

**PURCHASE DESCRIPTION**  
**WOOD, FREE STANDING AND MODULAR TRADITIONAL EXECUTIVE OFFICE FURNITURE**

**1. SCOPE, CLASSIFICATION**

1.1 Scope. This document describes wood traditional executive furniture that is available from commercial sources. This furniture meets the design requirements in 3.3.1. By allowing commercial products to be offered with some modifications we plan to get a much broader range of items on contract.

All dimensions are in metric (SI) units and do not include glides. Changes from required dimensions will be considered on a case-by-case basis; see paragraph 3.3.1.1.

1.2 Classification.

1.2.1 Classes, Types, Sizes, Styles.

TRADITIONAL EXECUTIVE OFFICE FURNITURE ITEMS. The following furniture items must be offered. All pieces are free standing with trim on 4 sides except those marked as “modular” which have trim on front edge only (unless otherwise specified). Modular pieces may be used separately as a “stand alone” piece or may be butted tight to another modular piece to give the appearance of a single unit.

**Class 1 - Desks and Desk Attachments      See design requirements in 3.3.1 and figures.**

Type I - Double Pedestal Desks		Grommets	Width	Depth	Height
Size 1	Full Chassis	0	1500	x 750	x 750 mm
Size 2	Full Chassis	0	1650	x 900	x 750 mm
Size 3	Full Chassis	0	1800	x 900	x 750 mm
Size 4	[deleted]				
Size 5	[deleted]				
Size 6	Conference Style (with top overhang on approach side)	0	1800	x 900	x 750 mm

Type II - Single Pedestal Desks		Grommets	Width	Depth	Height
Size 1					
Style A	Right Pedestal Desk	0	1650	x 750	x 750 mm
Style B	Left Pedestal Desk	0	1650	x 750	x 750 mm
Size 2					
Style A	Right Pedestal Desk	0	1800	x 900	x 750 mm
Style B	Left Pedestal Desk	0	1800	x 900	x 750 mm
Size 3					
Style A	[deleted]				
Style B	[deleted]				

Type III - Desk Attachments		Grommets	Width	Depth	Height
Size 1 [deleted]					
Size 2 [deleted]					
Size 3					
Style A	Left desk height attachment w/articulating keyboard shelf	1	1200	x 500	x 750 mm
Style B	Right desk height attachment w/articulating keyboard shelf	1	1200	x 500	x 750 mm

Size 4		Grommets	Width	Depth	Height
Style A	Left desk height attachment w/articulating keyboard shelf	1	1200 x	600	x 750 mm
Style B	Right desk height attachment w/articulating keyboard shelf	1	1200 x	600	x 750 mm

## Type IV - Straight Bridge Unit

Style A	[deleted]				
Style B	Desk height	1	1200 x	500	x 750 mm

**Class 2 - Credenzas/Cabinets and File Cabinets**

Type I - Credenzas/Cabinets		Grommets	Width	Depth	Height
Size 1	Telephone cabinet, 1 door, 1 adj. shelf, and 1 box drawer	0	500 x	500	x 750 mm

Size 2	Credenza, 2 door bookcase, 1 adj. shelf, and 1 top drawer	0	780- 815*	x 500	x 750 mm
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Size 3	Credenza, 2 file and 4 box drawers	0	1000 x	500	x 750 mm
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## Size 4

Style A	Credenza w/kneespace, 2 file and 4 box drawers, 1 center keyboard drawer with pull-down drawer front	1	1650 x	500	x 750 mm
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## Size 5

Style A	<b>Modular</b> credenza w/kneespace, 2 file and 4 box drawers, 1 center keyboard drawer with pull-down drawer front, designed to accommodate Overhead Storage Unit (OSU). Both ends shall be flush, as shown in figure 7.	1	1750 x	630	x 750 mm
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Style B	Credenza w/kneespace, 2 file and 4 box drawers, 1 center keyboard drawer with pull-down drawer front, designed to accommodate Overhead Storage Unit (OSU)	1	1800 x	500	x 750 mm
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Style C	Credenza, 2 door bookcase, 2 file and 4 box drawers, designed to accommodate Overhead Storage Unit (OSU)	0	1800 x	500	x 750 mm
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Style D [deleted]

Style E [deleted]

Style F	Credenza, single letter left pedestal with tray/box/file drawers, 1 center keyboard drawer with pulldown drawer front, with shaped edge on four sides of top, designed to accommodate Overhead Storage Unit (OSU). End panel molding is required on this credenza to match the single pedestal desk.	1	1800 x	500	x 750 mm
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Style G	Credenza, single letter right pedestal with tray/box/file drawers, 1 center keyboard drawer with pulldown drawer front, with shaped edge on four sides of top, designed to accommodate Overhead Storage Unit (OSU). End panel molding is required on this credenza to match the single pedestal desk.	1	1800 x	500	x 750 mm
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Size 6	Credenza, 2 door bookcase, 2 lateral file & 4 box drawers	0	2300 x	500	x 750 mm
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## Type II - Vertical File Cabinets

Size 1	2 file drawers	Grommets	Width	Depth	Height
Size 1	2 file drawers	0	500	x 500	x 750 mm
Size 2	4 file drawers	0	1000	x 500	x 750 mm
Size 3	6 file drawers	0	1400- 1550*	x 500	x 750 mm

Type III - Lateral File Cabinets	Grommets	Width	Depth	Height
Style A <b>Modular</b> Size 1 - 2 file drawers	0	850- 950*	x 500	x 750 mm
Size 2 - 4 file drawers	0	850- 950*	x 500	x 1350 mm

### Class 3 - Tables, Occasional, Console, Work and Conference

Type I - Occasional Tables	Grommets	Width	Depth	Height
Style A End table	0	700	x 450	x 580 mm
Style B Lamp table	0	650	x 650	x 580 mm
Style C Coffee table	0	1200	x 500	x 400 mm

Type II - Console Table	Grommets	Width	Depth	Height
Style A Console table	0	1500	x 500	x 750 mm

Type III - Work Tables	Grommets	Width	Depth	Height
Size 1 Work table w/drawer(s)	0	1500	x 750	x 750 mm
Size 2 Work table w/drawer(s)	0	1800	x 750	x 750 mm

Type IV - Conference Tables	Grommets	Width	Depth	Height
Style A Rectangular	0	2400	x 1050	x 750 mm
Size 1 Conference table	0	3000	x 1200	x 750 mm
Size 2 Conference table	0	3600	x 1200	x 750 mm

Style B Round				
Size 1 Conference table	0	1050 mm dia		x 750 mm
Size 2 Conference table	0	1200 mm dia		x 750 mm

### Class 4 - Bookcases, Hutch Cabinets, OSU and Wardrobe

Type I - Bookcases				
Style A	Grommets	Width	Depth	Height
Size 1 1 Adjustable Shelves Open Bookcase	0	900	x 350	x 750 mm
Size 2 2 Adjustable Shelves Open Bookcase	0	900	x 350	x 1220 mm
Size 3 2 Adjustable and 1 Fixed Shelf, or All Adjustable Shelves, Open Bookcase	0	900	x 350	x 1300 mm
Size 4 2 Adjustable and 1 Fixed Shelf, or All Adjustable Shelves, Bookcase with (2) two glass doors	0	900- 1000*	x 350- 375*	x 1300 mm
Size 5 3 Adjustable and 1 Fixed Shelf Open Bookcase	0	900	x 350	x 1830 mm
Style B <b>Modular</b> bookcase w/two doors & 2 lateral file drawers. Both ends shall be flush, as shown in figure 16.	2	760- 850*	x 630	x 1750 mm

Type II - Hutch Cabinets	Grommets	Width	Depth	Height
Size 1				
Style A Hutch, one section with grill doors	0	770- 815*	x 350- 380*	x 1225- 1270 mm*
Style B Hutch, one section w/o doors	0	770- 815*	x 350- 380*	x 1225- 1270 mm*
Style C Hutch, with wood panel doors	0	770- 815*	x 350- 380*	x 1225- 1270 mm*
Style D Hutch, with glass doors	0	770- 815*	x 350- 380*	x 1225- 1270 mm*
Size 2 [deleted]				
Size 3 [deleted]				

		Grommets	Width	Depth	Height
Size 4					
Style A	Hutch, three-section with workspace area, with grill insert doors	1	1800- x 350-	x 1225-	1830* 380* 1270 mm*
Style B	Hutch, three-section with workspace area, w/o doors	1	1800- x 350-	x 1225-	1830* 380* 1270 mm*
Style C	Hutch, three-section with workspace area, with wood panel insert doors	1	1800- x 350-	x 1225-	1830* 380* 1270 mm*
Style D	Hutch, three-section with workspace area, with glass insert doors	1	1800- x 350-	x 1225-	1830* 380* 1270 mm*
Type III	<b>Modular</b> Overhead Storage Unit (OSU) with two receding doors. Both ends shall be flush, as shown in figure 17.	1	1750 x 460	x 1000	mm
Type IV	<b>Modular</b> wardrobe, three adjustable shelves, fixed shelf w/coat bar, and two hinged doors. Both ends shall be flush, as shown in figure 18.	0	760 x 630	x 1750	mm

#### Class 5 - Computer Support Table

Style A	Split top table	Rear slot	900 x 600	x 750	mm
Style B	Computer table	Rear slot	900 x 600	x 750	mm
Style C	Mobile computer table	Rear slot	900 x 600	x 750	mm
Style D	Mobile computer table with adjustable keyboard shelf	Rear slot	900 x 600	x 750	mm
Style E	Machine table	Rear slot	760 x 500	x 750	mm
Style F	Mobile machine table	Rear slot	760 x 500	x 750	mm
Style G	Mobile machine table with adjustable keyboard shelf	Rear slot	760 x 500	x 750	mm

#### Class 6 – Presentation Board

Style A	Wall-mounted presentation board	1220 x 1220	x 75	mm
Style B	Wall-mounted presentation board with projection screen	1220 x 1220	x 75	mm
Style C	Wall-mounted presentation board with doors	1220 x 1220	x 125	mm
Style D	Wall-mounted presentation board with doors and projection screen	1220 x 1220	x 125	mm

\*Tolerances in 3.3.1.1 apply to the dimensional range.

## 2. APPLICABLE DOCUMENTS

2.1 Commercial Standards. The following documents of the issues in effect on the date of invitation for bids, or request for proposal, form a part of this specification to the extent specified herein:

#### American National Standards Institute Publications.

ANSI/KCMA A161.1	Performance and Construction Standard for Kitchen and Vanity Cabinets
ANSI/BIFMA X5.5	Desk/Table Products - Tests
ANSI/BIFMA X5.9	Storage Units - Tests
ANSI/ASQC Z1.4	Sampling Procedures and Tables for Inspection by Attributes
ANSI/HPVA HP-1	American National Standard for Hardwood and Decorative Plywood
ANSI/NEMA LD-3	High Pressure Decorative Laminate

(Copies are available from the American National Standards Institute, 1819 L Street, NW, 6<sup>th</sup> Floor, Washington, DC 20036; www.ansi.org)

American Society for Testing and Materials Standards.

ASTM D 1211	Standard Test Method for Temperature-Change Resistance of Clear Nitrocellulose Lacquer Films Applied to Wood
ASTM D 1308	Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes
ASTM D 2091	Standard Test Method for Print Resistance of Lacquers
ASTM D 2199	Standard Test Method for Measurement of Plasticizer Migration From Vinyl Fabrics to Lacquers
ASTM D 3359	Standard Test Methods for Measuring Adhesion by Tape Test

(Copies are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959; www.astm.org)

2.2 Government Standards.State of California, Department of Consumer Affairs Publication.

Technical Bulletin 117	Requirements, Test Procedure and Apparatus for Testing the Flame Retardance of Resilient Filling Materials Used in Upholstered Furniture
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(Copies are available from the State of California, Department of Consumer Affairs, Bureau of Home Furnishings and Thermal Insulation, 3485 Orange Grove Avenue, North Highlands, CA 95660-5595; 916-574-2041; www.bhfti.ca.gov)

## 3. REQUIREMENTS

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

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

Formaldehyde emission requirements. All plywood, particleboard, medium density fiberboard, and wood veneered and plastic laminated panels shall meet ANSI/HPVA HP-1 for formaldehyde emission with the changes listed below.

Under Table 10, Formaldehyde Emission Requirements...Product Category, after: "Wall Paneling - Plywood" add: "and furniture panels, 6 mm thick or less, such as plywood drawer bottoms." After: "Industrial Panels" add: "and furniture panels greater than 6 mm thick, such as drawer sides/back, end panels, top panels, etc."

Loading ratios and Maximum Emission Levels for these two categories remain the same.

Formaldehyde emission requirements do not apply to hardboard panels.

3.1.1 Solid wood parts. 6 to 8% moisture content required at time of manufacturing.

Wood base rails – American Black Walnut (*Juglans nigra*).

Top edge band and panel molding – American Black Walnut (*Juglans nigra*).

Solid drawer sides, back - Walnut, beech, birch, maple, or oak. Only one species permitted per unit.

All other solid exposed parts not specified elsewhere – American Black Walnut (*Juglans nigra*).

Interior solid unexposed parts - Suitable hardwood.

3.1.2 Plywood parts. All exposed panel faces shall be American Black Walnut (*Juglans nigra*) with a 6 to 10% moisture content required at time of manufacturing.

