

**Part 1 General****1.1 RELATED REQUIREMENTS**

- .1 Section 06 40 00 ARCHITECTURAL WOODWORK
- .2 Section 09 21 99 PARTITIONS FOR MINOR WORKS

**1.2 REFERENCES**

- .1 ASTM International
  - .1 ASTM A123/A123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - .2 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 CSA International
  - .1 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
  - .2 CSA O121-08, Douglas Fir Plywood.
  - .3 CSA O141-05(R2009), Softwood Lumber.
  - .4 CSA O151-09, Canadian Softwood Plywood.
  - .5 CSA O153-M1980 (R2003), Poplar Plywood.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Safety Data Sheets (SDS).
- .4 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2014.
- .5 South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)
  - .1 SCAQMD Rule 1113-A2016, Architectural Coatings.
  - .2 SCAQMD Rule 1168-A2017, Adhesives and Sealants Applications.
- .6 PSPC Technical References for Office Building Design, 2017

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

**1.4 QUALITY ASSURANCE**

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

- .2 Plywood identification: by grade mark in accordance with applicable CSA standards.
- .3 Plywood, and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

## **Part 2 Products**

### **2.1 LUMBER MATERIAL**

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
  - .1 CSA O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
  - .1 Board sizes: "standard" or better grade.
  - .2 Dimension sizes: "standard" light framing or better grade.
  - .3 Post and timbers sizes: "standard" or better grade.

### **2.2 PANEL MATERIALS**

- .1 Douglas fir plywood (DFP), grade A/C 19mm: to CSA O121, standard construction,
  - .1 Urea-formaldehyde free.
- .2 Poplar Plywood, (PP) grade A/C 19mm: to CSA O153, standard construction,
  - .1 Urea-formaldehyde free.

### **2.3 ACCESSORIES**

- .1 Nails, spikes and staples: to CSA B111.
- .2 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
- .3 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

### **2.4 FINISHES**

- .1 Galvanizing: to ASTM A123/A123M, use galvanized fasteners for fire-retardant panels.

**Part 3 Execution****3.1 INSTALLATION**

- .1 Comply with requirements of NBC supplemented by the following paragraphs.
- .2 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, and other work as required.
- .3 Align and plumb faces of furring and blocking to tolerance of 1:600.
- .4 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .5 Use FRTW for all blocking located in ceiling plenums and areas where blocking is to be left exposed.
- .6 Install full blocking for all items to be attached or bolted to drywall partitions by others.
- .7 Use dust collectors and high-quality respirator masks when cutting or sanding wood panels.

**3.2 ERECTION**

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Countersink bolts where necessary to provide clearance for other work.

**3.3 SCHEDULES**

- .1 Electrical and IT equipment backboards:
  - .1 Room 910
  - .2 19mm DFP.
  - .3 2440 x 1220 panels to be mounted 150 AFF to 2590 AFF—coordinate with AV Supplier
  - .4 Panels to be painted with fire retardant finish.
- .2 Plywood backing for audio visual equipment- partition mounted:
  - .1 Refer to page ID-04, Note #1 for locations.
  - .2 19mm DFP or PP 19mm, full backing with 25% area greater than size of equipment, co-ordinate all locations with AV supplier.
- .3 Plywood backing for all wall mounted millwork, signage.
  - .1 19mm DFP or PP 19mm,
- .4 Vertical plywood backing for demountable partitions.

- .1 19mm DFP or PP19mm, full height backing for all wall starters adjacent to new drywall partitions.
- .5 Horizontal backing for demountable partitions.
  - .1 19mm DFP-FRTW, 19mm backing full length of demountable partitions above all drywall ceilings.

