the prescribed "Performance" crash test criteria ranges.

3.0 Performance: The assembled unit shall be capable of developing full tensile strength of the standard rail system and also have redirection and end-on capabilities as per criteria identified in National Cooperative Research Report 230 and supplements thereto. The assembled unit shall contain or permit controlled penetration of the vehicle into the system in an acceptable manner for vehicles in the 1,800 to 4,500-pound classes.

4.0 Constuction: The end terminals shall be fabricated and installed in accordance with the manufacturer's approved shop drawings, recommendations and the details shown in the plans. Any end terminals damaged during the term of the contract shall be replaced immediately at the contractor's expense.

5.0 Acceptance: The contractor shall furnish a manufacturer's certification that the units furnished are identical in materials and design to those tested for performance in accordance with Sec 3.0 of this specification. Shop drawings shall also be submitted for approval prior to the fabrication and installation of any units.

5.1 The units listed below have met the performance criteria and may be used, provided satisfactory results are obtained in the field.

UNIT MANUFACTURER

ET-2000 Syro Steel Company

Girard, Ohio 44420

SENTRÉ Energy Absorption Products

One East Wacker Drive

Chicago, Illinois 60601

5.2 Approval of other units may be requested by submitting the required information to the engineer. Acceptance shall be based upon proof of equivalent crash test results as described under Sec 3.0 of this special provision. .

6.0 Method of Measurement: Measurement for the guard rail end terminal will be made by each unit assembled, installed and complete in place.

6.0 Basis of Payment: The work performed and the materials furnished under this item will be paid for at the contract unit price for each of the items included in the contract.

GUARD RAIL

If the contractor elects to use the ET-2000 crashworthy end terminal the length of type A guard rail to which the end terminal is attached shall be reduced by 37.5 feet.