

PURCHASE DESCRIPTION

Office Furniture: Sofa; Chair,
Easy, Executive, Traditional

1. SCOPE AND CLASSIFICATION

1.1 Scope. This purchase description covers minimum requirements for office furniture, sofa and easy chair furnished certain Government personnel. It describes the minimum quality required by the Government. Construction requirements are in section 3 and figures 1, 2, and 3.

1.2 Classification.

1.2.1 Types and classes. The upholstered pieces shall be of the following types and classes, as specified (see 6.2):

Types:

- Type I - Sofa, three seat
- Type II - Sofa, two seat
- Type III - Chair, Easy

Classes:

- Class 1 – Leather
- Class 2 – Vinyl
- Class 3 - Fabric

2. APPLICABLE DOCUMENTS

2.1 Government Documents. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this purchase description to the extent specified herein.

Federal Test Method:

- Standard No. 191 - Federal Standard for Textile Test Methods.
- Standard No. 311 - Leather, Methods of Sampling and Testing.

(Federal Specifications and Federal Test Methods are available, for bidding purposes, from General Services Administration, Business Service Centers in Boston; New York; Philadelphia; Washington, DC; Atlanta; Chicago; Kansas City, MO; Fort Worth; Houston; Denver; Los Angeles; San Francisco; and Seattle WA.)

Purchase Descriptions:

FNE 80-214A Upholstered Furniture Test Method

(Available from GSA-FSS, Furniture Commodity Center, Engineering Division, Washington, DC 20406.)

2.2 Commercial and State Standards and Publications.

American National Standards Institute Publications

- ANSI/HPVA HP-1 - Standard for Hardwood and Decorative Plywood
- ANSI/NFPA 260 - Cigarette Ignition Resistance of Components of Upholstered Furniture
- ANSI/ASQ Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

(Application for copies should be addressed to ANSI, 11 West 42nd Street, NY 10036.)

American Society for Testing and Materials Standards

- D 905 - Standard Method of Test for Strength Properties of Adhesives in Shear by Compression Loading.
- D 1233 - Twine made from Bast and Leaf Fibers.
- D 1682 - Breaking Load and Elongation of Textile Fibers.
- D 2061 - Methods of Strength Tests for Zippers.
- D 2256 - Breaking Load (Strength) and Elongation of Yarn by the Single-Strand Method.
- D 3597 - Standard Specification for Woven Upholstery Fabrics - Plan, Tufted, or Flocked
- D 3770 - Standard Specification for Flexible Cellular Materials - High Resilience Polyurethane Foam(HR).
- D 3776 - Mass per Unit Area (Weight) of Woven Fabrics.
- D 3884 - Abrasion resistance of textile fabrics (Rotary Platform, Double Head Method).

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959)

Upholstery Furniture Action Council Test Methods

UFAC Flammability Test Methods for Upholstered Furniture Components - 1983 (UFAC test methods are available from UFAC, Box 2436, High Point, NC 27261)

State of California Technical Information Bulletin:

Technical Bulletin 117 2013- - Requirements, Test Procedures and Apparatus for Testing the Flame Retardance of Resilient Filling Materials Used in Upholstered Furniture.
State of California Technical Bulletin is available from:
Bureau of Appliance and Repair, Home Furnishings and Thermal Insulation
4244 South Market Court, Suite D
Sacramento, California 95834-1243 (www.bhfti.ca.gov) 916-999-2041 Fax: 916-921-7279

(State of California Technical Bulletin is available from California Department

of Consumer Affairs, Bureau of Home Furnishings, North Highland, CA)

U.S. Department of Agriculture Handbook:

Forest Service Agriculture Handbook No. 72 - Wood Handbook

(Available from U.S. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.)

3. REQUIREMENTS

3.1 Materials. The following paragraphs describe minimum requirements for materials used in construction and assembly.

Regulatory requirements. The Offerer/contractor is encouraged to use recovered materials in accordance with Public Law 94-580, as amended, to the maximum extent practicable.

3.1.1 Wood.

3.1.1.1 Wood species. The exposed portion of the front posts of the sofa and chair and the center leg of the sofa shall be in one piece of mahogany (Khaya or Sweitenia), cherry, walnut, andiroba, or pecan. All back posts and the center back leg of the sofa shall be of sweet or yellow birch, hard or sugar maple, or hackberry and shall be in one continuous piece, or of built-up stock with a maximum of one glue line. All other parts of the frames shall be made of domestic hardwood which meets the following requirements at 12% moisture content. See Wood Handbook, USDA No. 72.

Modulus of Rupture - 68,000 kPa, min.
 Modulus of Elasticity - 9,500 MPa, min.

3.1.1.2 Wood Characteristics. The wood shall be clear, sound stock without knots, worm holes, shake, or other defects which may affect appearance or serviceability of the finished product.

3.1.2 Dowels. Dowels shall be of birch, maple, beech, or hickory, and shall be dried to a moisture content of from 2 to 5 percent at the time of assembly. They shall be longitudinally or spirally grooved and shall be a minimum of 9 mm in diameter.

