



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

May 28, 1999

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

Refer to: HMHS

Mr. Barry Pucillo
Plasticade Products
7700 Austin Avenue
Skokie, IL 60077

Dear Mr. Pucillo:

Thank you for your letter of December 7, 1998, requesting Federal Highway Administration (FHWA) acceptance of your company's Fibercade and Plasticade barricades and Plasticade Sign Stand as crashworthy traffic control devices for use in work zones on the National Highway System (NHS). Accompanying your letter was a copy of the crash test report by the Texas Transportation Institute (TTI), black and white photographs, and video documentation of the crash tests. You requested that we find the tested devices, as well as lighter or smaller devices of similar design, acceptable for use on the NHS. You provided additional information and drawings on April 13, 1999, in response to our request.

The FHWA guidance on crash testing of work zone traffic control devices is contained in two memoranda. The first, dated July 25, 1997, titled "Information: Identifying Acceptable Highway Safety Features," established four categories of work zone devices: Category I devices were those lightweight which could be self-certified by the vendor, Category II devices were other lightweight devices which needed individual crash testing, Category III devices were barriers and other fixed or massive devices also needing crash testing, and Category IV devices were trailer mounted lighted signs, arrow panels, etc. The second guidance memorandum was issued on August 28, 1998, and is titled "INFORMATION: Crash Tested Work Zone Traffic Control Devices." This recent memorandum lists devices that are acceptable under Categories I, II, and III. The devices you tested fall under Category II.

Full-scale automobile testing was conducted on your company's Fibercade and Plasticade barricades and Plasticade Sign Stand. The Plasticade is a Type II barricade of hollow molded plastic that can be internally ballasted with sand. With the addition of a "sign sleeve" to its face, the Plasticade can support a warning sign (only "rollup" type signs were tested with the Plasticade.) The Fibercade is a Type II barricade constructed of rigid high molecular weight polyethylene components.

Two examples of each device were tested in tandem, one head-on and the next at 90 degrees, suggested in our July 16, 1998, letter to you. Each barricade was ballasted either internally or with two 11.4 kg sand bags placed on the middle rails. During the tests the most extensive windshield damage (for the specific devices you are requesting acceptance for) was shattering in two localized areas. This damage occurred during the tests of the Plasticade Sign Stand. There was no occupant compartment intrusion nor significant deformation observed, nor did any test article debris show potential for penetrating the occupant compartment. The vehicle remained stable and would not have intruded into adjacent lanes. The test results are summarized in the chart below. Drawings of the tested devices are enclosed.

Device	Plasticade Type II	Plasticade Sign Stand	Fibercades Model 101-T12-C8-B3
Test No.	400001-ALB1	400001-ALB2	400001-ALB3
Height, mm (in)	1005 (40)	1060 (42)	1095, 1075 (43, 42)
Height to top of light	1240 (48)	1767 (70)**	1350, 1313 (53, 52)
Mass (without light*)	9.1 kg	10.6 kg	6.9 kg
Mass, plus ballast	13.6 kg	16.1 kg	29.7 kg
Vehicle Speed, km/h	98.6, 97.1	101.2, 98.3	97.5, 92.7
Velocity Change, m/s	0.42, 0.81	0.81, 0.44	1.33, 2.06
Windshield Damage	None	Shattered in 2 places	None

* Warning lights used were 315-mm tall and attached to the devices with a 91 mm diameter, 105 mm long standard halfmoon tamper-resistant bolt and nut. Two 6-volt batteries were in each yielding a total mass of 2 kg (4.25 lbs.) ** Height to top of rollup sign.

The results of this testing met the FHWA requirements and, therefore, the tested devices listed in the table above are acceptable for use on the NHS under the range of conditions tested, when proposed by a State. In addition, your company's Minicade, Narrowcade, Signcade, and Type I Fibercades (with or without center or bottom panels) are acceptable by virtue of their being smaller or lighter versions of the successfully tested devices.

Our acceptance is limited to the crashworthiness characteristics of the devices and does not cover its structural features, nor conformity with the Manual on Uniform Traffic Control Devices. Presumably, you will supply potential users with sufficient information on design and installation requirements to ensure proper performance. We anticipate that the States will

require certification from Plasticade Products that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance. To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-14, shall not be reproduced except in full.

