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* INCH-POUND *

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SUPERSEDING
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FEDERAL SPECIFICATION

BED, BUNK, STEEL, SQUARE TUBE, WITH END PANELS SINGLE AND DOUBLE-DECK

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

1. SCOPE

1.1 Scope. This specification covers the requirements for component materials and their assembly into a single bunk bed with adapters for conversion to double-deck bunk beds.

1.2 Classification. The bunk beds covered by this specification will be of the following sizes as specified (see 6.2):

Size 1 - 36.0 inches +/-0.0625-inch (914.40 millimeters (mm) +\-1.59 mm) wide by 79.0 inches +/-0.125-inch (2006.61 mm +/-3.18 mm) long overall.
Size 2 - 36.0 inches +/-0.0625-inch (914.40 mm +/-1.59 mm) wide by 84.0 inches +/-0.125-inch (2133.61 mm +/-3.18 mm) long overall.

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Beneficial comments (recommendations, additions, deletions) and any pertinent
*data which may be of use in improving this document should be addressed to: *
*Commanding Officer (Code 156), Naval Construction Battalion Center, *
*1000 23rd Avenue, Port Hueneme, CA 93043-4301, by using the Standardization *
*Document Improvement Proposal (DD Form 1426) appearing at the end of this *
*document or by letter. *
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FSC 7105

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Federal Specifications

TT-C-490 - Cleaning Methods for Ferrous Surfaces and Pretreatments for Organic Coatings
TT-E-529 - Enamel, Alkyd, Semi-Gloss
PPP-B-601 - Boxes, Wood, Cleated-Plywood
PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner
PPP-T-97 - Tape, Packaging/Industrial, Filament Reinforced

Federal Standards

FED-STD-123 - Marking for Shipment (Civil Agencies)
FED-STD-151 - Metals, Test Methods
FED-STD-595 - Colors Used in Government Procurement

Military Specifications

MIL-L-10547 - Liners, Case, and Sheet, Overwrap; Water-Vaporproof or Waterproof, Flexible

Military Standards

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

(Unless otherwise indicated, copies of federal and military specifications and standards are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issue of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

American Iron and Steel Institute (AISI):

AISI - Steel Products Manual

(Application for copies should be addressed to the American Iron and Steel Institute, 150 East 42nd Street, New York, NY 10017.)

American National Standards Institute (ANSI):

ANSI A208.1 - Mat-formed Wood Particleboard

(Application for copies should be addressed to the American National Standards Institute, 11 West 42nd Street, New York, NY 10036.)

ASTM:

ASTM A 36 - Structural Steel
ASTM A 366 - Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality
ASTM A 513 - Electric-Resistance Welded Carbon and Alloy Steel Mechanical Tubing
ASTM A 569 - Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip Commercial Quality
ASTM D 1974 - Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Shipping Containers
ASTM D 3950 - Strapping
ASTM D 3951 - Commercial Packaging
ASTM D 3953 - Flat Steel Strap and Connectors
ASTM D 4317 - Polyvinyl Acetate-Based Emulsion Adhesives
ASTM D 4690 - Urea-Formaldehyde Resin Adhesives
ASTM D 5118 - Practice for Fabrication of Fiberboard Shipping Boxes
ASTM D 5168 - Standard Practice for Fabrication and Closure of Triple-Wall Corregated Fiberboard Containers

(Application of copies should be addressed to ASTM, 1916 Race Street, Philadelphia, PA 19103.)

American Welding Society (AWS):

AWS A3.0 - Terms and Definitions

(Application for copies should be addressed to the American Welding Society, Inc., 550 N.W. LeJeune Road, P.O. Box 35140, Miami, FL 33135.)

National Electrical Manufacturers Association (NEMA):

NEMA LD 3 - High-Pressure Decorative Laminates

(Application for copies should be addressed to the National Electrical Manufacturers Association, 2101 L Street, N.W., Washington, DC 20037.)

(Non-Government standards and other publications are normally 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 a 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 Description. The bunk bed (see Figure 1) shall be of all steel three-piece construction consisting of matching square steel tube, head and foot ends, a wedge type corner lock with four bearing points, and a fully-framed spring unit with sinuous (no-sag type) spring fabric, as shown in Figures 2 and 3. The bunk bed shall be of the size specified (see 6.2).

3.2 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 4.2.1 and 6.4).

