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

400 Seventh St., S.W.
Washington, D.C. 20590

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

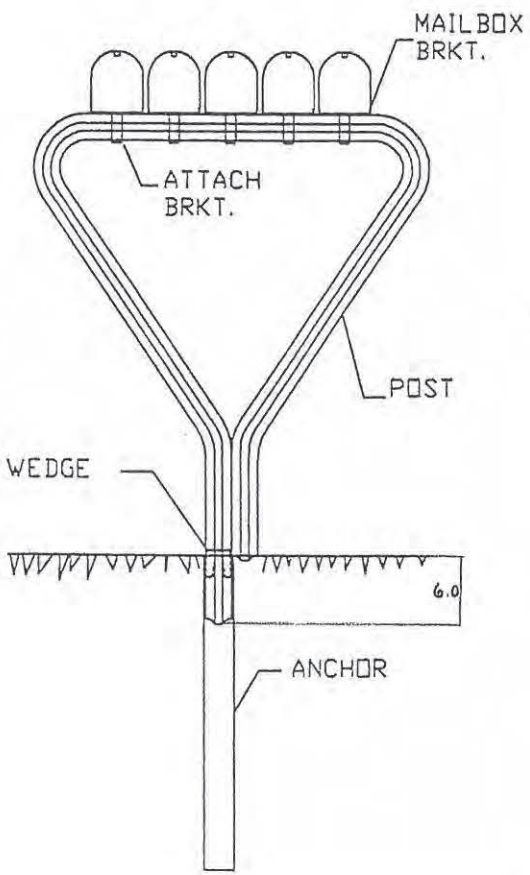
synchronization with existing highway facilities or that no equally suitable alternative exists or; (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is enclosed.

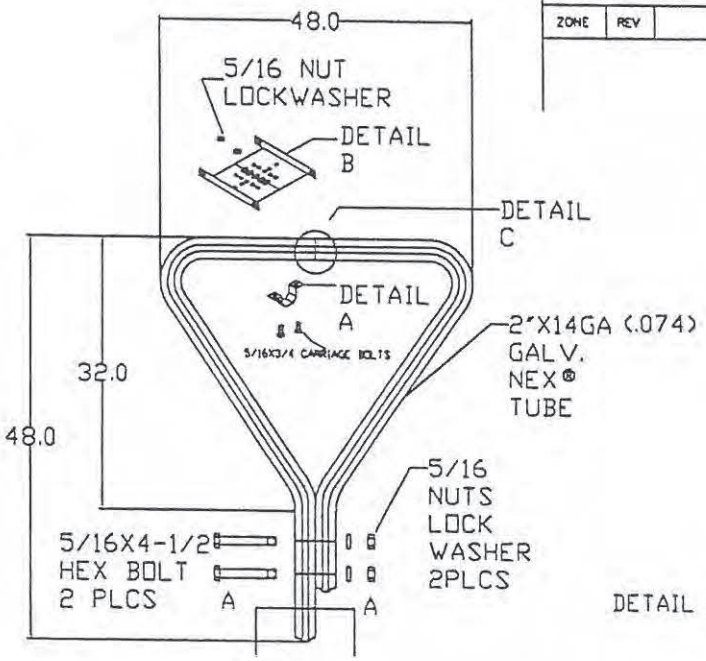
Sincerely yours,

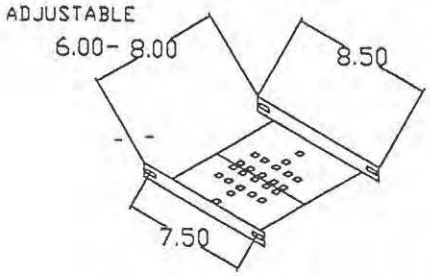
Harry W. Taylor

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

Enclosure

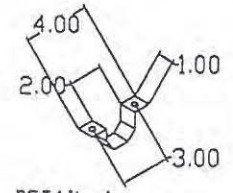




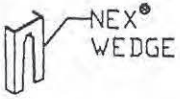


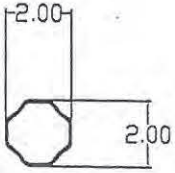
DETAIL B
MAIL BOX BRKT.
16 GA GALV. (.065)

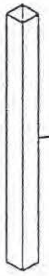
DETAIL C



DETAIL A
ATTACH BRKT
14 GA GALV. (.074)





