(FSN 8430-160-4076 thru 4136 and 4430-170-2259)

MIL-B-1710
23 November 1949

MILITARY SPECIFICATION

BOOTS, SKI-MOUNTAIN, WITH RUBBER-CLEATED-SOLES

Boot, Ski, Men's, Leather, Natural Rubber, Cleated Sole, and Heel

This specification was approved by the Departments of the Army, the Navy, and the Air Force for use of procurement services of the respective Departments, and supersedes the following specification:

Army 9-114
5 March 1948

This specification consists of this cover sheet and Specification 9-114, dated 5 March 1948, attached hereto, with the additional requirements of the Air Force outlined below:

FOR AIR FORCE PROCUREMENT

Articles, unit and intermediate containers shall be marked in accordance with the current issue of Specification AN-M-13. Exterior shipping containers shall be marked in accordance with Specification 94-40645.

Copies of this specification may be obtained from the Specifications and Quality Control Section, QM Research and Development Laboratories, Philadelphia Quartermaster Depot, 2800 South Twentieth Street, Philadelphia 45, Pa.

When a request for this specification is received by a supplying activity it will be necessary to attach this cover sheet to the pertinent specification before issue.

U. S. ARMY
SPECIFICATION

No. 9-114
5 March 1948
Superseding
BQD No. 31D
16 August 1945

BOOTS, SKI-MOUNTAIN; With Rubber Cleated Soles

A. APPLICABLE SPECIFICATIONS

A-1. The following specifications of the issue in effect on date of invitation for bids shall form a part of this specification.

A-1a. Federal Specifications

V-L-51 - Laces; Shoe, Cotton
V-T-276 - Thread, Cotton
KK-L-261 - Leather; Sole, (cut, outer and top lift) Vegetable Tanned, Factory
KK-W-231 - Welting; Leather Shoe
UU-T-111 - Tape, Paper, Gummed (Kraft)
ZZ-R-601 - Rubber Goods; General Specifications (Methods of Physical Tests and Chemical Analyses)
CCC-T-191 - Textiles; General Specifications, Test Methods
LLL-B-631 - Boxes; Fiber, Corrugated (for Domestic Shipment)
LLL-B-636 - Boxes; Fiber, Solid (for Domestic Shipment)

A-1b. U. S. Army Specifications

8-166 - Insoles, Felt
100-2 - Standard Specification for Marking Shipments by Contractors

A-1c. Quartermaster Corps Tentative Specification

BQD No. 132 - Leather, Upper, Chrome, Retan

A-1d. Joint Army-Navy Specifications

JAN-P-103 - Packaging and Packing for Overseas Shipment - Boxes; Wood Cleated, Solid Fiberboard
JAN-P-108 - Packaging and Packing for Overseas Shipment - Boxes; Fiberboard (V-Board and W-Board), Exterior and Interior
JAN-P-125 - Packaging and Packing for Overseas Shipment - Barrier Materials, Waterproof, Flexible
JAN-W-530 - Webbing, Cotton, Natural or in Colors

B. TYPE, GRADE AND SIZES

B-1. Type. - Boots, Ski-Mountain with Rubber-Cleated Soles shall be of one type.

B-2. Grade. - Shall be "Firsts."

B-3. Sizes. - Sizes and widths shall be as specified in the invitation for bids.

C. MATERIAL AND WORKMANSHIP

C-1. Material. -

C-1a. Upper Leather. - Shall conform to Finish No. 1 Natural (Grain out) of QMC Tentative Specification BQD No. 132. Where, in the opinion of the procuring depot, the leather has too many flesh or grain damages, it may be rejected in the side. No pipey or excessively loose grain leather will be accepted. No sides which are too hard, bony or otherwise inferior will be accepted. The sides shall be well worked out in all parts.

C-1a(1). Weight, Spread. - The sides shall measure not more than 28 square feet and shall weigh not less than 5-1/2 and not more than 6 ounces (2.2 m.m. to 2.4 m.m.). No tongues shall be cut from this weight stock.

C-1a(2). Finish. - The grain side of the leather may be buffed or snuffed to remove slight grain defects and shall be smooth plated, not printed or embossed. The grain surface of the leather shall not be pigmented, or deeply buffed. The flesh side shall be clean and free from rough fibers.

C-1a(3). Tongue Stock. - Shall be as specified above except that the weight shall be 2-1/2 to 3-1/2 ounces (1.00 m.m. to 1.4 m.m.). All tongues shall be pliable and of strong fiber. No split tongues will be allowed.

C-1b. Outersoles, Rubber. - Shall be black, full length, rubber cleated soles, made in molds standardized for Government use. The compound requirements shall be those as supplied by the procuring depot.

C-1c. All sole leather parts shall be cut from leather made in accordance with Federal Specification KK-L-261.

C-1d. Middlesoles, Leather. - Shall be full length and of good bend fiber or No. 1 shoulder quality not less than 9 nor more than 10 irons in thickness. Grain imperfections such as smooth brands, open scratches, healed grubs and small grain cuts none of which will impair serviceability will be acceptable. Open grub holes (not more than four) will be accepted provided they fall in that portion of the sole where heel nails, reinforcing screws, standard screw wire and Goodyear stitching will not penetrate.

C-1d(1). Wedges.- Shall extend from the ball line to the end of the heel seat and shall be 8 to 9 irons in thickness. They shall be of the same fiber quality with the same imperfection allowance as provided for the middlesoles. They shall be cut in accordance with patterns as furnished by the procuring depot.

C-1e. Innersoles.- Shall be of first quality, cut from vegetable tanned full grain leather, with a strong fiber and of quality well adapted to the purpose, avoiding soles which will run hard or soft, too fine or too coarse. Minimum thickness shall be 6-1/2 irons (after fleshing) and maximum thickness 7-1/2 irons (after fleshing). Rolled innersoles or innersoles that are pipey or cracky on the grain, will not be permitted. All innersoles shall be properly fleshed before inspection.

C-1e(1). Innersole Backing.- The cotton duck for innersole backing shall be a 9 ounce weight per yard, 30 inch width, before coating. The warp and filler break shall be a minimum of 128 and 136 pounds respectively. The cotton duck shall contain the minimum amount of sizing and shall be coated with an adhesive that will insure a permanent bond.

