

**SECTION 12 65 20**  
**MODULAR SYSTEMS FURNITURE**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. Section includes
  - 1. Furnish all labor, materials, tools, equipment, and services for all components of Systems Furniture as indicated, in accord with provisions of the Contract Documents.
  - 2. Completely coordinate with work of all other trades.
  - 3. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances, and devices incidental to, or necessary for sound, secure, and complete installation.
  - 4. See Division 1 for General Requirements.
  - 5. Areas serviced:
    - a. General Office Space
- B. Related sections
  - 1. Rough Carpentry: Section 06 10 00.
  - 2. Finish Carpentry: Section 06 20 00.
  - 3. Glazing: Section 08 80 00.
  - 4. Mechanical Work: Division 23.
  - 5. Electrical Work: Division 26.

**1.2 SYSTEM DESCRIPTION**

- A. Support components
  - 1. Panel System
  - 2. Horizontal Support elements
  - 3. Vertical Support Elements
- B. Counter Surfaces
  - 1. Work Surfaces
- C. Storage Assemblies
  - 1. Shelving Systems (Shelf Storage Units)
  - 2. Drawers, Pedestals and Filing (Modular Storage)
  - 3. Storage Wardrobes (freestanding storage tower)
- D. Accessory items
  - 1. Keyboard Shelf

**1.3 REFERENCES AND QUALITY ASSURANCE**

- A. References
  - 1. Building and Institutional Furniture Manufacturers Association (BIFMA)
  - 2. National Electrical Code (NFPA 70-1990)
  - 3. Underwriter's Laboratory (UL)
  - 4. Electrical Testing Laboratory (ETL)
- B. Design criteria
  - 1. The intent of this specification is to provide quality and functional interior furnishings for this facility. These products should enable this facility to avoid product replacement cost and at the same time avoid product obsolescence. The interior furnishings must respect this

intent in addition to providing maximum product integration and flexibility to accommodate changing office technology. The products must have the inherent qualities of durability, aesthetic value, and safety while being most functional within the office setting.

2. This space has been designed to be space efficient and permit maximum internal flexibility which will facilitate cost efficient reconfiguration of space and traffic patterns.
3. Additionally, a wide selection of components and accessories are required to solve the administrative requirements. Products must be fully compatible and interchangeable with each other to avoid costly reconfiguration expenses. All components shall exhibit a high degree of modularity so that components can be used anywhere within the facility.
4. System will allow workstations to be space efficient by making maximum use of vertical space and by providing a highly organized and versatile way of storing materials.
5. All components shall be modular and shall be interchangeable with each other together.

C. Installer qualifications

1. Furnish proof of familiarity with equipment to be installed.
2. Provide list of at least three previous projects, giving names of projects, scope, and name and telephone number of individual at facility to contact.
3. Furnish proof of financial and technical resources to assure prompt performance in delivery and installation and in-service training of hospital personnel.
4. Provide competent supervision and installation persons.

D. Source quality control

1. Systems furniture manufacturer must have minimum five years' continuous experience in manufacture of all systems components and accessories.
2. Manufacturer furnish proof of successful completion of at least three projects of similar scope within that time; furnish names of projects, scope, and name and telephone number of individual at facility to contact.
3. Furnish proof of financial and technical resources to assure prompt performance in production and delivery.

**1.4 SUBMITTALS (SEE DIVISION 1)**

A. Shop drawings

1. Provide complete shop and installation drawings, giving all dimensioning, details of construction, and accessory items.
2. Indicate electrical, mechanical, and telecommunication entry locations.
3. Indicate wall reinforcement and anchorages.

B. Product data

1. Provide catalog and model numbers for all components.

2. Provide addresses and phone numbers of nearest stocking/service parts locations.

C. Samples

1. Provide samples of all fabrics, finishes, and colors as requested by Architect (Owner).
2. Provide samples of chemical resistant materials.

D. Project information

1. Test reports to include support component and work surface load tests, NSF-30 stain tests.
2. Certificates: copies of UL and/or ETL cards on listed components.

E. Project close-out data

1. Operating and maintenance data.
  - a. Provide Owner's personnel with an implementation and education program, minimum \_\_hours, given by manufacturer's representatives.
  - b. Manufacturer provide an in-service videotape to illustrate use of system to Owner.
  - c. Provide technical and operational instruction and user's manuals for all components.
2. Provide physical demonstration of interchangeability of components. .
3. Warranties. See Section 1.07
4. Minimum of two copies of manufacturer's complete catalogs and price lists.
5. Location and phone of nearest service organization.

