**Revision of Section 606**

**Tensioned Cable Barrier (TL-4)**

**Revise Section 606 of the Standard Specifications for this project to include the following:**

# Description

This work consists of the installation of Tensioned Cable Barrier at locations shown on the plans.

# Materials

The tensioned cable barrier system shall meet NCHRP Report 350 (only applicable for those systems developed before 2011) or MASH (acceptable for all systems), Test Level 4 (TL-4), and shall be one of the following:

(1) Brifen Wire Rope Safety Fence (Brifen WRSF) supplied by Brifen USA Inc., 12501 N. Sante Fe Ave., Oklahoma City, OK 73114, Phone: (405) 751-8062, Fax: (405) 751-8338.

(2) Trinity Cable Safety System (Trinity CASS) supplied by Trinity Industries, Inc., 2525 Stemmons Freeway, Dallas, TX 75207, Phone: (800) 772-7976, Fax: (801) 292-9138.

(3) Safence Cable Barrier System (Safence) supplied by Gregory Industries, 4100 13th St., SW, Canton, Ohio, 44710, Phone 330-477-4800, Fax: 330-477-0626.

(4) Gibraltar Cable Barrier Systems (Gibraltar) supplied by Gibraltar Cable Barrier Systems, L.P.

4303 Innovation Loop, Marble Falls, TX, 78654, Phone 800-495-8957, Fax: 830-798-5445

The system shall have four cables. The cable shall be pre-stretched during manufacture per the manufacturer’s specifications.

All posts shall be socketed posts. Concrete for posts and anchorages shall be Class B. End Anchorages (Tensioned Cable Barrier) shall meet NCHRP 350 (only applicable for end anchorages developed before 2011) or MASH (acceptable for all end anchorages), TL-3.

# Construction Requirements

Tensioned Cable Barrier shall be installed per the details shown on the plans and per manufacturer’s recommendations. The post spacing for the system used shall be no greater than that tested per NCHRP 350 or MASH (per test utilized) for an impact deflection not to exceed nine feet and must be approved by the FHWA. The maximum post spacing shall be 20 feet.

The Contractor shall arrange for a qualified representative from the cable barrier manufacturer to be on site for the following:

1. The Contractor shall be adequately trained by the manufacturer’s representative to ensure proper installation of the Cable Barrier.
2. The Manufacturer’s representative shall check installation and tensioning after completion.

The Contractor shall obtain documentation from the manufacturer confirming the most recent detailed drawings are provided for the materials to be installed, and that these materials conform to the requirements of the NCHRP 350 or MASH (per test utilized). Three weeks before start of work, the Contractor shall submit three copies of the submittal drawings and specifications to the Engineer. Work shall not begin until approval of these drawings has been received from the Engineer.

Installation of the cable barrier shall be performed in the presence of the Engineer and a qualified representative of the manufacturer.

The Contractor shall obtain a signed statement from the manufacturer’s representative confirming that the cable barrier has been installed correctly and is operational.

Sections of wire cable shall be connected using turnbuckles, with thread connector swaged on the cable. Concrete foundations for end anchorages and line posts shall be constructed with appropriate rebar based on the size of the foundations. The Contractor shall conduct a soil survey based on at least one test boring every mile and at anchor sites to identify the soil type, classification, and load bearing capacity. The Contractor shall submit the results of the soil survey to the manufacturer so that adjustments can be made to the size or type of footing used. A copy of this survey shall also be submitted to the Engineer for the project records.

The minimum concrete post footing size shall be 14 inches in diameter and 3 feet in depth.

The minimum concrete anchor footing shape may vary according to the manufacturer’s recommendations but shall contain at least two cubic yards of concrete per anchor for systems with a single anchor for all cables. For systems having a separate anchor for each cable the footing shall contain at least one half cubic yard of concrete.

The Contractor shall install larger post and anchor footings than the minimum when soil conditions warrant. All size footings shall be constructed using Concrete Class B.

The Contractor shall maintain the cable barrier until CDOT Final Acceptance upon project completion. Cable barrier tensioning shall be checked within six weeks before project Final Acceptance.

# Method of Measurement

Tensioned Cable Barrier will be measured by the linear foot of barrier that is installed and accepted, excluding end anchorage.

End Anchorage (Tensioned Cable Barrier) will be measured by the actual number of anchorages that are installed and accepted. End Anchorage (Tensioned Cable Barrier) shall include concrete for standard foundation, cables, posts, and all necessary parts and fittings.

# Basis of Payment

The accepted quantities of tensioned cable barrier will be paid for at the contract unit price for each of the pay items listed.

| Pay Item | Pay Unit |
| --- | --- |
| Tensioned Cable Barrier (TL-4)  | Linear Foot |
| End Anchorage (Tensioned Cable Barrier) | Each |

Payment will be full compensation for all work and materials required to complete the Tensioned Cable Barrier and End Anchorage work.

Posts and post footings will not be measured and paid for separately but shall be included in the work.

Additional concrete and boring required for post and end anchorage footings required to be larger than the minimum specified in the Contract will be measured and paid for as Concrete Class (B) per Section 601. Additional reinforcing steel required will not be measured and paid for separately but shall be included in the work.

The soil survey will not be measured and paid for separately but shall be included in the work.

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**Instructions to Designers** (Delete instructions and symbols from final draft.):

Use of this special provision for cable barrier test level 4 is for locations where truck traffic is high or medians are narrow. Example locations are where truck ADT is over 3,000 vehicles per day or a median is less than 24 foot wide.

End Anchorages meeting TL-3 are the highest rated end terminal currently available and are acceptable for use on TL-4 Cable barrier installations.