3.1.3 Seasoning. All wood shall be air-seasoned and then kiln-dried to a moisture content of from 6 to 10 percent at the time of assembly. All wood shall be allowed to temper approximately two weeks before milling.

3.1.4 Adhesive. Block shear strength: 19,300 kPa minimum. See test procedure paragraph 4.4.1.

3.2 Upholstery materials and flammability requirements. All upholstery, cover materials, seat decking, welts, interior fabrics, fillings, and paddings shall meet NFPA-260 Class 1 construction, or UFAC Class 1 flammability requirements. All polyurethane foam shall meet California Technical Bulletin 117, Section A, Part 1 and Section D, Part II.

3.2.1 Leather. Top grain, dyed full depth. The color selection is specified in 3.6 (See 6.2).

Requirements: (See 4.4.6 for test methods.)

Thickness - 57 to 85 g

Breaking force (grab method) - 444 N minimum

Elongation - 40% maximum stretch.

Stitch tear (double hole) - 67 N minimum

Crocking (colorfastness, resistance to rubbing) -

Dry: 8.5 Munsell or better

Wet: 6.5 Munsell or better

Blocking - Specimens must separate with ease and show no grain damage.

PH - 3.3 to 5.0

Fade resistance (colorfastness) - Little or no change in color or finish.

Abrasion resistance - No signs of the finish wearing through (except for gloss change).

Flexibility - Fine cracks, no russet showing.

3.2.2 Vinyl. Vinyl shall have a terry loop knit polyester base cloth. Vinyl shall meet the following requirements when tested in accordance with the methods in 4.4.7.

Thickness: 1.2 mm minimum

Total weight: Minimum 678 g/m²

Breaking strength, Minimum: 266 N Wales, 266 N Courses

Elongation, Maximum: 5% stretch, Wales, 25% stretch Courses

Tear strength, Minimum: 44.4 N Wales, 44.4 N Courses

Crocking (colorfastness, resistance to rubbing): Good

Abrasion resistance: No signs of the finish wearing through (except for gloss changes) after 30,000 double rubs.

The color selection is specified in 3.6 (see 6.2).

3.2.3 Upholstery fabric. The upholstery fabric shall be 70% polyester and 30% olefin, dyed, patterned weave, not less than 280 g/m exclusive of back coating. The fabric shall comply with the following minimum test requirements:

Breaking strength: 485 N warp/570 N filling

Tear strength: 75 N warp/50 N filling

Tensile strength: 1000 N warp / 570 filling

Seam slippage: 370 N warp/375 N filling

Abrasion:	30 000 cycles (Heavy Duty)
Colorfastness to light:	40 hours - Class 4
Pilling:	Class 4

Color selection is specified in 3.6. (See 6.2).

3.2.4 Sateen. Sateen shall be rayon and/or polyester, minimum 190 g/m² (Test procedure: 4.4.3). Color shall be beige.

3.2.5 Sheet fabric. For use over foundation springs. Woven or non woven fabric 102 g/m² minimum (Test procedure: 4.4.3).

3.2.6 Cambric. Black or grey non-woven fabric, 64 g/m² (minus 2.7 g/m²). Test procedure 4.4.3.

3.2.7 Polyester fiberfill batting. Garnetted (not resinated), min. 610 g/m² (test procedure 4.4.3), hollow and slickened, 5.5 to 16 denier, branded polyester fiber (branded by fiber producer).

3.2.8 Garnetted batting. Garnetted material, smoothly carded, clean and free of foreign matter, made in unbroken laminated sheets.

Felt weight: 634 g/m² minimum (Test procedure 4.4.3) unless otherwise specified.

3.2.9 Polyurethane foam.

Seat: Slab or moulded, high resilience type, polyurethane foam with a minimum 35 kg/m² polyurethane polymer density. 120 ± 13 Indentation Force Deflection (IFD) (25 percent deflection) required.

Back: Slab or moulded, conventional or high resilience type polyurethane foam with a minimum 24 Kg/m² polyurethane polymer density. 58 N ± 13 N IFD (25 percent deflection) required.

Arms: Slab or moulded, conventional or high resilience type polyurethane foam with a minimum 24 Kg/m² polyurethane polymer density. 209 N ± 18 N IFD (25 percent deflection) required.

All foam shall have a minimum recovery ratio of 70% when tested as specified in 4.4.4 and meet flame retardant requirements in 3.2. Flame retardant additives are permitted. Foam for cushions shall be buffed to provide a 114 mm center thickness and 76 mm edge thickness.

3.3 Hardware.

3.3.1 Seat and back foundation springs. Any steel coil, sinuous wire spring system or drop-in is acceptable provided it gives a moderately firm, comfortable seat and back and meets the Heavy Service level Test in 4.5 and comfort requirements in 3.4.3. "Hammock type" spring systems are not acceptable. "Spring edge" required on front edge of seat foundation. Squeaks or other noise is not acceptable. When springs are "hand-tied", knot twine to springs.