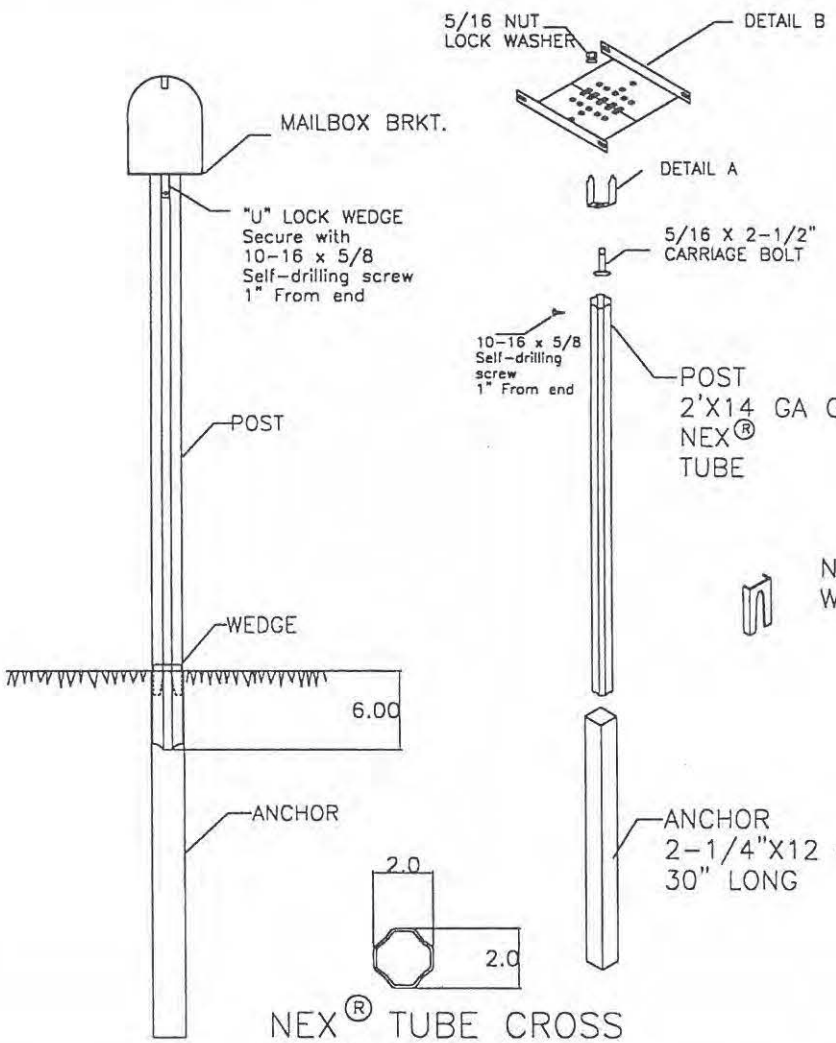


VIEW A

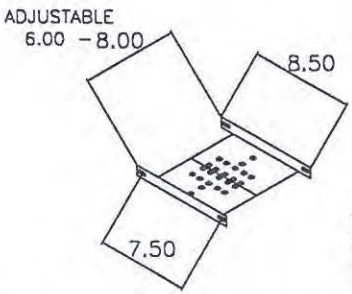
NEX® TUBE CROSS SECTIONAL

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

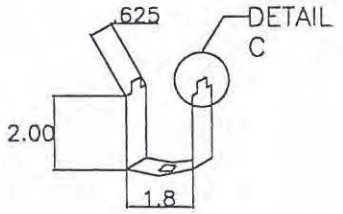
SQUARE TUBE PRODUCTS	MUTI. MAIL BOX SUPPORT		
COMMERCE CITY, CO.	SIZE	FSCM NO.	DWG NO. 1	REV A
1-888-267-6463	SCALE 1:1		SHEET



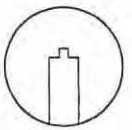
NEX® TUBE CROSS SECTIONAL VEIW



DETAIL B
MAIL BOX BRKT.
16 GA GALV. (.065)

