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SUPERSEDING
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July 18, 1968

FEDERAL SPECIFICATION

PILES AND POLES, WOOD

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers preservative treated and untreated piles and poles.

1.2 Classification. The piles and poles shall be of the following types, and classes as specified (see 6.2):

Type I - Piles Untreated.
Type II - Piles, Treated.
Type III - Poles, Untreated.
  Classes - 1 through 7 (see tables I and II).
Type IV - Poles, Treated.
  Classes - 1 through 7 (see tables I and II).

2. APPLICABLE DOCUMENTS

2.1 Specification and standards. The following specification and standards of the issues in effect on date of invitation for bids or request for proposal form a part of this specification to the extent specified herein:

Federal Specification

TT-W-571 - Wood Preservation: Treating Practices.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements

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as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Standards

MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	- Marking for Shipment and Storage.

(Copies of standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D25 - Round Timber Piles

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA, 19103.)

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

M6 - Brands Used on Forest Products.

(Application for copies should be addressed to American Wood-Preservers' Association, Suite 628, 1625 Eye Street, NW, Washington, DC 20006.)

ASSOCIATION OF AMERICAN RAILROADS

Rules Governing the Loading of Commodities on Open Top Cars.

(Application for copies should be addressed to the Association of American Railroads, 59 East Van Buren Street, Chicago, IL 60605.)

AMERICAN NATIONAL STANDARDS INSTITUTE, INC.

ANSI 05.1 - Specifications and Dimensions for Wood Poles.

(Application for copies should be addressed to the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10016.)

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations, Inc., ATTN: Tariff Order Section 1616 P Street, NW, Washington, DC 20036.)

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, ATTN: Tariff Publishing Officer, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

(Technical Society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal Agencies.)

3. REQUIREMENTS

3.1 Description.

3.1.1 Piles. Piles shall be the round timber stem of trees, of the species specified (see 6.2 and 6.3) and in accordance with ASTM D25.

3.1.2 Poles. Poles shall be in accordance with ANSI 05.1 and as specified herein. When specified (see 6.2), poles shall be of one species only.

3.2 Piles.

3.2.1 Lengths. Piles shall be furnished in the lengths specified (see 6.2).

3.2.2 Circumferences and diameters. The circumferences and diameters of piles shall be as specified in ASTM D25.

3.2.3 Types.

3.2.3.1 Type I, untreated piles. Type I piles shall be unpeeled, rough-peeled, or clean-peeled, as specified (see 6.2). When high heartwood content in untreated piles is required (see 6.2), the diameter of the heartwood at the butt of the pile shall be not less than eight-tenths of the butt diameter.

3.2.3.2 Type II, treated piles. Type II piles shall be clean-peeled and shall be treated in accordance with TT-W-571 as specified (see 6.2). Unless otherwise specified (see 6.2), the thickness of sapwood shall be not less than 1 inch.

3.2.4 Identification marking. Each pile shall be branded or marked with the typical brand and key data as prescribed in AWPA Standard M6. The data shall be legibly and permanently burn-branded into the pile or be included on a recessed, noncorrosive metal tag applied to the pile. The code letters shall not be less than 5/8 inch high, if burn branded, and not less than 1/8 inch high if on a metal tag. The piles shall have the required data burn-branded or tagged on the butt face and in addition in two places on the pile approximately 5 feet and 10 feet from the butt.

3.3 Poles. Type III and Type IV poles shall conform to the following.

3.3.1 Pole length. Poles shall be furnished in the lengths specified (see 6.2).

3.3.1.1 Length tolerance. The length tolerance for poles shall conform to the requirements of ANSI 05.1.

3.3.2 Pole circumference. Unless otherwise specified (see 6.2), the butt and top circumferences shall conform to the following.

3.3.2.1 Circumference of standard length poles. The circumferences of standard length poles as described in ANSI 05.1 shall conform to dimensions as stated in ANSI 05.1.

3.3.2.2 Circumferences of short poles. Circumferences of poles 16 and 18 feet in length shall conform to table I.

Table I. Dimensions for Poles 16 and 18 Feet Long.

Class		3	4	5	6	7
Minimum Circumference at top (inches)		23	21	19	17	15
Length of pole (feet)	Ground line distance from butt (feet)	Minimum circumference 6 feet from butt (inches)				
16	3-1/2	Not available		20.5	18.5	17.5
18	3-1/2	25.0	23.5	21.5	20.0	18.5

3.3.2.3 Circumferences of long poles. Long poles, 130-150 feet in length shall have circumference measurements as specified in table II.

