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August, 1997

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

SPECIFICATION FOR

SHEATHS, PLASTIC, HAND TOOL

1. SCOPE AND CLASSIFICATION.

1.1. Scope. The plastic tool sheaths described in this specification are used to cover the sharp edges of hand tools, thereby preventing injury to work crews. Sharp edges are vital in wildland fire fighting, but must be protected and ready for immediate use.

1.2 Classification.

Type A - Pulaski Tool Sheath
Type B - Double-Bit Ax Sheath
Type C - Fire Shovel sheath
Type D - Brush Hook Sheath
Type E - McLeod Tool Sheath
Type F - Combination Tool Sheath*
Type G - Fire Rake Sheath*

2. APPLICABLE DOCUMENTS.

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks 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 (see 6.2).

FEDERAL STANDARD

FED-STD-595 - Colors

(Unless otherwise indicated, copies of federal and military specifications and standards are available online at https://assist.daps.dla.mil/quicksearch/ or in hard copy from the Standardization Documents Order Desk, Building 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094.)

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, ddavis02@fs.fed.us.

DRAWINGS

USDA FOREST SERVICE

MTDC-1094 - Pulaski Tool Sheath, Plastic
MTDC-1095 - Double-Bit Ax Sheath, Plastic
MTDC-1096 - Fire Shovel Sheath, Plastic
MTDC-1097 - Brush Hook Sheath, Plastic
MTDC-1098 - McLeod Tool Sheath, Plastic
MTDC-1099 - Combination Tool Sheath, Plastic
MTDC-1100 - Fire Rake Sheath, Plastic

(Copies of Forest Service drawings are available from the preparing activity, 6.5.)

2.2. Non-Government Documents. The following specifications, standards, and handbooks 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 (see 6.2).

AMERICAN SOCIETY FOR QUALITY (ASQ)

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

(Copies are available from the American Society for Quality, PO Box 3005, Milwaukee, WI 53201-3005, www.asq.org.)

ASTM

D 412 - Standard Test Methods For Vulcanized Rubber And Thermoplastic Elastomers - Tension
D 2240 - Standard Method of Test for Rubber Property - Durometer Hardness.
D 3951 - Standard Practice for Commercial Packaging
D 5118 - Standard Practice for Fabrication of Fiberboard Shipping Boxes
E 380 - Practice for Use of the International System of Units.

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

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

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

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification

(Address requests for copies to Uniform Freight Classification Committee, Room 1106, 222 S. Riverside Plaza, Chicago, IL 60606.)

(Non-Government standards and other publications normally are available from the organizations that prepare or 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 the 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 items shall be subjected to first article inspection (see 6.3) in accordance with 4.3. During the term of the contract the contractor shall be required to notify the contracting officer in writing when a component, or the component supplier, changes in any way; when a major manufacturing process changes in any way; and when a manufacturing location changes. The contracting officer may at any time require the contractor to submit a new first article sample when substantive changes occur during the term of the contract."

3.2 Materials and construction. Materials and the construction shall be as specified herein and in the applicable drawings.

3.2.1 Material. Where more than one type of material is used, there shall be no incompatibility between materials which may cause corrosion.

3.2.1.1 Sheath Material. Plastic sheath material shall be made of urethane elastoplastic polymer, and shall meet minimum physical properties as indicated in Table I. These properties are determined after a cure of 16 hours at 230°F (+/-5°F).

Table I. Physical Properties of the Urethane Elastoplastic Polymer Material

Physical Properties	Values	Test
Ultimate Tensile Strength, Straight Specimen	3,000 psi minimum	ASTM D412
Hardness, Shore Type A durometer	90 +/- 5 durometer	ASTM D2240
Ultimate Elongation	475 percent minimum	ASTM D412

3.2.1.2 Hardware. All metallic hardware and fasteners shall be zinc coated steel. The rivets shall be oval head 3/16 inch diameter and grip length sufficient for the application with minimal extra length. The washers shall be zinc coated No. 10, for a 3/16 inch bolt size.

3.2.2 Construction. Tool sheaths shall be produced by injection. Dimensions and construction shall be as shown in the applicable drawings.

3.2.2.1 Sheath Type and Configuration. Tool sheaths shall be molded and assembled in accordance with the applicable drawings as specified:

Type A Pulaski Tool Sheath - MTDC-1094
Type B Double-Bit Ax Sheath - MTDC-1095
Type C Fire Shovel Sheath - MTDC-1096
Type D Brush Hook sheath - MTDC-1097
Type E McLeod Tool Sheath - MTDC-198
Type D Combination Tool Sheath - MTDC-1099
Type E Fire Rake Sheath - MTDC-1100

3.3 Dimensions. The dimensions shall be as shown in the applicable drawing. Unless otherwise noted, tolerances shall be +/-0.125 inch.

3.4. Workmanship. Workmanship shall be equal to the best commercial practices consistent with the highest engineering standards in the plastics industry and shall be free from any nonconformities which may impair serviceability or detract from the product's appearance. All component plastic parts must be fully and completely formed from the mold. Excessive material on edges shall not be allowed and all flash shall be trimmed off. The sheaths shall be free from any nonconformities such as blisters, pinholes, pits, sink marks, crazing, wrinkles, voids, foreign material, or cracks. The surface shall be smooth and tack free.

3.4.1. Symmetry. The plastic sections shall be symmetrical and concentric to 0.10 inches around all folding lines and symmetrical sections.

3.5 Color. The color of the sheath shall approximately match color number 12199 of FED-STD-595.

3.6 Compression Molds. For Types A through E the Government will furnish an injection mold which is suitable for use with a 300 ton injection molding machine or comparable press. The molds remain the property of the Government and shall be returned to the Government when the contract or agreement has been completed.

3.6.1 Maintenance of Compression Molds. The contractor with possession of Government owned molds shall be responsible for care of the molds. This care shall include but not be limited to the following:

a. Keep parting lines clean at all times.
b. Conduct a daily visual inspection of all moving parts such as the injector pins, guide pins, and bushings that line up the molds.
c. Grease the leader pins daily with an appropriate lubricant. This may be done while the molds are in the press.
d. Make sure the vents are clean at all times.
e. Remove the mold, clean and dry out all the water lines. Wipe down the parting lines after a production run and give the mold, including the water lines, a moisture resistant, non-corrosive coating.

3.7 Marking. The letters "GSA" shall appear as raised letters on the formed sheaths due to being engraved into the molds.

3.8 Metric Products. Metric dimensions are provided for information only, inch-pound units shall be the required units of measure for this specification. 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 ASTM E 380, and all other requirements of this specification are met.

3.9 Recoverable Materials. The contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR), provided all performance requirements of this specification are met.

4. INSPECTION, SAMPLING AND TEST PROCEDURES.

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 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 the specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.2 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 acceptance of nonconforming material.

4.1.3 Responsibility for dimensional requirements. Unless otherwise specified in the contract or purchase order, the contractor is responsible for ensuring 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.

4.2 Sampling for inspections and tests. Sampling for inspections and tests shall be made in accordance with ASQ Z1.4. The inspection level and acceptable quality level (AQL) shall be as specified. All sheaths for one type of tool presented together in one delivery shall be considered a lot for the purpose of inspection. A sample unit shall be one tool sheath.

4.3 Inspection and Tests.

4.3.1 First Article Inspection. Unless otherwise specified First Article Inspection shall be consist of an inspection in accordance with Table II and an examination of the Certificates of Conformance in accordance with 4.4.