Many of your devices are patented products and considered "proprietary." The use of proprietary work zone traffic control devices in Federal-aid projects is generally of a temporary nature. They are selected by the contractor for use as needed and removed upon completion of the project. Under such conditions they can be presumed to meet requirement "a" given below for the use of proprietary products on Federal-aid projects. On the other hand, if proprietary devices are specified 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 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,



Dwight A. Home
Director, Office of Highway Safety
Infrastructure

2 Enclosures

FHWA:HMHS-NArtimovich:db:x61331:5/28/99
cc: Reader - HMHS, Chron - Rm 3407
N. Artimovich - HMHS
FHWA Field Offices

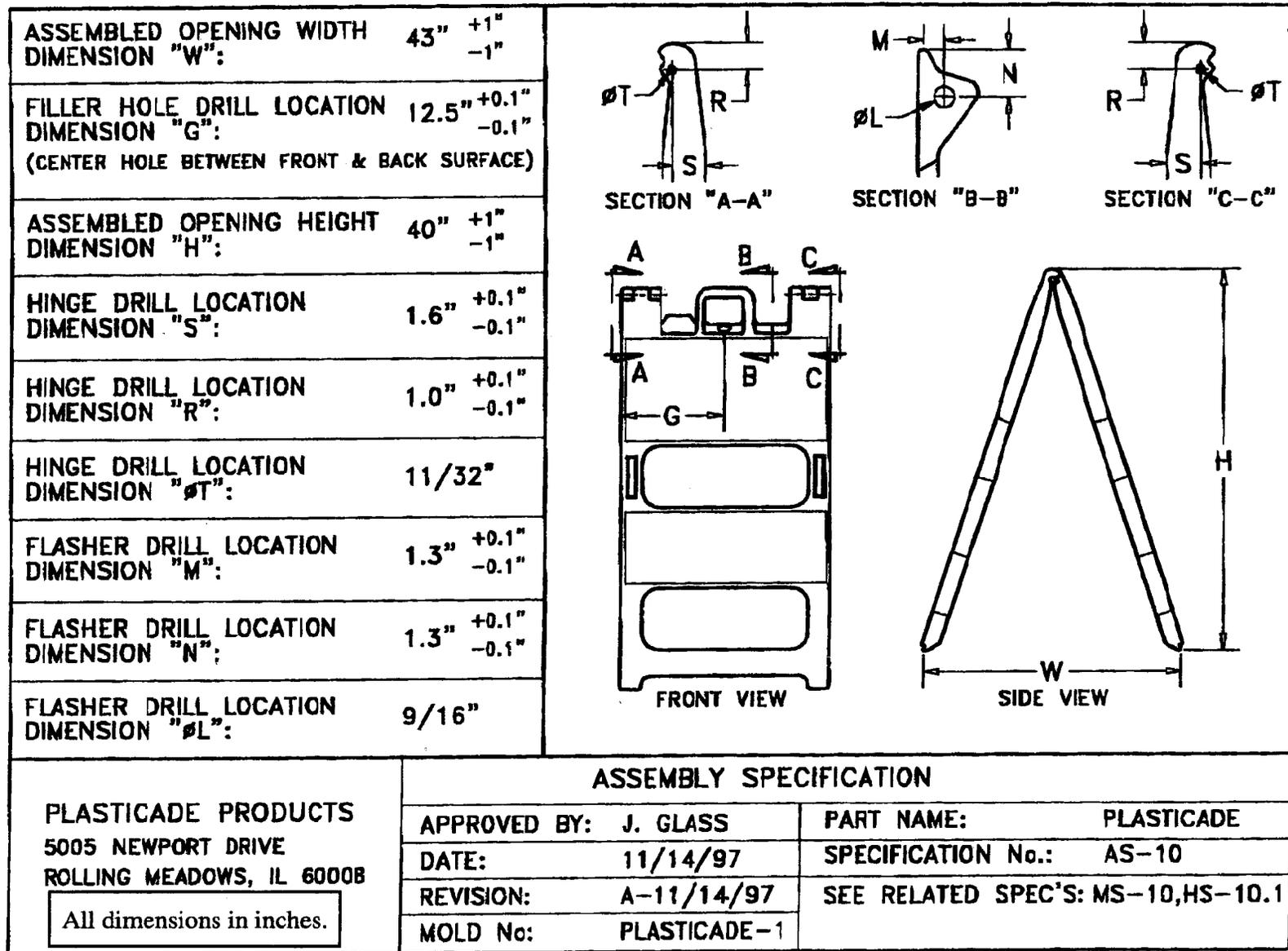


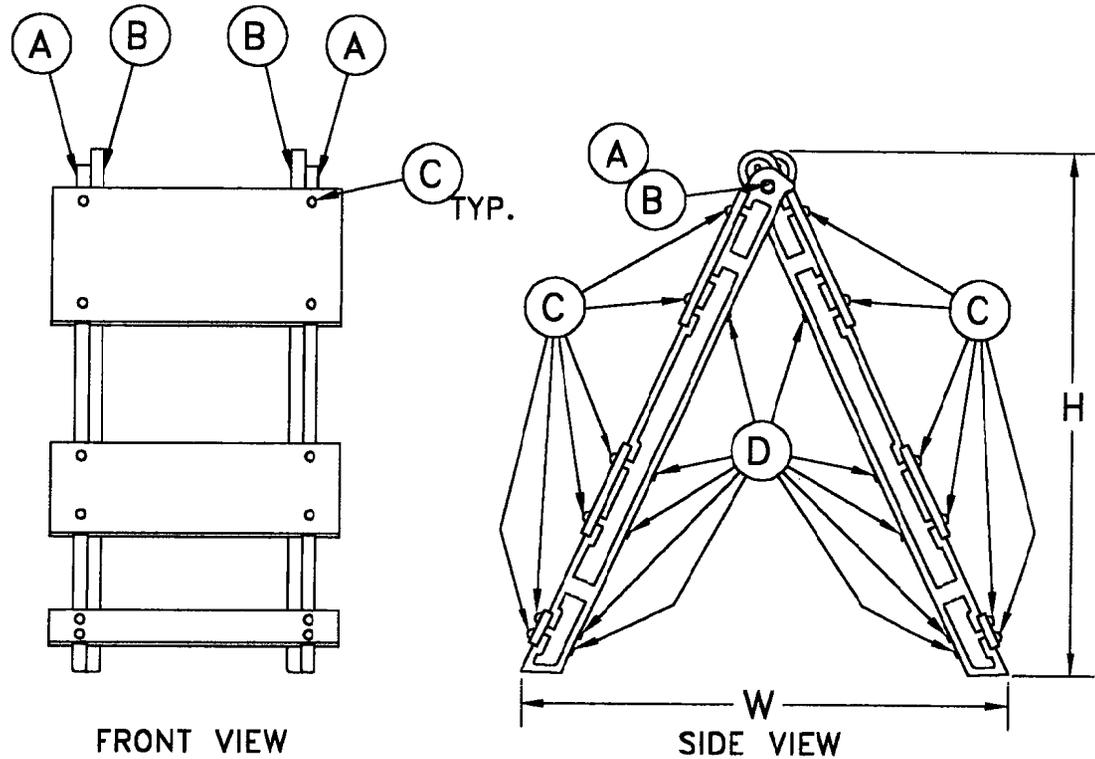
Figure 36. Details of the Plasticade Products Plasticade Type II A-Frame barricade.

COMPONENT "A"
CARRIAGE BOLT
3/8"-16 UNC BY 2" LONG.

COMPONENT "B"
NYLON INSERT LOCKNUT
3/8"-16 UNC

COMPONENT "C"
CARRIAGE BOLT
1/4"-20 UNC BY 3" LONG.