Table II. Dimensions for Poles Over 125 Feet Long.

Species		Alaska Yellow Cedar Douglas Fir Southern Pines Western Hemlock		Western Larch	
Class		1	2	1	2
Minimum circumference at top (inches)		27	25	27	25
Length of pole (feet)	Ground line distance from butt (feet)	Minimum circumference 6 feet from butt (inches)			
130	17	66	62	64.5	60
135	18	67	63	65.5	61.5
140	19	68	64	66.5	62
145	20	69	65	67.5	62.5
150	21	70	66	68.5	63

3.3.2.4 Circumferences of nonstandard length poles. The circumferences of poles 21 feet through 149 feet in which the length is not evenly divisible by five shall conform to the requirements of the next larger 5-foot-length increment as prescribed in ANSI 05.1. (i.e., the circumference of a 32-foot pole shall conform to the requirements for a 35-foot pole.)

3.3.3 Splices. Poles up to 120 feet long shall be furnished in single lengths. Poles over 120 feet long shall be furnished either spliced (two pieces) or single length (one piece), as specified (see 6.2). If spliced poles are required, the following details shall be furnished:

(a) Total length and length of each section.
(b) Top circumference of the completely assembled pole including the taper to butt.
(c) Type and length of splice.
(d) Details for gaining and boring for splicing.
(e) Material and dimensional requirements for hardware.
(f) Group or species of wood for both sections.
(g) Detailed drawings, as applicable.

3.3.4 Roofing, gaining and boring. Unless otherwise specified (see 6.2), all roofing, gaining, and boring shall be accomplished prior to preservative treatment.

3.3.4.1 Roofing. Roofing shall be 15 degrees one way or flat, as specified (see 6.2).

3.3.4.2 Gaining. Unless otherwise specified (see 6.2) all poles shall be slab gained or mortise gained for the mounting of a standard 4-1/2-inch crossarm. The length of the slab gain or number of mortise gains shall be as specified (see 6.2).

3.3.4.3 Boring. Unless otherwise specified (see 6.2) each pole shall be provided with two 11/16-diameter holes spaced 24 inches, plus or minus 1/16, on centers. The first hole shall be located 10-1/4 inches plus or minus 1/4 inch, from the peak of the roofing. Mortise gains shall have holes centered in the mortise and all holes shall be centered in the pole.

3.3.5 Preservative treatment. Type IV poles shall be treated in accordance with TT-W-571 as specified (see 6.2).

3.3.6 Identification marking. Each pole shall be branded or marked with the typical brand and key data prescribed in AWPA Standard M6. The data

shall either be legibly and permanently burn-branded or shall be included on a recessed, noncorrosive metal tag. The code letters shall be not less than 5/8 inch high if burn-branded, and not less than 1/8 inch high if on a metal tag. Poles shall have the required data branded or tagged on the butt face. In addition, poles 50 feet or less in length shall be burn-branded or tagged 10 feet from the butt; poles 55 feet or more in length shall be burn-branded or tagged 14 feet from the butt.

3.4 Workmanship.

3.4.1 Piles. Piles shall be cut above the ground swell. Butts and tips shall be sawed square with the axis of the pile. All knots and limbs shall be trimmed or smoothly cut flush with the surface of the pile, except that knots may be hand trimmed flush with the surface of the swell surrounding the knot. Rough-peeled piles require the removal of all outer bark. Clean-peeled piles require the removal of all outer bark and not less than 80 percent of the inner bark well distributed over the pile surface. No strip of inner bark wider than 1/2 inch shall remain and sapwood shall not be cut through in clean-peeled piles.

3.4.2 Poles. Poles shall conform to the manufacturing requirements of ANSI 05.1 including bark removal, sawing, trimming, and framing.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his 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 inspection set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of inspection. Inspection shall be classified as follows:

(a) Quality conformance inspection (see 4.3).
(b) Inspection of preparation for deliver (see 4.4).

4.3 Quality conformance inspection.

4.3.1 Type I, untreated piles.

4.3.1.1 Examination. Each pile shall be examined for the following defects. The presence of one or more defects shall be cause for rejection of the pile.