C-1f. Counters Inside.- Shall be a right and left (long shank) type, properly graded, long on the inside and high enough to give support to the instep, extending to the middle of the shank on the inside and to the breast of the heel on the outside of the boot, approximately 2-3/4 inches high at the back from the heel seat on a size 9. They shall be cut from the bone section of vegetable tanned shanks and be from 6 to 7 irons in thickness. They shall be full moulded to fit the last, grain side out. Counters shall be carefully skived and end clipped with a 5/8 inch scarf at the bottoms. Reasonable grain defects which will not affect the wear will be accepted. Counters may be inspected after moulding. No glue or other sizing shall be used in the moulding.

C-1f(1). Counters Outside.- For heel protection shall be of good quality grain sole leather of vegetable tannage and from 4 to 5 irons in thickness. There shall be 4 sizes for the size run of boots 5 to 15, and they shall be cut in accordance with patterns furnished by the procuring depot.

C-1g. Welting.- Welting shall be of the best quality of vegetable tanned sole leather and may be lightly buffed. It shall be 1/8 inch in thickness and of sufficient width to produce an 8/32 inch finished edge extension. It shall be properly grooved and bevelled. It shall conform to Federal Specification KK-W-231, Welting, Leather, Shoe.

C-1h. Welt Extension.- A "Dutchman" of 6-1/2 to 7 irons in thickness and cut from vegetable tanned grain sole leather of firm fiber equal to good shoulder quality shall be used to form a full extension for the width of the heel seat.

C-1i. Bottom Filler.- May be either thermoplastic or cold process type. The thermoplastic type shall consist of a mixture of ground cork and a suitable thermoplastic binder in proportion of three to four parts by volume of cork to each one part of binder. The cork granules shall be of best quality free from bark and shall be of such size that substantially 100 percent shall pass through a No. 10 (0.0787") sieve (U.S. Standard) and not more than 20 percent shall pass through a No. 40 (0.0165") sieve. The ground cork and the binder shall be thoroughly and evenly mixed. The binder shall be water insoluble and flexible. It shall have a softening point, ball and ring A.S.T.M. Method E-28, of at least 125° F., and a maximum penetration of 85 at 200 grams for 60 seconds at 77° F. A.S.T.M. Method D5. The cold process type shall be spreadable without the use of heat. It shall consist of a mixture of ground cork and a suitable binder in proportion of two parts cork to one part binder by volume. The cork granules shall be of best quality free from bark and shall be of such size that substantially 100 percent shall pass through a No. 10 (0.0787") sieve (U. S. Standard) and not more than 20 percent shall pass through a No. 40 (0.0165") sieve. When spread filler is dry and set, it shall consist of four parts cork to one part binder. It shall not soften at less than 150° F. and shall be water resistant and flexible.

C-1j. Box Toes.- Shall be semi-hard but firm pyroxylin compound of a slow burning nature, commercially known as number 120 with an average thickness before activating of .085 to .095 and a manufacturing tolerance of .010. The tensile strength in the warp shall be 80 pounds and 50 pounds in the filler. The average elongation shall be warp 20 percent, filler 40 percent. For extra strength a double box of this material shall be used. The rider layer shall be scarfed with a 1/2 inch bevel on the breast edge. The base layer shall be skived entirely around with a 1/2 inch bevel scarf, and be of proper size and shape so that the shoulder of skived edge comes to the channel of the insole when lasting. The breast edge of the base layer shall be flush with the shoulder of the scarf on the rider layer to prevent a ridge from forming. Both shall be stitched together with a single row approximately 1 1/4 inches from breast edge of the rider layer, to ensure accuracy of fit and to prevent slipping. This double box may otherwise be assembled by the box toe manufacturer in a secure manner before activating to prevent slipping. The sweep (breast) edge shall be straight after lasting.

C-1k. Top Band, Snow Excluder.- Shall be made from leather fitted over sponge rubber. The leather shall be glove or garment tanned brown kid, kip or brown horse leather, 2 to 3 ounces (.8 to 1.2 m.m.) in weight. This stock shall be of good mellow quality and shall be cut in strips 1 5/8 inch wide. The leather shall be smoothly and securely fitted over fine sponge rubber, made from best quality reclaim, which shall be 3/8 inch wide and 1/8 inch thick.

C-1l. Shanks.- Shall be of birchwood "PG" style, 1/8 inch in thickness, curved to fit the last, bevelled on the sides and chamfered (scarfed) at ends. There shall be 4 sizes for the run of boots from 5 to 13 on all widths. They shall be graded 1/4 inch in length and 1/16 inch in width starting with 5 inches x 15/16 inch for size 5 to 6-1/2 boots.

Shank Casing Schedule

BOOT SIZES ALL WIDTHS	6-6 1/2	7-8-1/2	9-10-1/2	11-13
SHANK SIZE	5" x 15/16"	5-1/4" x 1"	5-1/2" x 1-1/16"	5-3/4" x 1-1/8"

C-1m. Heels, Rubber.- Shall be black, whole heels 7/8" in height with 9 nails holes and 7 reinforcing holes. They shall be cleated and made in molds standardized for use on this boot. The compound requirements shall be those supplied by the procuring depot.

C-1n. Heel Seat Tacks.- Shall be steel and shall be of the proper length and weight to strongly attach the parts through which they are driven and leave the innersole smooth on the inside.

C-1o. Heel Seat Nails.- Shall be #39 head, steel, loose nails of proper length and gauge to clinch firmly and smoothly on the innersole.

C-1p. Nails, Heel.- Shall be steel of wire or cut type and shall be of proper gauge and length to securely and smoothly clinch 1/16 inch on the innersole.

C-1q. Screws, Soles - Heels.- The outersoles and heels shall be reinforced by the use of cross head steel screws with sheet metal thread; they shall be No. 4 gauge, 1/2 inch in length for the soles and 1 inch in length for the heels.

C-1r. Screws, Brads, Sole Protectors.- The screws for attaching the sole protectors shall be steel zinc electro plated, No. 4 gauge, 5/8 inch in length; they may be slot head or cross head types. Both types shall have a sheet metal thread. The brads for the welt surface of the sole protectors shall be brass, round head, 18 gauge, 4/8" in length.

C-1s. Standard Screw Wire.- For reinforcing leather middlesole shall be of standard type made of steel.