4.3.2 Lot by lot inspection. The end items shall be examined for the nonconformities listed in table II on a lot by lot basis. The lot size shall be expressed in units of complete sheaths. The inspection level shall be S-2, and the acceptable quality level (AQL), expressed in terms of nonconformities per hundred units, shall be 1.5. Nonconformities shall be scored on an individual basis, i.e., each fastener, each dimension, etc. Each sample sheath shall be visually examined to determine conformance with this specification. If the number of nonconformities in any sample exceeds the indicated AQL, the lot shall be rejected.

TABLE II. Classification of nonconformities

Examine	Nonconformity
Sheath Assembly	Not Complete
	Material not as required
	Workmanship not as required
	Rivets or washers not as required
	Color not as required
	Dimensions not as required
	Excessive material on sheath edges
	Marking not as required

4.4 Certification. Unless otherwise specified (see 6.2), as part of first article presentations and lot inspections, it shall be acceptable for the contractor to provide certificates of conformance (COCs) for all materials and components in lieu of actual lot by lot testing. When the contractor changes component or material suppliers, a new certification based on actual test results shall be required. The following components shall be certified:

The basic sheath material (3.2.1.1)
Hardware (3.2.1.2)

All certificates shall include as a minimum:

Specification, type, class, form, etc. as applicable
Quantity purchased
Purchase source, address, and telephone number
Purchase date
Lot number traceable to materials used in production
Contract number

4.4.1 Test Results. The contractor shall maintain complete records, including actual test results, of all inspections and tests performed on all materials used in the manufacture of all sheaths. Copies of test results proving conformance to the properties specified by this specification shall be supplied as a part of the First Article Inspection and thereafter at the request of the government.

4.5 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 Table III. 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.

Table III. Packaging Examination

Examine	Nonconformity
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.
	Bulged or distorted container.
Contents	Number of items per container is more or less than required.

5. PACKAGING, PACKING AND MARKING.

5.1 Preservation. Preservation shall be in accordance with ASTM D 3951 and as specified in the contract or purchase order (see 6.2).

5.2 Packaging. Ten (10) sheaths shall be packaged in a 11-1/4" x 11-1/2" x 5" paperboard or fiberboard box.

5.3 Packing. Ten (10) packages (see 5.2) of one kind of sheath (100 sheaths) shall be packed into a type CF, variety SW, class Domestic, grade 200 (ESC 32) of ASTM D 5118; size shall be 23-1/2" x 12" x 26" (+/- 1/2"), the closure shall be in accordance with method IV of the appendix. The box shall comply with the Uniform Freight Classification and the National Motor Freight Classification. .

5.4 Marking. In addition to any special marking required by the contract or purchase order, shipping containers shall be marked in accordance with FED-STD-123.

6. NOTES.

6.1 Intended Use. The plastic tool sheaths described in this specification are used to cover the sharp edges of hand tools, thereby preventing injury to work crews.

6.2 Ordering data. Documents utilizing this material should specify the following:

(a) Title, number and date of this specification.
(b) When first article samples are not required (see 3.1).
(c) When lot by lot testing is required in lieu of certificates of compliance (see 4.4).
(d) Preservation, packing, and marking required in addition to specification requirements (see section 5).

6.3 First article. When first articles are required, they shall be inspected and approved under the appropriate provisions of Federal Acquisition Regulation 52.209. The first article shall consist of three completely assembled items covered under this specification and shall be preproduction samples. The contracting officer should include specific instructions regarding arrangements for selection, inspection, and approval of the first articles.

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

6.5 Preparing Activity. USDA Forest Service, Missoula Technology and Development Center (MTDC), 5785 Highway 10 West, Missoula, Montana 59808.