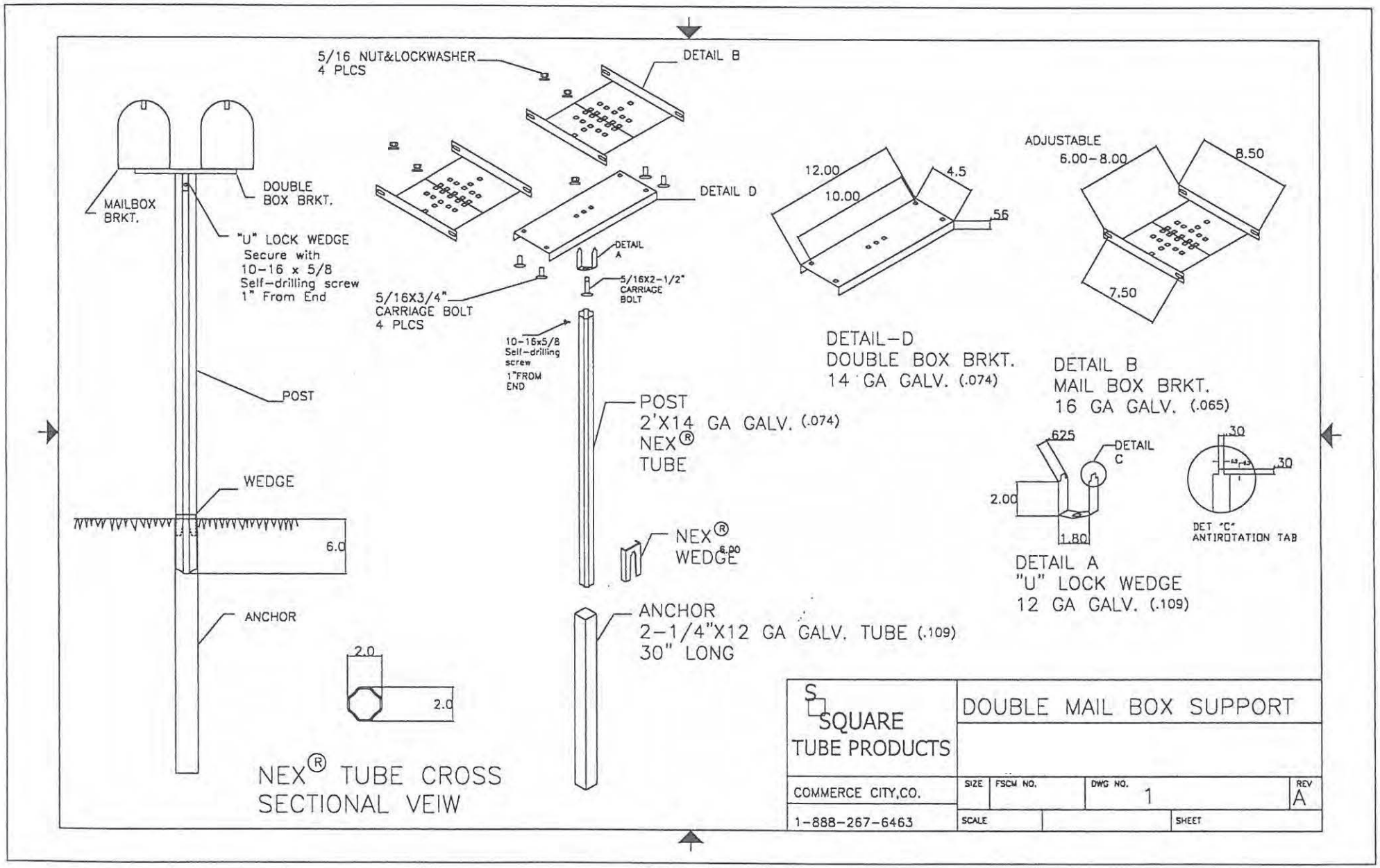


DETAIL A
"U" LOCK WEDGE
12 GA GALV. (.109)



DET "C"
ANTIROTATION TAB

S SQUARE TUBE PRODUCTS	SINGLE MAIL BOX SUPPORT			
COMMERCE CITY,CO	SIZE	FSCM NO.	DWG NO. 1	REV A
1-888-267-6463	SCALE		SHEET	



S SQUARE TUBE PRODUCTS	DOUBLE MAIL BOX SUPPORT			
COMMERCE CITY,CO.	SIZE	FSCM NO.	DWG NO. 1	REV A
1-888-267-6463	SCALE		SHEET	

Administrator. A request must be submitted sufficiently in advance of the need for the waiver in order to allow time for proper review and action on the request. The RFHWA will have approval authority on the request.

(3) Requests for waivers may be made for specific projects, or for certain materials or products in specific geographic areas, or for combinations of both, depending on the circumstances.