C-1t. Sole Protectors.- Shall be of single unit, type 1, made of brass, with a thickness of .039 and a tolerance of .005 inch. Each plate shall be 7/8 to 1 inch in length and shall be bent to an angle of approximately 90 degrees and on the edge surface shall measure approximately 3/8 inch and approximately 3/16 inch on the welt surface. The welt surface of the plate shall have a hole drilled at each end and through which brass escutcheon pins 18 gauge, 4/8 inch length with a 3/32 inch head shall be driven to anchor the protector to the welt. Two countersunk holes shall be punched in the face of each protector for attaching to the edge of the boot. The letter "U.S.", name or trade mark of the manufacturer shall appear on each sole protector. The holes for the edge screws shall be located so as to allow the screws to go firmly into the middlesole of the boot.

C-1u. Webbing.- For quarter instep reinforcing shall be two inches in width, white, brown or olive drab color, made in accordance with the requirements of Joint Army-Navy Specification JAN-W-530,(Type 1, light weight).

C-1v. Threads.- Upper fitting threads for vamping and counterpocket stitching shall be 12/4 glazed cotton for needle with 12/4 natural soft finish cotton bobbin thread. The minimum yardage shall be 2810 and 2900 respectively and minimum single break test 8.80 and 8.25 pounds respectively. Thread for outside counter stitching shall be 10/4 cotton soft finish, natural or white color with minimum yardage of 1995 and minimum single break of 12.6 pounds. All other upper fitting shall be done with 16/4 glazed cotton needle thread and 16/4 natural soft finish cotton bobbin thread with yardage of 4000 minimum and minimum single break tests of 6.65 and 6.20 pounds respectively. The 12/4 and 16/4 exposed threads shall be natural or brown color. Inseam thread shall be best quality 11 cord cotton, natural, soft finish, right twist, minimum 610 yards per pound single break minimum 51 pounds. Goodyear stitching running thread shall be 11 cord cotton, natural, glazed finish, left twist, minimum 585 yards per pound, single break minimum 51 pounds. Shuttle thread shall be 10 cord cotton, natural, soft finish, right twist, minimum 672 yards per pound, single break minimum 46 pounds. All thread tests will be made under prevailing atmospheric conditions, but a 5 percent tolerance will be allowed on break test and yardage figures.

C-1w. Backseam Tape.- Shall be 1/2 inch wide, finished edges, 52 ends, 40 picks. The warp yarn shall be 20/1 best quality carded soft cotton, the filler 16/2 best quality carded soft cotton. Minimum warp and filler strength shall be 42 and 80 pounds respectively. The weight shall be a minimum of 17 ounces per gross yards.

C-1x. Eyelets and Hooks.- Eyelets shall be of aluminum with roll setting barrel made from not less than .015 gauge stock. They shall have a lace opening 4/16 to 5/16 inch in diameter and barrel of sufficient length to properly clinch. The eyelets shall be khaki color japanned or enamelled finish. Hooks shall be brass of Klondike type, made from .045 gauge stock. The diameter of the top of the hooks shall be 5/16 inch, the barrel length 5/16 inch and lace opening 5/32 inch.

C-1y. Innersoles, Felt.- There shall be 2 pairs of felt innersoles procured by the contractor and packed with each pair of boots. These innersoles shall be made in accordance with U. S. Army Specification No. 8-166.

C-1z. Heel Pads.- There shall be no heel pads in these boots.

C-1aa. Laces.- Shall be of cotton waxed type, 52 inches in length, natural or white color and shall conform to the requirements of Type IV, Class J, of Federal Specification V-L-51.

C-1bb. Tags, Instruction.- For attaching to the right boot of each pair shall be in accordance with sample tag on file at the procuring depot.

C-1cc. Finishing Materials.- Neoprene cement, rubber cement, other adhesives, stains, polishes, waxes and inks shall be of best quality for use in accordance with the requirements of this specification.

C-2. Workmanship.- The boots shall be well made, well finished and free from any defects which may affect appearance or serviceability.

D. GENERAL REQUIREMENTS

D-1. See Section E.

E. DETAIL REQUIREMENTS

E-1. Design.- This specification covers the requirements for material, manufacture and shipping of a ski and mountain boot of whole quarter blucher pattern, unlined, with outside counterpocket and outside sole leather counter. The boots shall have cleated rubber heels, full length rubber cleated soles, leather middlesoles and a leather wedge from ball line to and including heel seat. There shall be double box toes and snow excluder top bands. The boot shall be of welt construction stitched around the heels and with metal fastening for the rubber soles and heels.

NOTE: - The word "manufacture" as herein construed shall mean the performance of all operations and processes necessary for the completed boot, but shall not be construed to prohibit a contractor from purchasing middlesoles, innersoles, or counters in the form of cut stock, nor from purchasing welting and counters already prepared for use.

E-2. Patterns.- In order to obtain uniformity and standardization of line, design and measurements, a standard set of junkboard patterns will be loaned each contractor by the procuring depot. The patterns shall consist of a circular blucher vamp (plain toe), whole quarter extending to toe, half bellows tongue, outside counterpocket, outside counter, loop backstay, eyelet facing with curved end, top band and inside counter. These patterns shall be carefully followed except for lasting allowance. Contractors will be responsible for correct lasting allowance. The junkboard patterns shall be returned to the procuring depot after the cutting dies have been carefully checked.

E-3. Dies.- The cutting dies (or patterns) for quarters and vamps shall be in whole and half sizes for each width, in accordance with the size tariff included in the invitation for bids, but the tongue, and outside counter may be made whole sizes only and combined widths C-D and E-EE. The backstay shall be whole sizes for all widths. The counterpocket shall be made on whole sizes for each width. Dies and patterns used in cutting shall be those of the contractor and shall be made with the necessary marker to ensure good fitting and lasting.

E-4. Lasts.- Boots shall be made on standard United States Army Ski Boot lasts, all necessary sizes of which will be loaned to the contractor. The contractor shall furnish the wood insole rounding patterns.

E-5. Construction.-

E-5a. Upper Leather Cutting.- All parts of the upper except the tongue, top band and outside counter shall be cut from the 5-1/2 to 6 ounce leather using the plumper, firmer stock for the vamps and quarters. Tongue shall be cut from the tongues stock and shall be a minimum of 2-1/2 ounces in thickness and maximum of 3-1/2 ounces. No split tongues will be allowed. The curved end eyelet stays shall be cut from the upper stock or from the tongue stock. When necessary they shall be split to a thickness of not less than 2-1/2 ounces nor more than 3-1/2 ounces. The uppers shall be cut to be fitted with the grain side out and no stretchy or inferior leather will be accepted in these boots.