3.3 Interchangeability. All units of the same classification furnished with similar options under a specific contract shall be identical to the extent necessary to insure interchangeability of component parts, assemblies, accessories, and spare parts.

3.3.1 System of measurement. The dimensions used in this specification are not intended to preclude the use of the metric system of measurement in the fabrication and production of the material, individual parts, and the finished product, provided form, fit, and function requirements are satisfied.

3.4 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specified are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified, none of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification.

3.4.1 Steel. All steel shall be smooth, free from rust, scale, pits, scratches, laps, and buckles affecting strength and appearance. Unless otherwise specified herein, the gage numbers or thicknesses specified for steel are subject to standard tolerances. Steel shall be tested in accordance with 4.5.1 where applicable.

3.4.1.1 Steel tubing. Steel tubing for bed ends, adapters, and stretcher braces shall be in accordance with ASTM A 513, electric resistance welded type, square.

3.4.1.2 Steel angles. Steel angles for spring fabric frame shall be in accordance with ASTM A 36 and shall be 2.0 inches (50.80 mm) by 1.5 inches (38.10 mm) by 0.1875-inch (4.76 mm) thick. Edges of angles shall be slightly rounded to avoid sharpness.

3.4.1.3 Spring fabric. Spring fabric shall be high carbon sinuous (no-sag type) furniture spring wire in accordance with table 7-55 of the AISI Steel Products Manual. Spring wire shall be number 10 United States (US) Steel Wire Gage, 31.0 inches +/-0.50-inch (787.40 mm +/-12.70 mm) long in the flat position, containing 19 full loops including the "Z" hook ends. Spring fabric shall be fabricated to 7.50 inches +/-0.50-inch (190.50 mm +/-12.70 mm) diameter. Cut ends shall not have burrs or sharp projections.

3.4.1.4 Spring fabric links. Spring fabric links shall be number 11 US Steel Wire Gage basic steel wire in accordance with table 7-48 of the AISI Steel Products Manual with galvanized finish. Dimensional and size requirements shall be in accordance with Figure 4.

3.4.1.5 Helical springs. Helical springs shall be number 12 US Steel Wire Gage steel premier wire with electrodeposited zinc coating. Tensile strength shall be in the range from 204,000 to 230,000 pounds per square inch (140,664.15 Newtons per square centimeter (N/cm^2) to 158,591.93 N/cm^2). Dimensional and size requirements shall be in accordance with Figure 4.

3.4.1.6 Corner locks.

3.4.1.6.1 Male corner locks. The male corner locks shall be in accordance with ASTM A 569, hot-rolled sheet or strip, commercial quality steel, pickled and oiled, of shape, thickness, and dimensional requirements shown in Figure 5. As an alternate, the male corner locks shall be in accordance with ASTM A 366, cold-rolled sheet, commercial quality, and oiled.

3.4.1.6.2 Male corner lock studs. Male corner lock studs shall be AISI designation C-1010 steel. When upset, shank shall be annealed for riveting with a Rockwell hardness of not greater than 40 on the "B" scale. When machined, studs shall be AISI Designation CF-B-1113, C-1213, or C-1215 steel. Dimensional requirements shall be as shown in Figure 5.

3.4.1.6.3 Female corner locks. The female corner locks shall be in accordance with the requirements specified in 3.4.1.6.1 except that the shape, thickness, and dimensional requirements shall be as shown in Figure 6.

3.4.2 End panel core. End panel core shall be particleboard in accordance with ANSI A208.1, Grade 1-M-3, weight of 45 pounds per cubic foot (720.9 kilograms per cubic meter), and 0.75-inch (19.05 mm) thick.

3.4.3 High pressure decorative laminated plastic sheet. The high pressure decorative laminated plastic sheet for surfacing end panels shall be in accordance with GP 32 of NEMA LD-3. Pattern, color, and finish shall be as specified (see 3.6.3 and 6.2).

3.4.4 Adhesive. Adhesive for bonding high pressure decorative laminated plastic sheet to panel core shall be in accordance with ASTM D 4317 or ASTM4D44690.

3.4.5 Paint. The epoxy-powder coating shall meet the dried film requirements of TT-E-529, type II. Color shall be in accordance with FED-STD-595, color number 16251 (Gray gloss), 20059, 20227, 23578, 26120, 26424, 27038, or 27769 as specified (see 3.7.2 and 6.2).

