

PART 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 35 18 – LEED Requirements and Procedures
- .2 Section 08 14 16 – Flush Wood Doors
- .3 Section 08 71 10 – Door Hardware
- .4 Section 08 80 50 – Glazing
- .5 Section 09 21 16 - Gypsum Board Systems
- .6 Section 09 51 00 – Acoustical Ceilings
- .7 Section 09 68 00 – Carpet
- .8 Section 12 61 00 – Open Office Furniture
- .9 Section 26 20 00 – Power System
- .10 Section 27 00 00 – Communication System

1.2 REFERENCES

- .1 Aluminum Association (AA)
 - .1 AA DAF45-R03, Designation System for Aluminum Finishes, 9th Edition
- .2 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-07, Surface Burning Characteristics of Building Materials and Assemblies.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA C22.1-06, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations.
 - .2 CSA C22.2 No.20, Canadian Electrical Code, Modular Wiring Systems for Office Furniture.
 - .3 CAN.CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded, Structural Quality Steel.
 - .4 CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregular Shaped Articles.
- .4 American Society of Testing and Materials International, (ASTM)
 - .1 ASTM B221-06: Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profile and Tubes.
 - .2 ASTM C36: Standard Specification for Gypsum Wallboard
 - .3 ASTM C1036: Standard Specification for Flat Glass
 - .4 ASTM E90-04: Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 - .6 ASTM E413-04: Classification for Rating Sound Insulation.
 - .7 ASTM E1300: Standard Practice for Determining Load Resistance of Glass in Buildings.
- .5 Architectural Woodwork Institute (AWI)
 - .1 Architectural Woodwork Standards, Edition 1, 2009
- .6 International Building Code, 2006 Edition
- .7 Health Canada/Workplace Hazardous Materials Information System
 - .1 Material Safety Data Sheets

1.3 SYSTEM DESCRIPTION

- .1 The movable wall system is to be a non-progressive, moveable and reconfigurable system of unitized panels, from a single manufacturer.
- .2 Unitized panels are to be fabricated off-site in a controlled factory environment and delivered fully finished to site for installation with no additional assembly, construction or finishing required.

- .3 Each unitized panel must be able to be removed, relocated and re-installed in different layouts, with all parts reusable. Scribing and fitting of panels on site to individual locations is not acceptable.
- .4 All solid panels must be capable of providing integrated, factory installed modular power & voice/data distribution utilizing plug-and-play technology for ease of panel reconfiguration.
- .5 Frameless glass wall assemblies of greater than 1524mm (60") wide may be delivered and site assembled as non-unitized components.
- .6 The wall system must provide a freestanding option that does not require a connection or attachment to the ceiling.

1.4 PERFORMANCE REQUIREMENTS

- .1 **Acoustic Performance:**
 - .1 Solid panels must be tested in accordance with ASTM E90 and achieve the following acoustic performance ratings in accordance with ASTM E413, without site alteration:
 - .1 Steel faced panels minimum STC 45
 - .2 Gypsum board panels minimum STC 43
 - .3 Wood composite panels minimum STC 40
 - .2 Butt hinged doors will be specified where acoustic performance of the wall system is paramount. Sliding doors to be provided where specified.
- .2 **Surface Burning Performance:**
 - .1 All steel and wall covering faced panels must achieve a Maximum Flame Spread of 25 when determined on the basis of 3 test runs conducted in accordance with ULC-S102-07.
- .3 **Structural Performance:**
 - .1 Design and size the movable partition system and components to withstand dead and live loads as calculated in accordance with the International Building Code 2006 Edition.
 - .2 Design and size movable partition System and components to withstand seismic loads and sway displacement as calculated in accordance with International Building Code 2006 Edition.
 - .3 Load bearing capacity: tested to not less than the requirements for panel systems as defined by ANSI/BIFMA X5.6, latest edition. Specifically, a load of 136kgs (300lbs) on either side of each panel at both overhead and desktop elevations with a CG of no greater than 203mm (8") from the panel face.
 - .4 Panes or panel framing members to exhibit lateral deflection not greater than 1/120 of span when subjected to a uniformly distributed load of 240 Pa.
 - .5 At a minimum, glass thickness shall be specified to conform to the requirements of ASTM E1300
- .4 **Electrical and Communications:**
 - .1 Assembled panels with prewired components (boxes, cables, devices and faceplates) shall comply with CSA C22.1-06 & 09, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations.
 - .2 CSA C22.2 No.203.1-94, Canadian Electrical Code, Modular Wiring Systems for Office Furniture.
- .5 **Indoor Air Quality Performance:**
 - .1 Product to be certified by Greenguard Environmental Institute (GEI) indoor air quality standard for building materials, finishes and furnishings.