E-5b. Skiving.- The quarters, vamps, and counterpockets shall be skived 3/4 inch entirely around the lasting edges. A light evener scarf 3/16 inch in width shall be made on the wings and throats of vamps, fronts and tops of quarters. Both ends of the pull loop shall be skived for secure and smooth fitting. Skiving shall be done on the flesh side.

E-5c. Marking Quarters.- The contractor's firm name, number and date of contract, purchasing depot and correct size and width of the boot shall be legibly stamped below the top band with indelible ink on the flesh side of the quarter of each boot.

E-5c(1). Marking - Permanent Identification.- The grain side (outside) of the inside quarter of each boot shall be marked with the correct size, width and contractor's identification symbol. This marking shall be impressed into the leather in such a manner as to be permanently visible without cutting through at any point, and shall be placed 1/2 inch from the top of the quarter and spaced evenly between the eyelet stay and the backstay. Figures shall be Arabic type and the letters shall be Gothic. These figures and letters shall be a minimum of 9/32 inch and a maximum of 3/8 inch in height. The contractor's symbol shall be in block as shown in the following example: 10-1/2 EE /AB/.

E-5d. Fitting Uppers.- The quarters shall be closed at the back with zig-zag stitch, 8 to the inch, then rubbed down, butted and stay taped with lock-stitch. They shall be closed at toes with the same type of seam, without tape. Needle thread shall come on the inside of both seams with thread running straight across the seam.

E-5d(1). Quarter Webstay - Snow Excluder - Backstay.- The 2 inch webstay for reinforcing each quarter shall be smoothly adhered in proper position between the lasting edge and the double eyelet row of each quarter then stitched with one row on each edge. This stay shall not extend to the hooks or top stitching, but shall be caught in by the double eyelet row stitching. The rubber snow excluder shall be fitted under the top band with two single rows running around the top of the boot with the ends of the top band between the quarter and eyelet stay. There shall be a double bar row at each end of the snow excluder, 1/16 inch from the edge and running perpendicular 5/16 inch in length. Top bands with lapped leather pieces shall not be fitted to the boot.

The narrow skived end of the backstay shall be fitted just under the counter pocket stitching line and stitched with a double row close to the top band, running across to the opposite edge, and then "V" barred down and back; then continuing downward to the bottom of the backstay under the counterpocket edge. The top of the backstay shall then be turned downward about 1/2 inch under the counter pocket edge and barred with 2 double rows from its bottom edge to a point 1/2 inch above the counter pocket edge. The counter pocket "V" shall be zigzagged, without tape, eight stitches to the inch.

E-5d(2). Tongue - Eyelets - Hooks.- The curved end eyelet facing shall be stitched on top of the tongue with a single row. The inside of the curve shall have an additional row to properly reinforce the curved edge at throat. The tongue shall be creased and carefully pounded from the throat to the curve of the eyelet reinforcement. The tongue shall be carefully placed on the stab marks and stitched with two single rows across the throat. The double eyelet row shall run from top band to nose of the quarter, and shall be spaced one inch from the edge of the quarter. There shall be three eyelets and five hooks in boots sizes 6 to 10 and three eyelets and six hooks in boots sizes 10-1/2 to 15. These eyelets and hooks shall be evenly spaced exactly the same distance between centers, and securely and smoothly clinched with the bottom eyelet and top hook centered not more than 1/2 inch from bottom and top edges of quarter.

E-5d(3). Vamping. Shall be done with three rows from one side of the boot around the edge of the vamp and throat to the opposite lasting edge. These three rows shall be closely and uniformly spaced and the fitting shall be done to keep the throat snugly closed. Single needle machines shall be used and the thread shall be 12/4 cotton.

E-5d(4). Counterpocket and Outside Counter Stitching.- The counterpocket shall be stitched to the quarters with three single rows closely and uniformly spaced using the size 12/4 thread. The outside counter shall be lightly mulled and may be half moulded, then Puritan stitched with three rows of the 10/4 cotton, spaced 1/8 inch apart. This stitching shall follow the contour of the counter with the outside row uniformly 1/16 inch from the edge, the stitch spacing shall be a minimum of 8 to the inch. The machine lacing for lasting shall be done for a 5/8 inch opening after side lasting.

E-5d(5). Needles, Spacing.- The length of stitch in the above described operations except for outside counter and zigzag stitching shall be 10 to 12 to the inch. The needle shall be of the smallest practicable size to carry the thread. The bobbin thread of the top band stitching shall be in color to match the top band leather. Pattern markers shall be used when necessary in order to ensure good upper fitting. Die stabs shall be carefully checked at frequent intervals.

E-5e. Examining.- The contractor's employees shall examine all fitting operations to prevent imperfections from entering the lasting room.

E-5f. Sole Leather Stock Fitting.- Middlesoles and wedges shall be carefully sorted by the contractor's employees to certify specification requirements then properly fleshed but not deeply skived. Wedges shall be skived with a scarf 1-1/4 inches wide to fit smoothly at the ball line. After buffing the grain side of the wedge and middlesole, the correct size wedge, in accordance with patterns as furnished by the procuring depot, shall be cemented to the prerounded middlesole grain to grain. The assembled units shall be moulded on a form commercially known as EFU in order to conform to the bottom of the last.

E-5f(1). Innersoles.- Shall be sorted for varying fibers to get uniform channeling and cased for even weight. They shall be lightly degrained, if this can be properly accomplished with uniformity. If not, they shall be heavily buffed after inspection. If necessary degraining may be done before inspection.

E-5f(2). Innersole Marking.- Each innersole shall be deeply stamped in the shank on the grain side, with the correct size and width where they will plainly show, using figures for the whole and half sizes and letters for the widths. The letters and figures shall be at least one quarter inch in height and the stamped impression shall be fully 1/32 inch in depth.

E-5f(3). Innersole Channeling.- Innersoles shall be properly fleshed, rounded and channeled with a heavy feather. The channeling shall provide for a 4/16 inch extension and straight forepart from ball line to toe on the finished boot.

E-5f(4). Innersole Backing.- All innersoles shall be reinforced with gem duck coated with a good quality rubber or synthetic rubber cement which has been proven in its use to produce a permanent bond. It shall extend from top of lip on either side across innersole to top of lip on opposite side and to the insole scoring mark and shall be firmly and smoothly fitted to the base of the lip.

E-5f(5). Counters Outside.- The stitched edge shall be carefully feathered to a thickness of 2 irons approximately 3/8 inch in width and the bottom to 2 irons with a 5/8 inch bevel scarf.

