

**Part 1            General**

**1.1                REFERENCE STANDARDS**

- .1    CSA Group (CSA)
  - .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    CAN/CSA-O325.0-07, Construction Sheathing.
  - .6    CAN/CSA-Z809-08, Sustainable Forest Management.
- .2    National Research Council Canada (NRC)
  - .1    National Building Code of Canada 2015 (NBC).
- .3    Forest Stewardship Council (FSC)
  - .1    FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
- .4    National Lumber Grades Authority (NLGA)
  - .1    Standard Grading Rules for Canadian Lumber 2010.
- .5    Sustainable Forestry Initiative (SFI)
  - .1    SFI-2010-2014 Standard.

**1.2                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 rough carpentry work and include product characteristics, performance criteria, physical size, finish and limitations.

**1.3                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, OSB and wood based composite panel construction sheathing identification: by grade mark in accordance with applicable CSA standards.
- .4    Sustainable Standards Certification:
  - .1    Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809 or FSC or SFI.

#### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00- Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect wood from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse by manufacturer and return of pallets, crates, padding, packaging materials and banding in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

### **Part 2 Products**

#### **2.1 MATERIALS**

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
  - .1 CAN/CSA-O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
  - .3 CAN/CSA-Z809 or FSC or SFI certified.
- .2 Furring, blocking, nailing strips, grounds, rough bucks, curbs, fascia backing and sleepers:
  - .1 S2S is acceptable for
  - .2 Board sizes: "Standard" or better grade.
  - .3 Dimension sizes: "Standard" light framing or better grade.
  - .4 Post and timbers sizes: "Standard" or better grade.
- .3 Panel Materials:
  - .1 Douglas fir plywood (DFP): to CSA O121, standard construction.
  - .2 Canadian softwood plywood (CSP): to CSA O151, standard construction.
  - .3 Plywood, OSB and wood based composite panels: to CAN/CSA-O325.

#### **2.2 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.

## **2.3 FINISHES**

- .1 Galvanizing: to ASTM A123/A123M, use galvanized fasteners for exterior work, interior highly humid areas and pressure- preservative treated lumber.

## **2.4 WOOD PRESERVATIVE**

- .1 Surface-applied wood preservative: coloured, copper naphthenate or 5% pentachlorophenol solution, water repellent preservative.
- .2 Pentachlorophenol use is restricted to building components that are in ground contact and subject to decay or insect attack only. Where used, pentachlorophenol-treated wood must be covered with two coats of an appropriate sealer.
- .3 Structures built with wood treated with pentachlorophenol and inorganic arsenicals must not be used for storing food nor should the wood come in contact with drinking water.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for rough carpentry installation in accordance with manufacturer's written 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.

### **3.2 PREPARATION**

- .1 Treat surfaces of material with wood preservative, before installation.
- .2 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and 1 minute soak on plywood.
- .3 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.
- .4 Treat material as follows:
  - .1 Wood sleepers supporting wood subflooring over concrete slabs in contact with ground or fill.

### **3.3 INSTALLATION**

- .1 Comply with requirements of National Building Code of Canada (NBC), supplemented by the following paragraphs.
- .2 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding 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 Install sleepers as indicated.
- .6 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .7 Countersink bolts where necessary to provide clearance for other work.

### **3.4 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11- 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 11- Cleaning.
- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**END OF SECTION**