3.5 Accessories.

3.5.1 End panels. Each bed end panel, two for each bed, shall consist of a particleboard core (see 3.4.2) surfaced on each side with a high pressure decorative laminated plastic sheet (see 3.4.3). Panel dimensions and thickness shall be as shown in Figure 7. Laminated plastic sheets with woodgrain patterns shall have the woodgrain in the horizontal direction, not vertical.

3.5.2 Steel caps. Steel caps for closure of the top of bed posts shall be as shown in Figure 8. Caps, four to be provided for each bed, shall be retained within the post by the retaining spring pressing against the post interior sides. Caps shall be removable without the use of tools. Construction shall be in accordance with 3.6.4.

3.5.3 Bed shoes. Bed shoes for closure of the bottom of the bed posts shall be as shown in Figure 8. Bed shoes, four to be provided for each bed, shall be retained within the post by the retaining spring pressing against the post interior sides. Shoes shall be removable without the use of tools. Construction shall be in accordance with 3.6.5.

3.5.4 Adapters. When specified (see 6.2), each pair of beds shall be provided with a set of four adapters for double-decking two beds. Adapters shall be as shown in Figure 9. Construction shall be in accordance with 3.6.6 and finish shall be the same as for the bed ends (see 3.7).

3.6 Construction. To insure interchangeability, beds shall be similar and of the same construction in accordance with design, material thickness, dimensions, and tolerances as shown in Figures 1 through 13 and as specified herein. Materials shall be as specified in 3.4 and accessories as specified in 3.5. Components for both size beds shall be the same, except the 84-inch +/-0.125-inch (2133.61 mm +/-3.18 mm) long bed (Size 2) shall require two additional strands of spring fabric, side rails shall be 5.0 inches (127 mm) longer than the 79-inch +0.0125-inch (2006.61 mm +3.18 mm) long bed (Size 1), and spring fabric link size shall be in accordance with Figure 4.

3.6.1 Bed ends. Head and foot bed ends shall be interchangeable and of the same construction as shown in Figure 7. Each bed end shall consist of two square tube posts, a rectangular horizontal top rail located between the posts, a full width panel located between the channel at the top and a "Z" formation at the bottom, and two steel caps as closures at the top of each post, and two bed shoes as closures at the bottom of each post. The posts shall be 1.50-inch (38.10 mm) square steel tube with 14 gage thick steel and shall be 30.50 inches (774.70 mm) high exclusive of caps and shoes. The horizontal top rail, channel, and "Z" formation thickness shall be of 14 gage thick steel. Connection of the two posts of each bed end shall be by placing the components in jigs and joining by the most applicable method of welding (see 3.9.1). The horizontal top rail shall be welded around the entire perimeter of each joint. The channel and "Z" formation shall be welded along the entire joint on the exposed side. The female corner lock shall be placed on main post as shown in Figure 7 to match the male corner lock on the spring unit. The female corner lock shall be properly jigged and welded across the top bottom, down 1.0-inch (25.40 mm) from top and up 1.0-inch (25.40 mm) from bottom as shown in Figure 6. Finish of welds shall be as specified in 3.9.1. The end panel shall fit snugly into channel at the top. A chamfer, as shown in Figure 7, is permissible to ease installation. The bottom of the end panel shall rest on the horizontal section of the bottom "Z" formation and be secured with not less than three flat head sheet metal screws at the location as shown in Figure 7. Panels shall fill the full width between the posts.

3.6.2 Bed spring unit. The bed spring unit shall consist of an all welded angle frame, sinuous (no-sag type) spring fabric, two round tubular sheet stretcher braces, and four male corner locks as shown in Figures 2 and 3. The