**1.5 DELIVERY STORAGE AND HANDLING**

- A. Deliver all components to site in manufacturer's clearly identified containers.
- B. Deliver, receive, and store in a secured space in a manner to prevent damage.
- C. Time delivery to assure components are available at site when required for installation.

**1.6 JOB CONDITIONS**

- A. *Existing conditions*
- B. Protection.
  1. Assure that adjoining work is not damaged by installation of this work.
  2. Provide temporary protection as required, and repair all damage to such work.
- C. Sequencing.
  1. Sequence this work to allow work by Division 23 and 26 Contractors to be performed without interference.
  2. Coordinate this work with other operations in same area to avoid conflicts.

## **1.7 WARRANTY**

- A. All warranties run from date of Substantial Completion.
- B. Written warranty on entire system, signed jointly by installer, manufacturer, and Contractor, for period of one year.
- C. Written warranty on all system components from manufacturer, for a period of 12 years, with 24-hour-per-day, 7-days-per-week usage.
- D. Written warranty on items incorporated into system, not manufactured by contractor or subcontractor for a period of one year.

## **PART 2 -- PRODUCTS**

### **2.1 MANUFACTURER**

- A. Acceptable manufacturers.
  - 1. Systems furniture System
    - a. Base: Canvas Office Landscape, by Herman Miller, Inc., 855 East Main Avenue, PO Box 302, Zeeland, Michigan 49464-0302 or Approved Equal.
    - b. Other manufacturers desiring approval shall demonstrate compliance of essential characteristics with requirements of bid and contract documents.
  - 2. Movable Walls
    - a. Base: Environamics Movable Walls, by Herman Miller, Inc., 855 East Main Avenue, P.O. Box 302, Zeeland, Michigan 49464-0302 or Approved Equal.
    - b. Other manufacturers desiring approval shall demonstrate compliance of essential characteristics with requirements of bid and contract documents.

### **2.2 MODULARITY REQUIREMENTS**

- A. All systems furniture components must be provided by one manufacturer.
  - 1. If products of several manufacturers are used to satisfy this section, then all items shall meet the specified flexibility and interchangeability requirements.
  - 2. Supplier of the system is responsible for performance of all components.
- B. All systems furniture components shall be modular and shall be interchangeable to form a flexible system which will accommodate change.
  - 1. Dimensions of products are nominal and are located on the appropriate equipment drawings and schedules.
- C. All hanging components must also be modular on same increments.
  - 1. Provide units which are selectively removable and replaceable, without disturbing adjacent components.

### **2.3 FABRICATION**

A. Basic Support Components

**1. Panel System 10' x 10' and 7'6 x 7'6 Workstations and Accessories**  
**(Deduct Alternate No. 3)**

a. General Performance Requirements

- (1) Shall meet class A requirements for flame spread and smoke development as specified by ASTM E-84 and the 1988 National Fire Protection Association National Life Safety Code No. 101. This requirement is necessary to provide assurances that employee's safety will not be placed in additional danger during an emergency.
- (2) Shall have preassembled steel hangers with slots at a maximum of one inch intervals for suspension of work surfaces and shelf storage. This requirement provides assurances that the hangers will not fail and cause injury to employees and permits reconfiguration without having to replace connections among work surfaces, shelves and panels.
- (3) Frame to be 14-gauge roll-formed steel top rail, bottom rail & stiles; (2) steel glide stem supports; The Stiles shall include slots for hanging components at 1" increments, as well has for mounting tiles & electrical components.
- (4) Frame shall have adjustable leveler glides per frame with 2" of leveling to provide uniform height assurance for adjacent units on uneven floors, and the capability of easily relocating an entire run of panels by sliding over the floor without disassembly of panels and suspended modular counters and shelf storage units.
- (5) Shall be designed to permit installation to begin with any partition in the run. Once erected, any partition can be removed, replaced, or relocated without removing any other partition or without violating the integrity of the panel system. This requirement will decrease the hours needed to reconfigure.
- (6) Shall be of sufficient width to permit one person to easily carry, skid, transport or relocate with minimum risk of bodily strain or harm.
- (7) Shall be capable of being installed on top of finished flooring without the penetration of the

finished floor or the use of floor fasteners; and shall have complete flexibility for future changes without having to patch floor material. This requirement will minimize the repair and maintenance cost associated with reconfiguration.