E-5g. Lasting.- The correct size, half size and width of lasts, uppers and innersoles shall be assembled. Innersoles shall be tacked to the last with not less than 5 tacks, one of which is to be in the heel seat. Tacks to be long enough to securely hold. The long shank inside counter shall be properly mulled and pasted on both sides with a suitable counter paste. The box toes shall be properly activated and placed well back between the quarters and the vamp in accordance with schedule as approved by the procuring depot. The box toes shall be allowed to sufficiently set before the pull over operation. The mulling shall be carefully and properly done to permit smooth lasting at toe and heel with the use of properly shaped and sized toe wipers. Leather softener may be used and back of boot may be wet and shaped up on a round top post or pipe. When the lasting operations are finished, the boot shall be down to the wood at all points with heels and toes smoothly wiped in. The outside counter shall be smooth and free from bulges or bruises. There shall be not over 5/8 inch of the quarter lasted over the heel seat.

E-5h. Time Allowance on Lasts. Shall be sufficient to allow the setting of the pyroxylin box toes and thorough drying of the sole leather parts.

E-5i. Inseaming.- Shall be done with thread thoroughly hot waxed with a strong tension and not less than 3-1/2 stitches to the inch. No grinning seams will be accepted.

E-5j. Inseam Trimming.- After the innersole tacks, anchor tacks and toe wire have been removed the inseam shall be carefully and closely trimmed from butt of welt to butt of welt, care being taken that no stitches are cut or scraped. Butts shall be bevelled with a 5/8 inch scarf and tacked. Welts shall be beaten out smoothly while in temper and slashed around the toe.

E-5k. Shank Fitting - Bottom Filling.- The wood shanks shall be carefully selected for correct size in accordance with casing schedule, as given in paragraph C-11. They shall be inserted in the proper position and attached with wax or tar at both ends. The bottom filler shall be smoothly and evenly applied to produce a flat bottom across the forepart and pressed well down into the inseam cavity. The bottom shall be filled full length including the shank and heel seat.

E-5l. Welt Extension, Dutchman. The "Dutchman" shall be scarfed 5/8 inch on the grain side at the breast and attached smoothly to lap the scarfed welt butts with a smooth joint. The "Dutchman" shall be fastened with tacks or staples.

E-5m. Sole Laying, Middlesoles and Wedges. The bottoms shall be thoroughly cemented and after the assembled wedges and middlesoles have been properly tempered and molded, they shall be laid on a sole laying machine with a suitable pressure. Care shall be taken to see that these units are laid evenly and are sufficiently wide to produce the specified finished edge extension.

E-5n. Rough Rounding.- The forepart and heel seat of the middlesoles shall be smoothly rounded on a rough rounding machine following the general contour of the last. Care shall be taken that the sides of the forepart from ball line to corner of toe shall be straight with proper extension for laying of the cleated rubber sole.

E-5o. Goodyear Stitching.- Before attaching the outersole, the middlesole and welt shall be stitched together on a lockstitch machine using an 11 cord cotton running thread and a 10 cord cotton bobbin thread. Both threads shall be hot waxed and the stitching shall be done 6 stitches to the inch. The sole shall be grooved when stitched with the stitching extending around the heel seat. Care shall be taken that the stitching around the heel seat is close to the upper in order to eliminate any chance of cutting the stitch in the heel grooving operation. The smallest practicable size of needle and awl shall be used for Goodyear stitching.

E-5p. Heel Seat Fastening.- Shall be done with loose nails of proper gauge and length to clinch smoothly on the innersole. They shall be spaced four to the inch and shall be 1/4 inch from innersole edge.

E-5q. Leveling.- Before attaching the cleated rubber outersoles the bottoms shall be leveled on forms to fit the last with a suitable even pressure applied to all parts of the bottom. Care must be taken to apply sufficient pressure to the shank edges for a tight seam.

E-5r. Standard Screw.- After levelling, the lasts shall be pulled and one row of standard screws placed around the bottom, spacing one-half inch, in such manner as to avoid cutting the inseam. This row shall extend from heel breast to heel breast. The lasts shall then be inserted in the boots for the sole attaching and heeling operations.

E-5s. Outersole Attaching.- The middlesoles and the reverse side of the cleated outersoles shall be buffed their full length with a fine wire brush or coarse abrasive paper then thoroughly covered with the best quality Neoprene adhesive. After drying the proper length of time the cleated rubber soles shall be attached on a cement sole attaching machine with the proper amount of pressure to ensure a secure and permanent adhesion. Care shall be taken that the soles are fitted from the toe with the edge of the middlesole slightly overlapping the outsole. The soles shall be attached in accordance with schedule approved by the procuring depot.

E-5t. Heeling.- The heel seat of the outersoles and the bottom of the heels shall be buffed with a coarse abrasive paper and covered with the Neoprene adhesive. After properly drying the heels shall be carefully spotted and placed under pressure by the heeling machine. They shall then be nailed using 9 nails of proper gauge and length to clinch smoothly and securely 1/16 inch on the innersole. The heel schedule shall be approved by the procuring depot.

E-5u. Sole and Heel Reinforcing.- The soles and heels shall be reinforced by the use of the steel screws using screws 1/2 inch in length for the soles and 1 inch in length for the heels. They shall be inserted in each hole provided therefore and shall be set firmly and securely to the metal washers.

E-5v. Edgemaking.- Edges shall be trimmed square all around with a flat bed cutter minimum extension 4/16 (measured at right angles from the upper). The toes shall be trimmed square to follow the general contour of the last, but the sides of the forepart from ball line to toe shall be carefully trimmed flat and absolutely straight. The two sides of the outsole shall converge at the toe end at as sharp an angle as is consistent with basic contour of last to allow for proper fitting of the ski bindings. The stitched around heel seat shall be trimmed for an extension of 3/16. The leather portion of the sole shall be finished natural with the use of filler and wax and set once.

E-5w. Heel Trimming - Grooving - Finishing.- The heels shall be trimmed with a single, horizontal groove, 3/16 inch in depth and 5/8 inch in width except at the heel breast where it shall be 6/8 inch in width for a distance of 3/4 inch. Care shall be taken to prevent damage to the heel seat stitching. The leather portion of the heel shall be finished natural to match the sole edge with the use of filler and wax and burnished.

E-5x. Sole Protectors.- Shall be as specified in paragraph C-1t, 8 to each pair of boots. They shall be located on the face of the leather portion of the edge in accordance with templates as furnished by the procuring depot. They shall be secured by two 5/8 inch screws in the face of each plate and two round head brads on the welt surface of each plate. Care shall be taken that both the screws and brads are driven evenly and firmly into the holes.