frame shall be constructed of steel angle sides and ends as specified in 3.4.1.2, with the 2.0-inch (50.80 mm) flange in the vertical position and the 1.50-inch (38.10 mm) horizontal flanges punched as shown in Figure 10 for insertion of spring fabric "Z" hook ends in side angles and spring helicals in the end angles. The horizontal flanges of the end angles shall overlay the horizontal flanges of the side angles with width and length as shown in Figures 2 and 3. Frame shall be properly jigged and welded (see 3.9.1) as shown in Figures 11 and 12. Two stretcher braces of steel tubing with 0.875-inch (22.23 mm) outside diameter and a 0.065-inch (1.65 mm) wall thickness shall be bowed, and the ends flattened as shown in Figure 13. The stretcher braces shall be located on side angles as shown in Figure 2 for Size 1 bed and as shown in Figure 3 for Size 2 bed. Each end of the stretcher brace shall be secured to horizontal flange of side angle by a continuous weld along the entire union of the side angle surface and the stretcher brace edge. The male corner lock, as shown in Figure 5, shall be of the double stud design. The male corner lock plate shall be provided with two shouldered steel studs riveted (see 3.9.2) thereto to engage the female corner lock as shown in Figure 6. The male corner lock shall be located on side angle as shown in Figures 2 and 3 and welded thereto as shown in Figures 11 and 12. The upper and lower extensions on male lock end shall butt against the slotted surface of the female lock providing a lock wedge fit to prevent the bed from racking. There shall be four point contact between male and female corner locks; at upper and lower extensions on male lock end and the two studs. The spring fabric shall consist of 18 equally spaced transverse strands of sinuous (no-sag type) spring fabric for Size 1 bed and 20 strands for Size 2 bed. Each strand shall be connected to the adjacent strand with five rows of links (see Figure 4) clinched over the spring fabric. The "Z" hook ends of each strand shall be inserted in holes in horizontal flange of each side angle in a manner to provide secure retention; free from scratching and tearing hazard. Each end strand shall be attached to the end angle with five helical springs (see Figure 4).

3.6.3 End panels. End panels shall be of the dimensions shown in Figure 7. The particleboard core shall be surfaced on each side with a one-piece high pressure decorative laminated plastic sheet. Adhesive for bonding the plastic sheet to the core shall conform to ASTM D 4317 or ASTM D 4690. The assembly periods, clamping or pressing times shall be in accordance with the adhesive manufacturer’s instructions to assure a permanent and secure bond. The upper horizontal edge of the panel may be chamfered to ease insertion into the channel. Panels shall extend the full width between the posts. Exposed surfaces of the panels shall not be cracked, split, scratched, scuffed, or dented.

3.6.4 Steel caps. The steel cap, consisting of a square washer and retaining spring, shall be fabricated as shown in Figure 8. Each of the two spot welds shall resist a pull of not less than 10.0 pounds +/-1.0 pound (4.5 kg +/-0.45 kg). The washer shall be cold-rolled steel, number 1 temper. The retaining spring shall be number 1 full hard with a Rockwell hardness of not less than 90 on the "B" scale. Caps shall be capable of being removed from the posts without the use of tools and shall require 5.0 pounds +/-1.0 pound (2.25 kg +/-0.45 kg) pull for removal.

3.6.5 Bed shoes. The bed shoe dimensional requirements shall be as shown in Figure 8 and assembly of components shall be as shown in the cross-section view of Figure 8. The shoe base shall be cold-rolled steel, AISI Designation C-1005,

hardened to number 5 temper, and nickel plated. The interior of the shoe base shall be covered with 1.75-inch (44.45 mm) diameter by 0.0625-inch (1.59 mm) thick rubber washer to assure a tight base after curling operation. The inside shell shall be cold-rolled steel, die formed, and zinc plated. The center post shall be steel with AISI Designated C-12L14 and have a 0.50-inch (12.70 mm) hexagon head. The square washer on which the post rests shall be cold-rolled steel, number 1 temper, with corner radius the same as the post and zinc plated. The retaining spring shall be cold-rolled steel, 0.035-inch (0.889 mm) thick with a Rockwell hardness range between 88 to 93 on the "B" scale. The base shall be hardened and nickel plated prior to being curled. Slight cracks due to forming, hardening, and nickel plating are acceptable on the curled section of the base. Final assembly shall be by swedging the corners of the center post hexagon head using a round punch. The square washer shall have the same outside dimensions as the posts. The bed shoe shall be capable of being removed from the post without the use of tools and shall require a pull of not greater than 10.0 pounds +/-1.0 pound (4.5 kg +/-0.45 kg) for removal.

3.6.6 Adapters. The adapter dimensional and thickness requirements shall be in accordance with Figure 9. The inner sleeve shall be a tight fit within the outer tube and further secured with two drive screws. The inner sleeve shall have a gap as shown in Figure 9 to permit the sleeve to be squeezed for proper fit. Outer edges of the inner sleeve end shall be beveled to ease insertion into the main posts. Inserts shall be adjusted as necessary to fit snugly, after painting, into the top of the lower bed posts and the bottom of the upper bed ends or as specified when procured separately (see 6.2). Adapters shall be tested for assembly and disassembly as specified in 4.4.2.