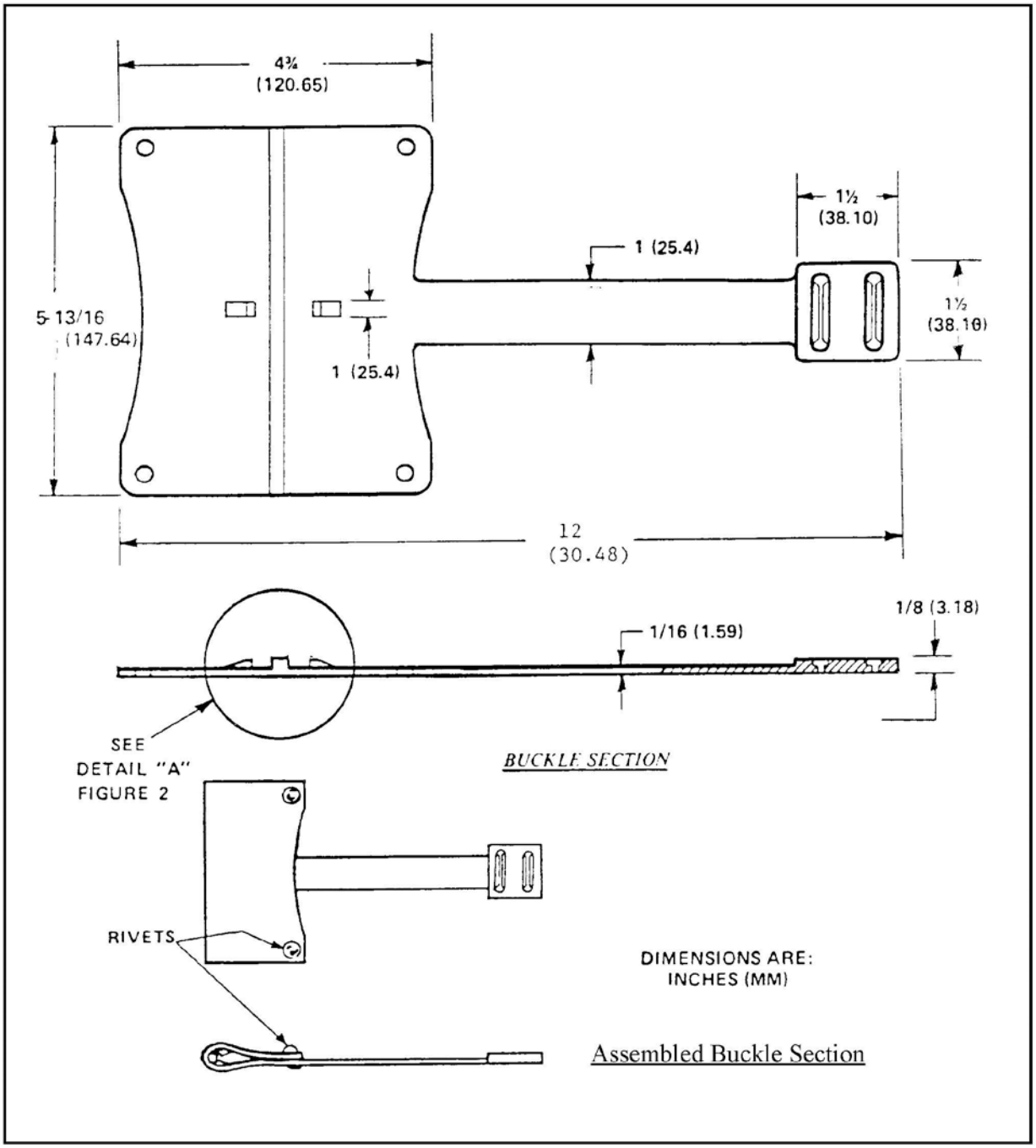

Figure 1 - Pulaski Tool Sheath

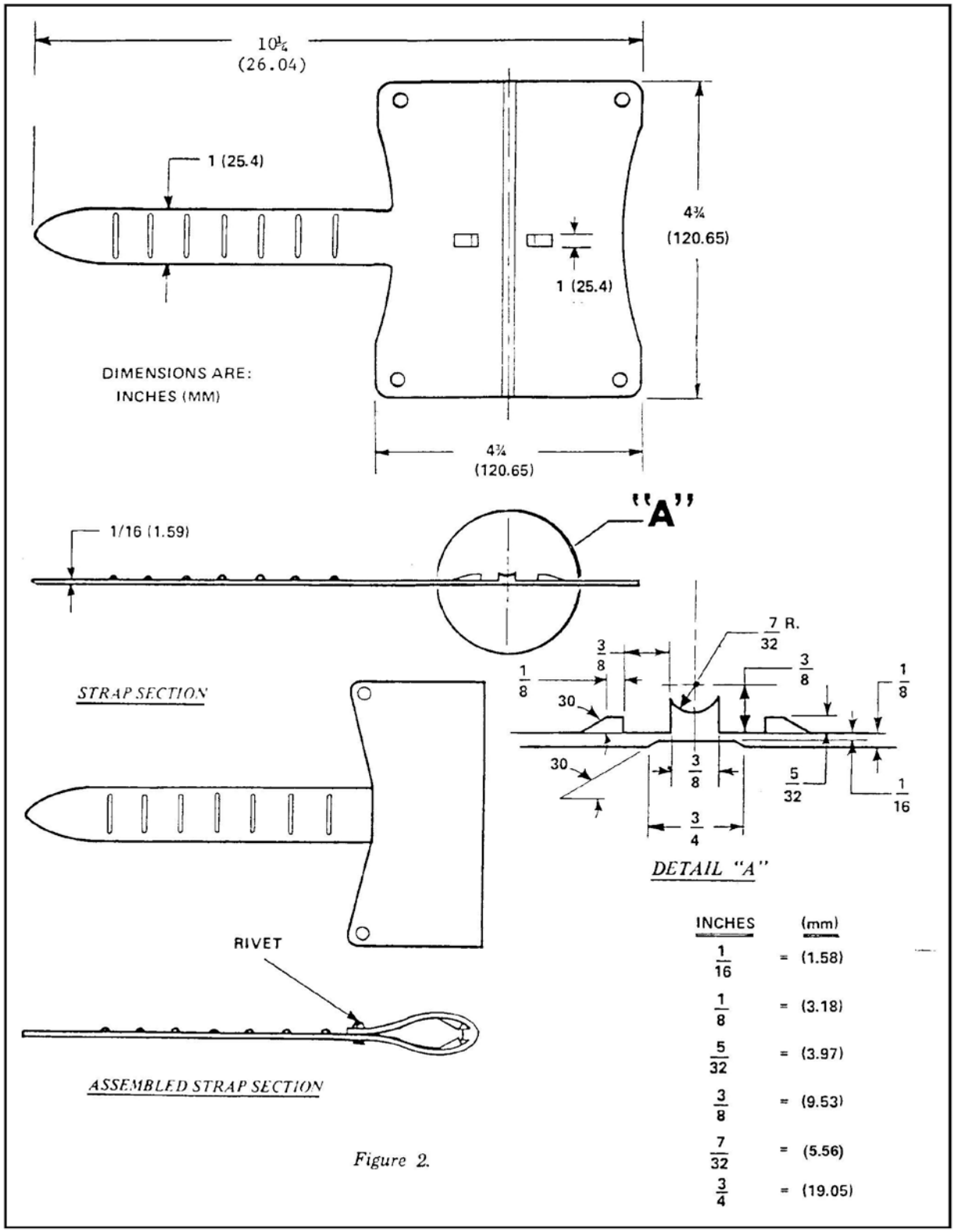

Figure 2.

