

Refer to: HSA-10/SS-114

Mr. Darren Hesse
National Sales Manager
S-Square Tube Products
5495 East 69th Avenue
Commerce City, Colorado 80022

Dear Mr. Hesse:

Thank you for your July 12, 2002, letter to Mr. Nicholas Artimovich requesting Federal Highway Administration (FHWA) acceptance of your company's NEX Tube as a breakaway component of a crashworthy mailbox support for use on the National Highway System (NHS). Accompanying your letter were photographs of your proposed mailbox mounting systems. You requested that we find the NEX Tube Mailbox Support System acceptable for use on the National Highway System under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features." On October 12, 2002, you provided additional information on a redesigned support for accommodating multiple mailboxes.

Introduction

Pendulum and full-scale automobile testing of NEX Tube sign supports was completed in 1998, and was in compliance with the guidelines contained in the NCHRP Report 350, Recommended Procedures for the Safety Performance Evaluation of Highway Features. Requirements for breakaway supports are those in the American Association of State Highway and Transportation Officials' Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. Our Acceptance Letter, SS-81, found the NEX Tube sign supports acceptable for use on the NHS.

The NEX Tube mailboxes use the same deformed cross-section 14 gage steel pipe, formed into what might be called a "question mark" shape. The base of the support is inserted into a ground socket and secured with a wedge. Drawings of the supports are enclosed for reference.

Findings

The testing of the NEX Tube sign supports showed that the socket and wedge arrangement was a successful breakaway design, with vehicle velocity changes well below the desirable limit of 3 m/sec for single supports and approximately 3 m/s for a

dual post support. You asked that we compare your socket design to the V-Loc system, which has already been tested as a mailbox support. We concur with your assertion that the same technology will be effective as a single/double mailbox support. Therefore, the NEX Tube sign support will be acceptable for use as a single/double mailbox support using the socket and wedge design as shown in the enclosed drawings.

You also asked that we accept the NEX tube for use with multiple mailboxes using the “inverted coat hanger” arrangement. When the V-Loc system was tested with a multiple mailbox support (using 14 gage steel pipe in an “inverted coat hanger” arrangement) the occupant impact speeds were almost at the limit of acceptability. Because your design did not replicate the basic “closed loop” shape of the V-loc system, we were not as certain that five-box support using the NEX tube would meet the occupant impact velocity requirements. You have since redesigned your multiple mailbox support to replicate the “inverted coat hanger” arrangement, which we expect will perform in an acceptable manner.

The single/double mailbox support and the “inverted coat hanger” multiple mailbox support described above and shown in the enclosed drawings for reference are acceptable for use as Test Level 3 devices on the NHS under the range of conditions tested, when proposed by a State. The single box supports are considered crashworthy for conventional rural mailboxes weighing up to 5 pounds. The multiple box supports are considered crashworthy when boxes weighing up to 3.5 pounds each, are used.

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

- Our acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- 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 FHWA and NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number SS-114 shall not be reproduced except in full. As this letter and the supporting documentation which support it become public information, it will be available for inspection at our office by interested parties.
- The Nex Tube is a patented product and is considered "proprietary." The use of proprietary devices specified on Federal-aid projects, except exempt, non-NHS projects: (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 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, a copy of which is enclosed.

Sincerely yours,

Carol H. Jacoby, P.E.
Director, Office of Safety Design

Enclosure

Sec. 635.411 Material or product selection.

(a) Federal funds shall not participate, directly or indirectly, in payment for any premium or royalty on any patented or proprietary material, specification, or process specifically set forth in the plans and specifications for a project, unless:

(1) Such patented or proprietary item is purchased or obtained through competitive bidding with equally suitable unpatented items; or

(2) The State highway agency certifies either that such patented or proprietary item is essential for synchronization with existing highway facilities, or that no equally suitable alternate exists; or

(3) Such patented or proprietary item is used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes.

(b) When there is available for purchase more than one nonpatented, nonproprietary material, semifinished or finished article or product that will fulfill the requirements for an item of work of a project and these available materials or products are judged to be of satisfactory quality and equally acceptable on the basis of engineering analysis and the anticipated prices for the related item(s) of work are estimated to be approximately the same, the PS&E for the project shall either contain or include by reference the specifications for each such material or product that is considered acceptable for incorporation in the work. If the State highway agency wishes to substitute some other acceptable material or product for the material or product designated by the successful bidder or bid as the lowest alternate, and such substitution results in an increase in costs, there will not be Federal-aid participation in any increase in costs.

(c) A State highway agency may require a specific material or product when there are other acceptable materials and products, when such specific choice is approved by the Division Administrator as being in the public interest. When the Division Administrator's approval is not obtained, the item will be nonparticipating unless bidding procedures are used that establish the unit price of each acceptable alternative. In this case Federal-aid participation will be based on the lowest price so established.