**END OF SECTION**

**Part 1 General****1.1 RELATED REQUIREMENTS**

- .1 Section 06 10 00.01 ROUGH CARPENTRY- SHORT FORM.
- .2 Section 07 92 00 JOINT SEALANTS
- .3 Section 01 33 00 SUBMITTAL REQUIREMENTS
- .4 Section 01 35 29.06 HEALTH AND SAFETY REQUIREMENTS
- .5 Section 01 45 00 QUALITY CONTROL

**1.2 REFERENCES**

- .1 American National Standards Institute (ANSI)
  - .1 ANSI A208.1-09, Particleboard.
  - .2 ANSI A208.2-09, Medium Density Fiberboard (MDF) for Interior Applications.
  - .3 ANSI/HPVA HP-1-10, Standard for Hardwood and Decorative Plywood.
  - .4 ANSI/BHMA A156.9 2010, Cabinet Hardware.
  - .5 ANSI/BHMA A156.11 2014, Cabinet Locks.
  - .6 ANSI/BHMA A156.16 2013, Auxiliary Hardware.
  - .7 ANSI/BHMA A156.18 2012, Materials and Finishes.
- .2 ASTM International
  - .1 ASTM E1333-14, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.
  - .2 ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.
  - .3 ASTM D2832-92(R2016), Standard Guide for Determining Volatile and Non-volatile Content of Paint and Related Coatings.
- .3 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
  - .1 Architectural Woodwork Quality Standards Illustrated, 8th edition, Version 2.0 (2009).
    - .1 AWMAC AWS 2017 or most current at time of tender.
- .4 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.

- .2 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable
- .5 CSA International
  - .1 CSA B111-74(R2003), Wire Nails, Spikes and Staples.
  - .2 CSA O112.10-08, Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure).
  - .3 CSA O121-08, Douglas Fir Plywood.
  - .4 CSA O141-05(R2014), Softwood Lumber.
  - .5 CSA O151-14, Canadian Softwood Plywood.
  - .6 CSA O153-M1980(R2014), Poplar Plywood.
- .6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Safety Data Sheets (SDS).
- .7 National Electrical Manufacturers Association (NEMA)
  - .1 ANSI/NEMA LD-3-05, High-Pressure Decorative Laminates (HPDL).
- .8 National Hardwood Lumber Association (NHLA)
  - .1 Rules for the Measurement and Inspection of Hardwood and Cypress 2019.
- .9 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2017.
- .10 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
  - .1 SCAQMD Rule 1113-A2016, Architectural Coatings.
  - .2 SCAQMD Rule 1168-A2017, Adhesives and Sealants Applications.

### **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for architectural woodwork and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by general contractor.

- .2 Indicate details of construction, profiles, jointing, fastening and other related details.
  - .3 Scales: profiles full size, details 1:5, 1:10, 1:20.
  - .4 Indicate materials, thicknesses, finishes and hardware.
  - .5 Indicate locations of service outlets in casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.
  - .6 On casework and countertop elevations show location of backing required for attachment within partitions.
  - .7 Provide detailed sections of all standard millwork items where elevations are provided.
- .4 Mock ups:
- .1 Construct mock ups in accordance with Section 01 45 00 Quality Control.
  - .2 Shop prepare one base cabinet with drawers, wall cabinet, complete with hardware and shop applied finishes, and install on project in designated location.
  - .3 Allow three (3) working days for inspection and approval of mock-up by Departmental Representative. before proceeding with this work,
  - .4 When accepted, mock up will demonstrate minimum standard for this work, mock up may remain as part of finished work.
- .5 Samples
- .1 Submit duplicate samples of plywood: sample size 300 x 300 mm.
  - .2 Submit duplicate samples of laminated plastic for colour selection.
  - .3 Submit duplicate samples of laminated plastic joints, edging, cut-outs and post formed profiles.
  - .4 Submit three sample sets of Maple and Douglas Fir samples of each species and cut of wood to be used. Each sample set of three to represent range of color and grain expected.
- .6 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

#### **1.4 QUALITY ASSURANCE**

- .1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood, particleboard, and wood based composite panels to CSA and ANSI standards.