COMPONENT "D"
NYLON INSERT LOCKNUT
1/4"-20 UNC



PLASTICADE PRODUCTS
7700 AUSTIN AVENUE
SKOKIE, IL 60077

HARDWARE SPECIFICATION

APPROVED BY: B. Pucillo

PART NAME: FIBERCADE 101-T12-C8-B3

DATE: 03/29/99

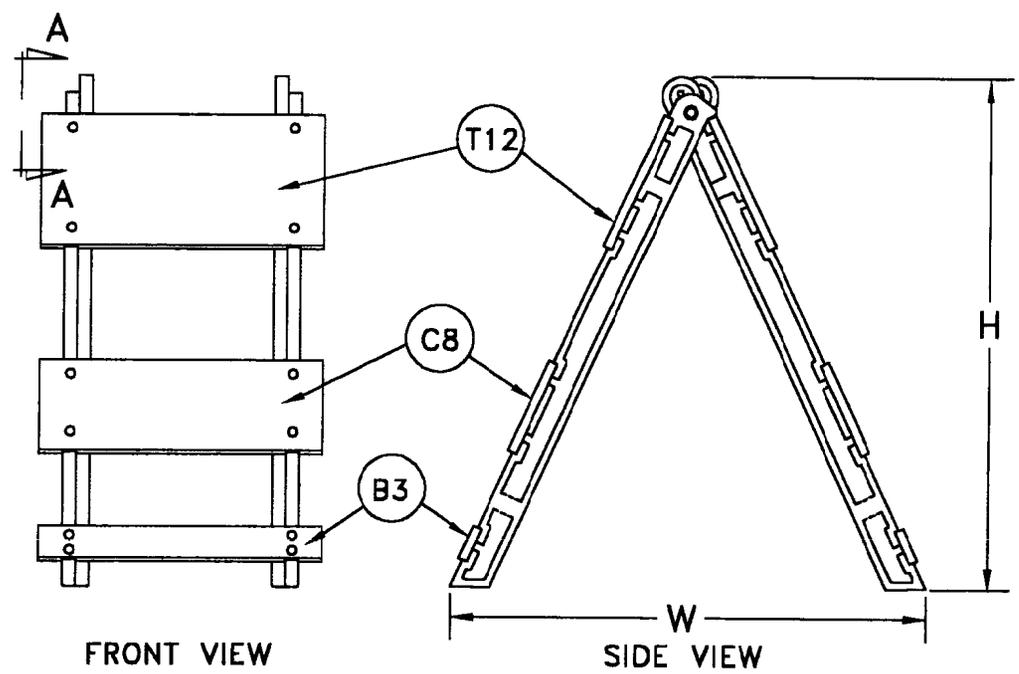
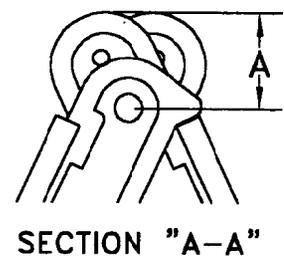
SPECIFICATION No.: HS-70.1

REVISION: A-03/28/99

SEE RELATED SPEC'S: AS-70

MOLD No: FIBERCADE-1

ASSEMBLED OPENING WIDTH DIMENSION "W":	43.3" ^{+1"} _{-1"}
ASSEMBLED OPENING HEIGHT DIMENSION "H":	41" ^{+1"} _{-1"}
HINGE LOCATION DIMENSION "A":	3.25" ^{+0.1"} _{-0.1"}
TOP BOARD DETAIL "T12":	12" HIGH X 24"WIDE
MIDDLE BOARD DETAIL "C8":	8" HIGH X 24"WIDE
BOTTOM BOARD DETAIL "B3":	3" HIGH X 24"WIDE