- (8) The base raceway shall be sized to hold at least twenty -25 pair data cables. If twenty-25 pair cables can not be accommodated through the base raceway the offeror must bring this to the attention of the contracting officer and provide an acceptable equivalent with the use of an add or an internal top cap raceway.
- (9) The system must offer optional panel-top cable raceway for additional cable capacity. They must feature continuous lay-in for up to ten 25-pair cables in straight-line and corner conditions. Complex computer and other communication systems demand adequate solutions to changing administrative requirements.
- (10) The electrical system shall meet the National Electric Code and be UL listed.
- (11) The power system must offer both ceiling access and end of panel access since both wall and ceiling power are available and interior offices must be served by electrical connections in the both the ceiling and walls.
- (12) The electrical system shall be capable of reconfiguration without the need for an electrician.
- (13) The electrical system shall have as a minimum the capacity for four outlets on all panels wider than 24 inches. This is required to accommodate the need for additional receptacles in the work station and to eliminate the need for extension cords.
- (14) The baseline cable management channel shall be plastic or a similar material to minimize damage from ordinary floor maintenance; e.g., vacuum cleaners, buffers, etc.
- (15) The baseline cable management channel shall have hinged side covers to provide quick and easy access to electrical harnesses and telecommunications. This provides the ability to quickly modify the electrical and

telecommunications for new equipment and services.

- (16) The cable management shall have a "lay-in" design to eliminate tenuous, time-consuming "fishing through" cables into the panels.
- (17) The electrical system will come with preset circuit receptacles to eliminate individuals from contaminating dedicated lines by switching circuits. Electrical systems that contain user-changeable receptacles are not acceptable. This is required to prevent damages to equipment and data.
- (18) The panel power system must offer cable management at the work surface as well at the floor level to accommodate the various power requirements at the work station.
- (19) The panel system must feature eight-wire, four-circuit capability with up to three circuits of isolated ground protection and one general circuit and an optional surge suppression for computers (with LED indicator). To support a variety of electronic equipment, a ten gauge neutral wire is required. The system must be able to offer up to 80 amps of power with three isolated circuits and 20 25-pair cables in the base of the powered panel. The increased need for management personnel to have access to new technology requires better management of the electrical power.
- (20) The appropriate receptacles must be indicated with an orange alpha symbol and triangle on the face to identify the isolated ground. This insures that equipment that requires grounding is powered with appropriate receptacles.
- (21) A non-conductive barrier(s) in the raceway to maintain voice\data isolation from the electrical system shall be provided. If a non-conductive barrier(s) is not provided through the base raceway the offeror must bring this to the attention of the contracting officer and provide an acceptable equivalent with the use of an add or an internal top cap raceway to achieve data and electrical isolation.
- (22) The power system must have an optional metal barrier that separates data lines from power lines within the cable management space to avoid electrical interference and tapping of data lines.

- (23) The power system must be modular and be able to provide power selectively only at needed locations, and be rearranged without altering or disassembling the panel system. Power system must have access to any circuit via duplex or simplex receptacles. The eight wire electrical system must allow circuits to share a common ground or change to sharing an isolated ground in the field for future electronic equipment protection.
- (24) The electrical harness, which provides power distribution and access, shall have 4 receptacle mounting brackets, (2 per frame side), 2 distribution blocks, 16 terminals, and 8 conductors. Conductors will comprise an 8-wire electrical system of 4 hot lines of #12 copper wire, each rated at 20- amps; 2 neutral lines #10 AWG copper wire; and 2 ground lines of #12 AWG copper wire - one shall be a common ground, the other shall be a isolated ground.
- (25) Panels must meet or exceed ANSI/BIFMA requirements for mechanical strength and decrease the risk of employee injury.
- (26) Return panels used for system structural stability must match or exceed the width of the work surfaces. Work surfaces must be able to be attached with proper return panels without the need for counterbalancing. This provides assurances that the structural integrity of the work station will not be compromised.
- (27) Panel's base raceway must permit a 6" bend radius to permit the installation of fiber optics communication cable.
- (28) Panels shall be pre-wired at the factory to save installation time and costs, but power components must be retrofittable in the field.

b. Types Required

- (1) Standard panels shall be modular units available in a minimum of
  - (a) five heights from 34" to 80"
  - (b) six widths from 12" to 60"
  - (c) Fabric covered, acoustic and Tackable Acoustical
  - (d) 20 fabric options
  - (e) .80 NRC for acoustic rating
  - (f) 22 STC Rating
- (3) Glazed tiles shall be modular 1/8" thick and available in a minimum of