Figure 2 - Pulaski Tool Sheath

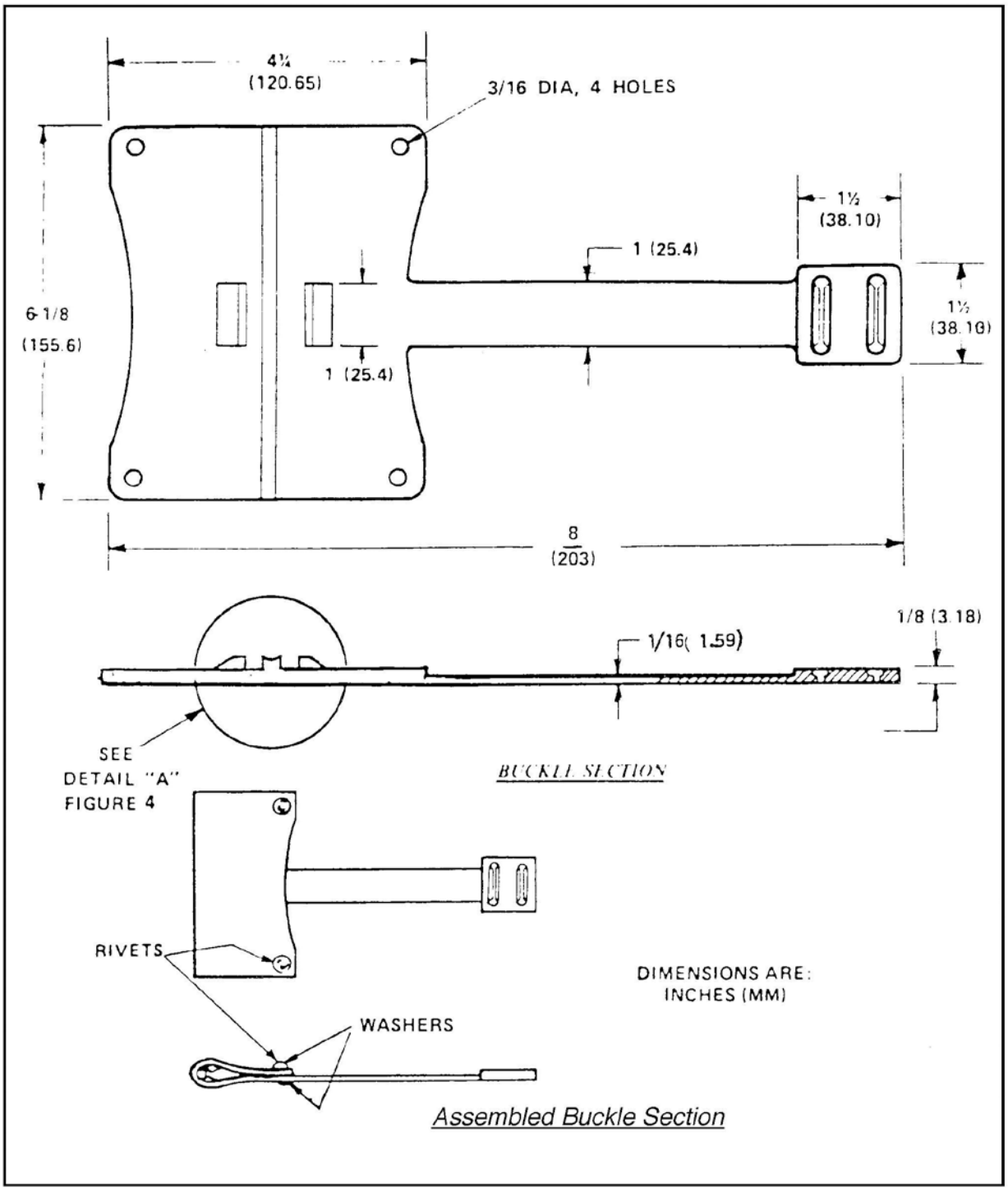

Figure 3 - Double-Bit Ax Sheath

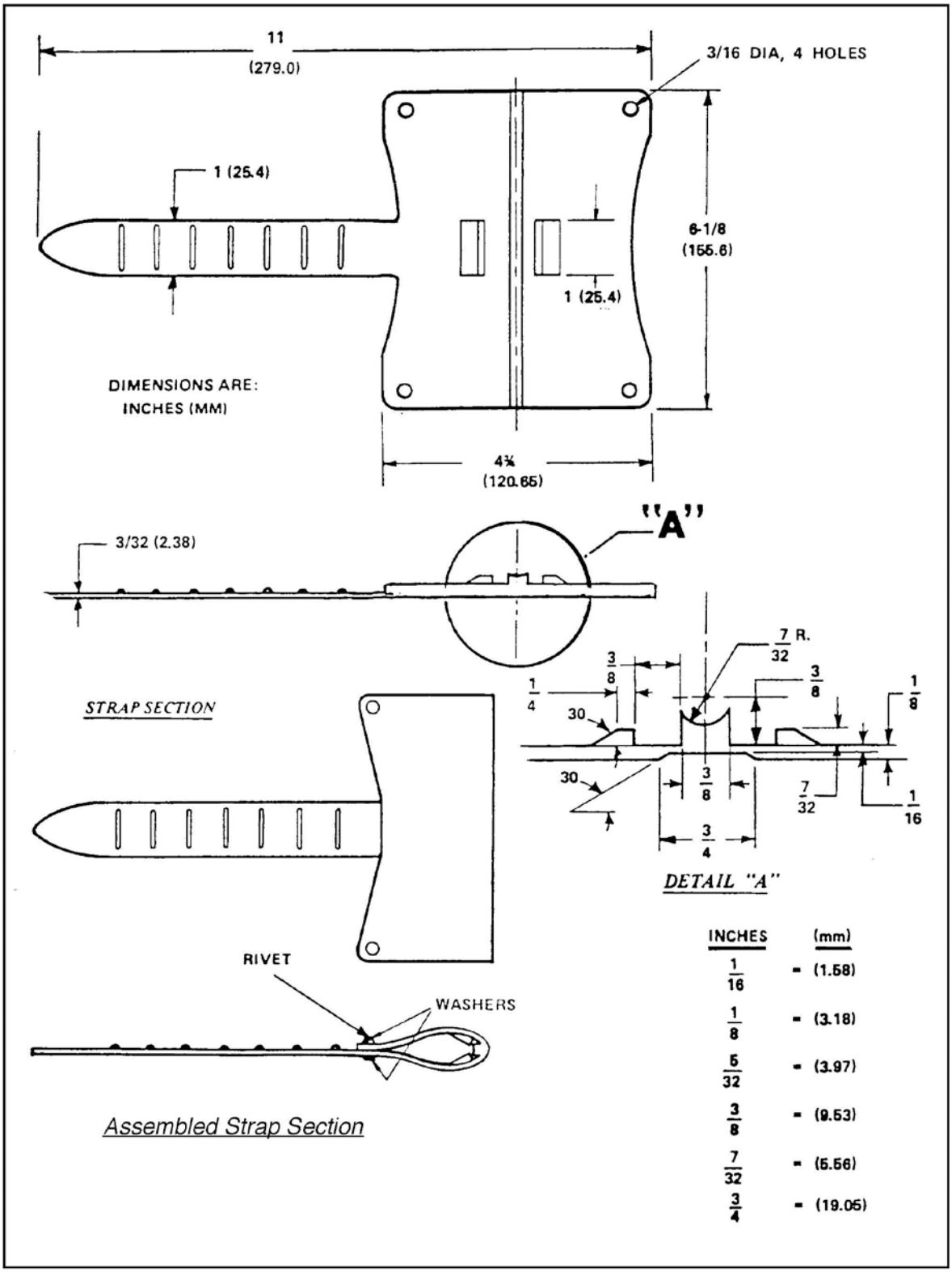

Figure 4 - Double-Bit Ax Sheath