- .6 **Sustainable Performance:**
 - .1 Solid and combination panels shall be third-party certified in conformance to the requirements of The Business and Institutional Furniture Manufacturers Association (BIFMA) level™ sustainability standard.
- .7 **Combustibility Performance:**
 - .1 Product shall be available with finishes and construction acceptable for use in Non-Combustible buildings, in accordance with Chapters 6 and 8 of the International Building Code, 2006 Edition.

1.5 DESIGN REQUIREMENTS

- .1 The movable wall system (the system) shall be rectilinear in design and expression with crisp corners and well defined horizontal and vertical elements to harmonize and integrate with base building architectural detailing.
- .2 The system shall be 102mm (4") thick minimum, and be designed and sized in horizontal and vertical modules to accommodate the partition layout shown on floor plans and sections, and to approval of Client representative.
 - .1 Panel heights to be available in 1.6mm (1/16") increments from a minimum of 203mm (48") to a maximum of 3658mm (144"). Actual floor to ceiling heights to be determined as per site dimensions.
 - .2 Panel widths to be available in 1.6mm (1/16") increments from a minimum of 203mm (8") to a maximum of 1220mm (48") for solid, combination and clerestory panels, and 1524mm (60") for glass panels.
- .3 Gypsum board, glass and steel panels to be constructed of materials acceptable for use in non-combustible construction. Painted metal and wallcovering finishes shall exhibit Class 1 or Class A Surface Burning Performance.
- .4 The system shall be non-progressive, allowing for removal and re-installation of panels, including door frames, at any position, without disturbing adjacent panels.
- .5 Solid panels shall be available with either monolithic or horizontally segmented panel faces on each side. Panel faces shall be removable and reusable, attached to the panel frame without the use of screws or other mechanical fasteners.
- .6 The panel/floor interface shall have a reveal, recessed 4mm (3/4") from the face of the panel on both sides and adjustable in height from 32mm (1-1/4") to 64mm (2-1/2"). Surface mounted base trim not permitted.
- .7 The panel/ceiling interface shall have a reveal, recessed 4mm (3/4") from the face of the panel on both sides and adjustable in height from 16mm (5/8") to 35mm (1-3/8"). Surface mounted top trim not permitted.
- .8 The system shall provide a vertical adjustment of not less than 51mm (2") in overall height to accommodate floor and ceiling irregularities.
- .9 The system must be erected and removed in a manner to prevent damage to adjacent building surfaces and elements, including floors, walls, ceilings, columns and window mullions. All wall system connectors to fixed-in-place building components shall be non-marking, removable and reusable.
- .10 The system shall be capable of extending in multiple directions using 2-way, 3-way, 4-way and variable angle corner posts.
- .11 System shall include [single][double], [sliding][butt hinged], doors utilizing adjustable metal frames. All door panels to utilize standard panel connection methods and be reversible in field without additional modifications or materials.
- .12 Cut-able panels shall be available to address irregularities in the interface between the panel system and fixed-in-place construction (i.e. sills, columns, bulkheads).
- .13 Wall system to offer an integrated, factory installed, modular power option Power distribution to be consistent and compatible with power system used in furniture system and below raised access floor.

- .14 Components to be distortion free, uniform in dimension, construction and appearance.