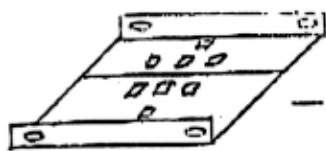
(d) Appendix A sets forth the FHWA requirements regarding (1) the specification of alternative types of culvert pipes, and (2) the number and types of such alternatives which must be set forth in the specifications for various types of drainage installations.

(e) Reference in specifications and on plans to single trade name materials will not be approved on Federal-aid contracts.

ENCLOSURE 2

⑤ - 5/16" Hex nut

⑥ - 5/16" Flat Washer

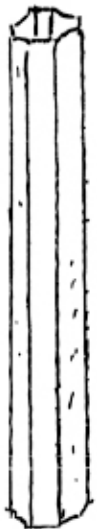


— UNIVERSAL Mailbox brkt. Det. "B"



— "U" Lock wedge Det. "A"

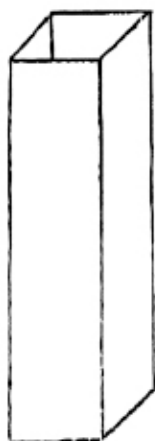
— 5/16" x 2 1/2" Carriage bolt



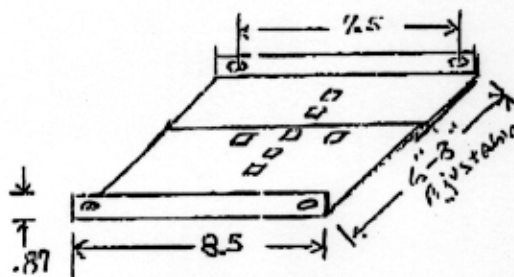
Post
— 2" x 14 GA Nex tube
1/5" Long



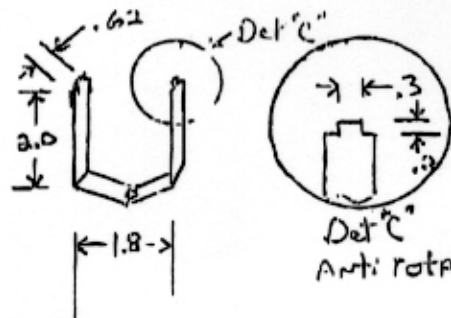
— Nex
Wedge



Anchor