101. Pile not of wood species specified.
102. Pile not sound, or free of decay, red heart, or insect attack, except as permitted in 3.1.1.
103. Dimensions of pile not as specified in 3.2.2.
104. Pile not unpeeled, rough-peeled, or clean-peeled, as specified.
105. Heartwood content of pile less than eight-tenths of butt diameter when specified (see 3.2.3.1)
106. Pile not straight as specified.
107. Spiral grain in pile not as specified.
108. Knots in pile not as specified.
109. Total sum of the average diameters of the holes in pile exceed allowance.
110. Splits or shake in pile exceed allowance.
111. Workmanship not as specified.

4.3.2 Type II, treated piles. Type II treated piles shall be inspected in accordance with TT-W-571. Nonconformance to any applicable requirement in TT-W-571 shall constitute failure of this inspection.

4.3.3 Type III, untreated poles.

4.3.3.1 Sampling.

4.3.3.1.1 Unit of product. For the purpose of quality conformance inspection, each pole shall be considered a unit of product.

4.3.3.1.2 Lot. For the purpose of quality conformance inspection, a lot shall consist of one class and length of poles offered for delivery at one time.

4.3.3.1.3 Examination. Samples for examination shall be selected in accordance with MIL-STD-105. Samples shall be examined for the following defects. AQL shall be 2.5 percent defective.

112. Species not as specified.
113. Dimensions not as specified.
114. Roofing, gaining, and boring not as specified.
115. Rate of growth and shape not as specified.
116. Wood quality defects exceed allowance.
117. Workmanship not as specified.
118. Splices not as specified.

4.3.4 Type IV, treated poles. Type IV, treated poles, shall be inspected in accordance with requirements of TT-W-571. Nonconformance to any applicable requirement in TT-W-571 shall constitute failure of this inspection.

4.4 Inspection of preparation for delivery.

4.4.1 Quality conformance inspection of pack.

4.4.1.1 Unit of product. For the purpose of inspection, a completely processed load prepared for shipment shall be considered a unit of product.

4.4.1.2 Examination. Each truckload, carload, or barge shall be examined for the following defects. Each defect found shall be corrected to conform to requirements. Failure to correct all defects shall be cause for rejection of the load.

119. Blocking, bracking, and tiedowns on truckload quantities does not conform to applicable requirements of the National Motor Freight Classification rules.
120. Blocking, bracking, and tiedowns on railcarloads does not conform to applicable requirements of the Uniform Freight Classification rules.
121. Barges not loaded in accordance with figures 1 and 2 and 5.2.
122. Marking missing, illegible or not as specified.

5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging and packing. Not applicable.

5.2 Loading (see 6.4).

5.2.1 Railcars. All piles and poles shall be shipped loose, in compliance with Uniform Freight Classification rules and the Association of American Railroads rules governing the loading of forest products on open top cars.

5.2.2 Trucks and trailers. All piles and poles shall be shipped loose in compliance with National Motor Freight Classification rules.

5.2.3 Barges. All piles and poles shall be shipped loose in barges in accordance with figures 1 and 2. The tips and butts of piles and poles shall be alternated in each tier. Each tier shall consist of a single layer. Separators between each tier shall be a minimum 4 x 4 (nominal), with a 12-foot minimum length. The shortest poles shall be located in the bottom tiers. A minimum of 2 feet shall be provided between ends

of the stacks and front or rear walls of the barge and between stacks.

5.3 Marking. The piles and poles shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use.

6.1.1 Piles. Piles are intended to support structures by bearing upon sound supporting soil. Type I piles are intended for temporary use. Type II piles are intended for any permanent construction or any use in any environment where insects or decay represent a hazard to the pile, in order to prevent attack by insects or fungi.

6.1.2 Poles. Poles are intended for use as supports for communications or electric transmission lines.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in the procurement documents:

(a) Title, number, and date of this specification.
(b) Type of pile required or type and class of pole required, as applicable (see 1.2).
(c) Species required for piles (see 3.1.1 and 6.3).
(d) When poles of one species are required (see 3.1.2).
(e) Length of piles and poles required (see 3.2.1, 3.3.1, and 6.5).
(f) Whether unpeeled, rough-peeled, or clean-peeled, type I piles are required (see 3.2.3.1).
(g) When high heartwood content is required for type I piling (see 3.2.3.1).
(h) Whether piles are to be treated in accordance with table I or either tables I or II of TT-W-571 and whether piling is for use in coastal waters or for use on land or in fresh water (see 3.2.3.2 and 6.6).
(i) Thickness of sapwood in type II piles if other than as specified (see 3.2.3.2).
(j) When circumference of poles other than as specified is required (see 3.3.2).
(k) Whether spliced or single length poles over 120 feet are required and details on spliced poles when applicable (see 3.3.3).