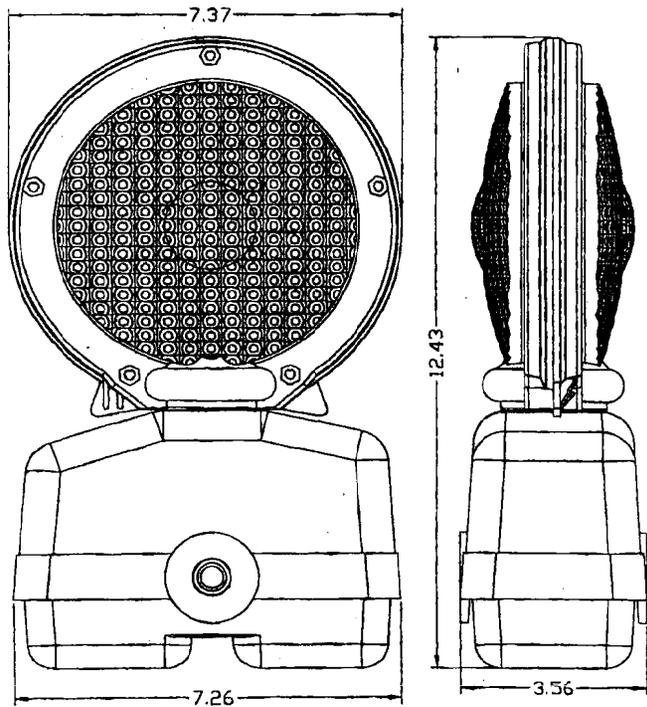
ASSEMBLY SPECIFICATION

PLASTICADE PRODUCTS 7700 AUSTIN AVENUE SKOKIE, IL 60077	APPROVED BY: B. Pucillo	PART NAME: FIBERCADE 101-T12-C8-B3
	DATE: 03/29/99	SPECIFICATION No.: AS-70
	REVISION: A-03/28/99	SEE RELATED SPEC'S: HS-70.1
	MOLD No: FIBERCADE-1	

APPENDIX A. DETAILED DRAWINGS

**Empco-Lite
Model 100/400**

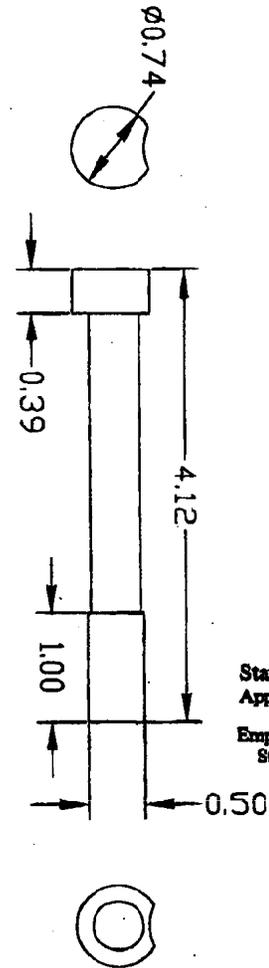
All units in
English measurement.
1 in = 25.4 mm
1 lb = 0.454 kg
1 oz = 28.35 g



Approximate weight with two 6 bolt spring terminal batteries - 4.25 lbs.
Approximate weight without two 6 volt spring terminal batteries - 1.4 lbs.
Weight of an individual 6 volt spring terminal battery 1 pound 6 ounces.
(Batteries weighed are our commonly used Rayovac heavy duty industrial battery)

Figure 34. Details of the Empco-Lite Model 100/400 warning light used during testing.

All units in
English measurement.
1 in = 25.4 mm
1 oz = 28.3 g



Standard Halfmoon Tamper-Resistant Bolt
Approximate weight - 3.5 ounces

Empco-Lite's tamper resistant bolts are stainless
Steel with a zinc coating

Figure 35. Details of bolts used to attach warning lights to barricades during testing.

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 war-

ranty provisions in non-NHS Federal aid contracts.

[60 FR 44274, Aug. 25, 1995]

§ 635.417 Convict produced materials

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

(1) Produced by convicts who are 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 use in Federal-aid highway construction does not exceed the amount 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 a prison facility in which convicts, during the 12-month period ending July 1987, produced materials for use in Federal-aid highway construction project

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

APPENDIX A TO SUBPART D—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 materials Do. ²
Other cross-drain installations.	X .....	.....	3 minimum	M-170 and M-190.	.....do	
Side-drain installations	X .....	.....	.....do	M-36 .....	.....do	Do. ² Specified to meet special conditions.
Special installation conditions.	.....	X .....	.....	.....	Individual installation.	
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 m adam segments, respectively shown in the right-hand columns of type codes G and H having a combined thickness of surf 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

§ 635.501 Purpose.

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

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