3.7 Finish. All metal surfaces of the bunk beds, except plated steel shoes and panels, shall be painted. Application of finish shall produce smooth and uniform surfaces without runs, wrinkles, and shall be free from objectionable defects such as scale under the finish, rust, or discoloring.

3.7.1 Surface preparation. All surfaces to be painted shall be treated in accordance with type I or type II of TT-C-490, except phosphate coating may be applied in three stages and a nonchromated final acidic rinse may be used.

3.7.2 Painting. All treated surfaces shall be painted with an epoxy-powder coating of the color specified (see 3.4.5 and 6.2) applied to a dry film thickness of not less than 1.1 mils. The coating shall be baked in accordance with the coating manufacturer’s recommendations.

3.8 Identification marking. The letters "US" in characters 1.0-inch (25.40 mm) high shall be permanently and legibly indented at center of horizontal or vertical surface on one end angle of each bed. The specification number, stock number, nomenclature, manufacturer’s name, trade name or trademark of such character easily identifiable with the manufacturer, and the year and contract number shall be indented or on a corrosion-resisting metal plate permanently attached on same end angle surface and to right of indented characters "US." Bed ends shall be identified by permanently and legibly indenting the manufacturer’s initials or trademark of such character easily identifiable with the manufacturer on one surface of one or both female corner locks. Letters or trademark shall be approximately 0.50-inch (12.70 mm) high at location shown in Figure 10.

3.9 Workmanship. Workmanship shall be of the highest quality throughout and in accordance with the best standard practice used in the manufacture of high grade commercial furniture of this type.

3.9.1 Welding. Bed spring fillet welds shall be in accordance with the definition and size requirements specified in AWS A3.0. The surface of parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Welds shall be of sufficient size and shape to develop the full strength of the parts connected by the welds. Welds shall transmit stress without permanent deformation or failure when the parts connected by the weld are subjected to proof and service loadings. The deposited weld metal shall be thoroughly fused with base metal and edges of union and shall penetrate into the root of the joint. All rough surfaces or projecting fins shall be ground smooth to prevent personal injury or damage to bedding. Weld spatter or flux shall be removed from surfaces surrounding the welding area.

3.9.2 Riveting. Studs shall be secured to the male corner locks by peening as shown in Figure 5. The studs shall be tight with the shoulder and end in full contact with the male corner lock surfaces. The head of the stud end shall be flat, parallel to the male corner lock surface, and edges free of burrs or fins.

4. QUALITY ASSURANCE PROVISIONS

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

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

4.1.2 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

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

a. First article inspection (see 4.2.1).
b. Quality conformance inspection (see 4.2.2).

4.2.1 First article inspection. The first article inspection shall be performed on one bunk bed, or two bunk beds if adapters are required (see 3.5.4), when a first article is required (see 3.2 and 6.2). This inspection shall include the examination of 4.4, the tests of 4.5, and the packaging inspection of 4.6. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.4, the tests of 4.5, and the packaging inspection of 4.6. This inspection shall be performed on the samples selected in accordance with 4.3.

4.3 Sampling. Sampling and inspection procedures shall be in accordance with MIL-STD-105. The unit of product shall be one complete bunk bed or two complete bunk beds and four adapters, when adapters are required. All bunk beds offered for delivery at one time shall be considered a lot for the purpose of inspection. Guidance for inspection level and Acceptable Quality Level (AQL) is provided in 6.5.

4.4 Examination. Each sample shall be examined for compliance with the requirements specified in section 3 of this specification. Any redesign or modification of the manufacturer's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet specified requirements shall receive particular attention for adequacy and suitability. Defects shall be classified in accordance with Table I. Each attribute within each classification of multiple defects shall constitute one defect.

4.4.1 Bed assembly examination. Each sample shall be assembled to determine ease of assembly and proper fit of mating parts. In addition, the beds shall be double-decked, when adapters are required, to assure proper overall dimensions among beds. Failure of studs and male corner lock extensions (see 3.6.1) to fit properly, requiring excessive force or use of tools to assemble or inability to match top bed post bottoms and bottom bed top, when double-decking each, shall constitute a major defect.