Veneer used on tops, base rails, and outside panels such as end panels, modesty panels, case backs, drawer and door fronts, table aprons, both sides of table panel bases on conference tables, work table and occasional tables shall conform to the following requirements:

Grain requirements;	Minimal wild heart. Plain sliced with cathedral (heart) grain pattern required on each plate (piece of veneer). Cathedral shall be centered on the plate ( $\pm$ 13 mm).
Sapwood;	20% maximum.
Color variation;	Minimal, no sharp contrast.
Mineral streaks, walnut;	Light, few.
Oil and blue stain;	None
Pin knots;	Light in color, sound.
Worm holes/tracks;	None
Veneer patches;	None
Gum spots/pitch pockets;	None
Torn grain;	None
Open splits, press marks, shake, doze, bird's-eye, cross brakes, rough cut;	None
Type of match, walnut;	Book or reverse slip match.
Plate width;	100 mm minimum unless limited by the size of the components. All plates on one panel shall be the same size except two outside edge plates which shall be 50 mm wide minimum. Two outside edge plates shall be the same width. All panels and drawer fronts shall have a balanced cathedral appearance.

Veneers used on bookcase/compartments/OSU interiors, both faces of shelves, inside faces of doors, underside face of bookcase and top face of keyboard shelf, interior panels such as kneespace areas in desks, desk attachments, bridge units, credenzas, and computer/printer tables shall conform to the following requirements:

Grain requirements;	Plain sliced with split heart permitted.
Sapwood;	20% maximum.
Color variation;	Some sharp contrast permitted.
Mineral streaks;	Some permitted.
Oil and blue stain;	None
Pin knots, walnut;	Sound.
Veneer patches;	None
Gum spots/pitch pockets;	None
Torn grain;	None
Type of match;	Book, reverse slip or slip match.
Plate width;	100 mm minimum unless limited by the size of the components. All plates on one panel shall be the same size except two outside edge plates which can be narrower.

#### Other plywood requirements.

Lumber core wood base rails - Hardwood lumber (poplar, gum, sycamore, pecan, maple, beech or birch) core with solid American Black Walnut molding on top edge. Face veneer on base rails shall be the same veneer grade as used for tops and outside end panels (3.1.2).

Drawer front and door core – MDF core or hardwood lumber core, with solid American Black Walnut band on top and bottom edges, of appropriate thickness to accommodate the required shaped edge shown in figure 1. Alternatively, core shall be particleboard core with solid walnut banding on four edges to accommodate the required shaped edge. In addition, regardless of the drawer construction method selected, desk file drawer fronts shall have a solid American Black Walnut horizontal band through the center portion to accommodate the required shape simulating two box drawer fronts.

Plywood panel crossbands and unexposed back veneer - Suitable sound veneers, no minimum plate width, any match acceptable. High density black backing sheet, which balances the panel to prevent warpage, may be used in lieu of unexposed veneer.

Drawer front backs and underside of keyboard shelf - Same species as exposed face, sound veneers, no minimum plate width, any match acceptable.

Plywood drawer sides, backs - Oak, beech, birch or maple faces with suitable hardwood core. Color match core to face veneers. Only one species permitted per unit.

Plywood drawer, bottoms, partitions - Same species as drawer sides and back. Plywood shall be crossbanded.

Drawer fronts, each pedestal - Matched sets.

Veneers used on drawer fronts and doors, on any one unit shall be selected so that all drawers and doors have a similar grain pattern and appearance.

Outside panels on all units shall be compatible with a similar grain pattern and appearance.

Mismatched plates not acceptable. All veneer plates on one panel shall come from the same flitch of veneer.

Grain direction -All exterior panels including drawers and doors: Vertical, with cathedral "peaks" pointed toward the top of the panel.  
 -Case and table desk tops: Parallel to long dimension.  
 -Panel edgebands: Parallel to long dimension.  
 -Apron rails: Horizontal or vertical.  
 -Tops: 1800 and 2400 mm long: Parallel to long dimension with a balanced appearance in the width and depth dimensions.  
 -Tops 3000 and 3600 mm long: Parallel or Perpendicular to long dimension with a balanced appearance in the width and depth dimensions.  
 -Desk attachment/bridge unit tops: Parallel to short dimension, so as to provide an appearance consistent with adjoined desk and credenza units.

### 3.2 Hardware.

3.2.1 Locks. Locks shall engage and disengage smoothly and quietly without binding or sticking. Lock shall hold all drawers/doors securely closed. Keys shall turn lock cylinder easily without excessive effort. Minimum 30 key changes shall be installed consecutively in every 30 units. Lock cylinders shall be easily removed and changed using a tool or special key. The same type of lock cylinder shall be used in all locks on all items offered so that when requested, all locks in an office can be keyed alike. Lock locations may vary from those shown in figures. All locks on same piece shall be keyed alike.

#### 3.2.2 Drawer suspensions.

Box, tray, and center: Min. two part, ball bearing suspension, with cushioned in and out stops, capable of passing applicable tests specified in this purchase description. Minimum 100% drawer opening.

Keyboard drawer: Keyboard drawer suspension shall have a friction outstop or positive outstop so keyboard drawer is retained in extended position when in use. A known source of supply for these suspensions is Knap & Vogt, KV 8100 or equal. Min. two part, ball bearing suspension, with cushioned in and out stops, capable of passing applicable tests specified in this purchase description. Minimum 100% drawer opening. Drawer suspension may be longer than the drawer front to back length in order to provide the required drawer opening.

File drawers: Three part progressive ball bearing suspension with cushioned in and outstops, capable of passing applicable tests specified in this purchase description. File drawers shall open 100% minimum and shall open sufficiently to permit easy removal of all file folders.

Lateral file drawers: Three part progressive or telescoping ball bearing suspension. Cushioned in and out stops, capable of passing applicable tests (including side play test) specified herein. Lateral file drawers shall open 100% and have over-travel to permit easy removal of all file folders.

Install all drawers so that cushioned stops on the suspension, stop the drawer when closed. All box, center, and tray drawers removable without tools and designed to prevent accidental removal.

Percent drawer opening shall be calculated as a percentage of the actual drawer interior length front to back, not as a percentage of the minimum drawer length required in 3.3.5.

### 3.2.3 Decorative hardware.

Knobs/pulls and escutcheons: Traditional design, corresponding to drawer pulls with same finish as drawer pulls.

Drawer pulls: Metal drop bail type, antique brass finish, traditional design as shown in the figures. Drawer and door pulls shall be processed to remove all traces of the die parting line, burrs, and sharp edges. Other exposed interior and exterior hardware except for drawer suspensions shall be an antique brass/bronze finish. Pull shall have stops to prevent contact with drawer front.

### 3.2.4 Door hinges/receding door mechanisms.

3.2.4.1 Bookcase, Hutch and Wardrobe doors. Shall have an antique brass/bronze finish and open 150 degrees minimum.

3.2.4.2 Bookcase/Lateral file receding doors. Shall be “receding door” type hinges. The hinges shall be mounted so that a maximum of 70 mm of the doors are exposed when they are fully open and pushed back into the side “pockets”. The hinges shall not mar the door or case finish.

3.2.4.3 OSU’s receding doors. Shall allow door to be lifted up and pushed back out of the way into the top area of the cabinet.

### 3.2.5 Keyboard shelf mechanism.

- Mechanism design – Provides a stable support for work surface for convenient, intensive use of a detached VDT keyboard. Low profile mechanism required that provides minimal interference with the user’s knees. Slides fully in and out from under top and swivels at the attachment point under the work surface. Readily adjustable up and down without locking handles/knobs. Minimum 120 mm vertical travel, able to be adjusted evenly with top of work surface. Capable of tilt that is adjustable both “up” and “down” from horizontal.
- Keyboard shelf design – Useable shelf space: 510 mm W x 250 mm D minimum including wrist rest. Black, rigid, low profile panel with non-skid surface or pads. Black padded “wrist rest” required at the front edge of the keyboard shelf.
- Mouse shelf design – Black, rigid, low profile round or rounded square panel(s) with smooth “mousing” surface. Designed for either left or right hand use of the mouse without need of demounting and reattaching shelf. Designed so mouse shelf(ves) can swivel or slide out of the way under the keyboard shelf for storage.
- Installation – Securely screw mechanism to bottom of top. Install to ensure shelf slides fully in and out smoothly from under top and that shelf mechanism will not damage edge of top.

3.2.6 Grommets with cover. All grommets shall have a minimum open area of 2500 mm<sup>2</sup> with the covers off. Cover can be one or two pieces. Grommets shall be antique brass/bronze or matte black. Covers shall be antique brass/bronze. All covers shall be flush with the top of the unit so glass can be used to protect top.

3.2.7 Pull down drawer front hardware for keyboard drawer. Drawer front shall be hinged with “flap” type hinges (Hafele 342.66.101 or equal, burnished brass/bronze finish), mortised and mounted flush. Hinges shall allow drawer front to drop to a horizontal position. Hinged drawer front shall be securely retained in the “up/vertical” position with one Selby S-187, or equal, adjustable slotted sliding stay on the front edge of the left drawer side. Finish on all portions of the stay shall closely match finish on hinges.

3.2.8 Adjustable shelf hardware. Either black or antique brass/bronze steel shelf supports required. Maximum 33 mm hole spacing in end panels. Recessed steel shelf standards in black, or antique brass/bronze finish may be used in lieu of holes in end panels.

3.2.9 OSU attachment hardware. Shall have an antique brass/bronze finish and shall securely attach OSU to credenza top. The hardware shall be located on the interior of the OSU and shall not interfere with the normal operation of the unit.

### 3.3 Construction. Construct furniture so that it complies with written requirements and figures.

3.3.1 Design. Traditional design required which complies with figures. All pieces shall have the drawer pulls specified in 3.2.3 and figure 1 and have the required wood finishes specified in 3.3.8. Top edge shape is required as shown in figure 1 and as described below. Similar top edge shapes are permitted subject to final approval during pre-award sample inspection. Top

edge shape is required on four sides of all tables. Panel molding is required as shown in figures and as described below. Base rail height shall be the same on all pieces of furniture such as desks, credenzas, vertical files, lateral files, bookcases, modular units and computer tables. Corner posts and chamfered corners are permitted on case pieces but are not required. Top thickness shall be 30 mm (+3, -1). End panel, modesty panels and base rails shall be 19 mm (+5, -1 mm) thick unless otherwise specified.

RTA (ready-to-assemble) design is not acceptable except for assembly of tables such as occasional and conference tables and table desks. Fasteners used shall not be obtrusive and shall blend with the wood finish. Acceptability of fasteners will be determined during pre-award sample evaluation. A clearly illustrated instruction sheet, explaining assembly, shall be provided with applicable units.

**Bookcases:** (figures 15, 21)

- Top edge shape required on all four sides as shown in figure 1.
- Lock is not required on the glass door unit except when specified on the customer order. Lock (when present) shall be located in the rail above the two doors and shall be of a design which securely engages both doors simultaneously upon fully turning the key.
- Back of unit is considered an exposed surface.
- One fixed shelf required in Size 3, 4 and 5 units.
- Doors in Size 4 unit shall be hinged. Sliding doors are not acceptable.
- Adjustable glides required on all size units.

**Bookcase and lateral file (modular) unit:** (figure 16)

- Top edge shape required on front edge as shown in figure 1.
- Back of unit is considered an exposed surface.
- Doors shall be plywood construction (3.1.2).
- Doors shall slide into “pockets” when opened (3.2.4.2).
- Lateral file drawers shall meet the same requirements as drawers in stand alone lateral files.
- Bookcase area shall have two shelves that have 200 mm minimum vertical adjustment.
- Back of bookcase area shall have two grommets, as shown in figure 16.
- Locks are required and shall hold doors securely closed (3.2.1).
- Adjustable glides required.

**Computer Support Tables:** (figure 22)

- Top edge shape, as shown in figure 1, is required on all four sides.
- Adjustable glides required on all non-mobile units. Casters required on all mobile units and shall be contemporary design, black finish, dual wheel type, minimum 54 mm wheel diameter, brakes on two front casters, four casters per table. Install in heavy duty mounting socket designed to withstand required caster durability test.
- Modesty panel shall be cut lower than end panels so there is a 37 mm (+3, -2 mm) gap for wire management between the top edge of the modesty panel and the bottom edge of the top. Band top and bottom edges with minimum 3 mm unexposed lumber, and ease all edges of banding.

**Console Table:** (figure 19)

- Top edge shape required as shown in figure 1.
- Legs with traditional reeded or fluted design required. Saw kerfs are not acceptable.
- Adjustable glides required.

**Credenzas/Cabinets:** (figures 4, 5, 6, 7, 8, 10)

- Top edge shape is required on all four sides as shown in figure 1, with the exception that Size 5, Style A credenzas are modular and have the shape only on the front edge.
- Back of unit is considered an exposed surface.
- Central locking system or pedestal locks are required for all credenzas over 900 mm.
- Panel molding to match desk is permitted but not required, with the exception that full panel molding (wrap-around and “picture frame”) and base rail are required on single pedestal non-modular credenzas.
- Center drawer with pull down front (3.2.7) shall function as a drawer and as a keyboard tray.
- Height of kneespace area, below center drawer, not including glide height, shall be a minimum of 585 mm.

- Wire management system with grommet (3.2.6) shall be included as follows:
  - a) Single pedestal credenzas with kneespace: One grommet centered over the kneespace;
  - b) Class 2, type I, size 4, style A credenza: One grommet centered over the kneespace;
  - c) Class 2, type I, size 5, styles A and B credenzas: One grommet centered over the kneespace.
- All doors shall be hinged and shall open 90° minimum. Sliding doors are not acceptable.
- Shelves shall be minimum 50% and maximum 95% of the interior compartment depth.
- Modesty panel with base rail required on kneehole credenzas.
- Single pedestal units shall have reinforcement in the corner without pedestal if needed to allow units to pass specified ANSI tests.
- Adjustable glides required on all units.