- (a) two glazing options
- (b) two heights from 62" to 80"
- (c) two widths from 24" to 48"

c. Hardware

- (1) Connectors shall be made of a material to withstand the weight of loaded components and the stress of movement under loaded conditions. Connectors shall accommodate a variety of panel configurations, including:
  - (a) straight line connection (180 degrees) of two panels
  - (b) L connections (90 degrees) of two panels
  - (c) T connections (all 90 degrees) of three panels
  - (d) X connection (all 90 degrees) of four panels
- (2) Connectors shall be able to connect panels of differing heights. Connector system shall allow continuation of electrical and communications wiring within a work station and from work station to work station. Connectors shall be reusable.
- (3) The finish of all filler post shall have the capability to match the finish and the color of the panel trim.
- (4) Right angle (90 degrees) connections shall not interfere with the capability to hang work surfaces and other components on any adjacent panel.

B. Support components

1. Horizontal Support Elements

a. Standard Rail Assembly

b.

- (1) Shall be a single horizontal supporting element designed to securely engage hanging components.
- (2) Length of rail shall be dependent upon use and function, being able to be cut to any length using simple hand tools.
- (3) Shall be capable of adapting to normal architectural wall variations (waviness) to eliminate areas for potential dust accumulation and bacteria growth.
- (4) Shall be capable of adapting to normal floor level variations so as not to impede the materials distribution process.
- (5) Shall be mounted on building walls.
- (6) Material shall be steel, extruded aluminum or fire retardant thermoplastic or a resin material.

b. Adapter Rail

- (1) Shall provide horizontal interface capability to suspend horizontally hung components on vertical support elements.
- (2) Shall be available in a minimum of four nominal widths of 24", 30", 48" and 60". Please refer to the equipment drawings for specific finishes and sizes.
- (3) Shall adjust vertically in 1" inch or less increments.
- (4) Shall have a leveling mechanism to level hanging components.
- (5) Material shall be steel or extruded aluminum with a power coat finish.

2. Vertical Support Elements

a. General Performance Requirements

- (1) Wall attachments to support shelves, work surfaces, tack boards and etc. where functional or operational procedure requirements do not require panels.
- (2) Wall attachment to connect a panel to a structure, i.e. wall or other architectural structure.

b. Types Required:

- (1) Wall attachments which must support at least 600 pounds of supplies in addition to the empty weight of the work surfaces, storage cabinets, and shelves typically configured for use as a work station. This will provide for a work station in an area where panels are not required or desired.
- (2) Wall attachments which shall permit 1" vertical height adjustments of hanging component to permit the employee to adjust their work station to meet their needs.
- (3) The wall attachment which shall be available in a minimum of 2 lengths from 5' to 7' to accommodate a variety of hanging components.
- (4) A wall attachment which connects a panel to connect to wall. This wall attachment must come in at least four heights

C. Counter Surfaces

1. Work Surface

a. General Performance Requirements

- (1) Work surfaces shall be manufactured with a warp resistant composition that will provide sufficient weight-bearing capabilities as functionally required. At a minimum, a 24" X

- 48" cantilevered work surface shall be able to support a load of 40 pounds per square foot with a maximum deflection of 1/200 of its free span. This is required to support a variety of office machines and equipment.
- (2) All work surfaces to have vinyl edge impact resistant material on exposed edges to prevent damage to other equipment and to staff.
  - (3) Work surfaces shall be capable of being suspended from similar width standard panel system modules, or vertical support. This eliminates the need for floor to work surface support.
  - (4) Work surfaces shall be capable of being easily relocated and installed without tools at various heights as required by either staff or function. This provides for the ability to change rapidly from one function to another without incurring additional expense.
  - (5) Work surfaces shall be capable of being "stacked" one on top of another to provide multiple writing or storage surfaces as required.
  - (6) Work surfaces shall have capability to suspend under counter mounted storage assemblies.
  - (7) Work surfaces shall have a positive locking support system to eliminate potential of being accidentally dislodged.
  - (8) Work surfaces shall have leveling adjustment capability so units can be brought into a level position to compensate for wall conditions and excessive weight loads.
  - (9) Work surfaces shall provide clearance at rear of surface for electrical, and CRT cabling.
  - (10) Work surfaces shall be available in a minimum of five nominal widths from 24" to 72" and shall be available in 24" and 30" depths.
  - (11) Work surfaces shall be finished with a minimum of .050-inch thick standard grade high plastic laminate on top and high pressure laminate on under surface. The work surface to be a 1-1/8" thick, 45 pound density particleboard core with a high pressure laminate (HPL) top and bottom face and side edges of rigid polypropylene
  - (12) Work surfaces shall have the ability to have grommets installed during installation.