1.6 SUBMITTALS

- .1 The basis for all bids in this section shall be **Enclose Walls** as manufactured by **Haworth Inc.** of Holland, MI.. Other wall systems that meet this specification may be bid with a complete submission of all applicable product details and certified independently accredited laboratory tests. Reports must be submitted and approved at least 21 working days prior to bid. This submission is to clearly outline areas of compliance and areas of failure to comply with function and performance specified. Indication of approval will be by addendum issued by the architect.
- .2 Product Data: Manufacturer's data sheets on each type of product indicated.
- .3 Shop Drawings: Plans, sections, elevations, details and attachments to other work.
 - .1 Indicate materials, methods of construction, attachment or anchorage details, erection diagrams of pre-assembled components, connections, explanatory notes and other information necessary for completion of work. Cross reference to design drawings and specifications.
 - .2 Indicate partition layout, including doors and hardware, elevations, opening locations, special panels and conditions at adjacent construction.
 - .3 Do not commence manufacture or order materials before shop drawings are reviewed and accepted by professional of record.
- .4 Revisions to shop drawings must be provided digitally within 24 hours of request.
- .5 Copies of WHMIS MSDS - Material Safety Data Sheets for Hazardous Materials.
- .6 Finish Samples
 - .1 For initial Selection: For units with factory-applied color finishes.
 - .2 For verification; For each type of exposed finish and trim required.
- .7 Product test reports from approved independent testing laboratory, certifying compliance with STC Rating, Surface Burning Rating, Structural Performance and Indoor Air Quality Performance requirements.
- .8 Lead Time: Provide the lead time duration from the date of shop drawing approval to the date of product shipment.

1.7 QUALITY ASSURANCE

- .1 Manufacturer Qualifications:
 - .1 All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years experience.
 - .2 The manufacturer of the wall system shall operate under an ISO 9001 certified quality management system.
- .2 Installer Qualifications: Minimum of two years documented experience in the installation of products in this section and must be approved by the manufacturer.

1.8 PROJECT CONDITIONS

- .1 Environmental Limitations: Do not deliver or install movable wall system components until building is enclosed and finishing operations, including ceiling and floor covering installation and painting, are completed.
- .2 Field measurements: Indicate all site dimensions including ceiling heights and "hold-to" dimensions on shop drawings.
- .3 Coordination of work: Coordinate layout and installation of demountable movable wall components with other units of work. Installation of ceilings, floor coverings, lighting fixtures, HVAC, equipment and fire suppression systems should be installed before movable wall systems are installed.

1.9 WARRANTY/PRICING

- .1 Submit, for Owner's acceptance, manufacturer's standard limited warranty document executed by authorized company official.
 - .1 Warranty period: Ten (10) years from date of substantial completion.
- .2 All transportation/shipping costs shall be included in the product price.

PART 2 PRODUCTS**2.1 MANUFACTURER**

- .1 **Haworth Inc. ,**
One Haworth Center, Holland, Michigan, 49423-9576
- .2 Product: Enclose Walls
- .3 Substitutions: Substitutions not permitted.

2.2 MATERIALS

- .1 Aluminum extrusions: to ASTM B221.
- .2 Insulation: Factory installed in all solid panels, urea-formaldehyde free batt insulation.
- .3 Cladding/Panel Faces:
 - .1 Steel panels: (For peak acoustical performance, magnetic tackboard capability, Class 1 or Class A Surface Burning performance, SCS Indoor Air Advantage Gold performance and highest sustainability). Minimum 18 gauge steel, epoxy powder coated.
 - .2 Wood Composite Panels: (For a refined millwork aesthetic and SCS Indoor Air Advantage Gold performance). Factory finished wood composite available with low pressure laminate, high pressure laminate or wood veneer to manufacturer's standard.
 - .3 Wall covering-faced gypsum board: (For a refined wall covering aesthetic with Class 1 or Class A Surface Burning performance and SCS Indoor Air Advantage Gold performance) To ASTM C960/C960M, 13mm (½") thick gypsum board with edges enclosed in an aluminum frame, surfaced with a minimum 0.15mm thick wall covering.
 - .4 Glass Marker Board: to ASTM C1036, 9.5mm (3/8") thick available as standard or low iron Glass, and either back painted white or steel backed/magnetic.
 - .5 Panels faces containing MDF must utilize fire rated material with no added urea formaldehyde and shall be certified to SCS Air Advantage Gold.
- .4 Doors and Hardware:
 - .1 Doors in accordance with Section 08 14 16- Flush Wood Doors
 - .2 Hardware in accordance with Section 08 71 00- Door Hardware
 - .3 All woodwork to adhere to AWI, Architectural Woodwork Standards, Custom Grade.
- .5 Glass and glazing materials:
 - .1 Glass and glazing: in accordance with Section 08 80 50- Glazing
 - .2 Glazing sections: resilient ABS, extruded glazing section to suit glazing channel retaining slot, to Moveable Partition System manufacturer's standard, gaskets for setting glass.