4.4.2 Adapter assembly examination. When adapters are procured separately or with beds, samples shall be examined for ease of double-decking. Assembly and disassembly with beds or steel tubes of same dimensions and wall thickness as bed posts as specified herein shall be performed manually with the use of tools and shall be a snug fit. Inside dimensions of bed posts or steel tubes shall be checked periodically for proper dimensions (see Figure 8).

TABLE I. Classification of defects.

Classification	Defect	Requirement paragraph
Critical	None defined.	
Major		
101	Design and construction not as specified.	3.1, 3.4, 3.5 and 3.6
102	Parts not manufactured to interchangeable standards.	3.3 and 3.6
103	Steel surfaces not as specified.	3.4.1
104	Steel components not as specified.	3.4.1.1 thru 3.4.1.6.3
105	End panel core not as specified.	3.4.2
106	High pressure decorative laminated plastic sheet not as specified.	3.4.3
107	Adhesive not as specified.	3.4.4
108	Epoxy-coating not as specified.	3.4.5
109	End panels not as specified.	3.5.1
110	Plastic sheet not on both sides of end panels.	3.5.1
111	Steel caps not as specified.	3.5.2
112	Bed shoes not as specified.	3.5.3
113	Adapters not as specified.	3.5.4
114	Four adapters not provided for each set of two beds (when adapters are required).	3.5.4
115	Overall dimensions not as specified.	3.6 and Figure 1
116	Bed end dimensions not as specified.	3.6.1 and Figure 8
117	Steel components not of thickness specified.	3.6.1
118	Welding of bed and horizontal components not as specified.	3.6.1

TABLE I. Classification of defects - Continued

Classification	Defects	Requirement paragraph
Major (Continued)		
119	Female corner locks not welded as specified.	3.6.1 and Figure 6
120	End panels not installed as specified.	3.6.1
121	Bed spring unit angle frame members not welded as specified.	3.6.2 and Figures 11 and 12
122	Long leg of angle sides not in vertical position as specified.	3.6.2
123	Stretcher braces not as specified.	3.6.2
124	Stretcher braces not located as specified.	3.6.2
125	Corner locks not located as specified.	3.6.2
126	Number of strands of spring fabric not as specified.	3.6.2
127	Spring fabric loose and not attached as specified.	3.6.2
128	Hook ends of spring fabric not free of scratching and tearing hazard.	3.6.2
129	End panel construction not as specified.	3.6.3
130	Steel cap construction not as specified.	3.6.4
131	Bed shoe construction not as specified.	3.6.5
132	Outside dimension of bed shoe washer not as specified.	3.6.5
133	Adapters not as specified (when adapters are required).	3.6.6
134	Dimensions and thicknesses for adapters are required).	3.6.6
135	Outer edges of adapter insert ends not beveled.	3.6.6

TABLE I. Classification of defects - Continued

Classification	Defects	Requirement paragraph
Major (Continued)		
136	Finish has wrinkles, or areas of thin or no film, or other defects such as indication of rust or scale under finish or discoloring.	3.7
137	Surfaces to be painted not prepared as specified.	3.7.1
138	Thickness of finish coat less than as specified.	3.7.2
139	Coating baking cycle not as specified.	3.7.2
140	Welding not as specified.	3.9.1
Minor		
201	Edges of angles not rounded.	3.4.1.2
202	Color not as specified.	3.4.5 and 3.7.2
203	When woodgrain end panels are provided, woodgrain not in horizontal position.	3.5.1
204	Pull necessary to remove steel caps not as specified.	3.6.4
205	Pull necessary to remove steel shoes not as specified.	3.6.5
206	Identification marking missing, illegible, or not as specified.	3.8

4.5 Tests.

4.5.1 Metals. Specimens of metal components shall be tested in accordance with FED-STD-151 wherever applicable.

4.5.2 Bed test. A load of 600 pounds (272 kg) shall be placed across the side angles of spring unit of an assembled bed, midway between the bed ends. The test load bottom or base shall be approximately 18.0 inches (457.20 mm) wide. At the center of the spring unit, the deflection of the spring unit side angles shall be not greater than 0.0475-inch (11.11 mm) with the 600 pound

(272 kg) load in place. Upon removal of the test load, the spring unit shall return to its original position with no visible distortion in the bed locks or spring unit frame.