3.3.2 Slide fastener. Minimum 311 N cross-wise pull required when tested as specified in 4.4.5. Pin lock or cam lock required unless a pocket pleat is provided in upholstery fabric to serve as lock.

3.3.3 Glides. Steel, cushioned nail type with antique copper finish, minimum 38 mm diameter base on front legs and minimum 29 mm diameter on rear legs.

3.4 Construction.

3.4.1 Design. Design of sofas and chair shall be traditional as shown in figures 1 and 2.

3.4.2 Tolerances. The following tolerances will be permitted, except where otherwise indicated herein.

3.4.2.1 Overall tolerances.

Overall width, depth, and height	- plus or minus 13 mm
Height of seat	- plus or minus 13 mm
Height of arms at front	- plus or minus 13 mm
Height of arms at rear	- plus or minus 13 mm
Depth of seat	- plus or minus 13 mm

3.4.2.2 Component part tolerances.

Dimension of any solid wood part	- plus or minus 1.5 mm
Any dimension, not otherwise specified	- plus or minus 3 mm

3.4.3 Seating comfort. Seats shall be moderately firm and not "bottom out." Seat must have adequate "ride" with extra support at edges near arms to prevent "edge sag." Back shall be moderately firm and provide good lumbar and shoulder support. Seat, back and arms shall be adequately and evenly padded to provide comfortable seating units.

Acceptability of "ride," firmness, padding, pitch, and comfort will be determined, during bid sample evaluation, by a minimum 7 member evaluation panel.

3.4.4 Frame. Any solid wood (3.1.1.1) frame is acceptable provided it meets the Heavy Service Level Test in 4.5.

3.4.5 Foundations.

3.4.5.1 Seat foundation. Spring system (3.3.1). A "spring edge" is required. Cover spring system with sheet fabric (3.2.5), permalator, insulator pad, and any combination of polyurethane foam (3.2.9) and or batting (3.2.7, 3.2.8) materials. Seat deck shall be independent of arms and back. Apply materials to provide a smooth deck with a cushioned effect and that will remain smooth after testing. A sewn resilient edging is required on front edge of sofa. Seat foundation shall be designed so that there is no gap between bottom of cushion and spring edge.

3.4.5.2 Arm foundation and padding. Cover frame with high density foam and or sheet fabric (3.2.5). Cardboard is not acceptable. Cover sheet fabric with any combination of polyurethane foam (3.2.9) and or batting materials (3.2.7, 3.2.8). Resilient edge roll required. Apply materials to provide a firm, full, well shaped, padded arm complying with figures 1, 2, and 3 when upholstered. Gap or opening between seat and arm is not acceptable.

3.4.5.3 Back foundation. Spring system (3.3.1). Cover spring system with sheet fabric (3.2.5), permalator, insulator pad, and any combination of polyurethane foam (3.2.9) and or batting materials (3.2.7, 3.2.8). Resilient edge roll required. Apply materials to provide a firm, full well shaped padded back complying with figures 1, 2, and 3 when upholstered.

3.4.5.4 Outside back and arms. Cover with resilient product(s) which will support and cushion the upholstery fabric and resist permanent indentation. Cardboard is not acceptable.

3.4.6 Application of upholstering material. The covering of upholstering material shall be applied so that it is smooth and even. All welt lines shall be true. Pleating at the top of the backs and arms shall be uniform. Panel ends of arms and backs shall be padded and fastened in such a manner as to avoid cutting or puncturing the upholstering material.

The final covering on the deck shall be sateen (3.2.4). The upholstering material facing shall extend over the deck not less than 100 mm. The facing shall be pulled down snugly over the edge roll. There shall be an additional facing of upholstering material and padding applied immediately below with a welt, (3.4.7) attached between the two sections. There shall be no seams in any of the facing upholstering material. There shall be a self-welt applied around the lower perimeter of the sofa and chair and secured to the rails. Completely cover bottom of units with cambric (3.2.6). Bottom cover shall be securely and neatly attached with no sagging. Outside back, when upholstered in leather, may be made up of 3 pieces. When upholstering in leather, place

flank areas of the hide and healed scars in areas that are inconspicuous when sofa/chair is viewed by someone standing in front of the piece.

3.4.7 Welts. Welts shall be of upholstery material, uniformly drawn over a suitable welt cord and be of suitable size for each particular application.

3.4.8 Seat cushion cover. The cushions shall be loose and of the nonreversible type, the underside having not less than a 100 mm facing of upholstery material, the remainder of the underside shall be sateen (3.2.4). All cushions shall have a 89 mm boxing and shall have welts around the top and bottom. No more than four pieces of upholstery material shall be used in the boxing. A slide fastener (3.3.2) shall be sewn in the center of the boxing strip along the back edge and a portion of each side edge of the cushion. Pocket pleats when used, shall be positioned approximately the same distance from the back edge of the cushion. The cover shall be arranged in an overlapping fold on either side of the slide fastener so as to hide the fastener track. When fabric cover is used, the cushion shall be reversible and fully covered with fabric.