**Part 1            General**

**1.1                REFERENCE STANDARDS**

- .1 American National Standards Institute (ANSI)
  - .1 ANSI/BHMA A156.9-2010, Cabinet Hardware.
  - .2 ANSI A208.1-09 , Particleboard.
  - .3 ANSI A208.2-09, Medium Density Fiberboard (MDF) for Interior Applications.
  - .4 ANSI/HPVA HP-1-10, Standard for Hardwood and Decorative Plywood.
- .2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
  - .1 Architectural Woodwork Standards (AWMAC AWS), 2014.
- .3 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 F1667-13 Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
- .4 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
- .5 CSA Group (CSA)
  - .1 CSA O121-08(R2013), Douglas Fir Plywood.
  - .2 CSA O151-14, Canadian Softwood Plywood.
  - .3 CSA O153-M1980 (R2014), Poplar Plywood.
  - .4 CAN/CSA-Z809-08(R2013), Sustainable Forest Management.
- .6 Forest Stewardship Council (FSC)
  - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
- .7 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .8 National Electrical Manufacturers Association (NEMA)
  - .1 ANSI/NEMA LD-3-05, High-Pressure Decorative Laminates (HPDL).
- .9 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
  - .1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .10 Sustainable Forestry Initiative (SFI)
  - .1 SFI-2015-2019 Standard and Rules.

## **1.2 PRE-INSTALLATION MEETING**

- .1 Prior to enclosing framing, convene a meeting of contractor, casework fabricator, casework installer, framing subcontractor and Consultant.
  - .1 Review locations of backing required for casework installation as shown on shop drawings and as necessary for installation.
  - .2 Review method of attachment for backing to wall system.
  - .3 Review coordination with other affected sections.

## **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product Data:
  - .1 Prepare and submit material list in accordance with AWMAC AWS, cross-referenced to specifications.
  - .2 Include manufacturer's instructions, printed product literature, data sheets and catalogue pages for all materials and products to be incorporated into architectural wood casework and include product characteristics, performance criteria, dimensions and profiles, finish and limitations on use.
  - .3 Submit copies of WHMIS MSDS in accordance with Section 01 35 29.06- Health and Safety Requirements.
- .3 Hardware List:
  - .1 Submit hardware list cross-referenced to specifications.
  - .2 Include manufacturer's specification sheets indicating name, model, material, function, finish, BHMA designations and other pertinent information.
- .4 Shop Drawings:
  - .1 Prepare and submit shop drawings in accordance with AWMAC AWS and as follows.
  - .2 Submit sets of shop drawings for initial review in accordance with requirements of Division 01. Revise as directed, submit copies for final acceptance and distribution.
  - .3 Indicate details of construction, profiles, jointing, fastening and other related details.
    - .1 Scales: profiles full size, details half full size.
  - .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 Show location on casework elevations of backing required in supporting structure for attachment of casework.
  - .7 Indicate AWMAC AWS quality grade where different from predominant grade specified.

- .8 Include color schedule of all casework items, including all countertop, exposed, and semi-exposed cabinet finishes, finish material manufacturer, pattern, and color.

.5 Samples:

- .1 Prepare and submit samples in accordance with AWMAC AWS and as follows.
- .2 Submit duplicate samples of laminated plastic for each specified colour selection.
- .3 Submit duplicate samples of laminated plastic joints, edging, cutouts and post-formed profiles.
- .4 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Submit statement of experience and qualifications of architectural wood casework fabricator.

**1.4 SUSTAINABLE DESIGN SUBMITTALS**

- .1 Submit manufacturer's Chain-of-Custody Certificate number for CAN/CSA-Z809 or FSC or SFI certified wood.
  - .1 Submit manufacturer's FSC Chain-of-Custody Certificate number.
- .2 Submit ASTM E1333 test report for formaldehyde emissions from composite wood products showing compliance with specified limits.
- .3 Submit product data indicating compliance with other specified sustainable design characteristics.

**1.5 QUALITY ASSURANCE**

- .1 Perform Work of this Section by single architectural wood casework fabricator with minimum 5 years of current architectural casework production experience and having completed minimum one project in the past 5 years with value within 20% of the cost of the work of this Section.
- .2 Independent inspection/testing agency will be engaged by Contractor for purpose of inspecting and/or testing Work of this Section.
  - .1 Cost of inspection and testing services will be borne by Contractor.