E-5y. Tacks and Nails.- The contractor shall furnish enough competent inspectors to conduct before packing a careful and diligent search for tacks and nails that may have been left protruding through or around the innersole. Any tacks that cannot be pulled out and require cutting shall be cut close to the grain and leave no protruding stumps.

E-5z. Treeing and Dressing.- The boots shall be thoroughly cleaned without the use of acids which might be injurious to the leather or threads. The use of paint or pigment is prohibited. The boots shall be properly dressed with a suitable colorless dressing. Sole and heel edges shall be thoroughly wiped and brushed.

E-5aa. Insoles, Felt.- Two pairs of felt insoles of the correct size, as described in paragraph C-1y shall be supplied by the contractor and packed with each pair of boots.

E-5bb. Laces.- A lace shall be inserted through the loop backstay of each boot.

E-5cc. Instruction Tags, Attaching.- One instruction tag shall be attached to the right boot of each pair. The string shall be tied securely through the loop backstay and the tag placed inside the boot.

E-6. Before production is commenced, unless otherwise specified in the invitation for bids, contract or order, a pair of Boots, Ski-Mountain shall be submitted to the Contracting Officer for approval.

F. METHODS OF SAMPLING, INSPECTION AND TESTS

F-1. Sampling.- Samples of any materials, components, etc., not furnished by the United States Government, entering into the manufacture of the article covered herein, shall be selected from time to time by the Government inspector and carefully examined and tests made to determine if they are in accordance with this specification.

F-2. Inspection.- Inspection may be made throughout the entire process of manufacture. The passing as satisfactory of any detail of construction or material shall not relieve the contractor of responsibility for faulty workmanship or material which may be discovered at any time prior to final acceptance. Final inspection of the finished article shall be made either at point of production or at point of delivery designated in the contract or purchase order of the procuring agency. In case of factory inspection, every facility shall be afforded inspector by the manufacturer, for the prosecution of their work.

F-3. Tests.- The methods of testing specified in the following specifications, wherever applicable, shall be followed:

ZZ-R-601 - Rubber Goods, General Specifications
CCC-T-191 - Textiles; General Specifications, Test Methods

G. PACKAGING, PACKING AND MARKING FOR SHIPMENT

G-1. Packaging.- Boots shall be bulk packed twelve (12) pairs to a case, one size and width only. They shall be tied together in pairs by the ends of the laces in the boots. Felt insoles to be furnished with each pair of boots shall be placed inside. Each pair of boots shall be placed toe to toe with quarters overlapping. Four (4) pairs shall be laid on their sides, width wise in the bottom of the case, with pairs reversed heel to toe. There shall be three layers, each layer packed in the same manner. A sheet of 30 pound kraft paper shall be placed between each layer.

G-2. Packing.- The following boxes shall be used for the range of boot sizes listed, inside measurements to be those of the corrugated liners hereinafter specified.

Box No.	Length	Width	Depth	Range of Boot Sizes
1	33-3/4"	13-1/2"	12"	5C to 7EE
2	34-1/2"	14"	12-1/2"	7-1/2C to 9EE
3	35"	14-1/2"	13-1/4"	9-1/2C to 12EE
4	35-3/4"	15"	14-3/4"	12-1/2C to 15EE

G-2a. Boxes, Shipping, Domestic.- shall be solid and/or corrugated fiberboard boxes with liners, complying with Paragraph G-2a(1), or wood, cleated, fiberboard boxes as specified in paragraph G-2a(2).

G-2a(1). Fiberboard Shipping Boxes.- shall conform to the requirements of Federal Specification LLL-B-636 or LLL-B-631, except that fiberboard shall have a bursting strength of not less than 275 pounds per square inch.

G-2a(1)a. Box Liners.- All boxes made to conform with this specification shall be provided with double-wall corrugated fiberboard liners having vertical corrugations of any commercial combination of flute sizes A, B and C, except BB. The liner shall be the full height of the box. The ends of the liner

shall abut at the middle of one side of the box and be taped with a three (3) inch wide 60 pound kraft (gummed) tape conforming to Federal Specification UU-T-111. The liner shall have three (3) .016 inch facings and two (2) .009 inch corrugations and the combined board shall have a Mullen test of not less than 275 pounds per square inch.

G-2a(1)b. Style of Box.- Any one of the three alternate constructions outlined below may be used.

G-2a(1)b(1). Style F.T.C. (Full Telescope). Full telescope design boxes shall be constructed in accordance with all the requirements of Federal Specification LLL-B-631 and/or LLL-B-636. Cover and body shall be assembled with not less than nine staples in each flap, spaced evenly in three vertical rows of three staples each, one row being nominally one inch from the free end of the stitched flap; the second row the same distance from the vertical corner of the box, and the third row midway between the other two. The top and bottom staple in each row shall be approximately one inch from the edge of the flap. The box shall be provided with a double-wall corrugated fiberboard liner as specified in paragraph G-2a(1)a.

G-2a(1)b(2). O.L.C. (Overlap Slotted Box). A box of this style shall be made of the same material as specified under paragraph G-2a(1), except that the top and bottom flaps shall overlap to one inch less than the width of the box. The box shall be equipped with double-wall liners as described in paragraph G-2a(1)a. All flaps shall be securely sealed with a good quality adhesive applied throughout the entire area of contact between the flaps (both inner and outer flaps) or by a combination of metal stitching the bottom flaps and sealing the top flaps with adhesive.

G-2a(1)b(3). Three-Piece Bliss Style No. 2 or 4. Boxes of these styles shall be made of the same material as specified in paragraph G-2a(1), except that the top and bottom flaps shall overlap to one inch less than the width of the box. The box shall be equipped with a double wall liner as specified in paragraph G-2a(1)a. The box shall be made from three pieces of board consisting of a body piece and two ends. These pieces shall be slotted and scored so as to have six flanges for marking the joints along the four edges perpendicular to the opening and the two edges where the bottom joins the ends, and four flaps for closing the open face or top. The flanges may be either on the end pieces to lap over the sides and bottom (No. 2 Bliss Style) or on the sides and bottom of the body piece to lap over the ends (No. 4 Bliss Style) at the option of the contractor. The length of the flanges shall be such that the boards lap not less than 1-1/2 inches at the joints between the ends and the sides and bottom. The joints between the flanges and the adjoining section of the box shall be fastened with steel stitching wire not less than .020 inch x .098 inch. Stitches shall be well formed and properly clinched after being driven through all thicknesses of board and shall be spaced nominally two inches apart and the distance between the outer fastener and the end of the joint shall not exceed one inch and the distance between any two adjacent stitches shall not exceed 2-1/2 inches. The two outer flaps, when in closed

position, shall lap to within one inch of the full width of the box. Flaps along the longer edge of the open face are the outer flaps. The inner flaps shall be the same lengths as the outer flaps. The flaps along the shorter edge of the open face are the inner flaps. Boxes of this style shall be sealed in accordance with the requirements outlined for O.L.C. style.