- .3 Woodwork Manufacturer:
  - .1 Member in Good Standing of AWMAC.
- .4 Perform work in accordance with Premium Grade quality.

## **1.5 PRE-INSTALLATION MEETING**

- .1 Before framing completed hold a meeting with the contractor, casework manufacturer, casework installer, and framing sub-contractor.
  - .1 Review locations of backing required for casework installation as shown on casework shop drawings.
  - .2 Review method of attachment for backing to wall system as shown on architectural drawings.

## **1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
  - .1 Protect millwork against dampness and damage during and after delivery.
  - .2 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.
  - .3 Maintain indoor temperature and humidity within range recommended by the AWS for location of project.
  - .4 Delivery of architectural millwork made only when area of operation enclosed, plaster and concrete work dry and area broom clean.
- .2 Storage and Handling Requirements:
  - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect architectural woodwork from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 COMPONENTS**

- .1 Softwood lumber: unless specified otherwise, S4S, moisture content 19 % or less in accordance with following standards:
  - .1 CSA O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
  - .3 AWMAC custom grade, moisture content as specified.

- .4 Exposed surfaces to be Douglas Fir.
- .5 Semi concealed surfaces to be Douglas Fir.
- .6 Concealed surfaces to be Hemlock
- .2 Machine stress-rated lumber is acceptable for all purposes.
- .3 Ensure manufacturing process adheres to Lifecycle Assessment (LCA) Standards to ISO 14040/14041 LCA Standards, CSA Z760-94 Life Cycle Assessment.
- .4 Hardwood, for interior use: moisture content 5-10%, (with optimum indoor relative humidity of 25 to 55%), and in accordance with following standards:
  - .1 AWMAC premium grade.
  - .2 Exposed surfaces to be Maple and BC Fir.
  - .3 Semi concealed surfaces to be maple
  - .4 Concealed surfaces to be popular
- .5 Hardwood plywood: to ANSI/HPVA HP-1
  - .1 Plywood resin to contain no added urea-formaldehyde.
  - .2 MDF cross bands on face and back, with light weight veneer core, available thickness 13mm
- .6 Interior mat-formed wood particleboard: to ANSI/NPA A208.1,
  - .1 Particleboard resin to contain no added urea-formaldehyde.
  - .2 Grade M-3i 768 kg/m<sup>3</sup>
  - .3 Panel thickness 19 mm and 29 mm
- .7 MDF (medium density fiberboard) core: to ANSI A208.2, Grade 155, 19 mm thick,
  - .1 Max moisture content 6%.
  - .2 Density 740-770 kg/m<sup>3</sup>
  - .3 MDF resin to contain no added urea-formaldehyde.
- .8 Plastic Laminate
  - .1 General Purpose Grade- through colour and laminated: HGS complying with NEMA LD3, 1mm to 1.2 mm thick
  - .2 Horizontal Forming Grade: HGP complying with NEMA LD3, max 1.0 mm thick, min radius 9.5mm
  - .3 Vertical Forming Grade: VGP complying with NEMA LD3, .5mm to .7 mm thick.
  - .4 Cabinet Liner Grade: CLS complying with NEMA LD3, min .5 mm thick.