b. Types Required

- (1) Regular Work Surfaces shall hang from wall strips and panels and support a live load weight of 200 pounds. This is required to support a variety of office machines, work in progress and other material. They shall be adjustable at one-inch increments enabling the work station to meet different functional needs. General-purpose work surfaces shall be designed to support suspended components. Units shall be

available with wire access holes, or with finished back edge for use with open or glazed panels.

- (2) Corner Work Surfaces shall hang from curved panels and extend work surface into corners. The underside of the corner work surface shall have pre-drilled holes for suspension of drawers and devices used to attach to panels or walls attachments. The corner work surface shall be available in 24 and 30 inches deep and six sizes from 36 - 48 inches wide. The additional depth is necessary to support computers and microfilm machines.
- (3) Peninsula work surfaces shall be available and shall be supported from panels or other work surfaces. They shall be available in a squared-edge with a round end or in a rectangular shape. They shall be a nominal 30 - 36 inches deep and 30 inches high with support legs or column.

D. Storage Assemblies

1. Shelving Systems (Shelf Storage Units)

a. General Performance Requirements

- (1) Shelf Storage Units to have rounded exposed surfaces free from sharp edges to prevent injury to staff.
- (2) Shelf Storage Units to operate safely under maximum load of at least 145 pounds and can be readily installed, removed, and relocated without disturbing adjacent modular componentry.
- (3) End panels on shelf units shall be of an integral color to keep the product from looking aged when chipped or scratched.
- (4) Shelf Storage must be able to attach and be interchangeable on panel systems and wall strips.
- (5) All storage components shall be master keyed to provide for the necessary security and loss prevention programs at this facility.

b. Types Required

- (1) General purpose shelving
  - (a) Unit to be available in a minimum of four nominal widths from 2' to 4'. Please refer to the equipment drawings for specific finishes and sizes.
  - (b) Unit to be available in a minimum of two nominal depths from, including a depth to accommodate a standard 3 ring binder for 8 1/2" x 11" paper and a depth to

accommodate a large binder of  
approximately 15" x 15"..

- (c) All units to have door covers available with locks for security and cleanliness. Storage to be a sliding storage unit hung from the frame, painted metal.

2. Drawers, Pedestals and Filing (Modular Storage)

a. General Performance Requirements

- (1) Modular Storage units to be manufactured to provide specific paper/form supply storage.
- (2) Modular Storage units to have rounded, exposed surfaces free from sharp edges to prevent injury to staff.
- (3) Modular Storage units to operate smoothly and freely under maximum load, and be readily installed, removed, and relocated without disturbing Modular Counter Surface units or Modular Rail Attach units on which the pedestal units may be affixed.
- (4) Modular Storage units to provide adequate floor clearance or adequate mobility for housekeeping staff to adequately maintain a clinical environment.

b. Types Required

- (1) Lateral Files (Panel or Wall Supported)
  - (a) Provide single drawer "lateral file" capability with side-to-side filing of standard letter size hanging file folders that can be easily converted to front-to-back filing of both standard, legal or European hanging file folders.
  - (b) Unit to be capable of locking.
  - (c) Unit to have positive locking action upon installation to prevent unit from being accidentally dislodged.
  - (d) Unit to be capable of being suspended from similar width standard panel system modules, vertical support components or lab modules.
  - (e) Unit to be capable of being easily relocated and installed without tools at various heights as required by staff personnel.
  - (f) Unit to be capable of being "stacked" one on top of another to provide additional filing/ storage capacity as required by staff or function.
  - (g) Unit shall be available in a minimum of three widths from 24" to 48" and 19" deep and 13" high. Please refer to the equipment drawings for specific finishes and sizes.