**Desks, single and double pedestal:** (figures 2, 3)

- Top edge shape, as shown in figure 1, is required on all four sides.
- Central locking system is required on desks and shall be located in a rail above center drawer or in the front edge of the top.
- Center drawer required on the working side of desks.
- Height of kneespace area, below center drawer, not including glide height, shall be a minimum of 610 mm unless otherwise specified.
- Reference slide, tray drawer, box drawer and file drawer required in each desk pedestal.
- Dictation slide required on the approach side of "full chassis" (non-conference type) double pedestal desks.
- Recessed modesty panel required on approach side of 1800 mm full chassis double pedestal desks and conference style desk.
- Conference style desk shall have nominal chassis size 1800 W x 750 D mm. The minimum overhang on the approach side shall be 150 mm.
- Conference style desk shall have conference molding (min. 19 mm solid exposed wood) under the top as shown in fig. 2.
- Wrap-around molding and "picture frame" molding required as shown in figures.
- Single pedestal units shall have reinforcement in the corner without pedestal.
- Adjustable glides required.
- Center drawers on desks may have a smoothly made finger pull across the bottom front edge of drawer front in lieu of drawer pulls shown in figures.

**Desk Attachments and Bridge Unit:** (figures 3, 20)

- Top edge shape, as shown in figure 1, required on all three exposed sides. Bridge units shall have top edge shape on front and back sides as shown in figure 1.
- Pedestal locking system is required.
- Wire management system w/grommet, consisting of one grommet (3.2.6) centered over the kneespace area at the rear of bridge.
- Bridge unit shall attach between single pedestal desks and single pedestal credenzas.
- Tops shall attach to each other smoothly and without gaps.
- One tray drawer, one box drawer, and one file drawer required in desk height attachment.
- Articulating keyboard shelf (3.2.5).
- Wrap-around molding and "picture frame" molding required as shown in figures.
- Adjustable glides required.

**Hutch Cabinets:** (figure 23)

- Cornice molding detail and top edge shape are required on four sides of the cabinet.
- Alternative traditional cornice design will be considered. Acceptability will be determined during source selection.
- Back of unit is considered an exposed surface.
- Pads required to prevent marring of the base unit top.
- Doors, when specified, shall have grill inserts, wood panel inserts, or glass inserts. As an alternative to the door construction shown in Figure 23, the tall doors in one-section and three-section hutch cabinets may use a center horizontal rail positioned such that it aligns with the bottom rail of the doors in the center section of three-section hutches.
- All doors shall be hinged. Sliding doors are not acceptable.
- Open workspace hutch cabinets shall have one 610 mm ( $\pm 25$  mm) long task light centered side to side over workspace area.

- Open workspace hutch cabinets shall have one grommet (3.2.6) centered side to side on the inside of back panel.
- Locks are required to hold all doors securely closed (3.2.1).
- Designed to fit securely on top of similar size credenzas; see tolerances in paragraph 3.3.1.1.

**Modular Lateral File Cabinets:** (figure 12)

- Lateral files are modular with flush ends and shall have top edge shape (figure 1) on front edge only.
- Central locking and anti-tip drawer interlock system shall be provided with each lateral file cabinet. Central locking system is required on lateral files. Lock shall be located either in a rail above the top drawer, in the front edge of the top or in the top drawer front.
- The hanging file system shall be reinforced and secured so that when the loaded drawer is closed the files do not shift and fall.
- Adjustable glides required.
- All lateral file cabinets shall accommodate at least one row of letter and one row of legal width files, filed front to back in each drawer.
- Lateral files may have one drawer pull centered on each drawer in lieu of two as shown in figure 12.

**Occasional Tables:** (figure 22, uppermost table on page)

- Top edge shape required as shown in figure 1.
- Legs with traditional reeded or fluted design required. Saw kerfs are not acceptable.

**Overhead Storage Unit:** (figure 17)

- This unit is modular and shall have top edge shape on front edge only.
- Receding doors are required (3.2.4.3).
- There shall be a minimum of 485 mm clear space below valance rail and task light.
- The shelf shall be a minimum of 400 mm deep.
- There shall be a minimum of 330 mm of vertical space above the shelf when door is open.
- One 610 mm (+25 mm) long task light is required at each end, or one 1475 mm long task light centered side to side under the shelf.
- Back panel shall have one grommet (3.2.6) centered side to side as shown in figure 17.
- Inside of back panel shall be covered with a sturdy, securely attached, tackable fabric covered panel. Fabric shall match that used on presentation board tackable surface.
- Lock (3.2.1) required for both doors.
- Designed to fit flush with top of 1750 mm modular credenza (figure 7). See tolerances in paragraph 3.3.1.1.
- When receding doors are open, they shall protrude a maximum of 80 mm beyond the front edge of the end panels.

**Presentation Boards:** (figure 24)

- Full wood frame with top cap. Top cap shall have edge shape as shown in figure 1, on at least the three visible sides.
- Mounting brackets suitable for wall mounting shall be provided.
- Writing surface material shall be white and shall be suitable for dry erase markers. Eraser and a minimum of four colored markers shall be included.
- When specified, presentation board shall be provided with hinged double doors enclosing the writing surface. Interior surface of each door shall have tackable fabric covered panels. Fabric shall be a pleasing pattern of neutral color and shall comply with applicable flammability requirements of the State of California Technical Bulletin 117. Flip chart pad and chart hanging hardware shall be mounted on inside of left hand door facing. Doors shall have magnetic catches and knobs or concealed finger pulls.
- Styles B and D presentation boards shall be provided with a pull-down, retractable projection screen securely mounted to the bottom of the top rail. Screen shall be 1040 mm wide minimum and shall fill the full interior height of the presentation board when pulled down.

**Rectangular Conference Tables:** (figures 13, 19)

- Top edge shape required as shown in figure 1.
- Panel bases required.
- Decorative molding and conference molding (min. 19 mm solid exposed wood) under the top required as shown in figures 13 and 19.
- Adjustable glides required.

**Round Conference Tables:** (figures 14, 20)

- Top edge shape required as shown in figure 1.
- Center column with Queen Anne or Duncan Phyfe style legs required.
- Adjustable glides required.

**Vertical File Cabinets:** (figure 11)

- Top edge shape, as shown in figure 1, is required on four sides.
- Panel molding to match desk is permitted but not required.
- Locks required for each vertical file cabinet.
- Adjustable glides required.

**Wardrobe:** (figure 18)

- This unit is modular with flush ends and shall have top edge shape (figure 1) on front edge only.
- One half of interior shall have minimum 3 shelves with 2 adjustable.
- The other half of interior shall have a space to hang items with hanging bar.
- The interior design can vary from what is shown in figure 18 as long as the above requirements are met and **drawing showing changes is submitted with pre-award samples.**
- Adjustable glides required.

**Work Table:** (figure 19)

- Top edge shape required as shown in figure 1.
- Minimum one drawer required.
- Legs with traditional reeded or fluted design required. Saw kerfs are not acceptable.
- Adjustable glides required.

3.3.1.1 Tolerances. The item dimensions have been converted from nominal inch measurements for office furniture to millimeters. When the numbers were converted and rounded to even metric numbers they were rounded down to be consistent. Therefore the tolerances shall be -5 mm and +100 mm on all units except Class 4 Type II Hutch Cabinets (not OSU's) and credenza depth which shall be -20 mm and +100 mm. This should allow for the production of pieces within normal commercial sizes and tolerances. Radius tolerance is +3 mm, -1 mm. Height tolerance on 750 mm high units shall be +25, -14 mm.

3.3.2 Joinery and gluing of joints. Strong enough to prevent breakage or loosening of any component during handling, shipping, daily usage or when moved within the office and to pass all required performance tests in section 4 herein. All joints shall be mortise and tenon, tongue and groove, dowel, biscuit, spline, lock miter or other machined woodworking joint. Miter joints with clamp nails are permitted on base rails provided they are squarely clamped and glued before the nails are inserted. Joints shall be reinforced with wood glue blocks/screw cleats, steel brackets/braces, hot melt glue where necessary to meet above structural requirements.

3.3.3 Panels. All panels such as tops, end panels, modesty panels, panel construction, shelves, doors etc. shall be minimum 3 ply balanced construction designed to prevent panel warp and "telegraphing" of the core with minimum 2 mm thick walnut edgeband unless otherwise specified. Maximum sag or warp in any panel 10 mm or thicker shall be 0.001 mm/mm of panel length/width. (Example: 0.001 mm x 2000 mm length = 2 mm sag or warp.) Modular end panel thickness can be increased up to a maximum of 30 mm as needed to pass performance test.

3.3.3.1 Reference slide. All reference slides shall have a minimum 3 mm exposed wood band on the three exposed edges.

3.3.3.2 Adjustable shelves. Shall be designed to withstand bookcase shelf load test (4.7.6).

3.3.4 Frame doors. Frame doors, with glass or grill inserts, on bookcases, hutches etc. shall be constructed with tight joints and without warping or bowing. All doors except for credenzas shall have profile edge (see figure 1).

3.3.5 Drawers.

- Drawer front: Minimum five ply balanced construction with profile edge (see figure 1). 19 mm (+3, -1 mm) T. Core shall be specified in 3.1.2.
- Drawer sides and back: Solid wood, plywood or laminated wood with all plies in the same direction. 11 mm (+3, -2 mm) T.

- Drawer bottom: Plywood 4.7 mm (+1.5, -0.5 mm) T.
- Drawer partitions: Two required per tray and box drawers. Minimum 4.5 mm thick.
- Pencil tray: Solid wood, required in center drawers on desks. Shall have compartments to accommodate items such as pencils, pens and paper clips.
- Center and tray drawers on all units shall be minimum 47 mm deep from top face of drawer bottom to top edge of drawer side.
- Drawer joinery: Securely glued, neatly accomplished.
  - I. Minimum interior center drawer length (front to back):
    - A. work tables - 445 mm
    - B. 750 mm deep desks - 480 mm
    - C. 900 mm deep desks - 480 mm
  - II. Minimum interior tray, box and file drawer length (front to back):
    - A. credenzas - 370 mm
    - B. 500 mm deep desk attachments - 370 mm
    - C. 600 mm deep desk attachments - 380 mm
    - D. desks - 515 mm
- Minimum interior desk pedestal drawer width (side to side): - 305 mm

### 3.3.6 Keyboard drawer.

- Pull down drawer front: Minimum five ply balanced construction with profiled edge (see figure 1). 19 mm (+3, -1 mm) T. Core shall be specified in 3.1.1.
- Hardware is specified in paragraph 3.2.7.
- Drawer sides and back: Solid wood with 6 to 10 mm radiused top front corners.
- Drawer bottom: Exposed veneer plywood, minimum 11 mm thick with wood banded front edge.
- Minimum interior keyboard drawer dimensions shall be minimum 650 mm wide (side to side) for all units except Class 2, type I, size 4, style A, 1650 mm credenza which shall be 570 mm wide, by 260 mm deep (front to back) by 56 mm high.
- Finish entire keyboard drawer as an exposed surface.

3.3.7 Base rail. Base rails on cases shall be solid exposed wood (3.1.1) or minimum 5 ply lumber core plywood or multi-ply veneer core plywood. Lumber core and veneer core plywood base rails shall have a walnut veneer face and solid walnut molding on top edge. Side and back flush base rails shall be the same construction, height, thickness and material as the front base rail. A vein line is permitted along the joint between the base and end/back panels. Bottom edge of lumber core plywood base rail shall be sanded flush and chamfered along bottom, outside edge.

3.3.8 Finish (exposed parts). Smoothly sand and clean all exposed parts. Finish must pass finish requirements specified below and the finish tests specified in 4.7.11. Finish shall match as closely as possible the overall color of FSS-W-01001 Federal Walnut Wood or FSS-W-01002 Federal Mahogany Wood, as required. Finish on adjacent pieces, such as desks and desk attachments, shall match each other. Final finish shall be clear, not hazy or clouded, and shall permit the wood grain to be highly visible.

- Case top finish: All items except unexposed tops on OSU's and hutch cabinets shall have a filled finish with a sheen of 45 to 60 gloss units. The finish shall be smooth with no bumps, grit, orange peel, runs, streaks, or other defects.
- Chassis finish: Finish shall have a sheen of 35 to 50 gloss units and shall be smooth with no bumps, grit, orange peel, runs, streaks, or other defects.
- Top edge shape: Under side shall be finished smoothly similar to chassis.
- Drawer bodies: Minimum one coat of natural or synthetic finish with adequate "build" to provide a smooth finish. All interior and exterior sides and back and interior bottom shall be smoothly machined, sanded and finished. No finish over spray permitted on drawer suspensions.
- Sheen levels shall be measured at three evenly spaced locations on the panel. The average of the three readings shall be within the specified range. All drawer fronts on the same pedestal are considered one panel.

When sheen readings are taken, the surface shall be clean and free of dust, dirt, finger prints or other foreign material.

Six sets (12 sample panels total), 200 x 250 mm, of finish panels shall be provided to the National Furniture Acquisition Center (NFAC) for approval as specified in the solicitation. Each finish shall have three (3) sets of samples. One set shall contain one panel finished the same as the tops and one panel finished the same as the chassis. The chassis sample shall have attached to the face a 45° mitered corner section of the "picture frame" molding used on the end panels. The finish on the molding shall

match the chassis panel. Each "top" and "chassis" set shall match as closely as possible the overall color of each wood finish standard listed above.

The furniture produced shall then match the corresponding approved NFAC finish panel for overall color, highlighting, sheen, fill of the pores, and smoothness. One NFAC finish panel of each set shall be retained by the contractor and one of each set retained by the GSA Industrial Operations Analyst (IOA) for the life of the contract to verify finish match of the production items.