(l) When roofing, gaining, and boring will not be accomplished prior to preservative treatment (see 3.3.4).
(m) Type of roofing required (see 3.3.4.1).
(n) When gaining is not required (see 3.3.4.2).
(o) Length of slab gain or number of mortise gains required, when applicable (see 3.3.4.2).
(p) When boring is not required (see 3.3.4.3).
(q) The appropriate table(s) or acceptable preservative solutions from TT-W-571 as required (see 3.3.6).

6.3 Species. Douglas fir, hemlock, southern pine, and oak are the principal species used for piles. Cedars, chestnut, cypresses, larch, red pine, lodgepole pine, ponderosa pine, the spruces, and tamarack are sometimes used and are generally available. Where treated piling is required, species should be limited to those specified in TT-W-571. Although not ordinarily considered as pile woods, sweet birch, yellow birch, sugar maple, American elm, rock elm, sweet gum, swamp tupelo, and water tupelo have many characteristics that make them suitable for pile use. When available, the inclusion of these species may be advisable.

6.4 The loading as specified in 5.2, represents the minimum as well as maximum levels of pack. For purposes of the packing level marking, level A, B, or C may be used as applicable.

6.5 Lengths. Piles are most commonly available with lengths in multiples of 2-foot increments up to a 40-foot length, and in multiples of 5-foot increments in piles over 40 feet in length. Poles are most commonly available with lengths in multiples of 2-foot increments thru the 22-foot length and in multiples of 5-foot increments in lengths 25 feet and longer. The commonly available lengths should be specified whenever possible.

6.6 Preservative treatment. For piling used in marine waters where an extreme borer hazard exists, a dual treatment is available in AWPA Standard C3, and may be requested when ordering piling in accordance with this specification. The dual treatment includes both a copper arsenic (ACA or CCA) and a creosote preservative solution.

MILITARY INTEREST

Custodians:

Army - ME
Navy - YD
Air Force - 84

Review activities:

Army - CE

Preparing activity:

Army - ME

CIVIL AGENCIES INTEREST

GSA - FSS

Project No. 5510-0121

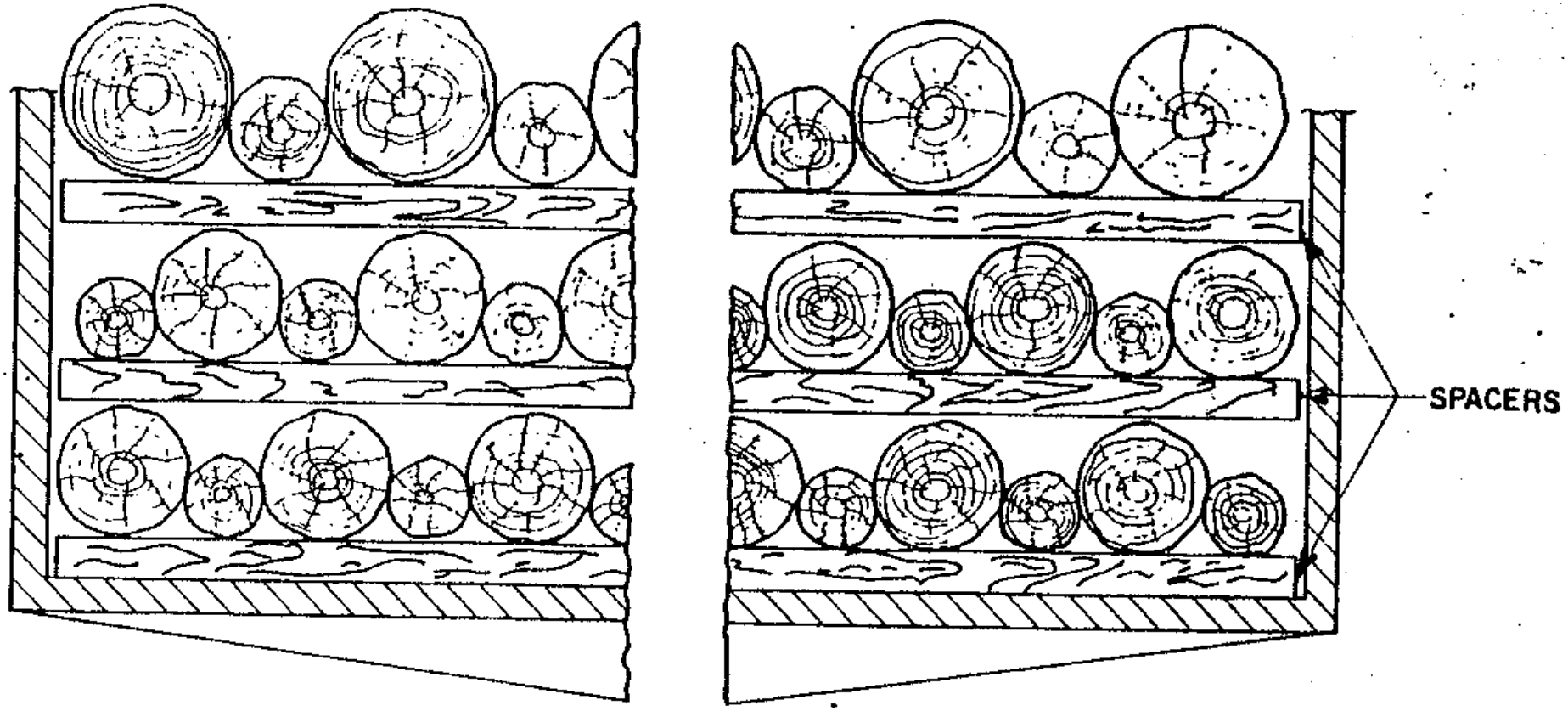

FIGURE 1 — END CUT-AWAY VIEW OF ACCEPTABLE BARGE L DING

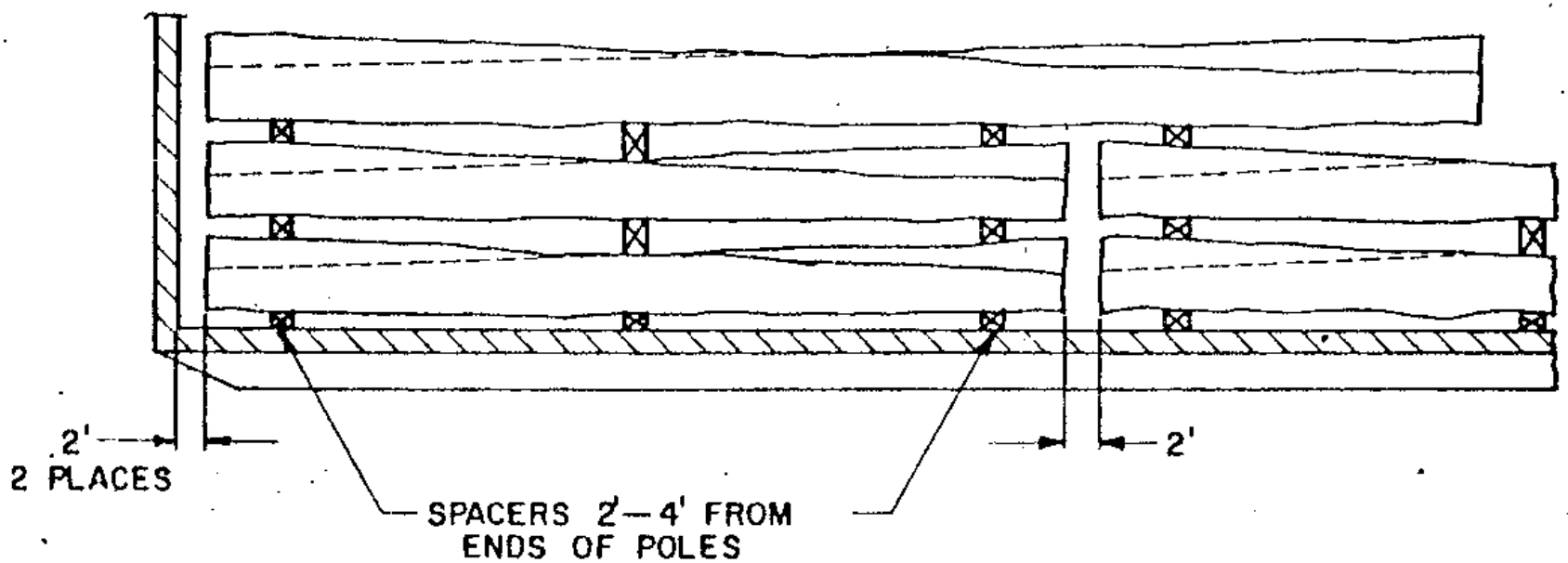

FIGURE 2 — CUT-AWAY SIDE VIEW OF LOADED BARGE

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Orders for this publication are to be placed with the General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein. Price 15 cents each.