- (h) Each file to be provided with factory installed full extension ball bearing bearer.
  - (i) Construction of top, bottom and back of files shall be of 18 gauge steel with end panels of high density phenolic particle board or equivalent with self edge.
- (2) Drawers and Pedestal
- (a) Drawers and pedestals mount on the underside of the work surfaces. Drawers should be available in pencil, box and file types. Pedestals shall be available with a variety of drawer configurations, including but not limited to a box and file drawer and three box drawers.
  - (b) Pencil drawer shall provide at minimum pencil and small paper handling storage capability. Unit to have integral divider to subdivide drawer into several compartments. A pencil tray located in a top drawer is an acceptable option.
  - (c) Pedestal shall be available for attachment under a work surface or mobile on casters. Mobile pedestals shall be design to prevent instability and tipping when drawers are extended.
  - (d) All drawers within a pedestal shall be lockable either by a central lock that controls all pedestals under one work surface or individual keyed lock in each pedestal.
  - (e) Mobile and pedestal units shall be a minimum of 20" deep, 15 inches wide and 20" -27" high depending upon the number and sizes of drawers within the unit.
  - (f) Pedestal drawer units shall have available at least one three drawer unit of drawers of a nominal 6 inches high and 12 inches high; and one two drawer unit of drawers of a nominal 12 inch high drawer.
  - (g) Pedestal shall be constructed with a minimum of 22 gauge steel and shall be available in at least five surface baked enamel finishes and if required accommodate veneer fronts
- (3) Storage Wardrobes
- (a) Freestanding storage tower has a wardrobe on one side and a storage case on the other side. Pedestal to be located opposite of wardrobe. Tower to have a smooth steel case with textured paint finish.

- (b) To have integrated base with 1" leveling glides and match the height of the frames.
  - (c) Files drawers to have full extension slides and hold letter size front-to-back hanging files. Each file drawer to include file converters for letter, legal and A4 size side-to-side hanging files.
- (4) Work Surface Drawers
- (a) Drawers shall mount on the underside of the work surface and be available in pencil, box and file types.
  - (b) Each drawer, with the exception of the pencil drawer, shall have individual keyed locks, keyed alike or uniquely as per needs.
  - (c) Each drawer, with the exception of the pencil drawer, shall be capable of being divided by stationery inserts.
  - (d) File drawers to be capable of filing letter, legal or European size hanging folders.
  - (e) Units shall be available in either under counter or mobile on caster forms.
- (5) Keyboard Shelf
- (a) Unit shall be an adjustable keyboard tray that attaches to the underside of counter and/or 24" and 30" deep hanging work surfaces and is used to support detached keyboards.
  - (b) Unit shall be a minimum of 22 inches wide with a depth of 22 inches and the tray shall be at least 22 inches wide and 10 inches deep which is sufficient to hold a standard keyboard.
  - (c) Tray shall be at least 1/2 inch thick particle board core, high pressure laminated backing, face, with an extruded vinyl edge.
  - (d) Tray shall have a molded front edge that is 1/2 inches higher than the tray face to keep the keyboard from falling forward.
  - (e) The units arm mechanism shall be a roll form steel channel, at least 17 3/4 inches long, which provides a track in which the arm mechanism can move forward and backwards.
  - (f) The tray's arm, which allows the mechanism to travel up and down the tray to tilt shall be of glass reinforced nylon to minimize wear.

- (g) The tray's handle shall be made of steel bolt, tubular steel cover, and glass reinforced nylon knob with rubber grip cover, controls and locks arm mechanism's up and down motion.
- (h) Trays up and down adjustments shall be a minimum of 5 3/4 inches; it travel in/out shall be a minimum of 12 1/2 inches; its swivel shall be 370 degrees and its tilt shall be 18 degrees.

3. Miscellaneous System Furniture Components

a. Display Surfaces

- (1) Performance requirements
  - (a) Surfaces shall provide operational areas a convenient mechanism for displaying notices, procedures, policies, schedules, etc.
  - (b) Unit shall be capable of being easily relocated and installed without tools at various heights as required by staff or function.
- (2) Types Required
  - (a) Tack boards
    - (i) Shall be available in several widths and heights.
    - (ii) Shall be fabric covered.
    - (iii) Shall be of various sizes of 24"-60" in width and a nominal height from 1'- 5'.
  - (b) Writing boards
  - (c) Shall be available in chalkboard or "liquid chalk" forms. Shall be available in a minimum of 48" x 48". Shall be white and erasable.

b. Lighting

- (1) General Performance Requirements
  - (a) UL listed unit shall provide individual lighting capability to selected location with a minimum of one fluorescent tube.
  - (b) Unit shall have cord outlet that can be utilized on either right or left side.
  - (c) Unit shall be easily changed and relocated with the use of tools as needed.
  - (d) Unit shall have individual on-off switch at convenient location.
- (2) Types Required Task lighting shall mount on the underside of shelving and shall be available in a minimum of three widths of 24" - 48", provided with a diffusing lens to reduce glare and eye fatigue. Shall be available in color rendition index of 52 or 75.
  - (a) Display lighting to "wash" a vertical surface below the light with illumination.