3.4.8.1. Seat cushion filling. Cushion shall consist of a polyurethane foam core (3.2.9) covered top and bottom with polyester batting (3.2.7). Foam shall be buffed as specified in 3.2.9. Cover cushion with a sewn interior fabric envelope. Insert this unit into the upholstery cover envelope (3.4.8). The cushion unit shall be oversized in excess of the finished cushion envelope to provide a "plump," full appearance as shown in figures 1, 2, and 3.

3.5 Exposed wood finish Finish to match as closely as possible the overall color of GSA Standard Sample FSS-W-01001 Federal Walnut wood and FSS-W-01002 – Federal Mahogany wood and be stained to equalize color. Suitable clear natural or synthetic top coat, 2 coat process with adequate "build" and a "semi-open pore" finish. Final finish shall pass finish test (4.4.2)

3.6 Upholstery colors: Standard samples are available from GSA-FSS-FCNE, Washington, DC 20406.

3.6.1 Leather standard sample colors shall be FSS-X-00017 Dark red, FSS-X-00018 Light blue, FSS-X-00019 Dark blue, FSS-X-00020 Green, FSS-X-00021 Brown, FSS-X-00022 Saddle, FSS-X-00023 Dark beige, FSS-X-00024 Black.

3.6.2 Vinyl standard sample colors shall be FSS-V-04009 Dark red, FSS-V-04010 Light blue, FSS-V-04011 Dark blue, FSS-V-04012 Green, FSS-V-04013 Brown, FSS-V-04014 Rust, FSS-V-04015 Dark beige, FSS-V-04016 Black.

3.6.3 Fabric standard sample colors shall be FSS-F-09009 Dark red, FSS-F-09010 Light blue, FSS-F-09011 Dark blue, FSS-F-09012 Green, FSS-F-09013 Brown, FSS-F-09014 Rust, FSS-F-09015 Dark beige, FSS-F-09016 Black.

3.7 Workmanship. A high degree of craftsmanship shall be exercised in order to produce chairs and sofas suitable for use in executive offices. The methods of construction, assembly, upholstery, finishing and the appearance of the chairs and sofas, shall be in strict accordance with the requirements of this purchase description. Chairs and sofas shall have a neatly tailored, taut, stuffed appearance complying with figure 1.

Loosely fitted upholstery or uneven padding is not acceptable. The natural grain of the wood shall not be clouded by the finishing materials. Bleaching agents or materials shall not be used. The application of materials, drying time, sanding, cleaning, and rubbing shall be controlled to produce items of smooth, uniform exposed surfaces without blisters, pits, wrinkles, runs, tackiness or more than a trace of orange peel.

3.8 Identification marking. Each item shall be permanently and legibly marked with contrasting ink, or with a white Tyvec (or equal) label, sewn on four sides, on the outside bottom with the contractor's name/trademark, contract number, national stock number, month and year of manufacture, and specification number.

4. QUALITY ASSURANCE PROVISIONS

4.1 Inspection responsibility. Unless otherwise specified in the contract or specification, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified,

the supplier may utilize his own facilities or any commercial laboratory acceptable to 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 assure that supplies and services conform to prescribed requirements.

4.2 First article approval. The requirement for first article approval and the responsibility (Government and contractor) for first article testing shall be as specified in the contract. The sample for first article approval test shall consist of one of each item awarded unless otherwise specified in the contract. Each item shall be examined and tested as specified herein for all the requirements of this purchase description. The samples shall be manufactured in the same manner, using the same materials, equipment, processes, and procedures as used in regular production. All parts and materials, including packaging and packing, shall be obtained from the same source of supply as used in regular production. First Article samples shall also be compared to the bid sample to ensure they have the same comfort (3.4.3) and appearance, and comply with the materials and components list supplied with bid samples. Approved First Article samples shall serve as a manufacturing standard during the contract and shall be maintained until the last order is shipped, delivered, and accepted.

4.2.1 Contractor testing. When the contractor is responsible for conducting first article approval test, the sample shall be inspected by the contractor for all the requirements of the contract. A record of this inspection and test, including certificates of conformance for materials, shall be submitted to the government for approval. The Government reserves the right to witness the contractor's inspection and test.

4.3 Inspection provisions.

4.3.1 Workmanship and dimensional examination. Examination shall be performed in accordance with Inspection Level – II, and Acceptable Quality Level (AQL) - 4.0 of ANSI/ASQC Z1.4. Items shall be inspected for visual and dimensional requirements of this specification paying close attention to filling and upholstery (3.4.6), Finish (3.5), workmanship (3.10).

4.3.1.1 Overall examination. In addition to workmanship and dimensional examination, inspect each sofa and chair at a viewing distance of 1.5 Meters for the following defects. Reject the item if one or more of the following defects is found.

- Wood finish streaked, not uniform.
- Piece over 6 mm off level.
- Scratch or bruise marks on wood.
- Poor fit of upholstery as evidenced by wrinkles (other than comfort type in seat) at sides and corners
- Welts not straight

4.3.2 Packaging, packing, marking examination. Examine items for compliance with requirements stated in this document and the contract. Score areas of noncompliance with requirements as defects.