GSA standard samples are available from National Furniture Acquisition Center, Engineering and Commodity Management Branch, General Services Administration, Arlington, VA 22202.

3.3.9 Finish (unexposed parts). Machine smooth and clean. Bottoms of shelves shall be stained evenly. Drips and runs are not acceptable. Bottom of top that is exposed out side of chassis shall be smooth.

3.3.10 Identification label/markings. Each unit on contract shall be labeled or marked with the following information: Contractor's name or trademark, purchase description number, contract number, national stock number, manufacturer's model number and month and year of manufacture.

Locate label or mark on the interior of chassis or underside of top, in a location that is not visible from a normal use position, but can be found and read without having to lift the unit up or turn it upside down. Label shall not be placed on drawer, shelf or other readily removable component. Acceptable locations include areas such as the underside of a top above a center drawer, inside face of a pedestal end panel or underside of top on a nominal 1300 mm high or shorter bookcase. Units such as a tall bookcase (nominal 1830 mm high), or hutch where the label would be visible from a normal use position, shall have the label located on the bottom of the unit. Labels shall be clear and not covered by overspray. Label shall not be removable by hand without defacement after being affixed for four hours. Legibly mark label in dark ink or use a permanent stenciled mark.

3.3.11 Workmanship. Method of machining, construction, veneering, joinery, gluing, assembly, and drawer fit and action shall be suitable for use in executive offices. Joints shall be tight, well fitted and securely glued. Veneers shall be securely and smoothly applied without gaps or filler.

Gap around drawer fronts shall be uniform. A 3 mm gap is required above top drawer fronts. Drawer faces shall be even and parallel with each other. Drawers, reference slides, and dictation slides shall operate smoothly and quietly and shall not interfere with each other or have excessive side play. Locks shall operate smoothly and quietly.

All surfaces (including drawer parts, stationary racks, and drawer partitions) shall be smoothly machined and sanded. Dovetails and other joints shall be tight and well fitted. Units shall be free of splinters, sharp edges, and sharp corners to prevent injury to personnel or damage to their clothing. Unexposed surfaces shall be smooth and clean.

The natural grain of the wood shall not be clouded by the finishing materials. The application of materials, drying time, sanding, and cleaning, shall be controlled to produce items of uniform finish without sags, runs, orange peel, overspray or other defects detrimental to a smooth quality appearance. Unexposed parts shall be finished as required. Drips and runs on unexposed parts is not acceptable.

All exposed attachment blocks shall be smoothly sanded and finished to match exposed parts.

4. QUALITY ASSURANCE PROVISIONS

4.1 Pre-award samples. After award the successful bidder is responsible for returning his source selection samples to the plant where first article inspection will take place.

4.2 **Reserved**

4.3 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, 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 assure that the supplies and services conform to prescribed requirements.

4.4 First article inspection and testing. The required samples shall be inspected and tested 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 tests. The sample required for first article inspection and testing shall be examined and tested 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 hardware shall be obtained from the same source of supply as used in regular production.

First article samples shall be compared to pre-award samples to ensure the first article samples have the same or better workmanship and finish quality, in addition, the first article samples shall be inspected to make sure they comply with all other requirements in this purchase description. The first article samples shall serve as the production standards during the term of the contract. Manufacturer shall keep first article samples along with the pre-award samples until the last order is shipped, received, and accepted. All samples shall be kept in a secure area so that they are not damaged and can be referred to by the GSA Industrial Operations Analyst (IOA) and plant production personnel while GSA contract furniture is being produced.

New first article samples are required for each new contract. Old first article samples shall not be reused.

4.5 Sampling of production items for inspection and acceptance. Sampling for inspection and acceptance shall be performed in accordance with the provisions in ANSI/ASQC Z1.4, unless otherwise indicated.

4.6 Inspection levels and acceptable quality levels (AQL's). Inspection levels and acceptable quality levels expressed in percent units defective shall be as shown in table 1.

TABLE 1.  
Acceptable quality levels in accordance with ANSI/ASQC Z1.4.

For examination in	Inspection level	AQL
4.6.1	II	4

4.6.1 Visual examination of production items. During production, contractor shall examine items for compliance with the requirements in this purchase description, and workmanship and finish standards established by the first article samples. Score each area of noncompliance with these requirements and standards as defects. No item shall be shipped unless it fully conforms with all contract requirements.

Lot size: All units of the same type offered for inspection at one time.  
Sample unit: One complete item.

4.7 Tests and inspection. Perform the following tests and inspection at time of first article testing/inspection.

Tests do not have to be rerun for the rest of the contract period provided:

1. There are no changes in construction/finishing techniques.
2. No changes in hardware such as drawer suspensions, articulating keyboard mechanism etc.

If there are changes in these areas, the applicable tests on the item(s) that was changed shall be rerun. Before these tests are rerun, the GSA-IOA shall be notified 7 workdays before, so he/she may witness the tests.

The following items shall be inspected and tested as applicable, as representative of the other untested items on contract. Contractor shall provide written certification, to the GSA-IOA at time of first article testing/inspection, that the untested items on contract would meet the applicable tests. If contractor wishes, he/she may test additional items at time of first article. If a quality problem arises during the contract, the GSA-IOA can require that applicable tests be performed on the item that the quality deficiency occurred on even if that style unit was not originally tested. Before these tests are run, the GSA-IOA shall be notified 7 workdays before so he/she may witness the tests.

First article testing shall be performed on the following units. Furniture pieces made for testing do not need to be finished and may lack decorative molding details provided this does not affect the structural integrity of the piece. If a sample is made for testing, a complete, fully finished unit shall be made for inspection if required below. The same unit may be used for both testing and inspection provided the unit is not damaged in testing.

1. Class 1, Type II, Size 2, Style A or B single pedestal desk (4.7.1)
2. Class 1, Type III, Size 4 desk height attachment. Single pedestal desk and desk attachment (4.7.1)
3. Class 2, Type I, Size 5, Style F or G, 1800 mm single pedestal credenza (4.7.2)
4. Class 2, Type III, Style A, Size 2, 4 drawer lateral file cabinet (4.7.3)
5. Class 3, Type IV, Style A, Size 2, 3000 mm, rectangular conference table (4.7.4)
6. Class 3, Type IV, Style B, Size 2, 1200 mm dia., round conference table (4.7.5)
7. Class 4, Type I, Style A, Size 4, bookcase with glass doors (4.7.6)
8. Class 4, Type I, Style B, modular bookcase (4.7.9)
9. Class 4, Type III, modular overhead storage unit. OSU shall be attached to the Class 2, Type I, Size 5, Style F or G single pedestal credenza after racking test is performed. (4.7.8)
10. Class 5, Style D, mobile computer table with adjustable keyboard shelf (4.7.7)

First article inspection shall be performed on the following units. Units made for inspection shall be complete and finished in the same way production pieces would be made.

1. \*Class 1, Type II, Size 2, Style A or B, 1800 x 900 mm single pedestal desk.
  2. Class 1, Type IV, Style B, 1200 x 500 mm desk height straight bridge unit.
  3. \*Class 2, Type I, Size 5, Style F or G, 1800 single pedestal credenza. Desk, bridge unit and credenza shall be attached together for first article inspection.
  4. \*Class 2, Type III, Style A, Size 2, 4 drawer lateral file cabinet
  5. \*Class 3, Type IV, Style A, Size 2, 3000 mm, rectangular conference table
  6. \*Class 3, Type IV, Style B, Size 2, 1200 mm dia., round conference table
  7. \*Class 4, Type I, Style A, Size 4, bookcase with glass doors
  8. \*Class 4, Type I, Style B, modular bookcase
  9. \*Class 4, Type III, modular overhead storage unit. OSU shall be attached to the Class 2, Type I, Size 5, Style F or G, single pedestal credenza after racking test is performed.
  10. \*Class 5, Style D, mobile computer table with adjustable keyboard shelf
- \* Denotes that inspected item is the same type and style as the tested item.

#### 4.7.1 Tests for single pedestal desk and desk attachment.

Attach the class 1, type III, size 4 desk height attachment to the class 1, type II, size 2 single pedestal desk. Perform the following tests in accordance with the following sections in ANSI/BIFMA X5.5. A complete piece of furniture must be tested. Furniture pieces made for testing do not need to be finished and may lack decorative molding details provided this does not affect the structural integrity of the piece. "Mock-up" fixtures for testing drawer suspensions etc. are not acceptable. Units made up of modular components shall be assembled before testing. Failure to comply with all of these test requirements will be cause for rejection.

Section 4 Stability Tests

Section 5 Unit Strength Tests with following clarification:

**Test both the desk and the desk attachment as primary surfaces.**

Section 6 Top Load Ease Cycle Test with clarification:

**Test both the desk and the desk attachment as primary surfaces.**

Section 7 Desk/Table Unit Drop Test

Section 8 Leg Strength Test

Section 10 Extendible Element Cycle Test with following modifications:

**10. Extendible Element Cycle Test.**

**10.2.1 Test Setup.** Test a file drawer and box drawer in both the desk and desk attachment. Change drawer loading requirements as follows:

- (1) Letter and legal size file drawers - 45 kg.
- (2) Box drawers - 22 kg.

**10.2.2 Test Procedure.** Change cycle requirements as follows: All drawers - 75,000 open-close cycles. Add the following new subparagraph: g) After cycling and pull tests are completed, fully extend tested drawer and apply the following proof masses, evenly distributed inside the drawer, and remove.

- (1) Letter and legal size file drawers - an additional 45 kg. (91 kg. total weight).
- (2) Box drawers - an additional 22 kg. (45 kg. total load).

**10.2.3 Acceptance level.** Add the following: After application of proof masses, drawer and suspension shall have no damage that affects operation.

Section 11 Extendible Element Retention Impact and Durability Test

Section 12 Extendible Element Rebound Test

Section 14 Lock Tests

Section 16 Keyboard Support and Input Device Support Adjustment Tests

In addition to the above tests, perform the following test on both the desk and desk attachment, in the manufacturer's plant. Failure to comply with this test requirement will be cause for rejection.

Filing provision test.

Test procedure

1. Place unit to be tested on a level surface.
2. Open each file drawer in the unit being tested and position file system to accommodate letter-size hanging files.
3. Place at least one letter-size, Pendaflex or equal, hanging file folder with one protruding index tab attached, on the file hanging system. Drawer and hanging system shall support the file folder without binding or falling through.
4. Fully open and close drawer. The hanging file folder and index tab shall not interfere with any part on the unit being tested.
5. Repeat this test procedure using a legal size Pendaflex or equal hanging file folder.

4.7.2 Tests for credenza. Test the single pedestal credenza in accordance with the following sections in ANSI/BIFMA X5.5.

Section 7 Desk/Table Unit Drop Test

In addition to the above test, perform the "Filing provision test" specified in 4.7.1.

4.7.3 Tests for lateral file cabinet.

Test the class 2, type III, size 2 four drawer lateral file in accordance with the following sections in ANSI/BIFMA X5.9.

Failure to comply with all of these test requirements will be cause for rejection.

Section 4 Unit Strength Test

Section 6 Racking Resistance Test

Section 9 Stability Tests

Section 12 Rebound Test

Section 13 Out Stop Test

Section 14 Lock Tests

Section 15 Extendible Element Cycle Tests with the following modifications:

**15. Extendible Element Cycle Tests. Test only one drawer.**

**15.2.2.1.3 Change drawer loading requirement to 56 kg. Connect cycling device level with drawer pulls and centered on drawer front.**

**15.2.2.2 Cycle drawer for 75,000 open-close cycles. After cycling and pull tests are completed, fully extend tested drawer and apply additional 56 kg. (112 kg. Total) proof load, evenly distributed inside the drawer, and remove. After testing, drawer, suspensions, and case shall have no damage that affects operation.**

Section 16 Interlock Test

In addition, test the four drawer lateral file in accordance with the following sections in ANSI/BIFMA X5.5:

Section 7 Desk/Table Unit Drop Test

Section 8 Leg Strength Test with following modification:

**8.3 Functional Test Procedure, subparagraph c). Test each glide on item.**

In addition, perform the following two tests on the largest lateral file.

Drawer Side Play Test A.

Test procedure

1. Test all drawers in lateral file cabinet.
2. Pull unloaded drawer out 300 mm.
3. Using a force gauge, apply 45 N horizontal side force (pulling or pushing) on the top edge of the drawer front so that drawer front moves to the right.
4. Establish a reference point at the right edge of the drawer front while force is being applied.
5. Using a force gauge, apply 45 N horizontal side force on the top edge of the drawer front so that the drawer front moves to the left.

Requirement: Measurement between the reference point and the new drawer front position shall be 11 mm maximum for each drawer tested. Failure to comply with this test will be cause for rejection.

Drawer Side Play Test B.

Test procedure

1. Test all drawers in lateral file cabinet.
2. Pull unloaded drawer out 400 mm.
3. Repeat the rest of the above test procedures.

Requirement:

Measurement between the reference point and the new drawer front position shall be 20 mm maximum. Failure to comply with this test will be cause for rejection.

4.7.4 Tests for rectangular conference table.

Test a class 3, type IV, style A, size 2 rectangular conference table in accordance with the Section 4 Stability Tests in ANSI/BIFMA X5.5. Any reference to "leg" in tests applies equally to panel base. Failure to comply with these requirements will be cause for rejection. Test certifications from component suppliers will not be acceptable.

4.7.5 Tests for round conference table.

Test a class 3, type IV, style B, size 2 round conference table in accordance with the following sections in ANSI/BIFMA X5.5. Any reference to "leg" in tests applies equally to base prongs. Failure to comply with these requirements will be cause for rejection. Test certifications from component suppliers will not be acceptable.