To provide for a "wash" it is required that the lens be a batwing, bilateral, acrylic or similar least that disperses the light at optimum angles toward the work surface.

(b) A light shall be available to attach to the underside of a transition surface to illuminate a work surface.

(3) All lights shall be shipped with bulbs installed.

4. Locks and keying.

- a. Key all locks alike.
- b. Furnish each lock with two keys.

**2. Moveable Wall System and Accessories - See Workstations and Accessories above for Accessories (Deduct Alternate No. 2)**

A. General Performance Requirements  
(1) Partition Construction

- a. Shall not to exceed 250# per unit.
- b. Maximum panel width to be 48", maximum ceiling height shall be 10 feet.
- c. Relative thickness of panels shall be 2-1/4" thick, beveled edge, fire code gypsum wallboard on 1" x 4"-6" core board studs spaced 12" apart. Pre-finished with fabric backed, 15 oz. Type I wall covering, color and pattern to be selected by Architect (painted surfaces are not acceptable).

(2) Aluminum Frames

- a. Exposed aluminum shall be extruded from a controlled alloy billet and shall have four stage treatment prior to the electrostatic application of paint like coating, baked and cured to a 2H minimum hardness, one mil. Minimum thickness and a gloss of 25 (+-5) smooth finish.
- b. paint like finish shall conform to the Aluminum Association Specification R-10.
- c. Anodized finish option shall equal Medium Bronze Anodized "MK" AA-C22A34 and Clear Anodized "AN" AA-C22A213.
- d. Aluminum door frames shall be plum and square and to be prepared for hardware including proper reinforcing, drilling and tapping. Mitres at corners of frames shall be anchored and concealed with clips.
- e. Shall include soft vinyl bulb-type light and sound seal.
- f. Aluminum glazing sections shall be installed plumb and square with all connections securely

clipped. Intersections with head conditions shall be mitred where possible. Sill sections shall have removable, flush snap-on stops. Surface applied glazing stops will not be acceptable.

- g. Glazing mullions and jambs shall be available which include slotted inserts for furniture integration as indicated on drawings, and must be capable of carrying the same load as required of panel wall construction.

(3) Furniture Support

- a. Moveable wall shall be capable of supporting the furniture components without requiring bracing other than the normal attachment to ceiling and floor.
- b. Wall shall exceed the test criteria of the "Panel Mounted Components" Section of BIFMA Panel System Standard.
- c. System shall be capable of receiving furniture integration splines at each point between panels and at each full module intersecting panel condition.
- d. Splines are required only where needed by the furniture integration and shall be capable of being added or deleted as furniture changes without defacing or replacing the wall panels.
- e. Furniture components shall engage splines directly without the use of interfacing clips or supplemental hanger brackets.
- f. System shall be capable of supporting connection to partial height panel systems and surface or cabinet components in any panel intersection configurations.

(4) Snap-On Base

- a. System to include a rigid vinyl base matching in height to the furniture system base color, style and height.
- b. Glue-on base is not acceptable.

(5) Electrical

- a. All movable wall panels shall have a vertical chase capable of accepting electrical outlets, switches, data/communication outlets, and the conduit serving the outlets.
- b. Electrical receptacle boxes and switch boxes shall be UL labeled and meet all NEC codes for designated uses. All outlet and switch boxes shall be assembled into the panels at the point of manufacture with flexible steel conduit extending from the boxes up through the panel chase-way. Locations of outlets and switches are shown on the Drawings.

- c. Electrical conduit for receptacles and switches shall contain 120 volt, 4 color coded #12 wire with an additional 12" of wire extending from the box, and 12" of conduit extending from the top of the panel and connected to a pre-manufactured UL listed component to accommodate hook-up to the building power system. The movable wall contractor shall furnish to the General Contractor a mating pre-manufactured UL listed component for each conduit, with a 6' length of flexible steel conduit and 4 color coded #12 wire for use by the electrical contractor.
- d. Conduit for data/communication cable shall terminate at a point 12" above the top of the panel.
- e. Receptacles, switches, data/communications outlets, and all cover plates will be furnished and installed by others in panel mounted electrical system.
- f. A UL 183 listed 8-wire 4-circuit electrical system must be available standard. A power adapter connecting cable must be available to connect manufacturers UL listed furniture system electrical system with identical capacities and circuitry.