Inspection Level - S-4. Acceptable Quality Level (AQL) - 4.0.

4.4 Testing. Failure to comply with the following test requirements will be cause for rejection. Testing is required for first article inspection. Test results shall be not more than one year old at time of First Article Inspection.

Subsequent shipments during the contract period are not required to be tested, however, the component supplier must certify that these shipments will meet all applicable test requirements.

4.4.1 Test for adhesives.

Component	Characteristic	Requirement reference	Test Method
Adhesive	Block shear test	3.1.4	ASTM D 905

Rerun test if all three of the following criteria are met: the average shear strength of all samples is below 19,300 kPa; there is a 10 percent or greater difference between high and low specimen values, and at least one test specimen broke at more than 19,300 kPa

Disregard a test specimen in computing the average if it breaks at less than 19,300 kPa; and it has 50 percent or more wood failure.

4.4.2 Finish tests and requirements. The following tests shall be performed on a sample panel finished in the same manner as units are finished in production. Perform all finish tests at first article inspection. All test panels shall be produced from finish materials currently being used in production. All samples tested shall meet the following test requirements.

4.4.2.1 Cold check. Age panel one week. Follow ASTM D 1211 test procedure. After exposure of 10 cycles, there shall be no checking or cracking. True film checking is one or more wavy or straight lines which cross the grain and do not appear related to grain structure. When a panel displays veneer checks, check running parallel to the grain, or glue line fracture, the panel shall be disregarded and another panel tested.

4.4.2.2 Cold print. Age panel 48 hours. A 50 x 50 mm (approx.) piece of duck material (canvas) 280 g/m², minimum count of 23.6 x 22.8 yarns per cm, shall be placed on the panel. Place a 455 g weight on the material for 24 hours at 24°C. Bottom (contact surface) of the weight shall be flat and have a 28 mm diameter. After the weight is removed, light polishing with a soft cloth and liquid polish must remove any imprint.

4.4.2.3 Ultra violet light resistance. One solid wood panel in each finish color, finished in the same way as in production, shall be tested. Allow panels to age for a minimum of ten days at 25°C (± 3°C) and 35 to 75% R.H. Perform exposure test at the same ambient conditions. Mask off one half of panel with aluminum foil or cut off a control portion of sample to be used later for comparison with the exposed portion. Place test panel 150 mm from ultraviolet lights (two 48 inch, UV 351 fluorescent lamps) for 72 hours. After exposure, remove and compare exposed and unexposed sections for discoloration, fading, loss of gloss, film embrittlement, cracking or any other failures. There shall be no more than a very slight change between the tested panel and the control panel after testing. UVA-351 fluorescent lamps are available from Q-Panel Co., Cleveland, OH.

4.4.2.4 Toughness and adhesion. Perform test for toughness and adhesion on a sample panel finished in the same manner as the furniture using Organic Coating Adhesion Tester, Model No, 1001 in accordance with manufacturer's instructions. Mar the panel both parallel and perpendicular to the grain. Film must conform to resulting indentation. Whitening (film separation) or cracking is not acceptable. Organic Coating Adhesion Tester Model No. 1001 is available from U.S. Testing Company, Inc. Instrument Marking Division, 1415 Park Avenue, Hoboken, NJ 07030.

4.4.2.5 Plasticizer migration. Perform test on a sample panel finished in the same way as production pieces according to ASTM D 2199, Standard Method for Measurement of Plasticizer Migration From Vinyl Fabrics to Lacquers.

4.4.3 Test method for determining weight of material per square area. 5041 of Fed. Test Method Std. 191 or ASTM D 3776. See test requirements in 3.2.5, 3.2.6, 3.2.7, 3.2.8.

4.4.4 Test method for determining recovery ratio of polyurethane foam. ASTM D 3770, Recovery ratio. Use this test method for both conventional and high resilience type foam. See test requirement in 3.2.9.

4.4.5 Test for slide fastener. ASTM D 2061, Crosswise Strength Test. See test requirement in 3.3.2.

4.4.6 Leather test methods. Sampling procedures and location from which the sample unit is to be obtained shall be in accordance with Fed. Std. 311. All tests are to be performed on individual sample units, with the exception of pH which is to be run on a composite. All test reports shall contain individual values utilized in expressing the final result. The lot shall be rejected if any one of the following conditions exist:

- a. More than 25% of thickness measurements taken do not fall within the required range.
- b. More than three test failures occur for breaking force, elongation, or stitch tear;
- c. More than one test failure occurs for the remaining requirements applicable to the sample unit;
- d. Any composite fails to meet the specified requirement.