(4) The denial of the request by the RFHWA may be appealed by the State to the Federal Highway Administrator (Administrator), whose action on the request shall be considered administratively final.

(5) A request for a waiver which involves nationwide public interest or availability issues or more than one FHWA region may be submitted by the RFHWA to the Administrator for action.

(6) A request for waiver and an appeal from a denial of a request must include facts and justification to support the granting of the waiver. The FHWA response to a request or appeal will be in writing and made available to the public upon request. Any request for a nationwide waiver and FHWA's action on such a request may be published in the FEDERAL REGISTER for public comment.

(7) In determining whether the waivers described in paragraph (c)(1) of this section will be granted, the FHWA will consider all appropriate factors including, but not limited to, cost, administrative burden, and delay that would be imposed if the provision were not waived.

(d) Standard State and Federal-aid contract procedures may be used to assure compliance with the requirements of this section.

[48 FR 53104, Nov. 25, 1983, as amended at 49 FR 18821, May 3, 1984; 58 FR 38975, July 21, 1993]

EDITORIAL NOTE: For a waiver document affecting §635.410, see 60 FR 15478, Mar. 24, 1995.

§ 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.

§ 635.413 Warranty clauses.

The SHA may include warranty provisions in National Highway System (NHS) construction contracts in accordance with the following:

(a) Warranty provisions shall be for a specific construction product or feature. Items of maintenance not eligible for Federal participation shall not be covered.

(b) All warranty requirements and subsequent revisions shall be submitted to the Division Administrator for advance approval.

(c) No warranty requirement shall be approved which, in the judgment of the Division Administrator, may place an undue obligation on the contractor for items over which the contractor has no control.

(d) A SHA may follow its own procedures regarding the inclusion of warranty provisions in non-NHS Federal-aid contracts.

[60 FR 44274, Aug. 25, 1995]

§ 635.417 Convict produced materials.

(a) Materials produced after July 1, 1991, by convict labor may only be incorporated in a Federal-aid highway construction project if such materials have been:

(1) Produced by convicts who are on parole, supervised release, or probation from a prison or

(2) Produced in a qualified prison facility and the cumulative annual production amount of such materials for use in Federal-aid highway construction does not exceed the amount of such materials produced in such facility for use in Federal-aid highway construction during the 12-month period ending July 1, 1987.

(b) *Qualified prison facility* means any prison facility in which convicts, during the 12-month period ending July 1, 1987, produced materials for use in Federal-aid highway construction projects.

[53 FR 1923, Jan. 25, 1988, as amended at 58 FR 38975, July 21, 1993]

APPENDIX A TO SUBPART D OF PART 635—SUMMARY OF ACCEPTABLE CRITERIA FOR SPECIFYING TYPES OF CULVERT PIPES

Type of drainage installation	Alternatives required			AASHTO designations to be included with alternatives	Application	Remarks
	Yes	No	Number			
Cross drains under high-type pavement.[1]	.....	X	.....	.....	Statewide	Any AASHTO-approved material.[2]
Other cross-drain installations.	X	.....	3 minimum	M–170 and M–190.	.....do	Do.[2]
Side-drain installations	X	.....	.....do	M–36	.....do	Do.[2]
Special installation conditions.	.....	X	.....	.....	Individual installation.	Specified to meet special conditions.
Special drainage systems (storm sewers, inverted siphons, etc.).	.....	X	.....	.....	.....do	Specified to meet site requirements

[1] High-type pavement is generally described as FHWA construction type codes I, J, K, L, and plant mix and penetration macadam segments, respectively shown in the right-hand columns of type codes G and H having a combined thickness of surface and base of 7 in or more (or equivalent) or that are constructed on rigid bases.

[2] Types not included in currently approved AASHTO specifications may be specified if recommended by the State with adequate justification and approved by FHWA.

Subpart E—Interstate Maintenance Guidelines

SOURCE: 45 FR 20793, Mar. 31, 1980, unless otherwise noted.

§ 635.501 Purpose.