G-2a(2). Wood Cleated, Solid Fiberboard Boxes.- Wood cleated fiberboard boxes shall comply with Joint Army-Navy Specification JAN-P-103, Style A, except that:

(1). Water resistant fiberboard shall not be required.

(2). Boxes shall not be marked with the container manufacturer's identification.

(3). Table I shall be replaced by the following table for the requirements for caliper and bursting strength.

Weight of Contents Pounds	Minimum Caliper Inches	Minimum Average Dry Bursting Strength Pounds
Up to 70	0.800	200
71 to 125	0.100	275
125 to 200	0.120	350

G-2b. Boxes, Shipping, Overseas.- shall be solid fiberboard boxes with liners complying with paragraph G-2b(1), or wood-cleated, fiberboard, boxes as specified in paragraph G-2b(2).

G-2b(1). Fiberboard Shipping Box.-

G-2b(1)a. Grade and Type of Board.- Boxes shall be made from Grade 2, Type SF, Compliance Symbol V2S solid fiber and shall comply with all the requirements for these grades as specified in Joint Army-Navy Specification JAN-P-108. (See paragraph H-4.).

G-2b(1)b. Box Liners.- All fiberboard boxes shall be provided with a double wall corrugated fiberboard liner as specified in paragraph G-2a(1)a.

G-2b(1)c. Style of Box.- Any one of the three alternate constructions outlined below may be used.

G-2b(1)c(1). F.T.C.(Full Telescope). Full telescope design boxes shall be constructed in accordance with all requirements of paragraphs under E-3 of Joint Army-Navy Specification JAN-P-108, except that the body blank shall be slotted on the ends with flaps butted and stitched on the outside. The cover blank shall be side-slotted with flaps stitched on the inside. Cover and body shall be assembled with not less than nine (9) staples in each flap, spaced

evenly in three vertical rows of three staples each, one row being nominally one inch from the free end of the stitched flap, the second row the same distance from the vertical corner of the box and the third row midway between the other two. The top and bottom staple in each row shall be approximately one inch from the edge of the flap. The box shall be provided with a double wall corrugated fiberboard liner as outlined in paragraph G-2a(1)a.

G-2b(1)c(2). F.O.L. (Full Overlap Slotted). Boxes of this style shall be made of the same grade and type of board as specified under paragraph G-2b(1)a, except that the top and bottom flaps shall overlap to one (1) inch less than the width of the box. This box shall be equipped with a double wall liner as described in paragraph G-2a(1)a. All flaps shall be securely sealed with a water resistant adhesive throughout the entire area of contact between the flaps (both inner and outer flaps) or by a combination of water resistant adhesive and metal stitching.

G-2b(1)c(3). Three-Piece Bliss Style No. 2 or 4. Boxes of these styles shall be made of the same grade and type of board as specified in paragraph G-2b(1)a, except that the top and bottom flaps shall overlap to one (1) inch less than the width of the box. The box shall be equipped with a double wall liner as described in paragraph G-2a(1)a. The box shall be made from three pieces of board consisting of a body piece and two ends. These pieces shall be slotted and scored so as to have six flanges for marking the joints along the four edges perpendicular to the opening and two edges where the bottom joins the ends, and four flaps for closing the open face or top. The flanges may be either on the end pieces to lap over the sides and bottom (No. 2 Bliss style) or on the sides and bottom of the body piece to lap over the ends (No. 4 Bliss style) at the option of the contractor. The length of the flanges shall be such that the boards lap not less than 1-1/2 inches at the joints between the ends and the sides and bottom. The joints between the flanges and the adjoining section of the box shall be fastened with steel stitching wire not less than .020 inch x .098 inch. Stitches shall be well formed and properly clinched after being driven through all thicknesses of board and shall be spaced nominally two inches apart and the distance between the outer fastener and the end of the joint shall not exceed one inch and the distance between any two adjacent stitches shall not exceed 2-1/2 inches. The two outer flaps, when in closed position, shall lap to within 1 inch of the full width of the box. Flaps along the longer edge of the open face are the outer flaps. The inner flaps shall be the same lengths as the outer flaps. The flaps along the shorter edge of the open face are the inner flaps. Boxes of this style shall be sealed in accordance with the requirements outlined for F.O.L. style.

G-2b(2). Wood Cleated Fiberboard Boxes.- Wood-cleated fiberboard boxes shall comply with Joint Army-Navy Specification JAN-P-103, Style A. Box liners and case liners are not required when this type of box is used. For overseas shipment, boxes shall be strapped in accordance with the requirements outlined in Appendix of Joint Army-Navy Specification JAN-P-103.

G-2b(3). V2S fiberboard boxes shall be lined with waterproof barrier-material conforming to Joint Army-Navy Specification JAN-P-125, Type L2 or M. The barrier material shall be placed between the fiberboard box liner and the outer fiberboard box. The waterproof barrier material shall be of such size as to overlap at all edges not less than 3 inches including the top fold.

G-2b(4). Strapping and Closure.

G-2b(4)a. F.T.C. (Full Telescope Box).- After packing the contents, the cover shall be placed on the body and secured by applying one flat steel strap lengthwise, passing over the top, ends, and bottom, and then placing two (2) parallel flat steel straps over the top, sides, and bottom, each strap located approximately nine (9) inches from either end of the box. Straps shall be a minimum of 1/2 inch x .015 inch or .020 inch having an ultimate tensile strength of not less than 80,000 pounds per square inch. Strapping shall be protected by a rust resistant coating. The breaking strength of the joint shall be not less than 75 percent of the breaking strength of the strap used.

G-2b(4)b. F.O.L. (Full Overlap Slotted). The box shall be reinforced by two parallel flat steel straps fastened over the tops, sides and bottom located approximately nine (9) inches from either end of the box. Straps shall be a minimum of 1/2 inch x .015 inch or .020 inch having an ultimate tensile strength of not less than 80,000 pounds per square inch. Strapping shall be protected by a rust-resistant coating. The breaking strength of the joint shall be not less than 75 percent of the breaking strength of the strap used.