## Section 4 Stability Tests

Section 5 Unit Strength Test (primary surface) with the following modifications:

**5.2 Concentrated Functional Load, 5.2.3 Acceptance Level. Add the following requirements: The maximum deflection with concentrated load in place shall not exceed 0.01 mm per mm of top diameter. (Example: 0.01 mm x 1200 mm diameter = 12.0 mm maximum allowable deflection.) The permanent set with concentrated load removed (5 minute recovery period is required) shall not exceed 0.003 mm per mm of top diameter. (Example: 0.003 mm x 1200 mm diameter = 3.6 mm maximum allowable set.)**

Section 6 Top Load Ease Cycle Test with following modifications:

**6.2 Test Setup, subparagraph b). Reduce mass to 75 kg and apply force to center of table top.**

Section 7 Desk/Table Unit Drop Test

Section 8 Leg Strength Test

In addition to the above tests, test the class 3, type IV, style B, size 2 round conference table in accordance with the following test procedure. Failure to comply with this test requirement will be cause for rejection.

Round table side play test.

Preparation: Place table on a flat level carpeted surface so that table does not move on the floor when tested. Drive a 19 mm screw into the bottom surface of the table top, 25 mm from the edge so that the screw head protrudes 5 mm. Attach a force gauge to the protruding screw. Using a force gauge, apply a 45 N force as shown in figure 10. Force shall then be released suddenly. After force is released, table shall not exhibit more than 3 mm oscillation from side to side about the center column.

4.7.6 Tests for bookcase.

Test the class 4, type I, size 4 bookcase with doors, in accordance with the following test requirements. Failure to comply with all of these test requirements will be cause for rejection.

Bookcase shelf/top static load test.

Preparation: Place complete bookcase on a flat level surface. Install shelves in bookcase, evenly spaced top to bottom. Place a 9 kg mass on each end of each shelf for 5 minutes to insure that the shelf supports are fully engaged. Remove these masses. Place dial indicators, or equivalent measuring devices at the front edge of the bookcase top panel and each shelf. Take initial readings.

Test: Apply an evenly distributed, 59 grams per mm, non rigid mass on the bookcase top panel and each shelf at the same time. Maintain force for 30 minutes. Record deflections while force is being applied. Remove masses.

Acceptance level: Maximum deflection for top and each shelf while force is being applied: 0.005 mm per mm of shelf/top length. End panels shall not bow while force is being applied to the bookcase. Structural damage to the case, shelves or shelf supports, that affect serviceability or could cause personal injury to the user, is not acceptable. After testing, shelves, top and end panels shall still comply with in-plant sag/warp test requirement.

Bookcase Door Tests. Failure to comply with these test requirements will be cause for rejection. Test certificates from component suppliers will not be acceptable. Test in accordance with the following sections in ANSI/KCMA A161.1.

Section 6.1 Door Racking and Hinge Set with following modifications:

**6.1.3 Required Performance. Add: 5. Any splitting or other failure on door is not acceptable.**

Section 6.2 Door, Door, Door-Holding Devices, and Hinge Operation with following modification:

**6.2.2 Test Procedure. A. Bookcase shall be tested on a level floor.**

Bookcase drop test. Remove glass from doors. Place bookcase on a bare concrete floor. Raise one end of the bookcase and then the other, 150 mm and release so that unit drops onto concrete floor. The bookcase shall then be thoroughly

examined (including glides). There shall be no broken joints, loose mechanical attachments, or other structural damage that affect serviceability or could cause personal injury to the user. Doors and door catches shall continue to operate smoothly and quietly.

#### 4.7.7 Test for mobile computer table.

Test the class 5, style D mobile computer table in accordance with Section 16 (Keyboard Support and Input Device Support Adjustment Tests) and Section 18 (Durability Test for Desks and Tables with Casters) in ANSI/BIFMA X5.5. Failure to comply with all of these test requirements will be cause for rejection.

#### 4.7.8 Tests for overhead storage unit (OSU).

Test the class 4, OSU in accordance with the following test requirements. Failure to comply with all of these test requirements will be cause for rejection.

Receding door test. Perform all tests on a complete piece of furniture in furniture manufacturers plant or at an independent test facility. Test certifications from component suppliers will not be acceptable. Test OSU with receding doors in accordance with sections 17.8 and 17.12 in ANSI/BIFMA X5.9.

Static load test. Preparation: Place the complete OSU with doors on a flat, level surface. Place dial indicators, or equivalent measuring devices at the front edge of the top panel and shelf. Take initial readings.

Test: Apply an evenly distributed non rigid mass that exerts a force of 0.58 N per mm on the top panel and each shelf at the same time. Maintain force for 30 minutes. Record deflections while under load. Remove force.

Acceptance level: Maximum deflection for top and shelf while force is being applied: 0.005 mm per mm of shelf/top length. End panels shall not bow while bookcase is under load. Structural damage to the case or shelf that affect serviceability or could cause personal injury to the user is not acceptable. After testing, shelf, top and end panels shall still comply with maximum sag/warp requirement in 3.3.3.

4.7.9 Pocket door cycle tests. The following tests shall be performed on Class 4, Type I, Style B, Bookcase w/two doors and 2 lateral file drawers. The door shall be opened and closed 2000 times. One cycle is opened and closed once. With the door in the open position the door shall then be pushed completely in and pulled completely out 2000 cycles. One cycle is in and out once. The two tests may alternatively be run in sequence on the same door. After the tests are completed the door shall be free of scratches and or mars in the finish and shall open and close smoothly and quietly. Failure to comply with all of these test requirements will be cause for rejection.

4.7.10 Wire management wire access test. Test will be performed on the Class 2, Type 1, Size 5, Style B Credenza submitted as one of the required pre-award samples. Failure to comply with this test will be cause for rejection.

Test procedure: Remove wire management grommet covers from the grommets over the pedestals. Run two, minimum 11 mm diameter, electrical cables through each wire management grommet, through the case to the floor. Wires shall hang freely, and shall not be secured inside the unit in any way. Replace both halves of wire management grommet covers. Open and close all drawers several times. Drawer shall operate smoothly with no interference between wires and drawers.

4.7.11 Finish tests. The following tests shall be performed on **two** sample panels. One panel shall be finished in the same manner as the **case chassis** is finished in production and the other panel shall be finished in the same manner as the **case top** is finished in production. All panels shall be aged 30 days (except for UV test) before testing. All samples tested shall meet the following test requirements.

(a) Stain resistance. Follow test procedure in ASTM D 1308 using the following staining reagents.

- Black coffee----- (one hour covered)
- Mustard----- (one hour covered)
- Lipstick----- (one hour covered)
- Corn oil----- (one hour covered)
- Grape juice----- (one hour covered)
- Distilled water-- (one hour covered)
- 50% ethanol----- (one hour open)

Light polishing of the area with a soft cloth must remove any whitening or spotting that developed.

(b) Boiling water. Pour 5 ml of boiling water on both finish test panels and immediately cover with watch glass. Remove watch glass after one hour, wipe dry, allow a 30 minute recovery period. There shall be no significant haze, blistering or film discoloration.

(c) High temperature resistance. Follow test procedure 3.6 in NEMA LD 3 except use water heated to 100° C (boiling) instead of bath wax heated to 185° C. Allow water to cool to 95° C before placing heating vessel on test samples. Wipe samples with a dry soft cloth instead of naphtha and alcohol. There shall be no more than a "slight effect" on the samples after testing.

(d) Ultra violet light resistance. One wood veneered panel, finished in the same way as in production, shall be tested. Allow panel to age for a minimum of ten days at 25° C ( $\pm 3^\circ$  C) and 35 to 75% RH. 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.

(e) Cold check. Follow ASTM D 1211 test procedure. After exposure of 10 cycles, there shall be no more than moderate film or veneer checking or cracking. Moderate is defined as checks or cracks that are "barely noticeable" without the aid of magnification.

(f) Cold print. Follow ASTM D 2091 test procedure at 230 C ( $\pm 2^\circ$  C) for 18 hours using a 14 kPa test pressure. After testing there shall be "no effect" on the finish.

(g) Adhesion by Tape Test. Follow ASTM D 3359 test procedure using method B. After testing, finish shall have no more than a "3B" rating (up to 15% of the lattice affected).

(h) Toughness and adhesion. Perform test on both panels using Organic Coating Adhesion Tester, Model No. 1001 in accordance with manufacturer's instructions. Mar the panels 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 Marketing Division, Fairfield, NJ 07004 (800-777-8378 [www.ustesting.sgsna.com](http://www.ustesting.sgsna.com)).

4.7.12 Weekly finish testing. To ensure finish quality is maintained during production, finish test (h), Toughness and Adhesion, shall be performed at least **once a week** during production, on at least one sample panel. They shall be aged a minimum of one week and finished in the same manner as production furniture. A record shall be maintained of test results and shall be available for review by the GSA-IOA. If a finish test failure occurs, action shall be taken immediately in the production process to find the cause for the failure and to correct the problem.

## 5. PACKAGING, PACKING AND MARKING

5.1 Packaging, packing and marking. Package, pack, and mark shipping containers in accordance with the contract or order.

For all product shipments going on common carrier, an Impact Detection device with companion or warning label shall be affixed, to all cartons in a location that complies with impact detection manufacturer's recommendation and is clearly visible. Known sources for these devices are Media Recovery, National Sales Office, 1111 W. Mockingbird La., Suite 1050, Dallas, TX 75247, 800-527-9497, [www.shockwatch.com](http://www.shockwatch.com); Impact-O-Graph, Chatsworth Data Corporation, 20710 Lassen Street, Chatsworth CA 91311, 818-341-9200, [www.chatsworthdata.com](http://www.chatsworthdata.com); and Uline Inc., 2200 S. Lakeside Dr., Waukegan, IL 60085, 1-847-473-3000, [www.uline.com](http://www.uline.com). Shipments going on the manufacturer's own trucks or trucks belonging to a furniture shipper exclusively, do not require the use of Impact Detection devices.

## 6. NOTES

6.1 Ordering data. Purchasers should select the furniture, accessories and finish offered herein and procurement documents should specify the following:

- (a) Title, number and date of this purchase description.
- (b) Class, type, size and style (see 1.2.1).
- (c) Finish required (Federal Walnut Wood or Federal Mahogany Wood).

6.2 SI - English unit equivalents.

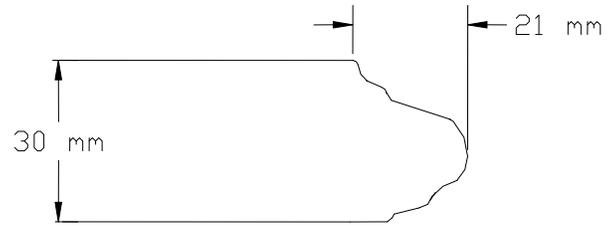
1 m <sup>2</sup> (square meter)	1.19617 yard <sup>2</sup>
1 kg/m <sup>3</sup> (kilogram/cubic meter)	0.06242 lb.(mass)/ft <sup>3</sup>
1 mm(millimeter)	0.03937 inch (thickness of one dime)
1 m(meter) = 1 000 mm	1.0936 yard (39.37 in)
1 N(Newton)	0.225 lb. (force)
1 kg(kilogram)	2.2 lb.(mass)
1 g(gram)	0.0022 lb. (mass)
1 g(gram)	0.03527 oz.(mass avoirdupois)
1 kPa(kilo Pascal)	0.14514 lb.(force)/in <sup>2</sup> (PSI)
(C° x 9/5) + 32 (Celsius)	F° (Fahrenheit)
1 g/m <sup>2</sup> (gram per square meter)	0.02949 oz/yd <sup>2</sup> or 0.04426 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:

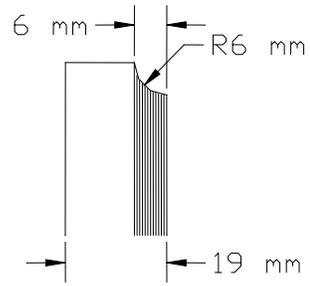
$$900 \text{ mm} \times 0.03937 \text{ in./mm} = 35.43 \text{ inches}$$

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

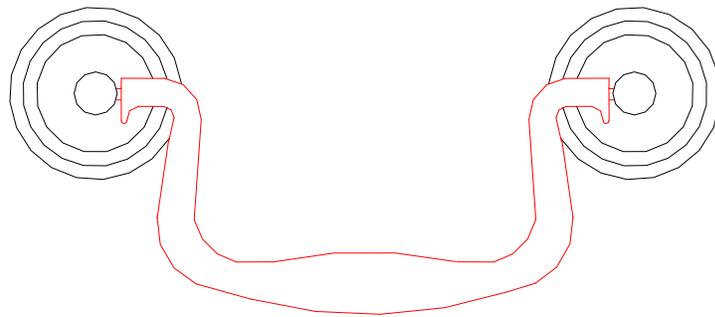
$$(20^{\circ}\text{C} \times 1.8) + 32 = 68^{\circ}\text{F}$$



PROFILE OF REQUIRED TOP SHAPE



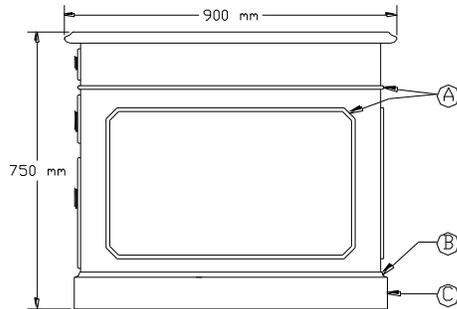
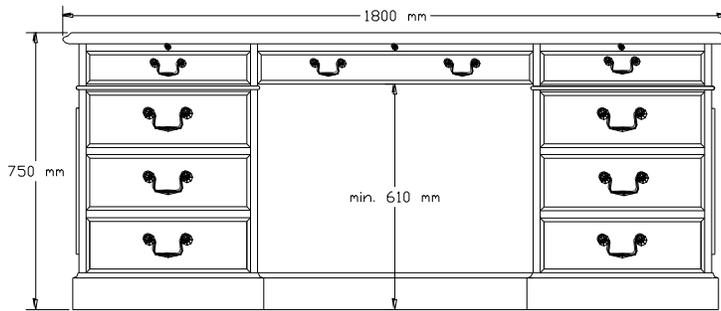
PROFILE OF REQUIRED DOOR  
AND DRAWER SHAPE