— 2 1/4" Sq x 12 GA Tube
30" Long



Det. "B"
Mail Box Brkt
2 Regd.
1/8 GA Galv. Steel



Det. "A"
"U" Lock Wedge
1/8 GA Galv. Steel

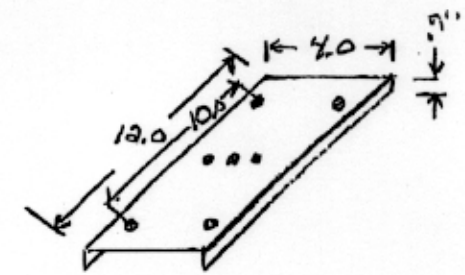
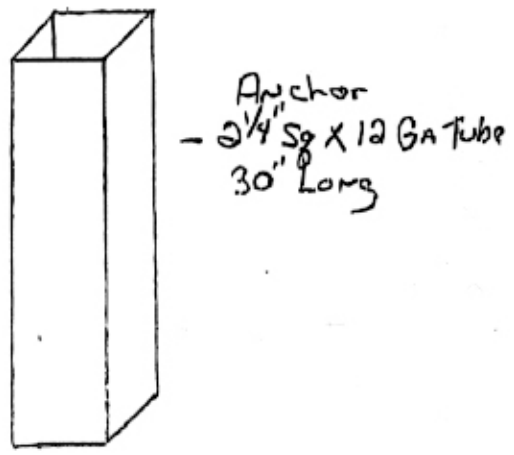
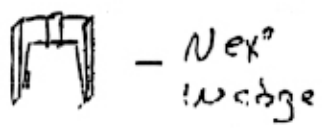
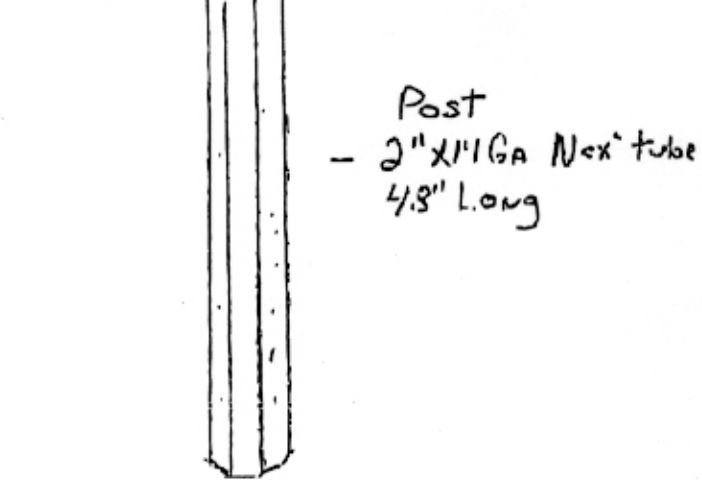
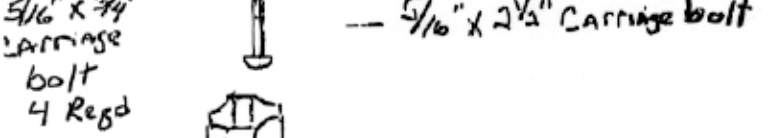
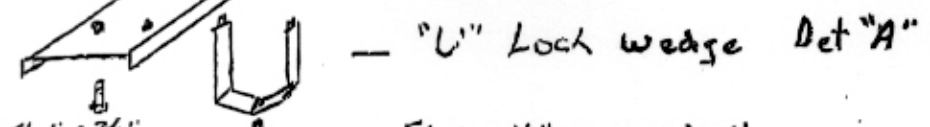
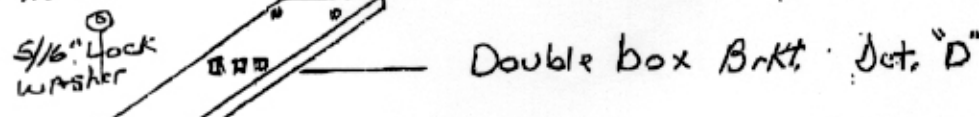
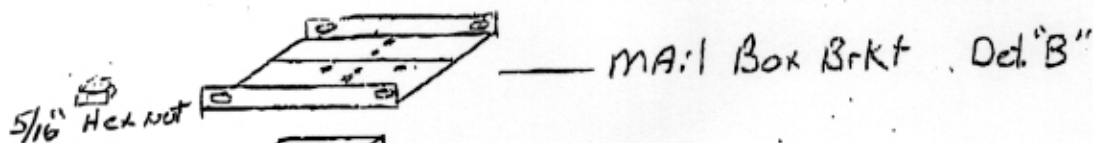
Det. "C"
Anti rotation tab

P.I. " 5,848,502
P.A. " 415,247
either Pat. Pending

Single Mail Box Support
System

10-03-02

- ⊗ - 5/16" Hex Nut
- ⊙ - 5/16" Washer

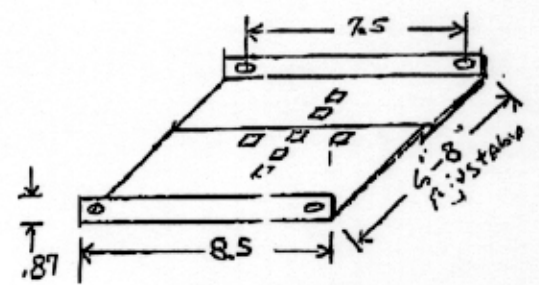


Det. "D"

Double Box Brkt

14 Gr Galv. Steel

1 Reg'd

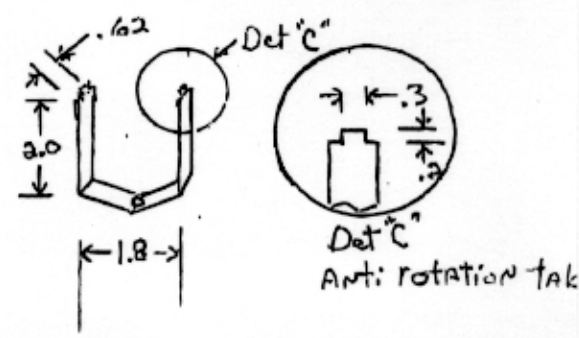


Det. "B"

Mail Box Brkt

4 Reg'd.

16 GA Galv. Steel



Det. "A"

