

**U.S. DEPARTMENT OF AGRICULTURE  
FOREST SERVICE**

**SPECIFICATION**

**CASE, CARRYING, FIRE SHELTER, M-2002**

1. SCOPE

1.1 Scope. This specification covers the requirements of carrying cases for the fire shelter.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications and standards form part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those in effect on the date of the invitation for bids or request for proposals (see 6.2).

SPECIFICATIONS

FEDERAL

A-A-55126 - Fastener Tapes, Hook and Pile, Synthetic  
V-T-295 - Thread, Nylon

MILITARY

MIL-W-4088 - Webbing, Textile, Woven Nylon  
MIL-PRF-5038 - Tape, Textile and Webbing, Textile, Reinforcing Nylon  
MIL-H-9890 - Hardware, Individual Load Carrying Equipment, and Hardware, Misc.  
MIL-W-27265 - Webbing, Textile, Woven Nylon, Impregnated  
MIL-DTL-32075 - Label: For Clothing, Equipage, and Tentage (General Use)

USDA FOREST SERVICE

5100-86 - Cloth, Duck, Nylon (Polyurethane Coated)

(Unless otherwise indicated, copies of federal and military specifications and standards are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094. Copies of Forest Service specifications are available from the preparing activity, see 6.6.)

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be used in improving this document should be addressed to: USDA Forest Service, Missoula Technology and Development Center, 5785 Highway 10 West, Missoula, MT 59808, by using the Specification Comment Sheet at the end of this document or by letter.

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2.1.2 Government drawings. The following drawings form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these drawings are those in effect on the date of the invitation for bids or request for proposals.

### USDA FOREST SERVICE

MTDC-1002 - Case, Carrying, Fire Shelter, M-2002

(Copies are available from the preparing activity, see 6.6.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those in effect on the date of the invitation for bids or request for proposals.

### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 1974 - Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Shipping Containers

D 3951 - Standard Practice for Commercial Packaging

D 6193 - Standard Practice for Stitches and Seams

SI-10 - Standard For Use of the International System of Units(SI): The Modern Metric System (IEEE/ASTM Standard available from ASTM)

(Copies are available from ASTM, 100 Barr Harbor Dr., West Conshohocken, PA 19428-2959.)

### AMERICAN SOCIETY FOR QUALITY CONTROL (ASQC)

Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

(Copies are available from the American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202.)

### NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Address requests for copies to American Trucking Association, Inc., Traffic Department, 1616 P St. NW, Washington, DC 20036.)

(Non-Government standards and other publications normally are available from the organizations that prepare and distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 First article. Unless otherwise specified (see 6.2), the carrying cases shall be subjected to first article inspection (see 6.4) in accordance with 4.3.

3.2 Materials and components. Materials and components shall be as specified herein and on drawing MTDC-1002.

3.2.1 Cloth, duck, nylon (polyurethane coated). The nylon duck shall conform to type II of Forest Service specification 5100-86. The cloth shall be royal blue to match the standard shade sample (see 6.3).

3.2.2 Tape and webbing.

3.2.2.1 Tape, nylon, 3/4 inch. The 3/4-inch binding tape shall conform to type III, class 2 of MIL-PRF-5038. The color shall be black.

3.2.2.2 Webbing, nylon, 2-1/4 inch. The 2-1/4-inch nylon webbing shall conform to type VIIIc; class 1, 1A, or 2 of MIL-W-4088. The webbing shall be resin impregnated conforming to class R treatment of MIL-W-27265. The color shall be black.

3.2.3 Thread, nylon. The thread for all stitching shall be type II, class A, size FF conforming to V-T-295. The color shall be black.

3.2.4 Keeper, with slide. The keeper with slide shall be type X, class B of MIL-H-9890. The color shall be black.

3.2.5 Fastener, tape. The fastener tape shall conform to 1 inch, type II, class 1 of A-A-55126. The color shall be black.

3.3 Construction. Construction shall conform in all respects to drawing MTDC-1002 and as specified herein.

3.3.1 Stitches, seams, and stitchings. All stitching, except bartacking, shall conform to type 301 of ASTM D 6193, with 8 to 10 stitches per inch.

3.3.1.1 Type 301 stitching. Ends of stitching shall be backstitched a minimum of 1 inch (1/2 inch for box) except where ends are turned under or caught in other seams or stitching. Thread tension shall be maintained so that there will be no loose bobbin or top thread or excessively tight stitching resulting in puckering of the materials sewn. The interlock shall be imbedded in the materials sewn.