DESIGN OF REQUIRED DRAWER PULL

REQUIRED TOP SHAPE AND  
DRAWER PULL DESIGN

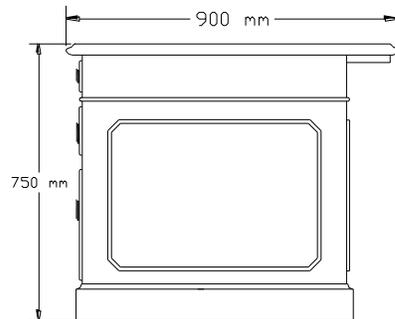
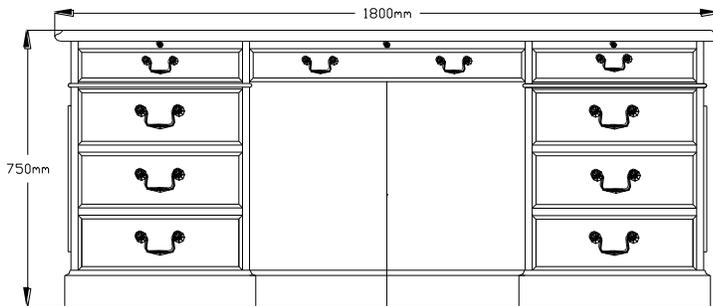
**Figure 1**



CLASS 1, TYPE I,  
 SIZE 3 DOUBLE PEDESTAL  
 DESK, FULL CHASSIS

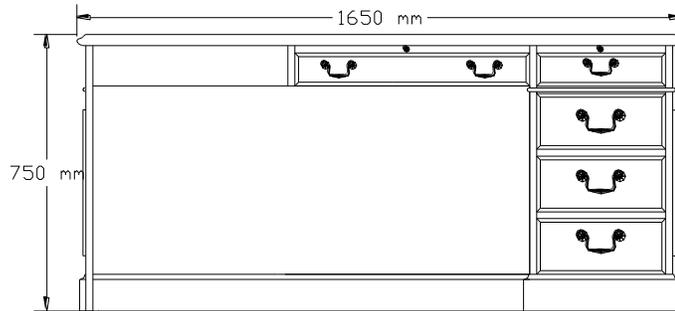
NOTES:

- A. PANEL MOLDING
- B. BASE MOLDING
- C. BASE RAIL

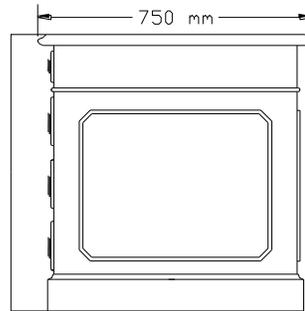


CLASS 1, TYPE I,  
 SIZE 6 DOUBLE PEDESTAL  
 DESK, WITH OVERHANG ON  
 APPROACH SIDE

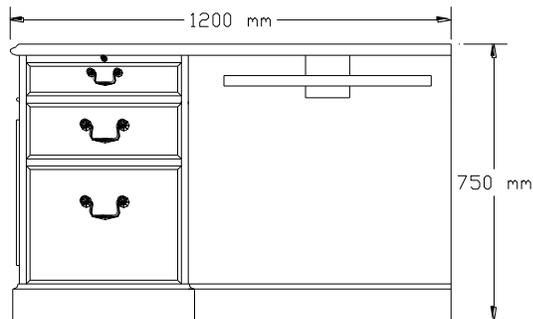
**Figure 2**



CLASS 1, TYPE II, SIZE I,  
STYLE A SINGLE PEDESTAL  
DESK, FULL CHASSIS

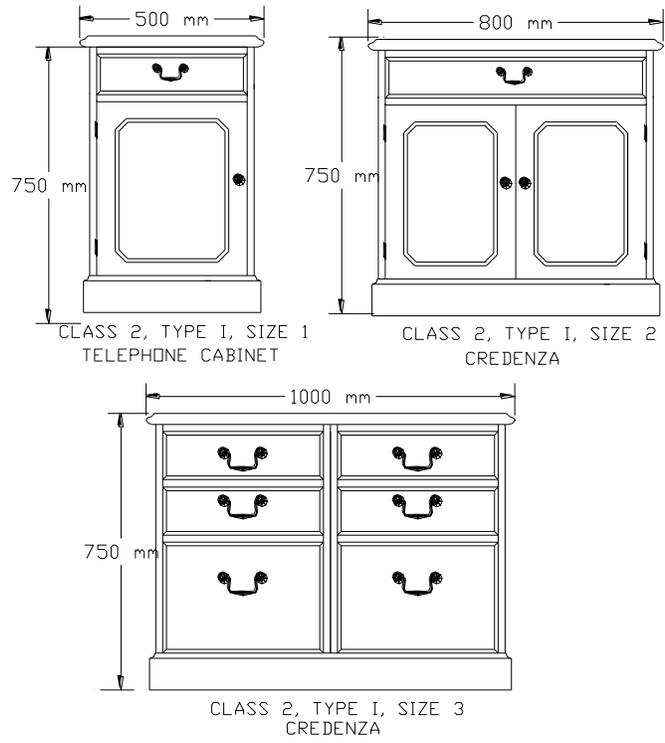


END VIEW OF ABOVE  
DESK (RIGHT HAND SIDE)

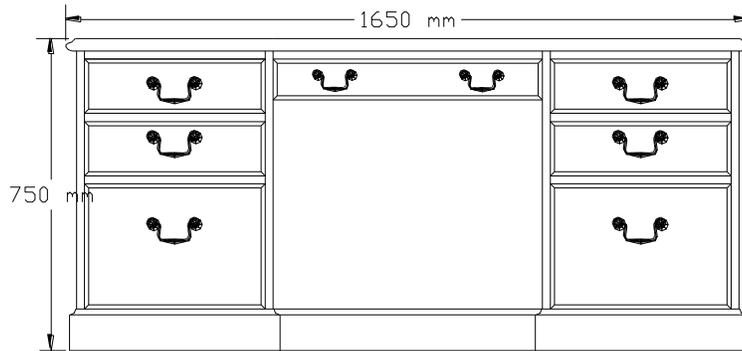


CLASS 1, TYPE III, SIZE 3  
STYLE A LEFT DESK  
HEIGHT ATTACHMENT WITH  
ARTICULATING KEYBOARD SHELF

**Figure 3**

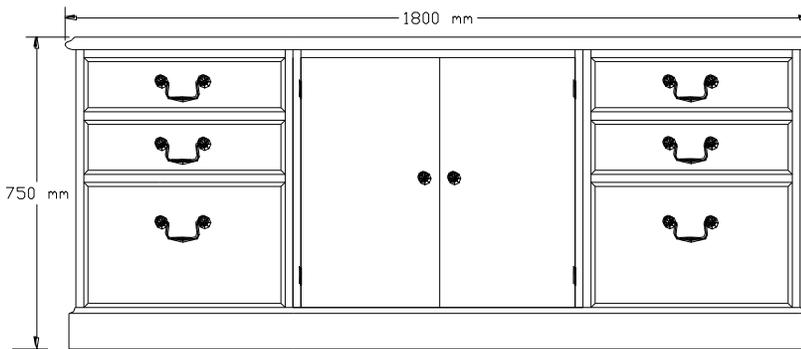


**Figure 4**

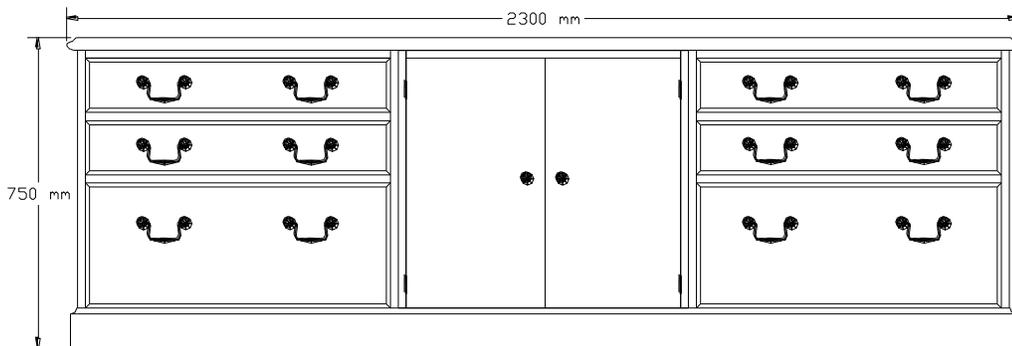


CLASS 2, TYPE I, SIZE 4, STYLE A, CREDENZA

FIGURE 5

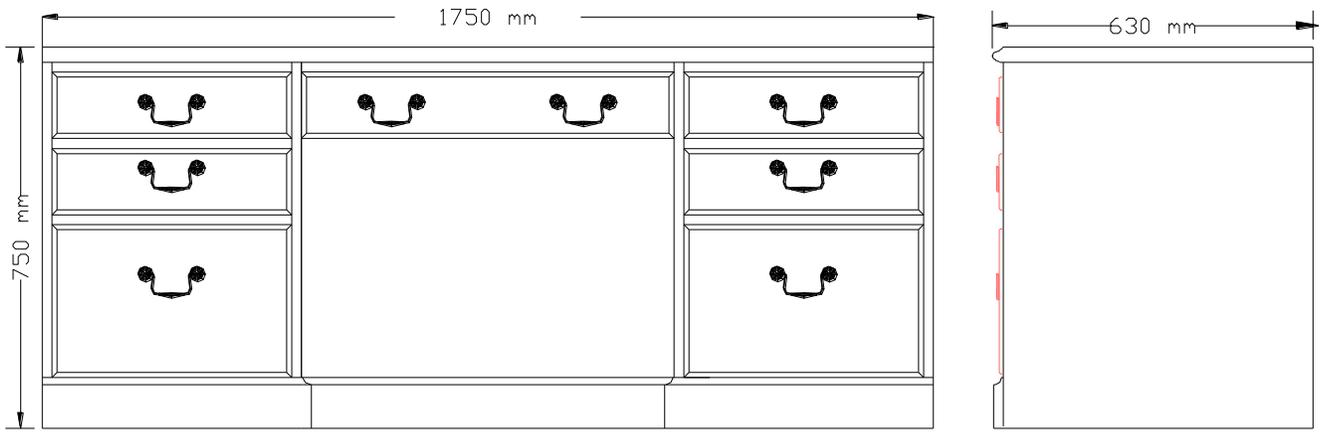


CLASS 2, TYPE I, SIZE 5, STYLE C, CREDENZA

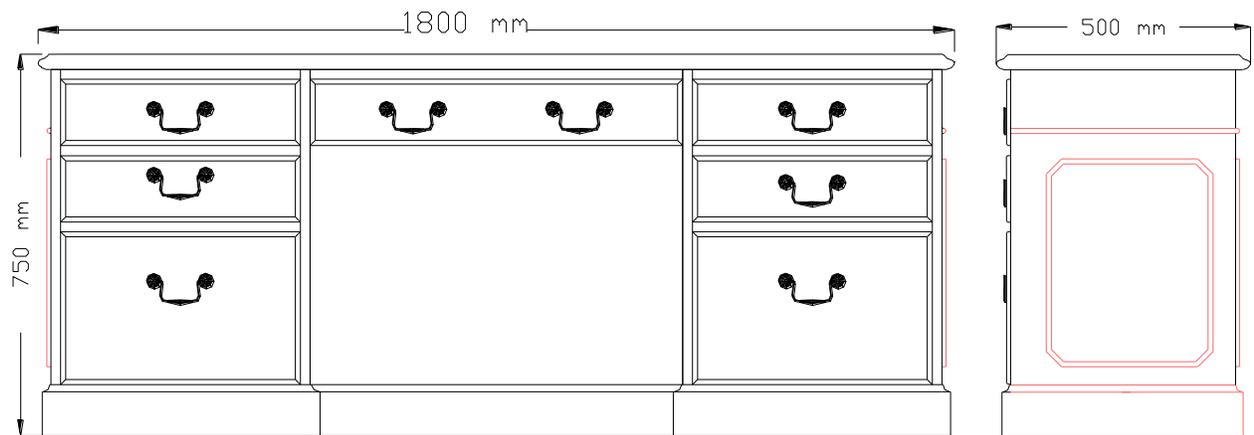


CLASS 2, TYPE I, SIZE 6 CREDENZA

**Figure 6**

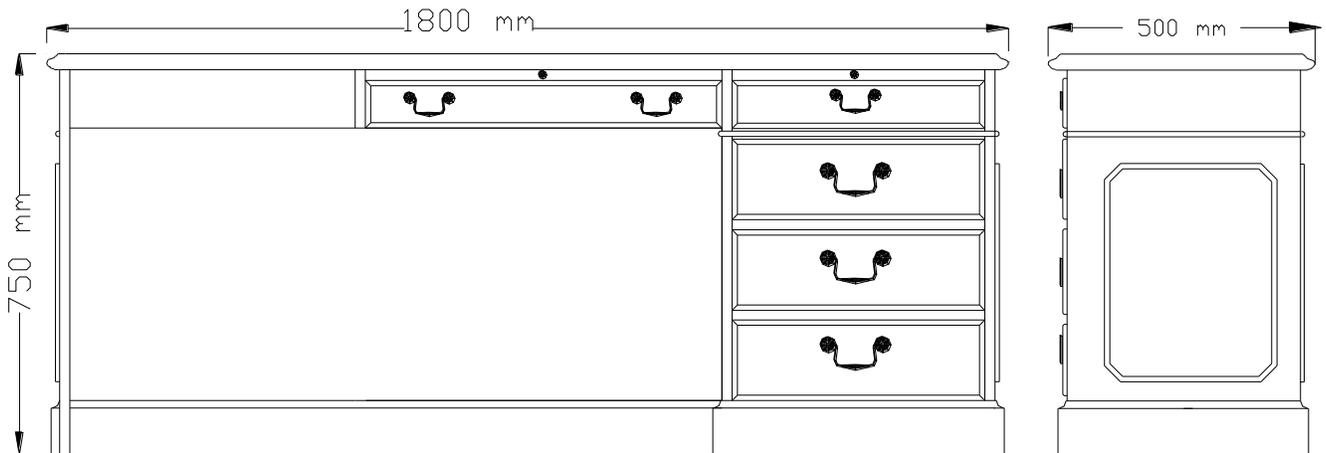


CLASS 2, TYPE I, SIZE 5, STYLE A, MODULAR CREDENZA



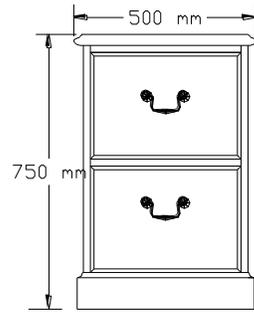
CLASS 2, TYPE I, SIZE 5, STYLE B, CREDENZA

