



U.S. Department
of Transportation
**Federal Highway
Administration**

1200 New Jersey Avenue, SE.
Washington, DC 20590

January 8, 2008

In Reply Refer To: HSSD/B-137C

Mr. Bill Neusch
President
Gibraltar
320 Southland Road
Burnet, TX 78611

Dear Mr. Neusch:

Thank you for your letter of October 19, 2007, requesting a modification to the anchorage of your company's 4-cable barrier. Your original test level 4 (TL-4) Gibraltar cable barrier was formally accepted for use on the National Highway System (NHS) in the September 9, 2005, Federal Highway Administration (FHWA) acceptance letter B-137A. The tested design, as described in that letter, consisted of cables placed 20 inches, 30 inches, and 39 inches above the ground line.

In our October 27, 2006, letter B-137A1 we accepted your 4-cable design having the lower three cables at the same heights as your TL-3 design while retaining the top cable at the tested TL-4 height of 39 inches. The addition of the fourth cable required a modified "hairpin" and lock plate to retain the cables at the proper heights. In order to "anchor" the added cable you tapered that 25-inch high cable down to the bottom (20-inch) cable between the first line post and the last terminal post and connected the two cables with a series of four cable clamps. Because of concerns raised over this splicing treatment, especially on downstream terminals, you have proposed to anchor each of the four cables separately.

The modified anchor is shown on the enclosed drawings for reference and features the fourth cable attached directly to the anchor post foundation plate instead of being cable clamped to the bottom cable. You also added a fourth J-bolt to each terminal post to accommodate the fourth cable. We concur in this modification and find it acceptable for use with your four-cable barrier.

The modified Gibraltar Cable Barrier as described above remains a National Cooperative Highway Research Program (NCHRP) Report 350 TL-4 median barrier when the posts are set on alternate sides of the cables or a TL-4 roadside barrier when the cables are all on the traffic side of the C-posts.

Although the barrier performed well under ideal test impact conditions when originally crash tested, the likelihood of passenger car underrides of any cable system may increase as the post spacing increases, particularly when the barrier is installed on non-level or slightly irregular terrain and the cables are not restrained from lifting at each post. Consequently, some



transportation agencies have limited post spacing to approximately 6m (20 feet) for cable barriers. The dynamic deflection of the barrier is likely to increase when it is installed along the convex sides of horizontal curves, and when distances between anchorages exceed the 350-foot test length.

Please note the following standard provisions that apply to the FHWA letters of acceptance:

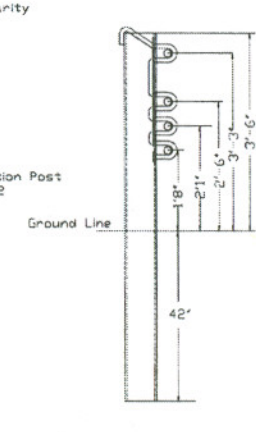
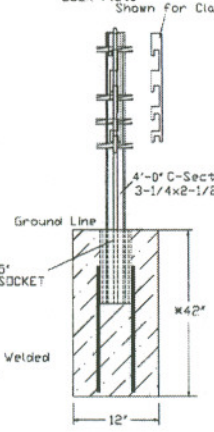
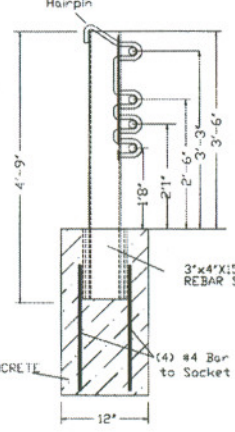
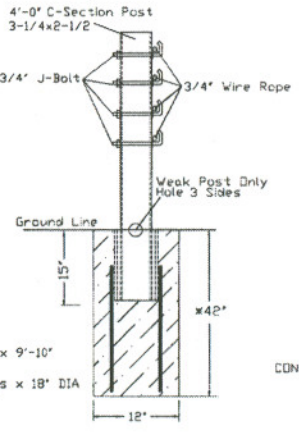
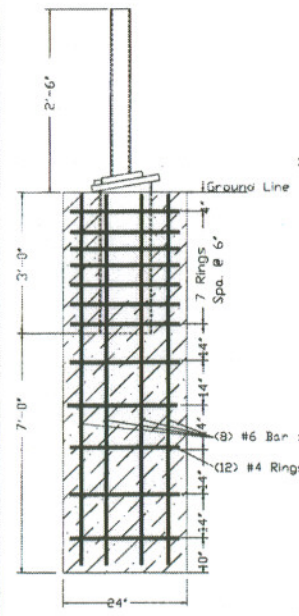
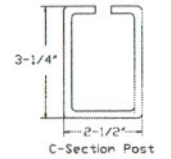
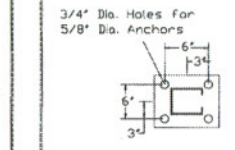
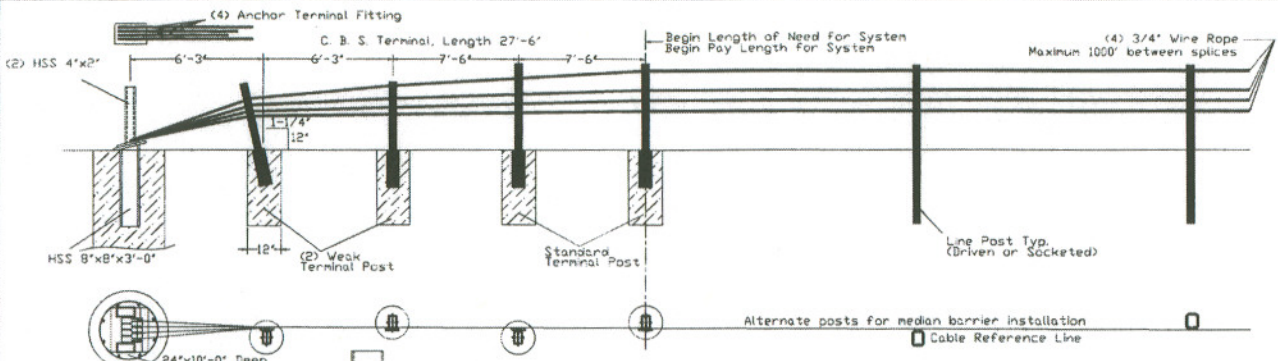
- This acceptance is limited to the crashworthiness characteristics of the device(s).
- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the device being marketed is significantly different from the version that was crash tested, it reserves the right to modify or revoke its acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that they will meet the crashworthiness requirements of the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number B-137C, shall not be reproduced except in full. This letter, and the test documentation upon which this letter is based, is public information. All such letters and documentation may be reviewed at our office upon request.
- The four-cable Gibraltar Cable Barrier System is a patented product and considered proprietary. If proprietary devices are specified by a highway agency for use on Federal-aid projects, except exempt, non-NHS projects, they: (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the existing highway facilities or that no equally suitable alternative exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411.
- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented device for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate device, and the FHWA is neither prepared nor required to become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.

Sincerely yours,



David A. Nicol, P.E.
Director, Office of Safety Design
Office of Safety

Enclosures



Terminal Post

Line Post (Socketed)

Line Post (Driven)

30"x12" Concrete Foundation with Min. 18" wide Mow Strip
42"x12" Deep w/o Mow Strip

GENERAL NOTES

- For additional information contact Gibraltar, Inc. at 1-800-495-8957, or see the manufacturer's product manual.
- All concrete shall be minimum 2500 PSI.
- Alternate Post for bi-directional traffic flow. If installed for traffic in one direction install cables on traffic side of posts.
- The Cable Barrier System shall be installed on shoulders or on medians with slopes of 6:1 or flatter. If installed on slopes steeper than 6:1 up to 4:1 the TL-4 system performs as a TL-3 and Gibraltar must be contacted for various guidelines related to placement.
- The Cable Barrier System is accepted by the FHWA Test Level - 4
- See the MUTCD for proper 'Barrier' delineation
- Rock Clause: Where solid rock is encountered:
 - For socketed post, continue digging 12" diameter, 15' deep into rock or the required plan depth, whichever comes first.
 - For driven post, core drill a 4" diameter hole 18" deep into rock or the required plan depth, whichever comes first.
 - For Anchor post, continue digging 24" diameter, 30' deep into rock or the required plan depth, whichever comes first.
- The Gibraltar cable barrier system shall be installed in NCHRP Report 350 standard compacted soil. Soil must be well drained.
- Every component to be galvanized.

Cable Tension	
-10F	8000
0	7600
10	7200
20	6800
30	6400
40	6000
50	5600
60	5200
70	4800
80	4400
90	4000
100	3600
110	3200

Allowable Deviation from Chart +/- 10%

Deflection	Post Spacing
9'3"	30.FT
9'	28.FT
8'	20.FT
7'	12.FT
6'8"	10.FT

GIBRALTAR
320 Southland Road
Burnet, Texas 78611
1-800-495-8957

Cable Barrier System
Patent Pending