3.3.1.1.1 Repairs of type 301 stitching. Repairs of type 301 stitching shall be as follows (when making the following repairs, the ends of the stitching are not required to be backstitched):

- a. When thread breaks or bobbin runouts occur during stitching, except presewing, the stitching shall be repaired by restarting the stitching a minimum of 1 inch (1/2 inch for box) back of the end of the stitching.

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- b. Except for prestitching, thread breaks or two or more consecutive skipped or runoff stitches noted during inspection of the item (inprocess or end item) shall be repaired by overstitching. The stitching shall start a minimum of 1 inch in back of the nonconforming area (1/2 inch on box), continue over the nonconforming area to a minimum of 1 inch into existing stitching. Loose or excessively tight stitching shall be repaired by removing the nonconforming stitching, without damaging the materials, and restitching in the required manner.

3.3.1.2 Automatic stitching. Automatic machines may be used to perform any of the stitch patterns provided the requirements for the stitch pattern, stitches per inch, size and type of thread, are met; and at least three or more tying, overlapping, or backstitches are used to secure the ends of the stitching.

3.3.1.3 Thread ends. All thread ends shall be trimmed to 1/4 inch maximum length.

3.3.1.4 Lubrication of thread. There shall be no lubrication of the thread by any means, before or during sewing.

3.3.1.5 Stitching margins. Unless otherwise specified, all stitching margins shall be 1/8 inch.

3.3.1.6 Seam allowance. Unless otherwise specified, seam allowance on pattern parts shall be 1/2 inch.

3.3.2. Fusing nylon webbing. All ends of webbing shall be fused before being assembled for stitching. The apparatus used to fuse webbing ends shall provide enough heat to create a smooth edge with cut ends of all webbing yarns fused together.

3.3.3 Location marks. Location marks may be drilled, providing drill diameter does not exceed 0.076 inch. All drill holes shall be covered on the finished item. Printed marks shall be no more than 1/32 inch in width.

3.3.4 Marking.

3.3.4.1 Case silk screened markings. Identification markings (FIRE SHELTER, USE INSTRUCTIONS, and FSS) shall be silkscreened in the size and location shown on drawing MTDC-1002, and shall conform to type IV, class 9 of MIL-DTL-32075 except the color of the markings shall be white. Fastness of the class 9 markings shall be as specified for class 5 markings. The color of the cloth shall not be visible under the markings. For non-Government contracted production, the "FSS" shall be omitted.

3.3.4.2 Label. The label markings shall be printed on a label which is captured in the seam sewing the carrying case flap to the case as shown on drawings MTDC-1002. The label shall conform to type VI, class 9 of MIL-DTL-32075, the character height shall be 1/8 inch minimum. The label shall be 2-1/4 (+0, -1/8) inches wide and as long as necessary for the required lettering.

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"CASE, CARRYING, FIRE SHELTER, M-2002  
NSN 8465-01-498-3190 (2/)  
[Manufacturers Name] (1/)  
[Manufacturer's Address] (1/)  
[Contract number] (1/, 2/)  
[Manufacturer's number, lot number, or serial number] (1/)  
Made in USA  
DATE OF MANUFACTURE: [mm/yy] (1/)

THIS FIRE SHELTER CARRYING CASE  
MEETS THE REQUIREMENTS OF  
FOREST SERVICE SPECIFICATION 5100-609.

DO NOT REMOVE THIS LABEL"

- 1/ Insert appropriate information.  
2/ Required only for government contracts.

3.3.5 Use instructions. Camera-ready use instructions for printing will be provided to the contractor by the preparing activity (6.6) upon request. The use instructions shall be printed with black waterproof ink on one sheet of Tyvek 1058, one sheet of Kimdura 150, or one sheet of Yupo FPG 150 (at the contractor's option), one figure to each side. The instructions sheet shall measure 6-1/2 by 8-3/4 inches  $\pm 1/4$  inch and shall be folded in thirds top to bottom and then folded in thirds again side to side. The instruction sheet folded as described shall be placed in the "Use Instructions" pocket.

3.3.6 Repairs. Repairs such as mends, darns, patches, or splices are not permitted on the carrying case.

3.3.7 Piecing. No piecing or splicing of materials is allowed.

3.3.8 Replacement of nonconforming components. During the spreading, cutting, and manufacturing process, components having material nonconformities or damages that are classified as nonconformities in Table I shall be removed from production and replaced with conforming and properly matched components.