To prescribe Interstate maintenance guidelines and establish the policy and procedures to insure that the condition of Interstate routes is maintained at

R5641100

BULL MOOSE TUBE CHICAGO FACILITY

11/14/02

CERTIFICATION OF TESTS

BILL TO S Square Tube Products
5495 East 69th Ave.
Commerce City CO 80022

SHIP TO S Square
221 North Kuner Road
Brighton CO 80601

B/L Number 31633 Ship Via TRL325A

1.75 NEX X 0.098 G140 X 20' 2
44.5 mm
A787 AWG 50 MY S Square
Ticket # = 34014858

Ladle Analysis and Physicals

Heat # = 10208160

C	MN	P	S	AL	SI	CB	CU	CR
.060	.340	.008	.003	.030	.030	0.000	.070	.030

Order # 20604
Purchase Order # 13604
Item # 106515 1120
P

NI	VA	YLD psi	TSN psi	ELN %
.030	0.000	61000	67000	

2" NEX X 0.077 G90 X 12'
50.8 mm
A787 AWG 50 MY S Square
Ticket # = 34016589

Ladle Analysis and Physicals

Heat # = 20211800

C	MN	P	S	AL	SI	CB	CU	CR
.050	.340	.008	.007	.020	.020	0.000	.080	.030

Order # 22120
Purchase Order # 13629
Item # 106536 1280
P

NI	VA	YLD psi	TSN psi	ELN %
.040	0.000	63100	65700	

1.75" SQ X 0.098 G90 X 20'
44.5 mm
A787 AWG 50 MY S Square
Ticket # = 34025625

Ladle Analysis and Physicals

Heat # = 20222340

C	MN	P	S	AL	SI	CB	CU	CR
.050	.360	.008	.005	.020	.010	0.000	.070	.030

Order # 34099
Purchase Order # 13664
Item # 105336 1120
P

NI	VA	YLD psi	TSN psi	ELN %
.030	0.000	73768	73968	

2" SQ X 0.098 G140 X 20'
50.8 mm
A787 AWG 50 MY S Square
Ticket # = 34025683

Ladle Analysis and Physicals

Heat # = 20225040

C	MN	P	S	AL	SI	CB	CU	CR
.060	.330	.011	.003	.020	.030	0.000	.060	.030

Order # 33317
Purchase Order # 13663
Item # 106444 1280
P

NI	VA	YLD psi	TSN psi	ELN %
.030	0.000	0	0	

1.75 NEX X 0.098 G140 X 24' 2
44.5 mm
A787 AWG 50 MY S Square
Ticket # = 34014865

Ladle Analysis and Physicals

Heat # = 30209440

C	MN	P	S	AL	SI	CB	CU	CR
.050	.310	.010	.002	.030	.020	0.000	.080	.030

Order # 20604
Purchase Order # 13604
Item # 106516 1120
P

NI	VA	YLD psi	TSN psi	ELN %
.030	0.000	58500	61000	

THIS WELDED STEEL TUBING IS MANUFACTURED IN THE UNITED STATES OF AMERICA AND HAS BEEN PRODUCED IN ACCORDANCE WITH THE STATED SPECIFICATION. LADLE CHEMISTRIES ARE REPORTED FROM DOCUMENTS PROVIDED BY THE SUPPLYING STEEL MILL. ANY PHYSICAL AND MECHANICAL TESTING RESULTS SHOWN ON THIS CERTIFICATION ARE CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY.

USS-POSCO INDUSTRIES METALLURGICAL TEST REPORT

P.O. NUMBER BR-2002 MILL ORDER NUMBER NS21318 TALLY TA854285
VEHICLE ID SWIFT TRANSPORTATION SHIP DATE 10-17-2002

SOLD TO: 0223579 002
METALWEST
1229 SOUTH FULTON AVENUE
BRIGHTON, CO 80601

SHIP TO:
METALWEST
1229 SOUTH FULTON AVENUE
BRIGHTON, CO 80601

PREPARED BY THE OFFICE OF:
MARKUS BORO
MANAGER QA SHEETS

ON:
DATE 10-16-2002
TIME 14:27:21

SPEC: GALVANIZED SHEETS ASTM A653-96 CS TYPE A, MIN SPANGLE, G90U, CHEM TREAT, NO OIL 1/2 STD MIN GAUGE TOLERANCE, 1/2 STANDARD FLATNESS TOLERANC .0544 MIN BASE METAL THICKNESS

ITEM	MATERIAL DESCR. THICKNESS	WIDTH	HEAT NUMBER	TEST PIECE IDENT	HRB
01	.0560	MIN X 48.0000	000244	0092HW	55.0
				0642JF	59.0

HEAT	C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	NB	TI
000244	.040	.22	.008	.016	.020	.05	.03	.04	.010	.041	.004	.002	.003	.002