4.6 Preparation for delivery inspection. The preservation, packaging, packing, and marking of the item shall be inspected to verify conformance to the requirements of section 5.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Preservation and packaging shall be level A or commercial as specified (see 6.2).

5.1.1 Level A. The main posts, horizontal tubes, and end panels of the bed ends (head and foot ends), and the end angles and corner locks of the bed spring unit shall be completely wrapped with cushioning material securely fastened in place with tape or twine in a manner which will prevent shifting or becoming detached. Additional cushioning material shall be used as required to protect any other metal surfaces from damage. One complete single bunk bed shall be arranged into a compact assembly in order to provide the smallest practicable shipping cube and to provide support for the faces and edges of the exterior shipping container. The assembly shall be secured in position by the application of flat steel straps at each end which completely encircle the main posts and the end angles. Each strap shall be drawn as tight as possible to provide a compact nonshifting assembly. The strapping shall be not less than 0.75-inch (19.05 mm) in width and shall be prevented from coming in direct contact with metal surfaces of the assembly by means of the applied cushioning or by use of additional separating material. When adapters are furnished with the bunk beds (see 3.5.4), they shall be cushioned and secured in an appropriate location inside the bed spring units with filament reinforced tape conforming to PPP-T-97 or flat strapping conforming to ASTM D 3950.

5.1.1.1 Adapters (procured separately). Adapters procured separately from bunk beds shall be packaged in quantities of four in a close-fitting fiberboard box conforming to ASTM D 5118 or ASTM D 5168 with a bursting strength of not less than 175 pounds per square inch (12.3 kg/cm^2) and the box closed and secured. The adapters shall be cushioned to prevent contact between pieces.

5.1.2 Commercial. Bunk beds (with adapters when furnished), and adapters (when furnished separately) shall be preserved in accordance with ASTM D 3951.

5.2 Packing. Packing shall be level A, B, or commercial as specified (see 6.2).

5.2.1 Level A. A complete single bunk bed, packaged as specified in 5.1.1, shall be packed in a close-fitting box conforming to PPP-B-601 overseas type or PPP-B-621, class 2. The box shall be close-fitting such that the cushioning material on the outermost parts of the assembly bears against the inner surfaces of the exterior shipping container in a snug manner. The box shall be provided with a waterproof case liner conforming to MIL-L-10547, sealed in accordance with the appendix thereto.

5.2.1.1 Adapters (procured separately). Adapters procured separately from bunk beds, packaged as specified in 5.1.1.1, shall be packed in boxes specified in 5.2.1. The boxes shall be provided with case liners as specified in 5.2.1.

5.2.2 Level B. A complete single bunk bed, packaged as specified in 5.1.1, shall be packed in a close-fitting box conforming to either PPP-B-640, class 2, PPP-B-601, domestic type, or PPP-B-621, class 1. Boxes conforming to PPP-B-640 shall be closed with flat steel strapping conforming to ASTM D 3953 and waterproofed with tape in accordance with the appendix to PPP-B-640.

5.2.2.1 Adapters (procured separately). Adapters procured separately and packaged as specified in 5.1.1.1 shall be packed as specified in 5.2.2, or in boxes conforming to ASTM D 5118, class weather-resistant, and closed in accordance with ASTM D 1974, Closure Method 2B.

5.2.3 Commercial. Bunk beds (with adapters when furnished) and adapters (when furnished separately) shall be packed in accordance with ASTM D 3951.

5.3 Marking. Boxes containing both bunk beds and adapters shall be marked noting that adapters are also included in the box.

5.3.1 Military agencies. Shipments to military agencies shall be marked in accordance with MIL-STD-129.

5.3.2 Civil agencies. Shipments to civil agencies shall be marked in accordance with FED-STD-123.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The bunk beds covered by this specification are intended for use in unaccompanied enlisted personnel housing.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Size required (see 1.2 and 3.1).
c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
d. When a first article sample and inspection is required (see 3.2 and 4.2.1.
e. Pattern, color, and finish required for the decorative laminated plastic sheet (see 3.4.3).
f. Color of finish coat (see 3.4.5 and 3.7.2).
g. When four adapters are to be provided with each pair of bunk beds (see 3.5.4).
h. When adapters are procured separately (see 3.6.6).
i. Level of preservation and packaging and level of packing (see 5.1 and 5.2).

6.3 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (DD Form 1423) incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 227.405-70 are invoked and the DD Form 1423 is not used, the data should be delivered by the contractor in accordance with the contract or purchase order requirements.