Test	Method	Requirement
Thickness	Fed Std. 311, Method No. 1011.1	See 3.2.1
Breaking force (grab method)	Fed. Std. 311, Method No. 2031	See 3.2.1
Elongation	Fed Std. 311, Method No. 2031 at 45 Kg load	See 3.2.1
Stitch tear (double hole)	Fed Std. 311, Method No. 2151	See 3.2.1
Crocking (colorfastness, resistance to rubbing) Test all colors.	Fed Std. 311, Method No. 3031.1	See 3.2.1
Blocking	Fed Std. 311, Method No. 3121.1	See 3.2.1
pH	Fed Std. 311, Method No. 6621.1	See 3.2.1
Fade resistance(colorfastness) Test all colors	Fed Std. 191, Method No. 5660.2; 72 hour exposure	See 3.2.1
Abrasion resistance	ASTM D 3884; 1000 cycles using CS-10 wheels and 1000 gram weights	See 3.2.1
Flexibility	ASTM D 2097 60,000 cycles	See 3.2.1

4.4.7 Vinyl test methods.

Test	Method
Total Weight	Fed. Std. 191, Method No. 5041
Breaking Strength	Fed. Std. 191, Method No. 5100
Elongation	Fed. Std. 191, Method No. 5100
Tear Strength	Fed. Std. 191, Method No. 5136
Crocking	Fed. Std. 191, Method No. 5651
Abrasion Resistance	ASTM D 3884

4.5 Performance test for sofas and chair. Sofas and chair shall meet the heavy service acceptance level as defined in FNE 80-214. Test report as required in test method shall be submitted at time of first article inspection. If the construction of the sofa and chair are identical with the exception of cross rail length, number of legs, and number of cushions, the two seat sofa and chair will be accepted on the basis of the 3 seat sofa unit tested.

5. PACKAGING, PACKING, MARKING

Package, pack and mark shipping containers in accordance with the contract or order.

6. NOTES

6.1 Intended use. The executive office type easy chairs and sofa in traditional styling were designed for use in executive offices, courtrooms, libraries, and conference rooms of Federal agencies. The chairs and davenport should compliment the traditional decor of executive areas when used with other furniture items within the group.

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

- (a) Title, number, and date of this specification.
- (b) Type and class, (see 1.2.1).
- (c) Upholstery color required (see 3.6).

6.3 SI - English unit equivalents.

1 m² (square meter) = 1.19617 yard²

$$1 \text{ kg/m}^3 \text{ (kilogram/cubic meter)} = 0.06242 \text{ lb(mass)/ft}^3$$

$$1 \text{ mm (millimeter)} = 0.03937 \text{ inch (thickness of one dime)}$$

$$1 \text{ m (meter)} = 1\,000 \text{ mm} = 1.0936 \text{ yard (39.37 in)}$$

$$1 \text{ N (Newton)} = 0.225 \text{ lb (force)}$$

$$1 \text{ kg (kilogram)} = 2.2 \text{ lb (mass)}$$

$$1 \text{ g (gram)} = 0.0022 \text{ lb (mass)}$$

$$1 \text{ g (gram)} = 0.03527 \text{ oz (mass avoirdupois)}$$

$$1 \text{ kPa (kilo Pascal)} = 0.14514 \text{ lb (force)/in}^2 \text{ (PSI)}$$

$$(\text{C}^\circ \times 9/5) + 32 \text{ (Celsius)} = \text{F}^\circ \text{ (Fahrenheit)}$$

$$1 \text{ g/m}^2 \text{ (gram per square meter)} = 0.02949 \text{ oz/yd}^2 \text{ or } 0.04426 \text{ oz/linear yard (54" W basis)}$$

To convert SI units to English units, multiply SI measurement by the appropriate English conversion factor listed above. See example below:

$$900 \text{ mm} \times 0.03937 \text{ in/mm} = 35.43 \text{ inches}$$

To convert Celsius temperature to Fahrenheit temperature use the above conversion equation. See example below:

$$(20^\circ\text{C} \times 1.8) + 32 = 68^\circ\text{F}$$

Notes:

1. Recess front arm panel 3/8 inch behind front roll edge on arm.
2. 7 to 9 evenly spaced, neatly folded pleats required on roll edge of arm.
3. Front arm panel shall be 2 inches wide between welts.
4. Two outside back cushions on sofa shall be maximum 1-1/2 inch wider than center back cushion.
5. Crown required across front of each back cushion as shown.
6. 8 to 9 evenly spaced, neatly folded pleats required on back cushion end panels.
7. Shape each edge of seat cushions to conform to crown of back cushions and roll edge.
8. Cushions shall be retained by roll edge to minimize gap between cushions and roll edge.
9. When upholstering in leather the strip of leather immediately below the cushions may be made up of three pieces with welted seams lining up with the breaks between.