3.3.9 Coated cloth surface. The coated side of the cloth shall face the inside of the case.

3.3.10 Dimensions. All dimensions except pattern sizes are finished dimensions.

3.4 Deviations and waivers. Deviations and waivers to the materials, construction, or components specified herein shall not be allowed unless authorized in writing by the contracting officer.

3.5 Workmanship. All items shall conform to the quality of product established by this document and the occurrence of nonconformities shall not exceed the applicable acceptable quality levels. There shall be no nonconformities that affect use, appearance, or serviceability.

3.6 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch/pound units, provided they fall within the tolerances specified using conversion tables contained in the latest revision of IEEE/ASTM SI-10, and all other requirements of this specification are met.

3.7 Recovered materials. The contractor is encouraged to use recovered materials in accordance with Federal Acquisition Regulation 23.4 to the maximum extent practical.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his/her own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known nonconforming material, either indicated or actual, nor does it commit the Government to accept nonconforming material.

4.1.2 Responsibility for dimensional requirements. Unless otherwise specified in the contract or purchase order, the contractor is responsible for assuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point or at all points in the manufacturing process necessary to ensure compliance with all dimensional requirements.

4.1.3 Certification of compliance. Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification (see 4.4.1.1).

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 First article inspection. Unless otherwise specified (see 6.2), first articles submitted in accordance with 3.1 and 6.4 shall be inspected as specified in Tables I and II and drawing MTDC-1002, for compliance with design, materials, construction, workmanship, and dimensional requirements (see 6.4). Presence of any nonconformity shall be cause for rejection of the first article.

4.4 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with ASQC Z1.4.

4.4.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected and tested in accordance with all the requirements of the referenced documents, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this document or applicable purchase document.

4.4.1.1 Certification. Unless otherwise specified (see 6.2), the contractor shall provide certificates of compliance for the following:

- Cloth, duck, nylon (3.2.1) - With test reports
- Tape, nylon, 3/4 inch (3.2.2.1)
- Webbing, nylon, 2-1/4 inch (3.2.2.2)
- Thread, nylon (3.2.3)
- Keeper with slide (3.2.4)
- Fastener tape (3.2.5)
- Labels (3.3.4.2)
- Use instructions (3.3.5)
- No thread lubrication (3.3.1.4)

Certificates shall include the following:

- Specification type, class, etc.
- Quantity purchased
- Purchase source, address, and telephone number
- Purchase date

4.4.2 In-process inspection. Inspection shall be made at any point or during any phase of the manufacturing process to determine whether construction details that cannot be examined on the finished item are in accordance with specified requirements. This inspection shall include verification that holes drilled for location marking do not exceed 0.076-inch diameter and are placed in such a manner that each shall be covered in the finished item (see 3.4.3). Components that cannot be corrected shall be removed from production.

4.4.3 End item examination. The end items shall be examined for the nonconformities listed in tables I and II. The sample unit for these examinations shall be one completely fabricated case. The inspection level and acceptable quality level shall be in accordance with table III.

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TABLE I. Classification of nonconformities

Examine	Nonconformity	Classification	
		Major	Minor
Cloth	Any hole (except location holes), cut, or tear	X	
	Not type specified	X	
	Any abrasion mark, large slub smash, weak place, broken or missing yarns, multiple floats or open places visible at normal inspection distance (3 feet)	X	
	Needle chew	X	
	Color not as specified	X	
	Coated side of cloth not facing inward	X	
	Coating nonconforming or partially omitted on nylon cloth	X	
	Webbing	Not class or type specified	X
Not color specified			X
Any hole, cut, tear, or smash		X	
Abrasion mark, slub, broken end or pick		X	
Cut ends not fused as specified		X	
Not firmly and tightly woven		X	
Edges frayed or scalloped		X	
Multiple floats			X
Hardware, general	Broken or malformed, protective finish omitted or not as specified: corroded area, burr or sharp edge	X	
Keeper	Slide component of keeper jams in open, partly closed or closed position NOTE: Check operation of keeper by fully opening and closing.	X	
	Slide installed in reverse position		X
Open seam	1/2 inch or less		X
	More than 1/2 inch NOTE: A seam shall be classified as open when one or more stitches joining a seam are broken, or when two or more continuous skipped stitches or runoffs occur.	X	
Rows of stitching	Any row omitted (unless otherwise classified herein)	X	
Runoff (see open seam)			
Raw edge (except on inside of case)	More than 1/2 inch when securely caught in stitching	X	
	NOTE: Raw edge not securely caught in stitching shall be classified as an open seam.		