**Figures 7 & 8**

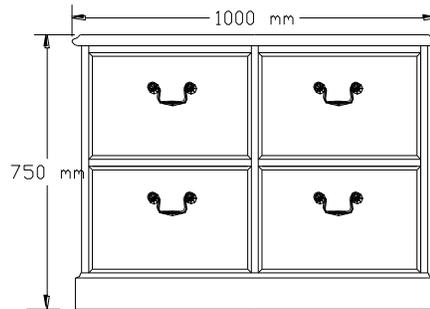


CLASS 2, TYPE I, SIZE 5,  
STYLE G SINGLE PEDESTAL  
CREDENZA

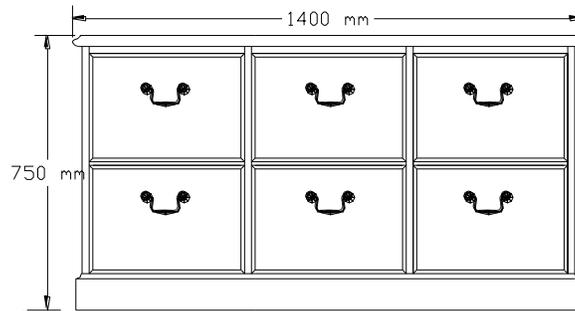
**Figure 10**



CLASS 2, TYPE II, SIZE 1  
VERTICAL FILE CABINETS

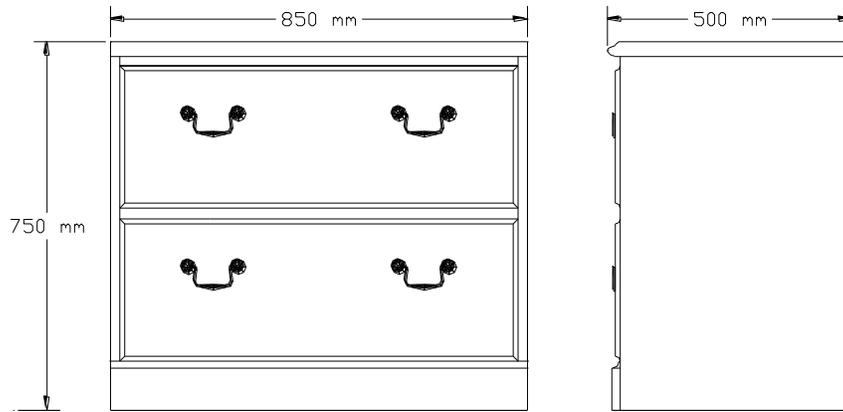


CLASS 2, TYPE II, SIZE 2  
VERTICAL FILE CABINETS



CLASS 2, TYPE II, SIZE 3  
VERTICAL FILE CABINETS

**Figure 11**

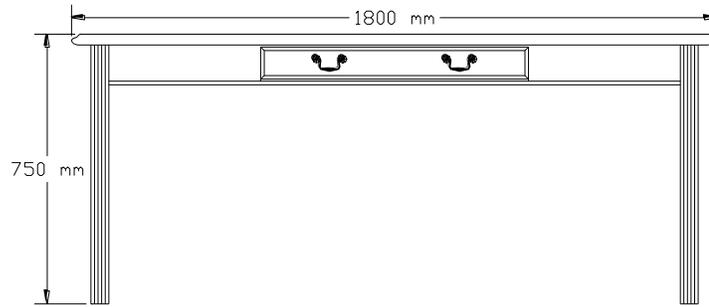


CLASS 2, TYPE III, STYLE A,  
SIZE 1, MODULAR LATERAL FILE

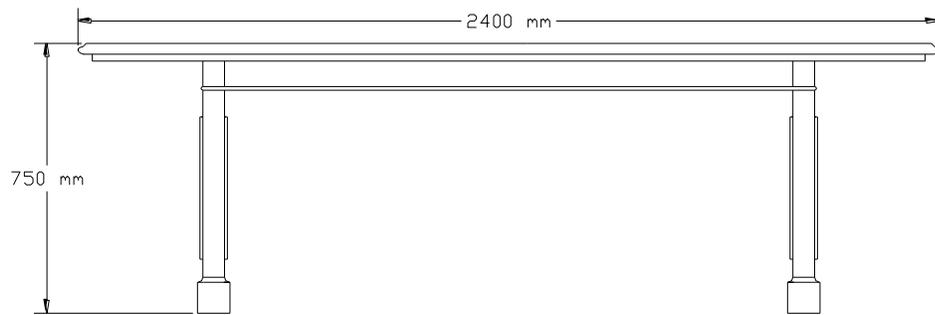


CLASS 2, TYPE III, STYLE A,  
SIZE 2, MODULAR LATERAL FILE

**Figure 12**

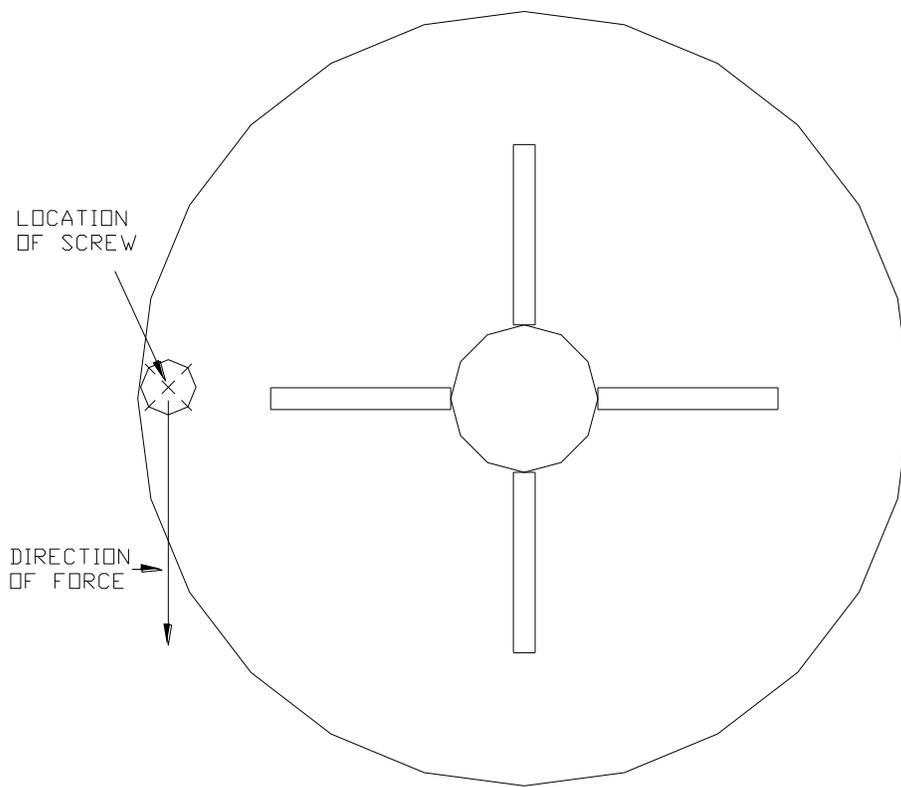


CLASS 3, TYPE III, SIZE 2  
WORK TABLE



CLASS 3, TYPE IV, STYLE A, SIZE 1 CONFERENCE TABLE

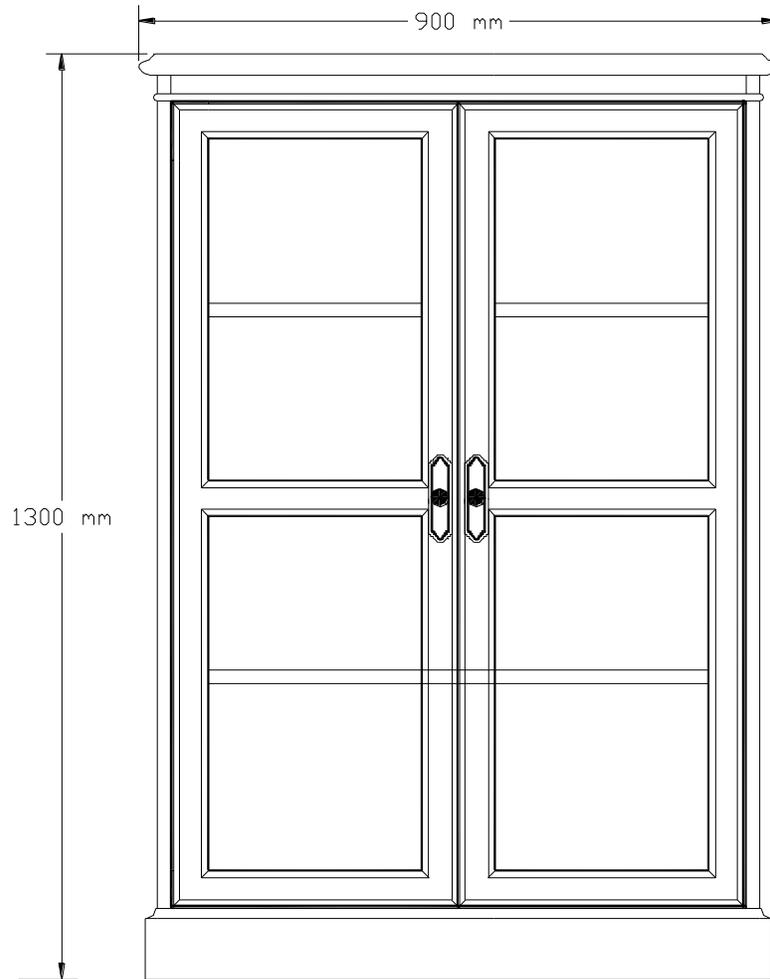
**Figure 13**



PLAN VIEW OF ROUND TABLE  
SIDE PLAY TEST

CLASS 3, TYPE IV, STYLE B,  
SIZE 2, 1200 MM ROUND TABLE

**Figure 14**



CLASS 4, TYPE I, STYLE A,  
SIZE 4, BOOKCASE WITH TWO DOORS

**Figure 15**

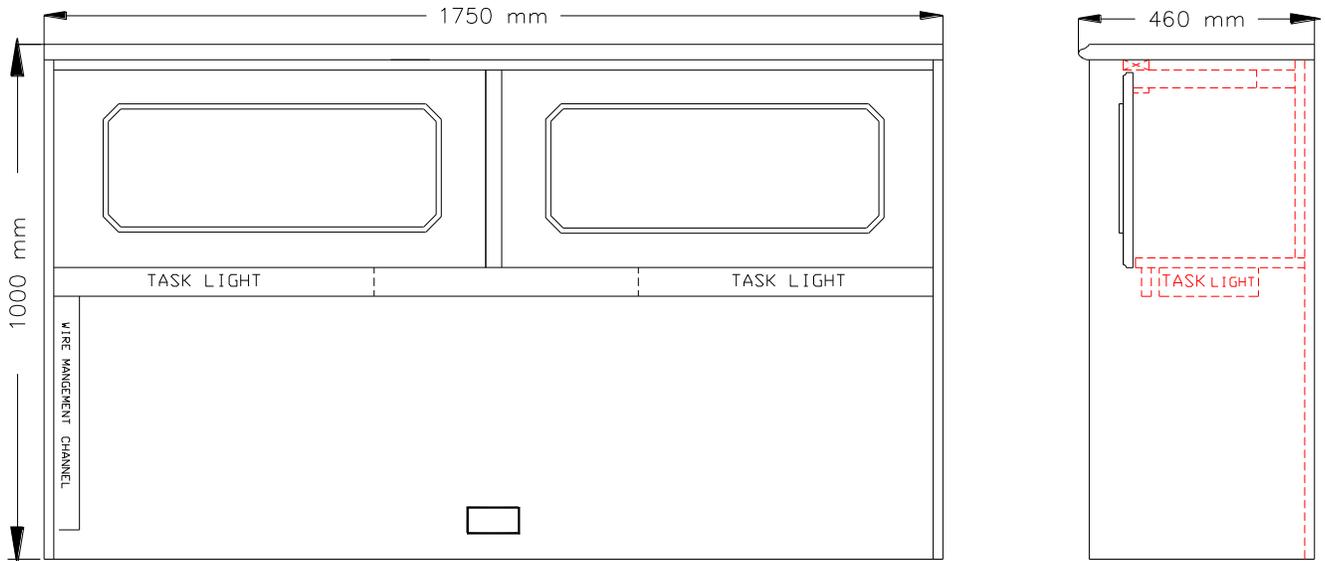


CLASS 4, TYPE I, STYLE B, MODULAR BOOKCASE  
WITH TWO LATERAL FILES



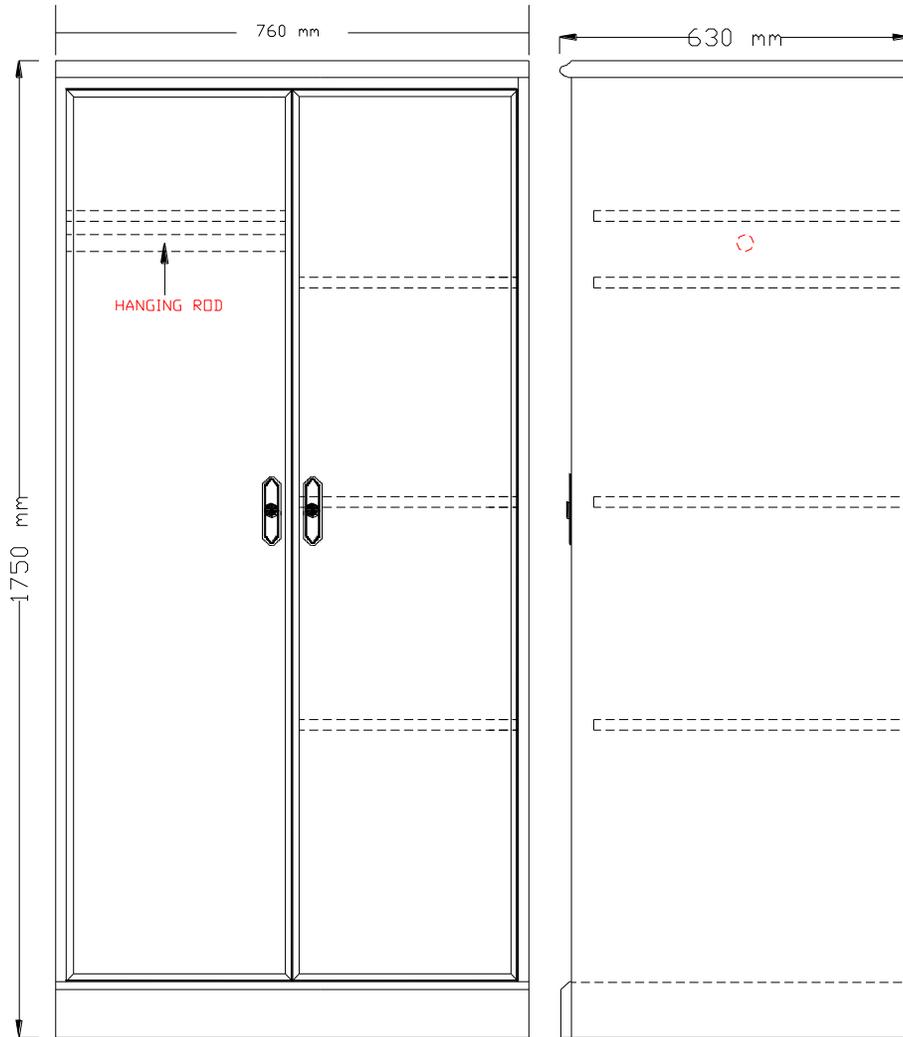
Acceptable top edge shapes  
for lateral file section

**Figure 16**



CLASS 4, TYPE III, MODULAR  
OVERHEAD STORAGE UNIT

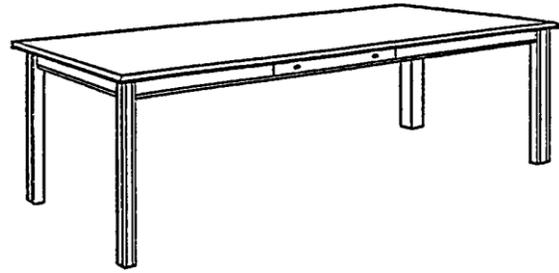
**Figure 17**



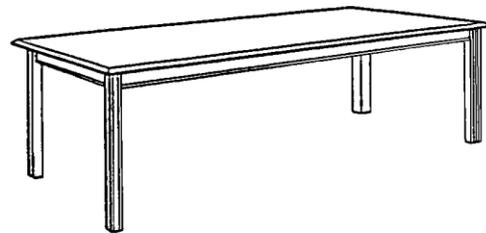
CLASS 4, TYPE IV MODULAR WARDROBE

**Figure 18**

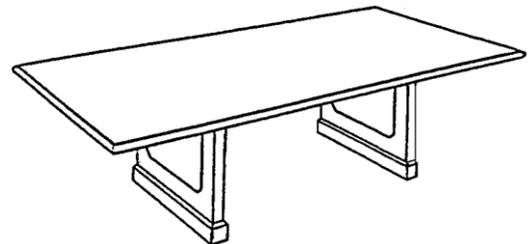
CLASS 3, TYPE III WORK TABLE



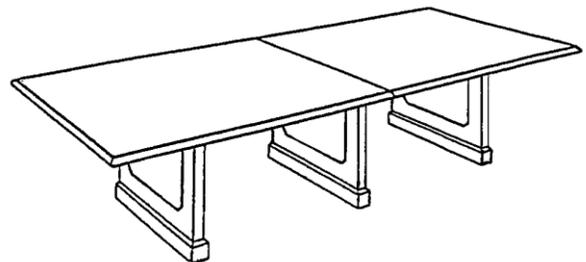
CLASS 3, TYPE II CONSOLE TABLE



CLASS 3, TYPE IV, STYLE A, SIZE 2  
CONFERENCE TABLE

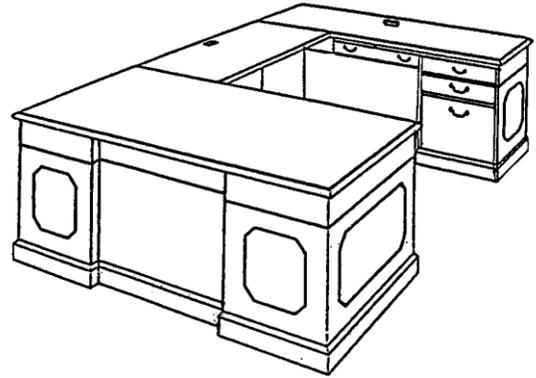


CLASS 3, TYPE IV, STYLE A, SIZE 3  
CONFERENCE TABLE

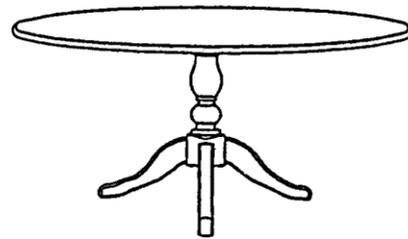


**Figure 19**

CLASS I, TYPE II, SIZE 2, STYLE B SINGLE  
PEDESTAL DESK  