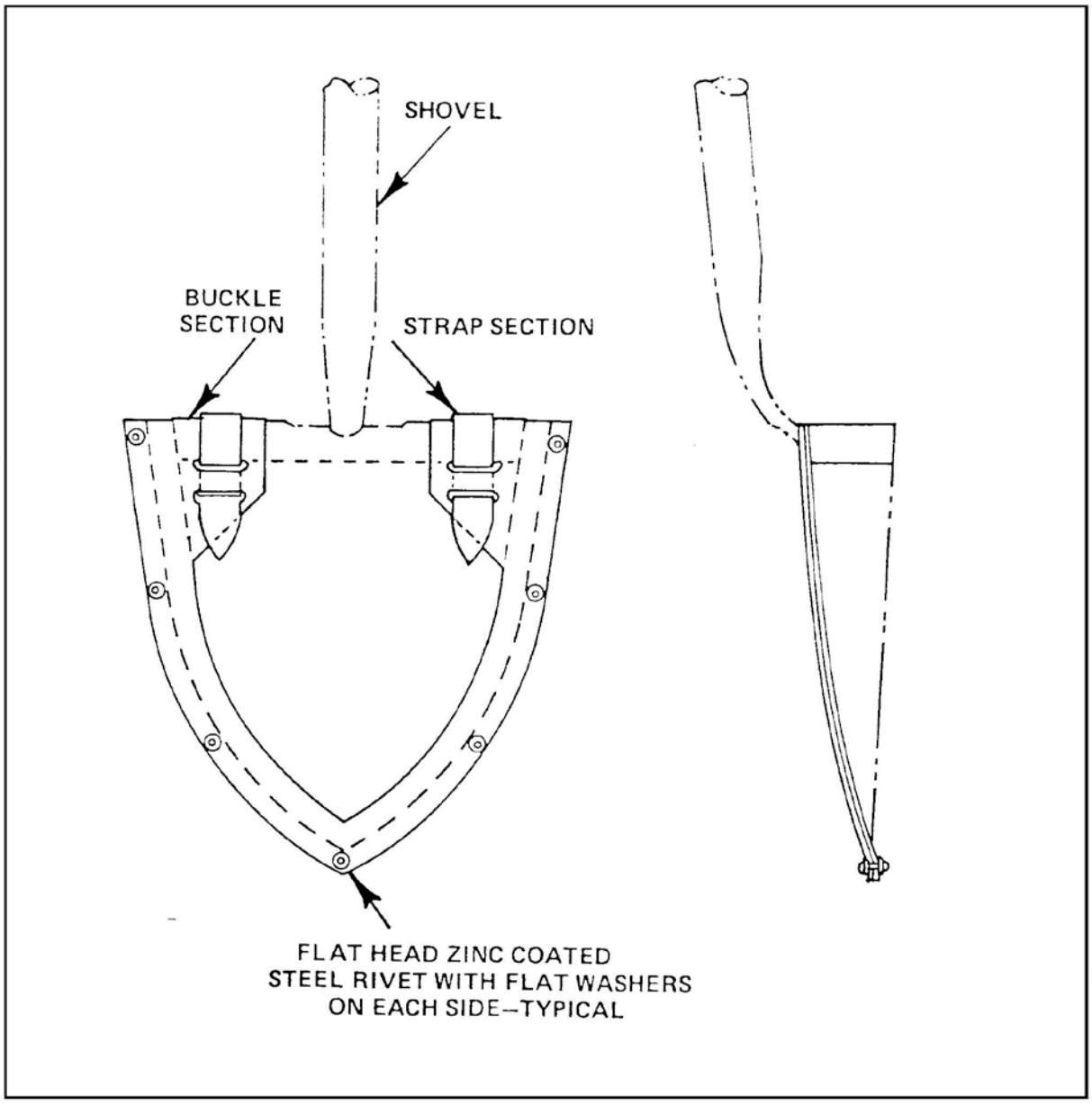

Figure 5 - Fire Shovel Sheath

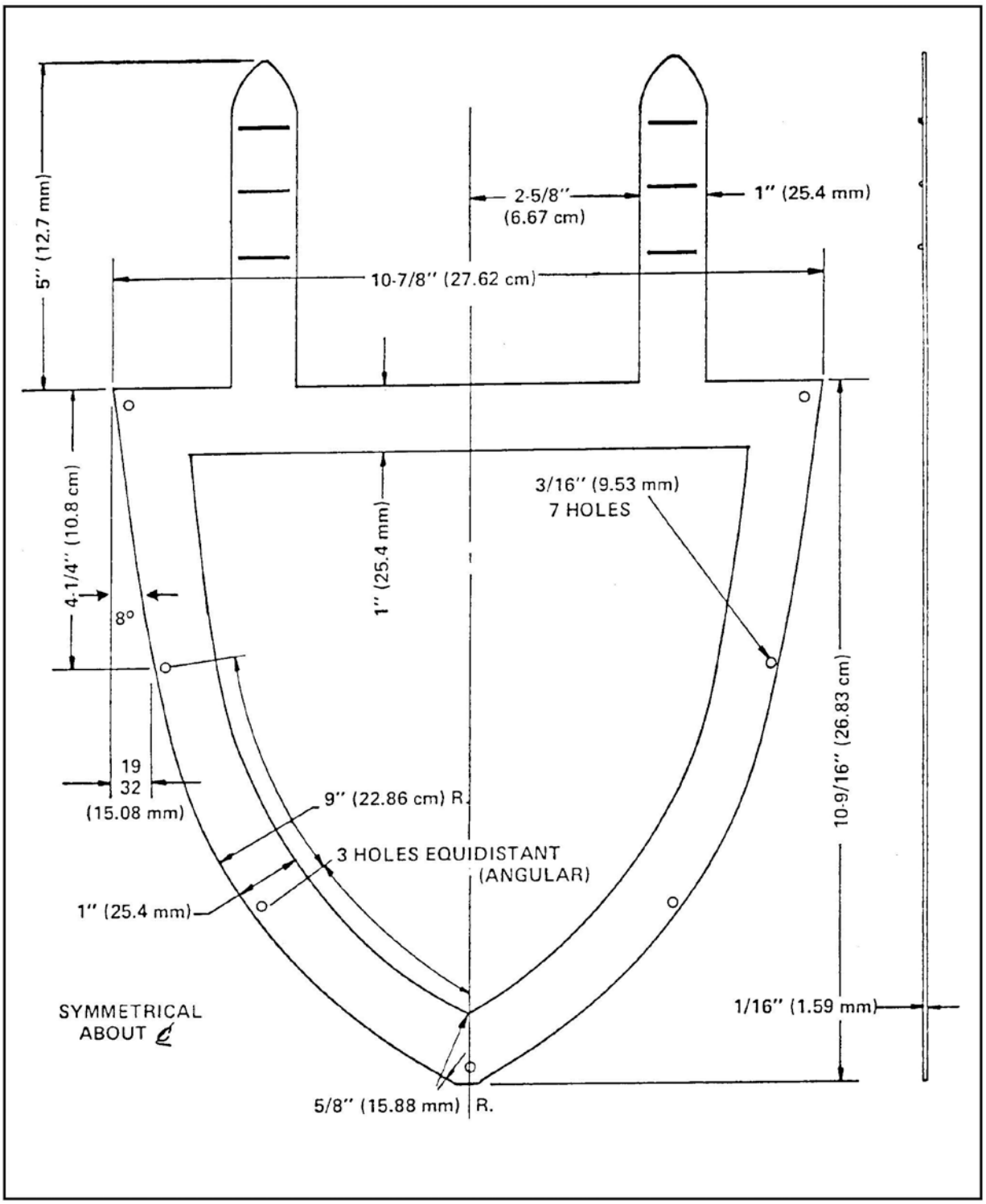

Figure 6 - Fire Shovel Sheath