"U" Lock Wedge

12 GA Galv. Steel

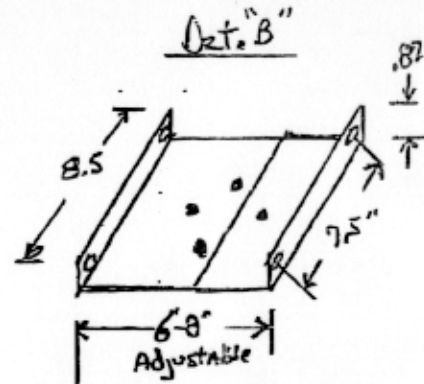
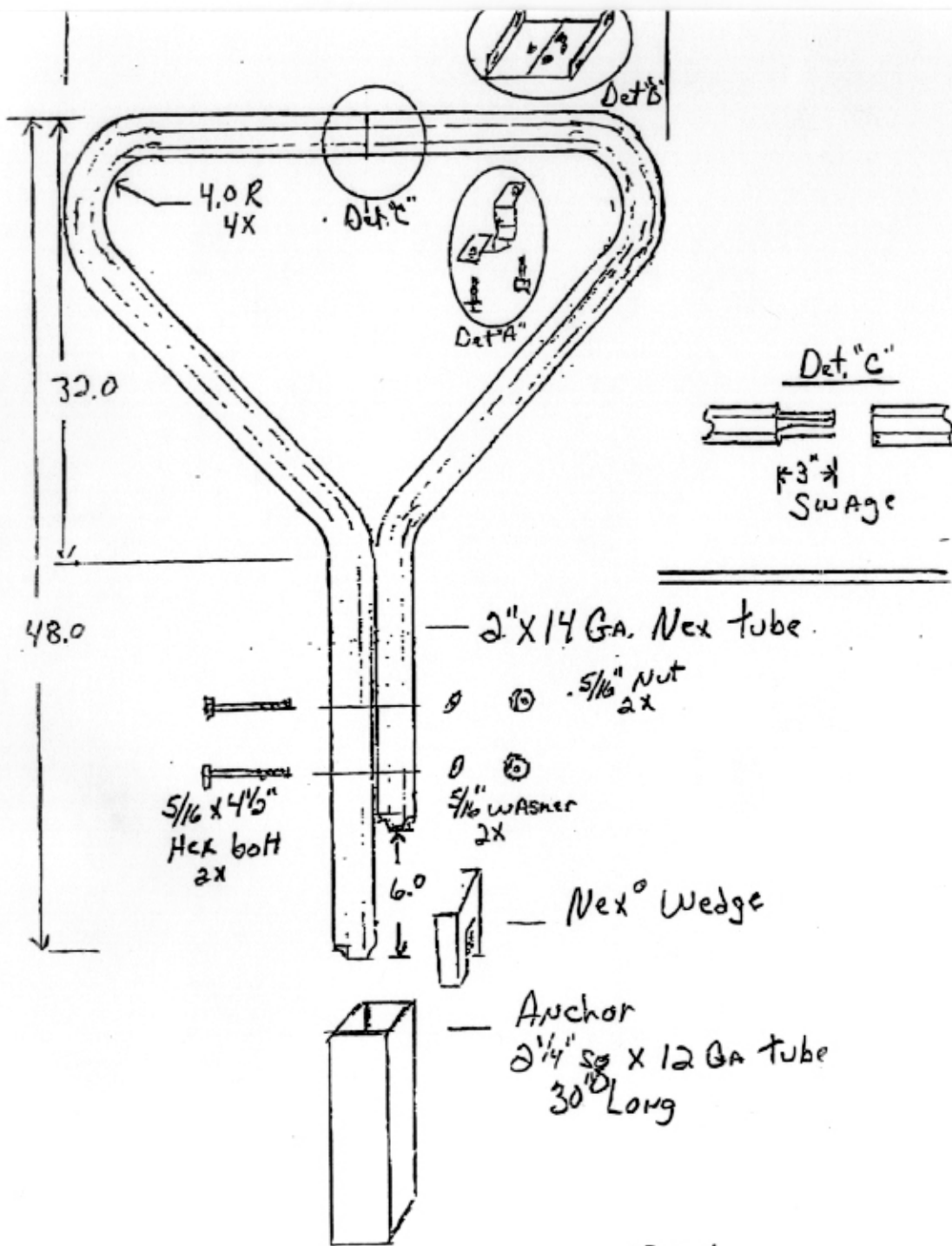
Pat. # 5,248,502

Pat. # 4,15,847

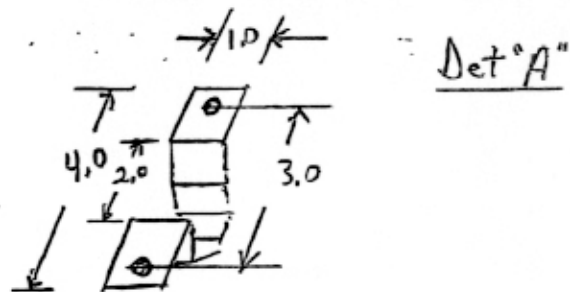
Other Pat. Pending

Double Mail Box Support System

10-03-02



MAIL BOX BRKT.
16 GA GALV. STEEL
5 Sets Req'd.



Attachment Brkt.
14 GA GALV. STEEL
5 Req'd.
10 - 5/16 x 3/4" CARRIAGE bolt
10 - 5/16" Hex nuts
10 - 5/16" washers

PAT. # 5,848,502
PAT. # 415,847

Mult. Mail Box Support