(cont)



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TABLE I. Classification of nonconformities (continued)

Examine	Nonconformity	Classification	
		Major	Minor
Thread	Not type, class, or size specified	X	
	Any thread lubricated	X	
	Not color specified		X
Fastener tape	Size or type not as specified	X	
	Location not as specified	X	
	Color not as specified		X
Seam and stitch type	Seam or stitch type not as specified	X	
	Required row of stitching omitted or not located as specified	X	
Stitch tension	Loose, resulting in a loose bobbin or top thread		X
	Excessively tight, resulting in puckering of material NOTE: Nonconformities to be scored only when the condition exists for a continuous 4 inches or more, and with an accumulated distance of 8 inches or more. Applicable to individual seams.		X
Stitches per inch	Up to two stitches less than minimum specified		X
	Three or more stitches less than minimum specified	X	
	Two or more stitches in excess of maximum specified		X
	NOTE: Variation in the number of stitches per inch caused by the operator speeding up the machine and pulling the fabric in order to sew over heavy seams or in turning corners, shall be classified as follows: (a) Within the minor nonconformity classification - no nonconformity; (b) Within the major nonconformity classification - minor nonconformity.		
Stitching margin	Exceeds specified tolerance, up to 1/16 inch		X
	Exceeds specified tolerance, over 1/16 inch NOTE: Nonconformities to be scored only when condition exists on major portion of seam. Applicable to each individual seam.	X	
Stitching dimensions (overall)	Smaller than nominal dimensions less applicable minus tolerance shown on drawings, but not smaller than nominal dimensions less twice the applicable minus tolerances		X
	Smaller than nominal dimensions less twice the applicable minus tolerance	X	
	Larger than nominal dimensions and applicable plus tolerances		X

(cont)

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TABLE I. Classification of nonconformities (continued)

Examine	Nonconformity	Classification	
		Major	Minor
Stitching ends	Not secured as specified		X
Thread breaks, skipped stitches or runoffs	Not overstitched as specified NOTE: Thread breaks or two or more consecutive skipped or runoff stitches not overstitched shall be classified as open seams.		X
Components and assembly	Any component part omitted or not as specified or any operation omitted or not as specified (unless otherwise classified herein)	X	
	Needle chews	X	
	Any mend, darn, patch, splice, or other unauthorized repair	X	
	Any material pleated or caught in stitch line where not specified		X
	NOTE: Needle holes visible as the result of broken or skipped stitching or stitching that has been removed shall not be considered as needle chews providing that the holes are spaced as in normal stitching.		
Flap	Sides of flap irregularly shaped, or not uniform on both sides		X
Horizontal and vertical hangers	Attached with one or more rows of stitching omitted (applicable to each stitch pattern)	X	
Piecing	Any piecing or splicing	X	
Cleanness	Grease, oil, dirt or ink stains, clearly noticeable		X
	Thread ends not trimmed as specified		X
Binding	Improperly or loosely applied; badly puckered		X
	Ends of binding not treated or turned under to prevent raveling, except where specified on drawing		X
Markings and label	Omitted, incorrect, illegible, misplaced, or size of characters not as specified	X	
	Label not securely caught by stitching		X
	Fabric color visible under markings		X
Instruction sheets	Missing or not as specified	X	
	Not folded as specified		X
	Illegible	X	
	Not in accordance with figures 1-4	X	

TABLE II. End item dimensional nonconformities

Examine	Nonconformities	Classification	
		Major	Minor
Fit of liner in case (see note)	Case too small, i.e., liner fails to fit properly in case	X	
	Case body or flap too short, preventing secure flap closure		X
	NOTE: A recently manufactured Fire Shelter Liner (NSN 8465-01-498-3191) shall be used as a fit gauge. The liner shall be fully inserted in the case without effort other than that necessary to overcome friction between the liner and case. The flap shall be securely closed.		
Stitch margins	Not within specified tolerances		X

Table III. Inspection levels and AQL's.  
(expressed in nonconformities per 100 units)

Examination	Inspection level	AQL
For nonconformities in Table I examination for visual nonconformities	II	2.5 major nonconformities 6.5 major and minor nonconformities combined
For nonconformities in Table II examination for dimensional nonconformities	S-3	0.65 one class

4.4.4 Packaging inspection. An examination shall be made to determine that packing and marking comply with the section 5 requirements. Nonconformities shall be scored in accordance with the list below. The sample unit shall be one shipping container fully packaged except that it shall not be palletized and it need not be closed. Shipping containers fully packaged that have not been palletized shall be examined for nonconformities in closure. The lot size shall be the number of shipping containers in the end item inspection lot. The inspection level shall be S-2 and the AQL shall be 2.5 nonconformities per hundred units.