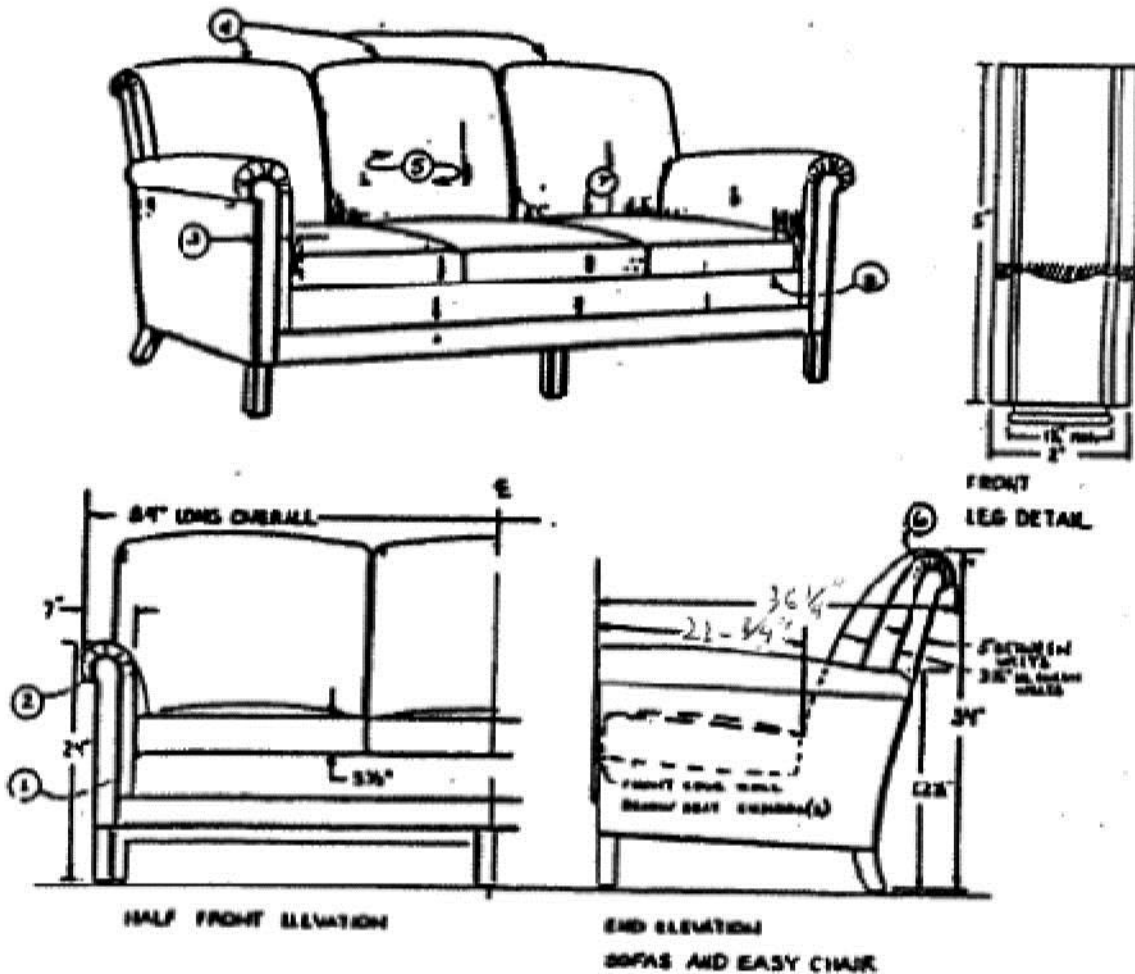


Figure 1
Type I – Sofa, Three Seat

Notes: See Figure 1

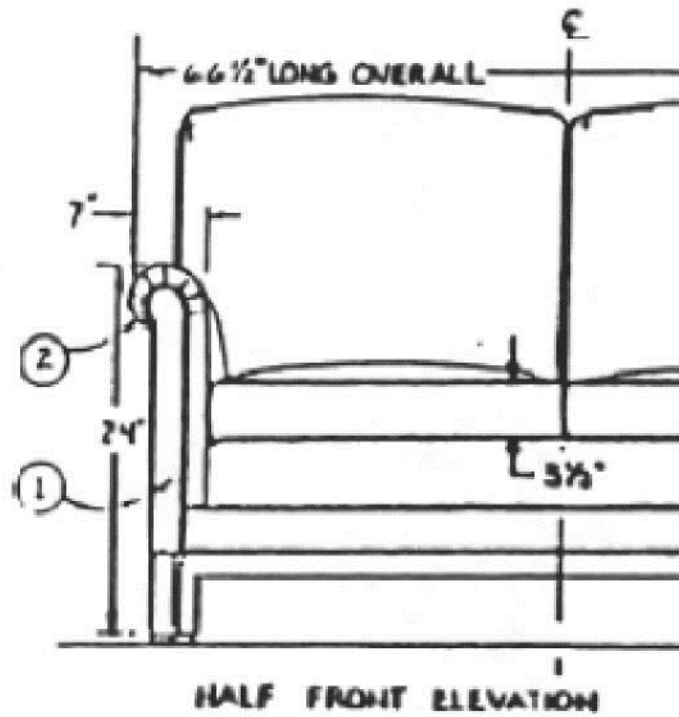
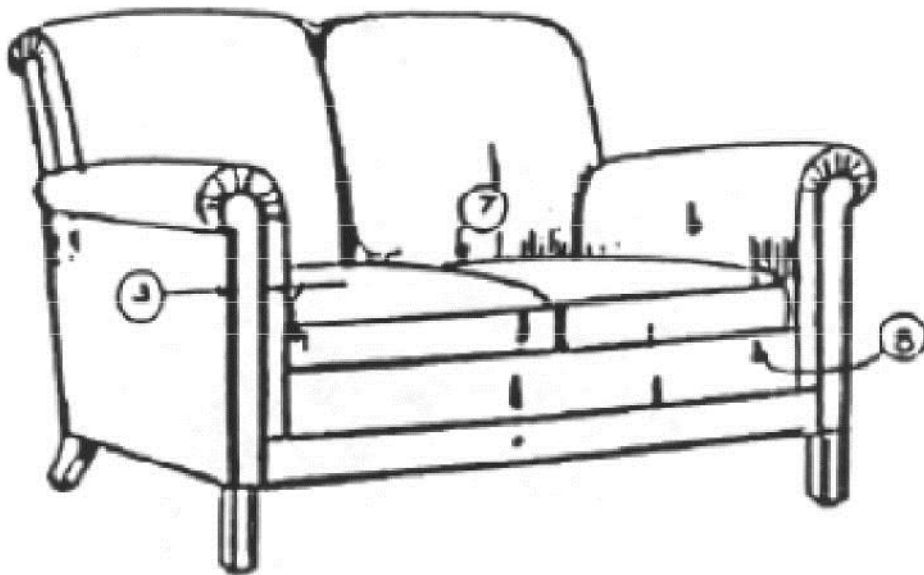