2.3 UNITIZED PANEL TYPES

- .1 Solid Panels:
 - .1 Cladding: Solid panels must be available with the following cladding alternatives:
 - .1 Steel panel,

- .2 Wall Covering-faced Gypsum Board,
- .3 Wood composite panels with wood veneer or laminate.
- .4 Glass Marker Board
- .5 Porcelain or powder coated steel Marker Board.
- .2 Solid panel faces to be secured to panel frame with continuous ABS retention strip
- .3 Extruded aluminum frame; minimum 1.3mm (0.05") thick, stile and frame with corner brackets, installed for full frame rigidity.
- .4 Acoustical insulation core: Urea-formaldehyde free batt insulation.
- .2 Glazed Panels:
 - .1 Extruded aluminum frame; minimum 1.3mm (0.05") thick, stile and frame with corner brackets, installed for full frame rigidity.
 - .1 Monolithic: [6.4mm(1/4")][8mm(5/16")][68mm(3/8")] thick glass panel, available as tempered or laminated, , ceiling height, fit to aluminum frame with neoprene glazing gaskets.
 - .2 Segmented: [6.4mm(1/4")][8mm(5/16")][68mm(3/8")] thick glass panels, available as tempered or laminated, in up to eight (8) horizontal segments as per approved elevations, fit to aluminum frame with ABS glazing gaskets and supported/separated horizontally by muntins.
 - .3 Vertical mullions and horizontal muntins not to exceed 22mm (7/8") wide to maximize glazing surface area.
- .3 Combination Panels:
 - .1 Full height, extruded aluminum frame, with horizontally segmented solid panel faces (finishes as per Section 2.3.1.1), and glazed panels, separated by horizontal, extruded aluminum cross member not to exceed 22mm (7/8") high.
- .4 Cut-able Panels:
 - .1 Solid panels as per section 2.3.1 with the inclusion of extended panel faces on one vertical edge providing cut-able surfaces to fit to irregularities in fixed-in-place construction (i.e. sills, columns, bulkheads) where required.
- .5 Door panels:
 - .1 Door frames: Extruded aluminum, ceiling height, to accommodate and support [44mm (1-3/4") thick, [solid core wood doors][aluminum door with 6mm (1/4") [tempered][laminated] glass panel][10mm (3/8") tempered glass slab door], with fixed stops.
 - .1 Prepare for hardware specified in Section 08 71 10 -Door Hardware.
 - .2 Pivot doors must include continuous vinyl seal or brush on door stop.
 - .2 Door frames must be available with integrated glazed transom, dimensions as per approved elevations.

2.4 FURNITURE INTEGRATION REQUIREMENTS

- .1 The Wall System must be a companion system to a compatible furniture product line from the same manufacturer. Companion products shall include systems furniture, wood office suites, storage components, tables and architectural case goods. The companion wall and furniture systems must incorporate identical/compatible surface finishes, trim details and design logic.
- .2 Solid panels must come standard with integral support for wall mounted furniture components at any elevation. Furniture mounting capabilities must include work surfaces, storage units, systems furniture panels, flat screen monitors and shelving. Support must be provided without compromising acoustic performance and without the addition of external or surface mounted support mechanisms.
- .3 Off-module mounting of furniture components and accessories (whiteboards, tack boards, storage components) must be available at any elevation through the use of a horizontal accessory rail. This rail must not impact the wall system STC performance when in use.