(6) Wood Doors and Hardware

- a. Install wood doors in all door openings in movable walls.
- b. Doors shall be 1 3/4" thick, solid core wood doors of size and design as shown on the Drawings. Doors shall be of stile and rail construction, manufactured according to the Architectural Woodwork.

Institute (AWI) Specification #1400, Custom Grade, for stile and rail wood doors. Exposed surfaces shall be plain sliced natural birch or other veneer suitable for painting or staining.

- c. Each door shall be hung with two pair of 4 1/2" x 4 1/2" x 0.134" five knuckle non rising loose pin, button tipped, ball-bearing, full mortise, wrought steel hinges conforming to ANSI A156.1 and BHMA No A8112.
- d. Locksets and passage sets.
  - 1. Lever Passage Set shall conform to ANSI

A156.2 1976 Grade 1 requirements; brass 'A' throw latch bolt projects to 1" throw with Delrin AF insert hardened steel insert; 4 %" curved lip ASA strike; cast bronze and stainless steel trim with precision machined internal parts of hardened steel; 2%" back set; 1% " x 2 brass front.

2. Lever or lockset shall conform to ANSI A156.2 1976 Grade 1 requirements, Fed. Spec. FE-H00106B; brass'/z° throw latch bolt projects to 1" throw with Delrin AF insert and hardened steel insert; 4 " curved lip ASA strike cast bronze and stainless steel trim with precision machined internal parts of hardened steel; 2%" back set; 1% " x 2<sup>1</sup>/<sub>4</sub>" brass front. Finishes to be manufacturer's standards.
- e. Doors shall be pre-fit, pre-machined, sanded and finished at the factory. Bevel doors <sup>1</sup>/<sub>8</sub>" in 2" at lock edge. Comply with hardware templates.
- f. Install doors in accordance with NFPA No. 80 with'/z" minimum latch throw. Clearances shall be %" at jambs and heads and <sup>1</sup>/<sub>2</sub>" from bottom of door to top of floor finish.
- g. Install floor mounted door stops, 2" diameter, low rise, dome type, cast units, No. 10 finish, with molded rubber bumper insert. Unit shall be provided with a non-rotational positioning stud to penetrate into floor with screws.

B. Performance Characteristics

1. All movable wall panels shall be Class A fire rated as defined by ASTM Procedure C-36. All laminated gypsum panel surfacing materials shall have a Flame Spread Rating of 25 (or less) when tested in accordance with ASTM Procedure E 84.
2. Depending on configuration, standard movable wall panels shall provide an STC rating of 33-37 when tested in accordance with ASTM E 90 without aid of acoustical batting in conformance with "full-wall" tests as opposed to "point on panel" tests. An STC rating of 39 for laminated gypsum panels and 41 for aluminum framed panels shall be achieved with sound batten option installed in panels.

3. Movable wall panels shall be capable of supporting a hang-on component weight capacity of no less than 2,000 pounds per wall panel spline, single or double side loaded, regardless of its width.

#### **2.4 FINISH**

- A. Colors shall be selected from manufacturer's standard line.
- B. Colors may be specified to identify areas for materials management.
- C. Finishes to meet need for infection control.

#### **PART 3--EXECUTION**

##### **3.1 INSPECTION**

- A. Inspect areas in which work is to be performed for acceptability to receive work.
- B. Report all discrepancies to Contractor for correction.
- C. Proceeding with work constitutes acceptance of existing conditions.

##### **3.2 INSTALLATION**

- A. Assemble and install all items in strict accord with manufacturer's printed instructions.
  1. Anchor all fixed components firmly, square, level, plumb.
- B. Horizontal support elements.
  1. Install at heights indicated with all tops, shelves, and writing surfaces level within 1/8" across width.
- C. Vertical support elements.
  1. Install plumb, spaced as indicated on shop drawings.
  2. Align slots to assure hanging units are level.

##### **3.3 FIELD QUALITY CONTROL**

- A. Adjust components to assure proper alignment and operation.
- B. Repair, if acceptable, or replace all damaged or improperly operating items.

##### **3.4 CLEANING**

- A. Immediately after installation and adjustment; clean all surfaces to remove all marks, soil, and foreign matter.
- B. Just prior to Substantial Completion, recheck all components and perform all required additional cleaning.

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