- .5 Backing Sheet: BKL, min .5mm or same thickness as face laminate
- .6 Flame Retardant Grade: HGF complying with NEMA LD3, max 1.2mm
- .9 Thermofused Melamine: to NEMA LD3 Grade VGL, white
  - .1 High wear resistant thermofused melamine: equal or exceed 400 cycles (Minimum standard for HPL abrasion test).
- .10 Nails and staples: to CSA B111.
- .11 Wood screws: plain, type and size to suit application.
- .12 Splines: wood.
- .13 Sealant: in accordance with Section 07 92 00 - Joint Sealants
  - .1 Sealants: VOC limit 250 g/L maximum to SCAQMD Rule 1168.
- .14 Laminated plastic adhesive:
  - .1 Adhesive contact adhesive to CAN/CGSB-71.20.
  - .2 Adhesives: VOC limit 30 g/L maximum to SCAQMD Rule 1168.
- .15 Applied finishes
  - .1 Clear Wood Finishes: VOC limit 350 g/L maximum to SCAQMD Rule 1113
  - .2 Paints: VOC limit 50 g/L maximum to GS-11.
  - .3 Natural oil sealer for furniture.
- .16 Edgeband
  - .1 For plastic laminate casework: PVC-3mm, colour to match laminate.
- .17 Hardware
  - .1 Cabinet hardware to ANSI/BHMA A156.9-2003 Cabinet Hardware, premium grade
  - .2 Pulls: back mounted, ADA compliant, finish varies.
    - .1 H1- Pull, Refer to architectural drawings for specification.
    - .2 H2- Pull, Refer to architectural drawings for specification.
  - .3 Closet rod:
    - .1 33 mm diameter, 1.2 mm thick, with brackets for side support
    - .2 Finish 626 satin chrome
  - .4 Hinges: concealed 35 mm clip hinge with soft close, hinge to match function, to minimum standards:

- .1 200,000 opening and closing movements
  - .2 5 kg additional load test for limit values
  - .3 30 kgf static load test at 45 degrees opening
  - .4 20 kg dynamic load test
  - .5 Abuse test- horizontal load for unintended overload- 7 kgf
- .18 Drawer Guides and sides: side mounted, heavy duty with full extension, self closing, ball bearing operation, rail disconnect system, zinc and finish, to minimum standards:
- .1 100,00 opening and closing movements
  - .2 23 kg static load for pencil drawer
  - .3 34 kg static load for box drawer up to 152 mm
  - .4 45 kg- 60 kg static load for drawer above 152 mm
  - .5 15 kgf lateral load for drawers smaller than 152 mm in ht
  - .6 20 kgf lateral load for drawers or greater larger than 152 mm in ht
  - .7 Positive stop- drawer must stop within itself and not rely on the drawer front to stop
  - .8 Drawer sides to be RAL 9006 grey finish
- .19 Base cabinet levelers
- .1 150 kg static load, 2 min per base cabinet.
  - .2 Adjustable by hand, and through base cabinet.
  - .3 Plinth panel clips to attach and remove base.
- .20 Shelf supports, 5mm bored hole for 32mm system, stainless steel finish.
- .21 Locks: for lockers.
- .1 Electronic locking system, with engraved cabinet number.
  - .2 Rotary option for manual operation if door jambs.
  - .3 Key pad entry, with intelligent battery management.
  - .4 LED and acoustical indicator.
  - .5 Vertical or horizontal mounting options.
  - .6 3 years battery life base on 30 lock cycles per day.

## 2.2 MANUFACTURED UNITS

- .1 Laminate Casework:
- .1 Fabricate caseworks to AWMAC custom quality grade.
  - .2 Furring, blocking, nailing strips, grounds and rough bucks and sleepers.
    - .1 S2S is acceptable.

- .2 Board sizes: "standard" or better grade.
- .3 Dimension sizes: "standard" light framing or better grade.
- .4 Urea-formaldehyde free.
- .2 Framing birch or maple species, NLGA premium grade.
- .3 Case bodies (ends, divisions and bottoms).
  - .1 Plastic laminate covered particle board, 19 mm.
- .4 Backs:
  - .1 Plastic laminate covered particle board, 6 mm.
- .5 Shelving:
  - .1 Plastic laminate covered particle board.
  - .2 Max length for 19 mm thick, HPDL both sides 1041 mm.
  - .3 Edge banding
- .6 Drawers:
  - .1 Fabricate drawers to AWMAC custom grade supplemented as follows:
  - .2 Backs, plastic laminate covered particle board 16 mm thick.
  - .3 Bottoms, plastic laminate covered particleboard 16 mm thick
  - .4 Metal sidebox, heights to suite drawer dimensions, provide brackets for securing drawer front, back and bottom.
- .7 Casework Doors:
  - .1 Fabricate doors to AWMAC premium grade.
  - .2 Plastic laminate covered particleboard, 19mm thick.
- .8 Laminated plastic countertops
  - .1 Fabricate countertops to AWMAC premium grade supplemented as follows:
  - .2 Particleboard core 19 mm thick.
  - .3 Post formed Half eased edge with coved splash, 38 mm thick.
  - .4 Square edge, back splash.