<u>Examine</u>	<u>Nonconformities</u>
Markings	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.
Materials	Any component missing or not as specified. Any component damaged, affecting serviceability.
Workmanship	Inadequate application of components, such as: incomplete closure of container flaps, improper taping, loose strapping, inadequate stapling.
Contents	Bulged or distorted container. Number of liners per container is more or less than required.

## 5. PACKAGING

5.1 Preservation. Preservation shall be in accordance with ASTM D 3951 and as specified in the contract or purchase order and herein: The flap of each fire shelter case shall be fastened and the keepers closed. Ten cases shall be stacked one on top of another with the flaps alternated end for end facing downward, except the flap of the top case shall face upward. The bundle shall then be securely tied with cotton tape or twine.

5.2 Packing (when shipped separately). Ten bundles of 10 cases each (100 cases) preserved as specified in 5.1 shall be packed in a close-fitting corrugated fiberboard box, minimum burst strength 275 psi, meeting the requirements of the latest version of ASTM D 5118. Boxes shall be in compliance with the National Motor Freight Classification. Each box shall be closed in accordance with the latest version of ASTM D 1974, except that the inspection shall be in accordance with 4.4.4.

5.3 Marking. In addition to any special marking required by this specification, marking shall be in accordance with the contract or purchase order.

## 6. NOTES

6.1 Intended use. The carrying case is designed to carry the Fire Shelter, M-2002, which is intended for emergency use by firefighters if entrapped by wildfire.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- (a) Title, number, and date of the specification.
- (b) When first article samples are not required.
- (c) Preservation, packing, and marking required in addition to specification requirements (see section 5).

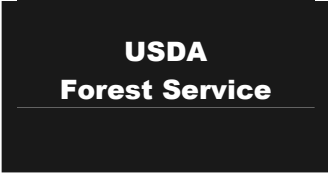
6.3 Standard shade sample. Shade samples for the carrying case may be obtained from preparing activity by the contractor only.

6.4 First article. Unless otherwise specified first articles are required and shall be inspected and approved under the appropriate provisions of FAR 52.209. The first article shall consist of three completely assembled cases covered under this specification and shall be preproduction samples. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should include specific instructions regarding arrangements for selection, inspection, and approval of first articles.

6.5 Notice. When Government drawings, documents, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever.

6.6 Preparing activity. USDA Forest Service, Missoula Technology and Development Center, 5785 Highway 10 West, Missoula, MT 59808.

6.7 Patent. This item has a patent pending. Contact the preparing activity for further details.



# Standardization Document Improvement Proposal

This form is provided to solicit beneficial comments that may improve this document and enhance it's use. Contractors, government activities, manufacturers, vendors, and users are invited to submit comments to:

Attach any additional pertinent information that may be of use in improving this document to this form and mail in a envelope. A response will be provided when the submitter includes their name and address.

USDA Forest Service  
Missoula Technology and Development Center  
5785 Highway 10 West  
Missoula, MT 59808

NOTE: This form shall not be used to submit requests for waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the document, or to amend contractual requirements.

Document Identification: **5100-609 - Case, Carrying, Fire Shelter, M-2002**

Submitter's Name (Optional. Please print or type): \_\_\_\_\_ Submitter's Organization and Address: \_\_\_\_\_

\_\_\_\_\_

Vendor    User    Manufacturer   \_\_\_\_\_

Phone Number: \_\_\_\_\_

Date: \_\_\_\_\_

Has any part of the Document created problems or required interpretation in procurement use?

Is any part of the Document too rigid, restrictive, loose, or ambiguous? Please explain below:  
Give paragraph number and wording: \_\_\_\_\_

\_\_\_\_\_

Recommended change(s): \_\_\_\_\_

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Reason for recommended change(s): \_\_\_\_\_

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Remarks:

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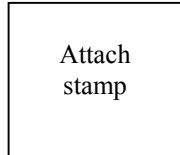
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