Figure 2
Type II - Sofa, Two Seat

Notes: See Figure 1

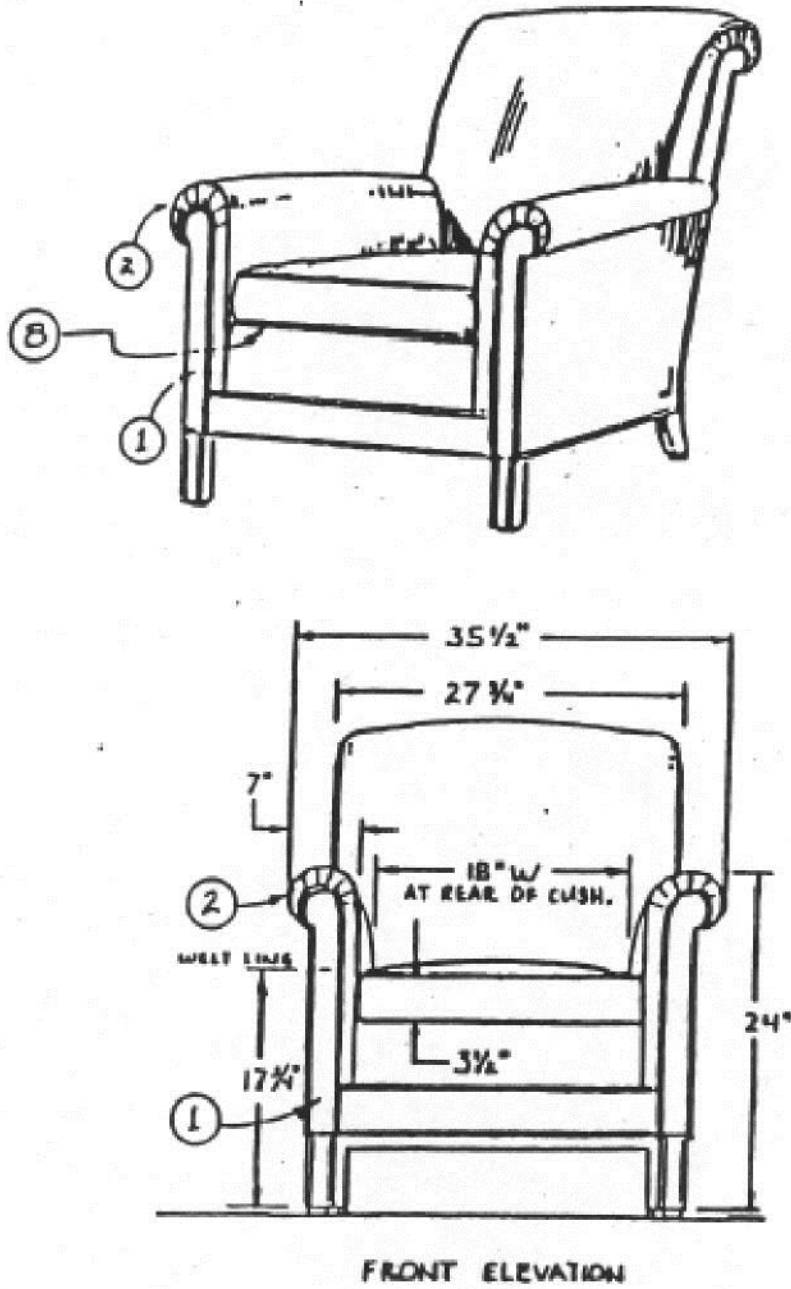


Figure 3
Type III – Easy Chair