## 2.3 FABRICATION

- .1 Set nails and countersink screws apply stained wood filler to indentations, sand smooth and leave ready to receive finish.
- .2 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.
- .3 Shelving to cabinetwork to be adjustable unless otherwise noted.

- .4 Provide cut-outs for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.
- .5 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.
- .6 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.
- .7 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- .8 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 3000 mm. Keep joints 600 mm from sink cut-outs.
- .9 Form shaped profiles and bends as indicated, using post forming grade laminate to laminate manufacturer's instructions.
- .10 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not miter laminate edges.
- .11 Apply laminate backing sheet to reverse side of core of plastic laminate work.
- .12 Apply laminated plastic liner sheet to interior of cabinetry.

## **2.4 FACTORY FINISHING**

- .1 Factory finishing materials.
  - .1 Use only products included in Manufacturers' Product List of the Master Painter Institute Architectural Specification Manual, latest edition.
  - .2 Backprimers: white Latex primer or gloss varnish thinned 25%, compatible with exposed finish, as applicable.
  - .3 Do not use combination filler/stain.
  - .4 Comply with SCAQMD Rule 1113- Architectural Coatings.
- .2 Factory finishing standards.
  - .1 Comply with applicable requirements and recommendations for factory finishing in AWMAC Manual.
  - .2 Items with natural wood finish to receive 3 coats of oil sealer, surface to be sanded with min 240 grit, and to be sanded between first and second coats.

- .3 Applied and cured coatings shall be uniform in thickness, sheen, colour and texture, and free of defects detrimental to appearance or performance.
- .4 Backprime the following surfaces that will be concealed after installation:
  - .1 Unfinished surfaces in contact with concrete, masonry, floors or floor finishes.
  - .2 Underside of front edges of countertops and toe spaces.
  - .3 Other surfaces that may be subjected to moisture during normal use or cleaning operations.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for architectural woodwork installation in accordance with manufacturer's instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
  - .4 Verify humidity and temperature conditions are stable and as recommended in AWMAC Manual.
  - .5 Do not deliver to site until job site conditions comply with the requirements outlined in the AWMAC Manual.
  - .6 Confirm site dimensions prior to fabrication.
  - .7 Wall, ceiling surfaces to have variations no more than 6 mm, or floors in excess of 10 mm over 3658 mm of being plumb, level, flat, straight, square or of the correct size are not acceptable for millwork installation, it is the responsibility of the general contractor to insure all tolerances are stated.

#### **3.2 INSTALLATION**

- .1 Do architectural woodwork to Quality Standards of AWMAC.
- .2 Install prefinished millwork at locations shown on drawings.
  - .1 Position accurately, level, plumb straight.

- .3 Fasten and anchor millwork securely.
  - .1 Supply and install heavy duty fixture attachments for wall mounted cabinets.
- .4 Use draw bolts in countertop joints.
- .5 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.
- .6 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant in accordance with Section 07 92 00 - Joint Sealants.
- .7 Fit hardware accurately and securely in accordance with manufacturer's written instructions.
  - .1 Adhere laminated plastic over entire surface.

### **3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
  - .1 Clean millwork.
  - .2 Remove excess glue from surfaces.

### **3.4 FINISHES SCHEDULES**

- .1 FINISHES
  - .1 PL-1: Natural wood grain, mid-tone colour (walnut look)
  - .2 PL-2: Anti-fingerprint finish, black colour
  - .3 PL-3: concrete look, grey colour

**END OF SECTION**