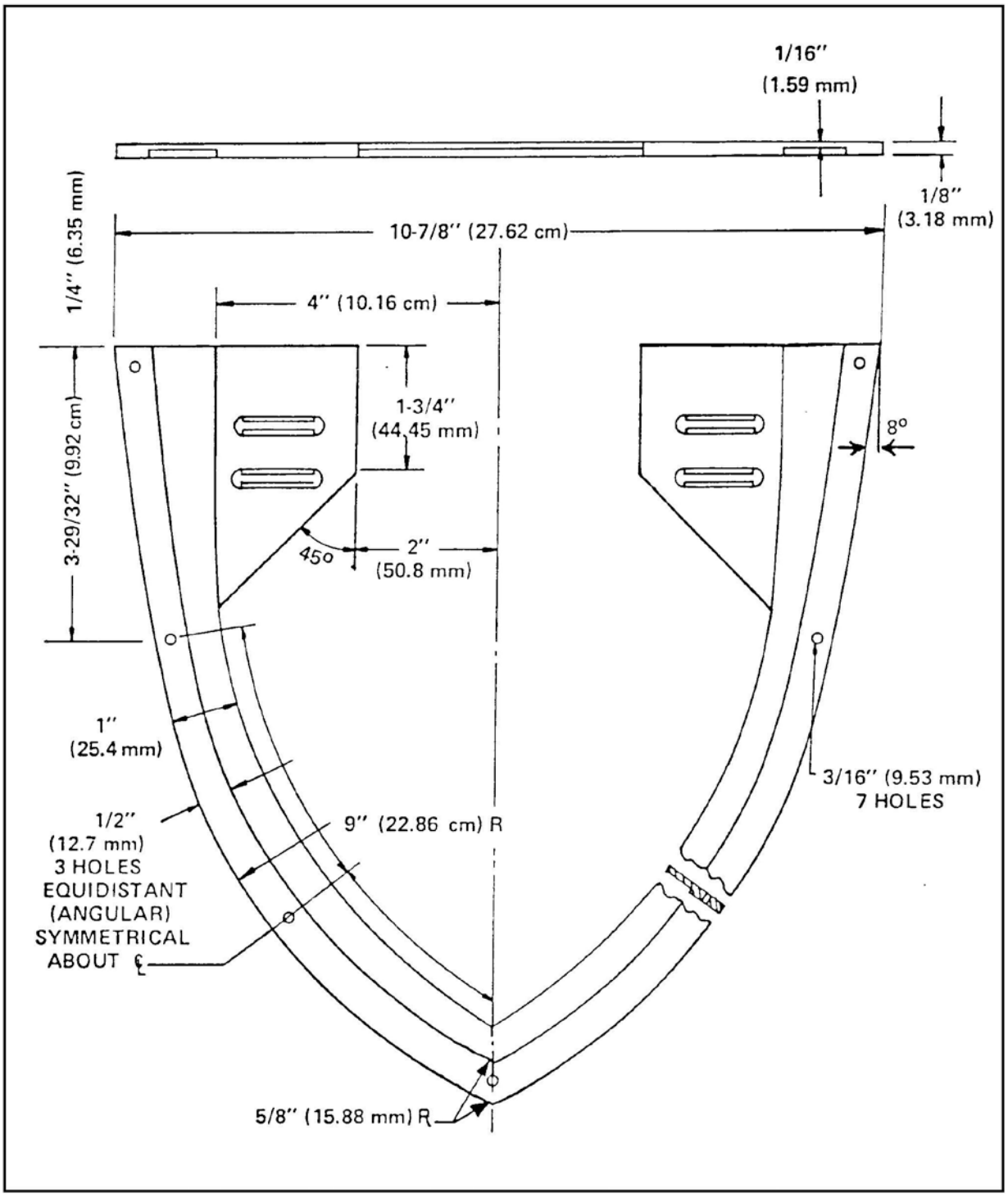

Figure 7 - Fire Shovel Sheath

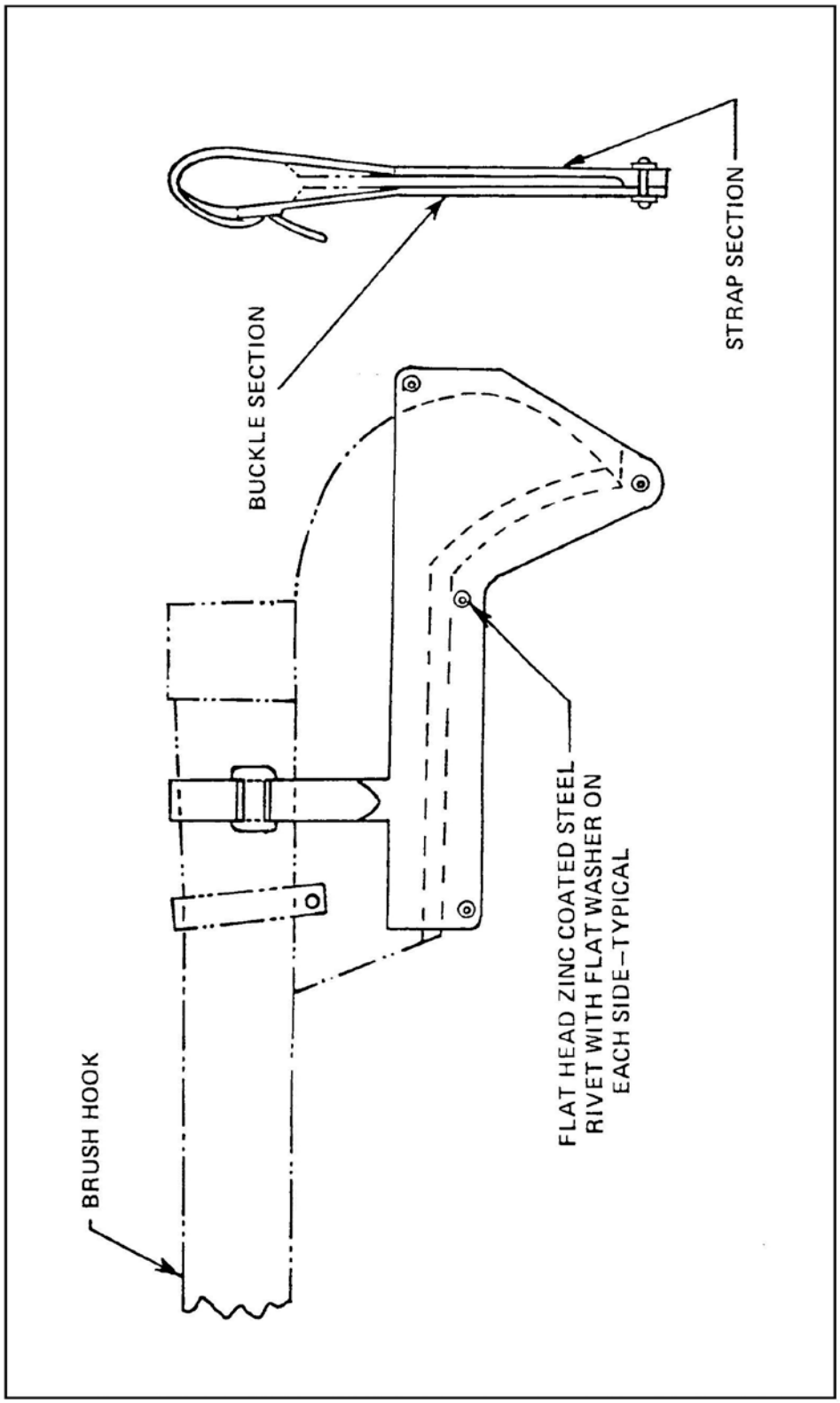

Figure 8 - Brush Hook Sheath

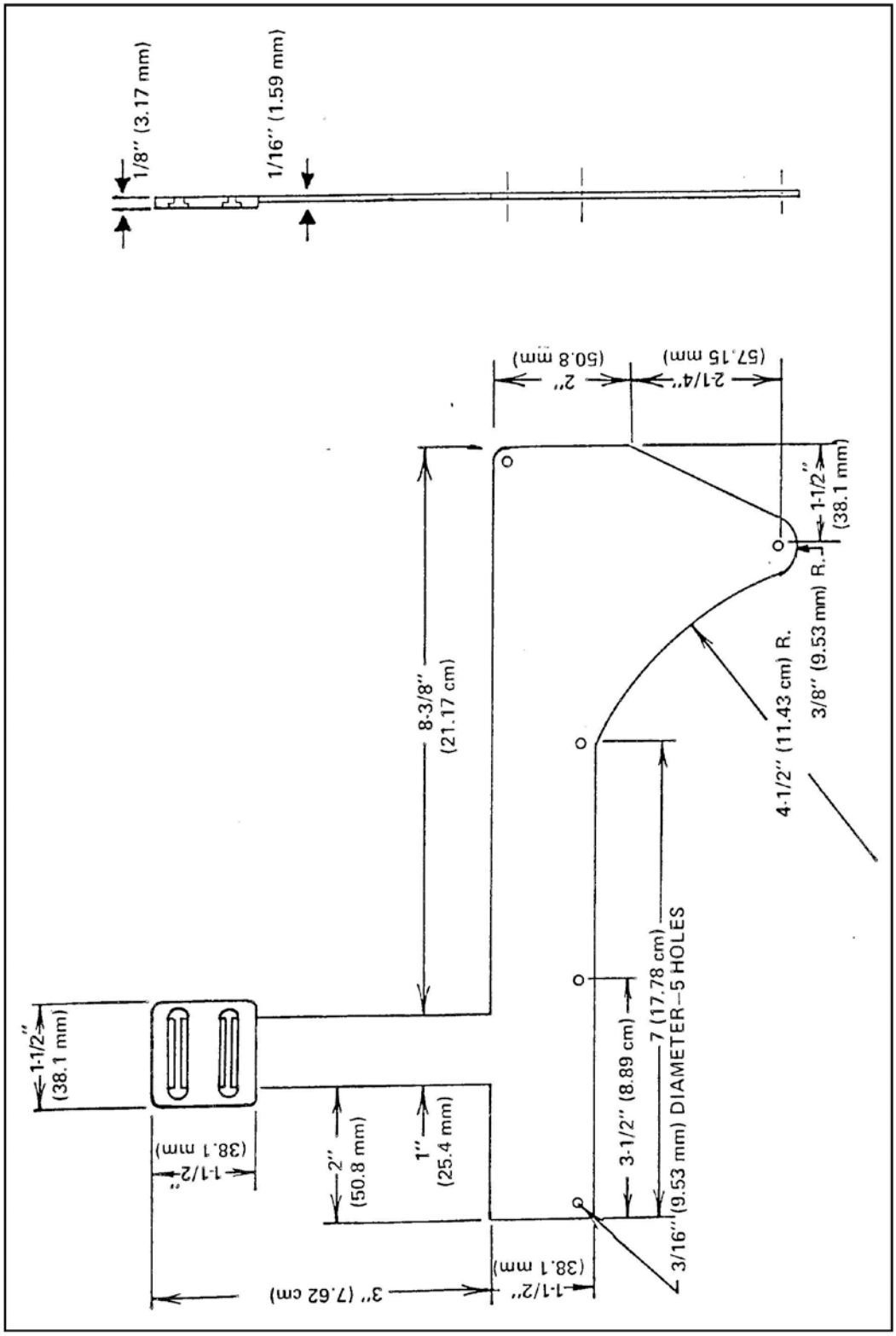