CLASS 1, TYPE IV, STYLE B DESK HEIGHT  
STRAIGHT BRIDGE UNIT  
CLASS 2, TYPE I, SIZE 5, STYLE G SINGLE  
LETTER RIGHT PEDESTAL CREDENZA



CLASS 3, TYPE IV, STYLE B, SIZE 2  
ROUND CONFERENCE TABLE



CLASS 3, TYPE IV, STYLE B, SIZE 1  
ROUND CONFERENCE TABLE

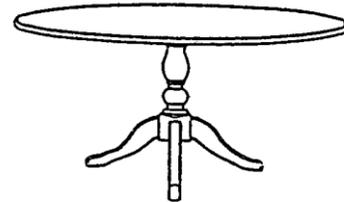


Figure 20

CLASS 4, TYPE I, STYLE A, SIZE 1  
2 SHELF OPEN BOOKCASE



CLASS 4, TYPE I, STYLE A, SIZE 2  
3 SHELF OPEN BOOKCASE



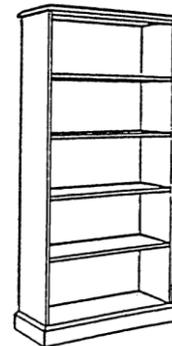
CLASS 4, TYPE I, STYLE A, SIZE 3  
4 SHELF OPEN BOOKCASE



CLASS 4, TYPE I, STYLE A, SIZE 4  
BOOKCASE WITH 2 GLASS DOORS

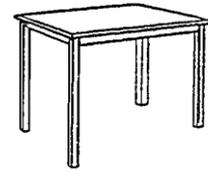


CLASS 4, TYPE I, STYLE A, SIZE 5  
5 SHELF OPEN BOOKCASE

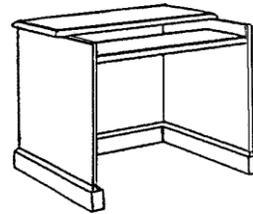


**Figure 21**

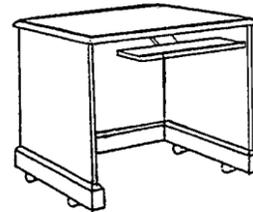
CLASS 3, TYPE I, STYLE B LAMP TABLE



CLASS 5, STYLE A SPLIT TOP  
COMPUTER SUPPORT TABLE



CLASS 5, STYLE D MOBILE COMPUTER TABLE  
WITH ADJUSTABLE KEYBOARD SHELF



CLASS 5, STYLE E MACHINE TABLE

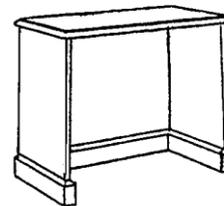
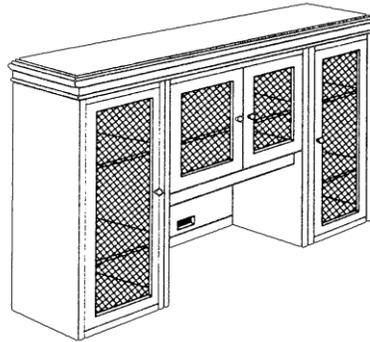
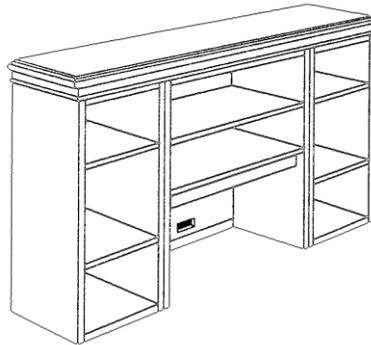


Figure 22

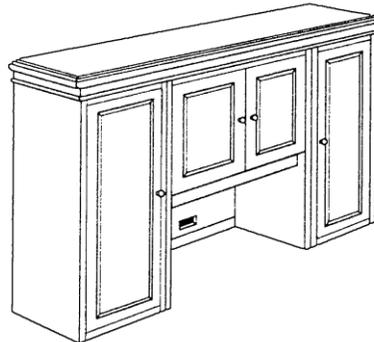
CLASS 4, TYPE 2, SIZE 4, STYLE A  
HUTCH, THREE-SECTION WITH WORKSPACE  
AREA, WITH GRILL INSERT DOORS



CLASS 4, TYPE 2, SIZE 4, STYLE B  
HUTCH, THREE-SECTION WITH WORKSPACE  
AREA, WITHOUT DOORS



CLASS 4, TYPE 2, SIZE 4, STYLE C  
HUTCH, THREE-SECTION WITH WORKSPACE  
AREA, WITH WOOD PANEL INSERT DOORS



CLASS 4, TYPE 2, SIZE 4, STYLE D  
HUTCH, THREE-SECTION WITH WORKSPACE  
AREA, WITH GLASS INSERT DOORS

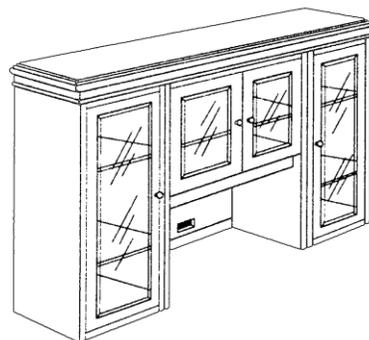
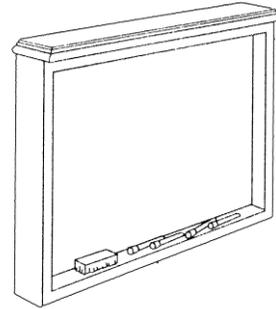
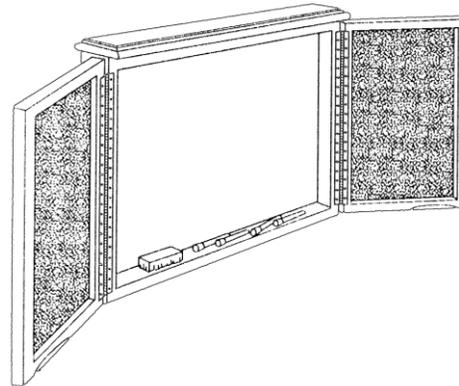


Figure 23

CLASS 6, STYLE A  
WALL-MOUNTED PRESENTATION BOARD



CLASS 6, STYLE C  
WALL-MOUNTED PRESENTATION BOARD WITH  
DOORS



**Figure 24**