6.3.1 Assembly instructions. The manufacturer should prepare assembly instructions for single bed, and for double-decking (see 6.3). In addition, a sketch similar to Figure 14 should be included in the instructions to preclude the possibility of forcing male corner lock studs to seat or bottom in female corner lock. Instructions should be provided on a white paper sheet, 8.5 inches wide by 11.0 inches long. Instructions for assembly of the bunk bed should contain the following information:

a. Single bed assembly instructions: Assemble a single bunk bed by placing a spring unit on the floor with spring up, stand a bed end at each end of the spring unit, with one person standing outside of each bed end, lift the spring unit up and place between the slotted extensions on the main posts of the bed end and fit the studs into the slots. Lightly tap each corner to set the studs in the slots. DO NOT FORCE THE STUDS TO SEAT AT BOTTOM OF THE SLOTS. See illustration below. (NOTE: A sketch similar to Figure 14 should be inserted below the paragraph contained in the assembly instructions).

b. Double-decking instructions: Assemble two bunk beds as instructed above. Remove the caps from the top of the main posts at each corner of one bed and remove the bed shoes from the bottom of the main posts of the other bed. Place an adapter into each post from which the caps were removed. Lift the other bed above the adapters and insert the top of the adapters into the bottom of the main posts.

6.4 First article. When a first article inspection is required, the bunk bed should be tested and should be a first production bunk bed or a standard bunk bed from the contractor’s current inventory. The contracting officer should include specific instructions in the contract regarding arrangements for examination, test, and approval of the first article (see 3.2, 4.2.1, and 6.2).

6.5 Sampling procedures.

6.5.1 Sampling for examination. Recommended inspection level is S-4 and AQL is 2.5 defects per hundred units for major defects and 4.0 defects per hundred units for minor defects (see 4.3).

6.5.2 Sampling for tests. Recommended inspection level is S-4 and AQL is 2.5 defects per hundred units (see 4.3).

6.6 Part or identifying number (PIN). The PIN for the bunk beds covered by this specification will consist of the basic specification number followed by a

hyphen and a two digit code number. The two digit code number corresponds to the size. The specification PINs for the two sizes of bunk beds are as follows:

a. AAB2825-01 for Size 1 bed.
b. AAB2825-02 for Size 2 bed.

6.7 Subject term (key word) listing.

Adapters
Convertible type

6.8 Supersession data. This specification replaces military specification MIL-B-28644A, dated 19 November 1988.

6.9 Classification cross-reference. Classifications used in this specification (see 1.2) are identical to those found in the superseded military specification, MIL-B-28644A.

MILITARY INTERESTS:

Custodians:

Army - GL
Navy - YD1
Air Force - 99

Review Activities:

Army - MD
Navy - MC
Air Force - 84

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FSS

PREPARING ACTIVITY:

Navy - YD1

(Project 7105-0270)

Orders for this publication are to be placed with 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.

FIGURE 1. Bunk bed, steel, square tube with panels, single and double deck.
[FIGURE NOT AVAILABLE]

FIGURE 2. Bunk bed spring unit (top view).
[FIGURE NOT AVAILABLE]

FIGURE 3. Bunk bed spring unit (bottom view).
[FIGURE NOT AVAILABLE]

FIGURE 4. Spring unit components.
[FIGURE NOT AVAILABLE]

FIGURE 5. Male corner lock.
[FIGURE NOT AVAILABLE]

FIGURE 6. Female corner lock.
[FIGURE NOT AVAILABLE]

FIGURE 7. Bunk bed head and foot ends.
[FIGURE NOT AVAILABLE]

FIGURE 8. Bed shoe and steel cap.
[FIGURE NOT AVAILABLE]

FIGURE 9. Adapter, square tube, for conversion of single beds to double bunk.
[FIGURE NOT AVAILABLE]

FIGURE 10. Side, head and foot rails.
[FIGURE NOT AVAILABLE]

FIGURE 11. Spring frame welding (top view).
[FIGURE NOT AVAILABLE]

FIGURE 12. Spring frame welding (bottom view).
[FIGURE NOT AVAILABLE]

FIGURE 13. Stretcher brace.
[FIGURE NOT AVAILABLE]

FIGURE 14. Corner lock.
[FIGURE NOT AVAILABLE]