Figure 9 - Brush Hook Sheath

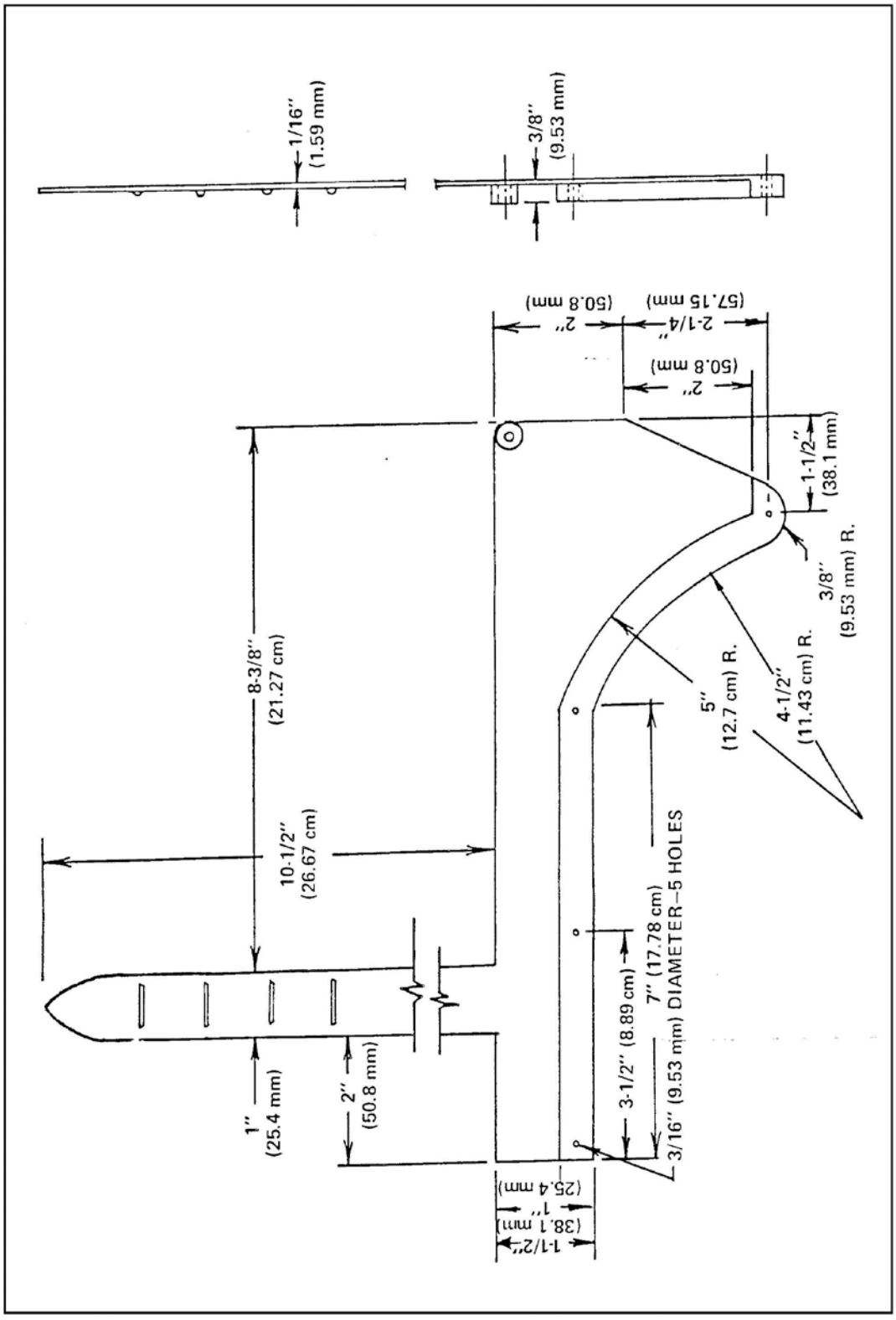

Figure 10 - Brush Hook Sheath

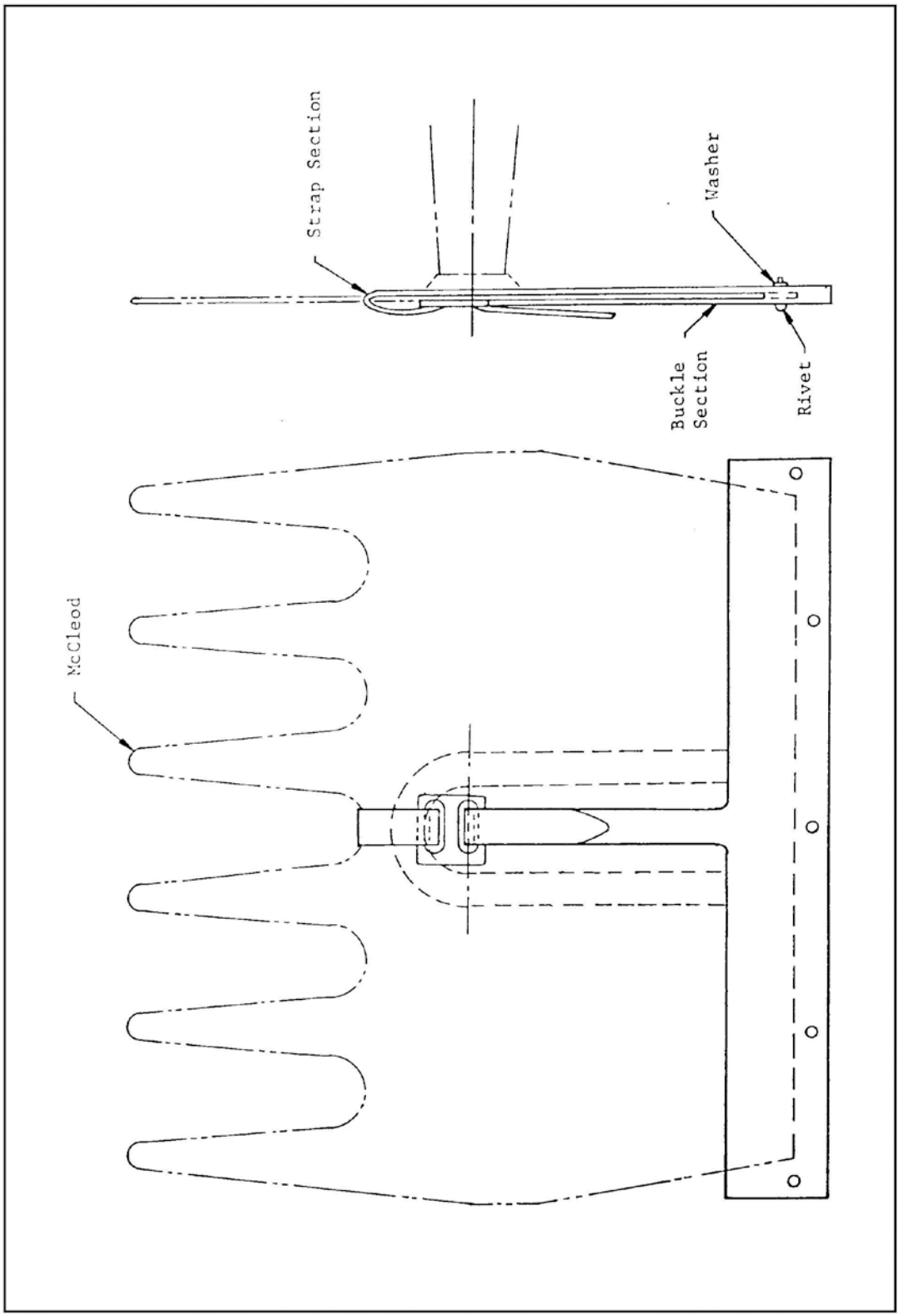