The horizontal, off-module mounting rail shall be removable and relocate able for application any solid wall location. To maintain aesthetics, it shall not be mounted at locations where its function is not required.

2.5 CONNECTION METHODS

- .1 Wall system to ceiling: Extruded aluminum track, attached to ceiling grid using non-marking clip, lined with closed cell neoprene seal. Ceiling track to support extruded ABS top reveal profile, friction fit to track providing a continuous top channel for panel system. ABS channel to fit securely against interior panel faces to ensure integrity of acoustic and visual barrier.
- .2 Wall system to floor: Integrated extruded aluminum channel/base assembly , designed to grip and hold to carpet flooring without damage to floor surface. Threaded adjustable leveling legs with leveler saddles set into floor channel. Sidewalls of channel to fit securely against interior panel face on both sides of panel without gaps.
- .3 Panel to fixed-in-place construction: Extruded aluminum wall start channel, affixed to permanent building components without the use of permanent fasteners, lined with closed cell neoprene seals.
- .4 Panel to panel, door frame or post connector: Continuous, extruded ABS connector applied to aluminum frame providing a 8mm (5/16") reveal, recessed 5mm (3/16") from panel face and ensuring integrity of sound and light seal.
- .5 Panel face to frame: Continuous, extruded ABS retention clip affixed to back of panel face secured to aluminum frame.
- .6 Wall system to furniture; Solid panels must be capable of supporting furniture components at any elevation, by means of slotted channels incorporated in the upright sections of the extruded aluminum panel frame.
- .7 Cut-able panel to fixed-in-place construction: Panels cut on site, fitted with extruded aluminum end cap and closed cell neoprene seal providing a continuous, clean interface with the panel and fixed-in-place elements.
- .8 For all exposed ends and corners, provide one piece aluminum extrusion to match panel finish, attached to end panel with standard panel-to-panel connector.

2.6 FINISHES

- .1 Aluminum surfaces: Finish exposed surfaces of aluminum components to AA DAF45. Textured or metallic powdercoat finish. Non-repairable, anodized aluminum finishes are unacceptable.
- .2 Wood Surfaces:[wood veneer][laminated] to manufacturers standard and AWS Custom Grade.
- .3 Steel Surfaces: Epoxy powder coated. Color as selected from manufacturer's samples.
- .4 Gypsum Board Wall Covering; Minimum .15 mm thick Vinyl, Fabric or Environmental wall covering. Color and pattern as selected from manufacturer's samples .
- .5 ABS extrusions: Selected from manufacturer's samples.

2.7 POWER AND COMMUNICATIONS

- .1 In solid panels, manufacturer shall offer a factory installed [8-wire, 3-Circuit][8-wire, 4-circuit] modular power system including conduit, power feeds, power distribution assembly and panel mounted boxes with [15 amp][20 amp] triplex receptacles. Location of devices as per floor plans and elevations.
- .2 Power shall be supplied to the panel power distribution assembly via [ceiling/panel top][floor/panel base][horizontal/panel base], [internal hardwire pigtail][internal powerbase quick-connect].

- .3 Horizontal, solid panel-to-solid panel power distribution shall be provided by the use of internal jumpers in the panel base cavity.
- .4 Device boxes containing receptacles shall also be available to provide voice/data housing with faceplate knock-out. Installation of voice/data cabling and devices by others.
- .5 Power/communications devices shall be available on either panel face at heights of 1308mm (51 ½"), 902mm (35 ½"), 495mm (19 ½") and 159mm (6 ¼") from center of receptacle to the bottom edge of the panel.
- .6 Factory installed light switches shall be available on either panel face at 1057mm (41-5/8") from center of device to bottom edge of the panel.
- .7 Cabling, devices, face plates for thermostats and other devices installed by others.

PART 3 EXECUTION

3.1 ERECTION

- .1 Installation of partitions shall be under manufacturers approved, direct supervision to insure wall performance and compatibility with design and specification intent.
- .2 Erect partitions rigid, level, plumb and aligned. Install continuous light and sound seals at connection to floors, ceilings, fixed walls and abutting surfaces.

END OF SECTION