G-2b(4)c. Three-Piece Bliss Style 2 or 4 Box.- shall be strapped in the same manner as specified for F.T.C. style boxes.

G-2b(4)d. Domestic Type, Full Telescope Design Boxes.- shall be strapped in accordance with the requirements outlined above. The strapping on other types of domestic shipping containers will not be required.

G-3. Marking.-

G-3a. Marking on Shipping Boxes.- All shipping boxes shall be marked in accordance with the requirements of U. S. Army Specification 100-2.

G-3a(1). Labels, Mixed Sizes.- Every shipping box containing mixed sizes shall have securely attached to the end and side, a white label 5 inches x 4 inches with the words "MIXED SIZES" plainly stamped or printed thereon and under these words shall be legibly printed the correct quantity of pairs and sizes contained within the case.

G-3a(2). Short Cases.- The shipper shall exercise care to see that the stenciling or labeling is done properly and legibly, that the quantities and sizes accurately agree with what is actually in the cases and that no short cases (missing boots) are shipped.

H. NOTES

H-1. The use of this specification, wherever applicable, is mandatory upon all procuring agencies of the Army.

H-2. Bill of Materials No. B-75b applies to this specification. This bill of materials is for the information of the U. S. Government only and is not for distribution to manufacturers.

H-3. Boots, Ski-Mountain with-rubber-cleated-soles are classified under the following Quartermaster Corps Stock Numbers:

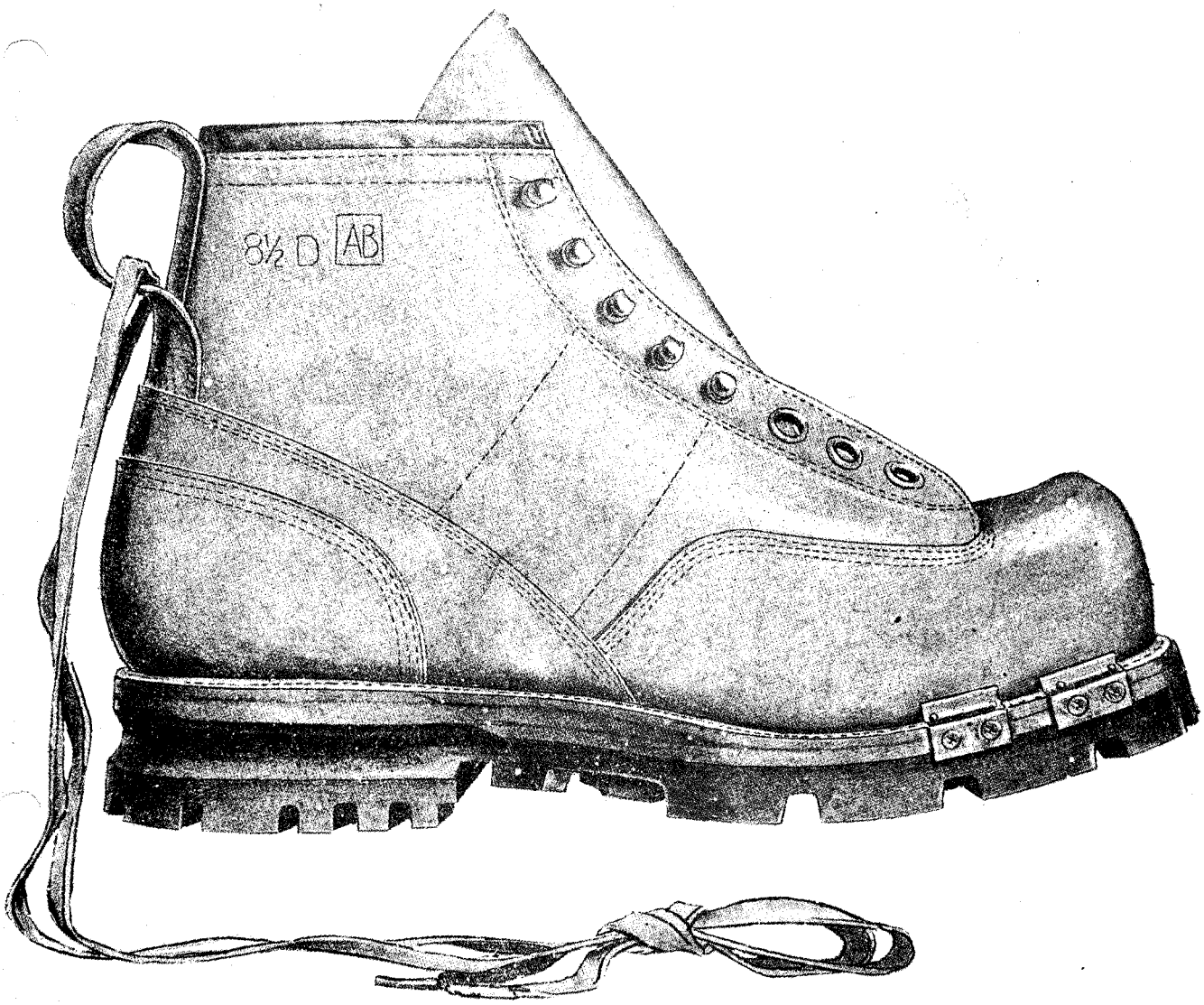
72-B-2846-10 thru 72-B-2850-14

H-4. Fiberboard boxes made from Grade 3, type SF or CF, compliance symbol V3S or V3C fiberboard may be substituted for post war overseas shipment of boots.

NOTICE: When Government drawings, specifications 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; and the fact that the Government may have formulated, furnished or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

NOTE: Unless otherwise specified in the invitation for bids, contract or purchase order, copies of this specification may be obtained at the following points:

Chicago Quartermaster Depot, 1819 W. Pershing Road, Chicago 9, Ill.
Jeffersonville Quartermaster Depot, Jeffersonville, Ind.
Kansas City Quartermaster Depot, 601 Hardesty Ave., Kansas City 1, Mo.
Stockton General Depot, U. S. Army, Stockton 1, Calif.
Philadelphia Quartermaster Depot, 2800 S. 20th Street, Philadelphia 45, Pa.



BOOTS, SKI-MOUNTAIN; WITH-RUBBER CLEATED-SOLES