Figure 11 - McLeod Tool Sheath

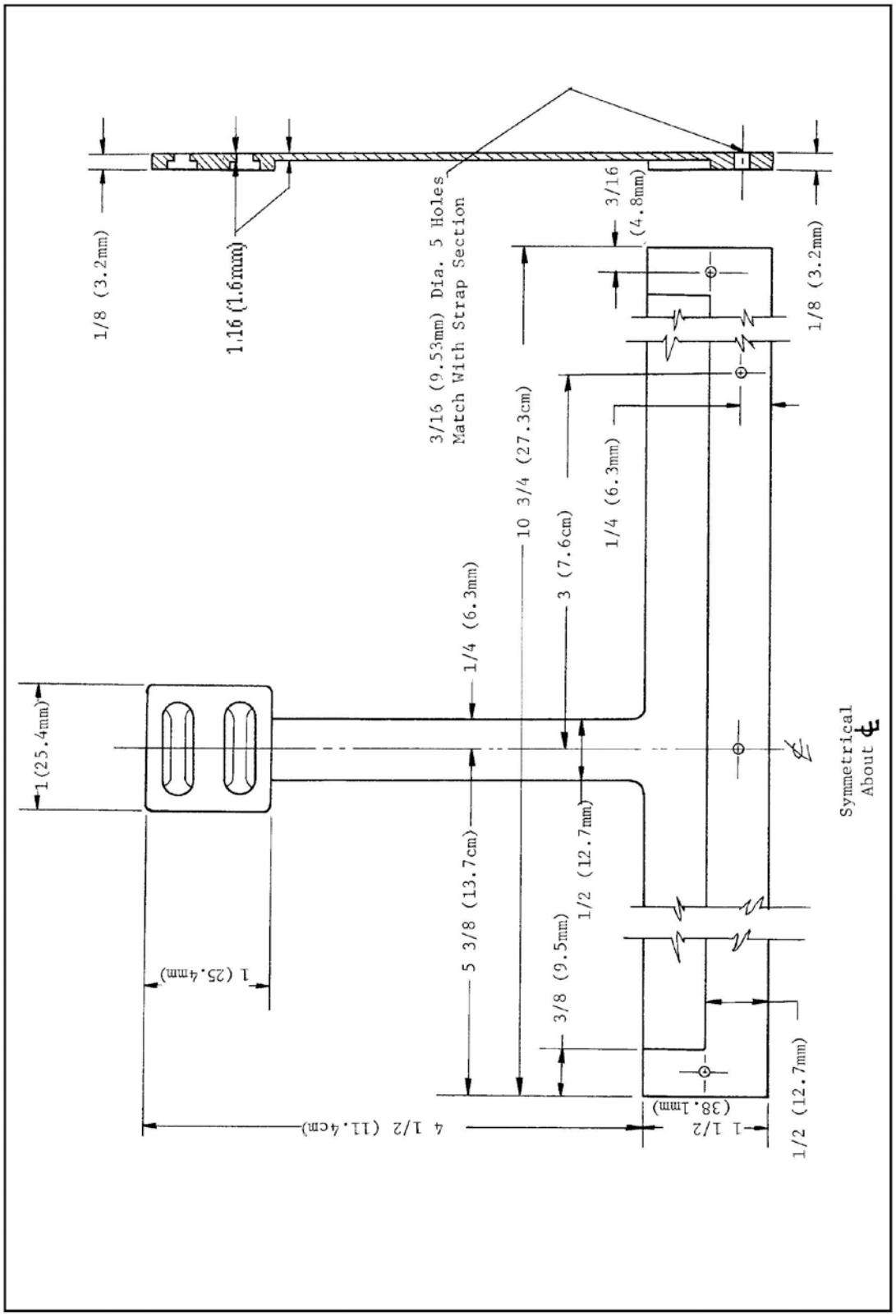

Figure 12 - McLeod Tool Sheath

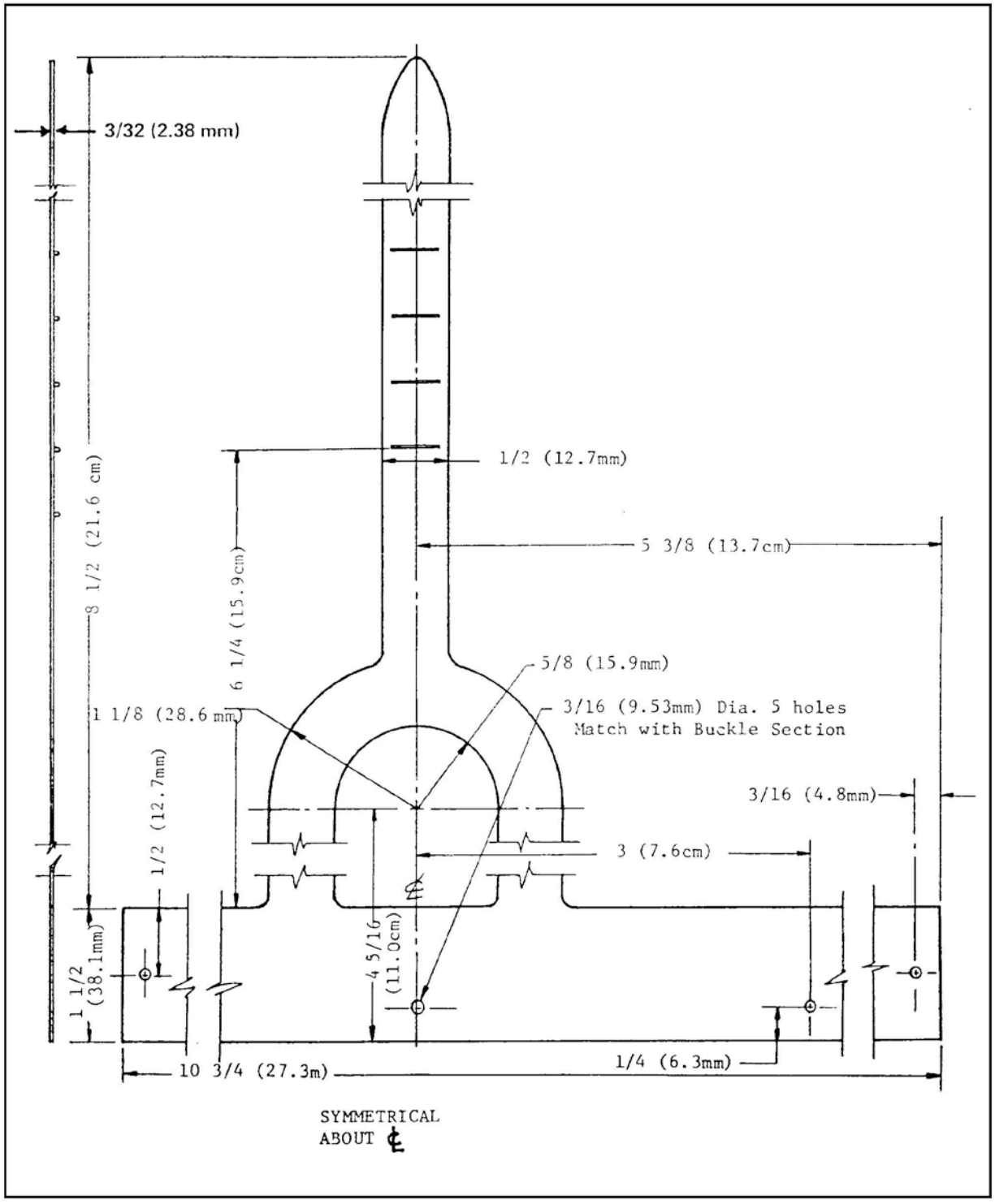

Figure 13 - McLeod Tool Sheath