**1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00- Common Product Requirements and manufacturer's written instructions.
- .2 Deliver wood casework only when area of work is enclosed, plaster and concrete work is dry, and area is broom clean and site environmental conditions are acceptable for installation.
- .3 Protect millwork against dampness and damage during and after delivery.
- .4 Store millwork in ventilated areas, protected from extreme changes of temperature and humidity, and within range recommended by AWMAC AWS for location of project.
- .5 Store materials indoors in clean, dry, well-ventilated area.

- .6 Protect architectural woodwork and hardware from nicks, scratches, and blemishes.
- .7 Replace defective or damaged materials with new.
- .8 Waste Management: for packaging and materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **Part 2 Products**

### **2.1 SUSTAINABILITY CHARACTERISTICS**

- .1 Lumber, plywood and composite wood products to be CAN/CSA-Z809 or FSC or SFI certified.
- .2 Composite wood products: formaldehyde emissions within the following limits when tested in accordance with ASTM E1333:
  - .1 Hardwood plywood with veneer core (HWPW-VC): 0.05 ppm.
  - .2 Hardwood plywood with composite core (HWPW-CC): 0.05 ppm.
  - .3 Particleboard (PB): 0.09 ppm.
  - .4 Medium density fibreboard (MDF): 0.11 ppm.
  - .5 Thin (less than 8 mm) medium density fibreboard (tMDF): 0.13 ppm.
- .3 Recycled content:
  - .1 Fibreboard must contain less than 10 % round wood by weight, using weighted average over three month period at manufacturing locations.
- .4 Adhesives: VOC limit 250 g/L maximum to SCAQMD Rule 1168.

### **2.2 QUALITY GRADE**

- .1 Provide all materials and perform all fabrication in accordance with AWMAC AWS Custom Grade and as follows, except where specified otherwise:
  - .1 Premium Grade: service counters.
- .2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

### **2.3 LUMBER**

- .1 Softwood and Hardwood Lumber: Sound lumber to specified AWMAC AWS quality grade requirements, kiln-dried to moisture content recommended by AWMAC AWS for location of the Work.
- .2 Machine stress-rated lumber is acceptable for all purposes.

### **2.4 PANEL MATERIALS**

- .1 Interior mat-formed wood particleboard: to ANSI/NPA A208.1, industrial grade M-2 or M-3, medium density (640-800 kg/m<sup>3</sup>), thickness 19 mm unless indicated otherwise.
  - .1 Use moisture resistant grade 2-M-2 or 2-M-3 for countertops and splash-backs to receive plumbing fixtures.

- .2 MDF (medium density fibreboard) core: to ANSI A208.2, density 769 kg/m<sup>3</sup>, Grade and thickness indicated.
  - .1 Use moisture resistant MR grade for countertops and splash-backs to receive plumbing fixtures.
- .3 Douglas fir plywood (DFP): to CSA O121, standard construction.
- .4 Hardwood plywood: to ANSI/HPVA HP-1.
- .5 Canadian softwood plywood (CSP): to CSA O151, standard construction.
- .6 Poplar plywood (PP): to CSA O153, standard construction.

## **2.5 LAMINATED PLASTIC MATERIALS**

- .1 Laminated plastic for flatwork: to NEMA LD3.
  - .1 High pressure decorative laminated (HPDL) plastic.
    - .1 Type: GP (general purpose).
    - .2 Horizontal Surfaces: HGS to suit application, 1.2 mm thick.
    - .3 Vertical Surfaces: VGS to suit application, 0.71 mm thick.
    - .4 Colour: as indicated.
    - .5 Pattern: as indicated.
    - .6 Finish: as indicated.
  - .2 Laminated plastic for backing sheet:
    - .1 Type: backer.
    - .2 Grade: BKH.
    - .3 Thickness: same thickness as face laminate.
    - .4 Colour: same colour as face laminate.
  - .3 Thermofused Melamine: to NEMA LD3 Grade LPDL.
    - .1 High wear resistant thermofused melamine: equal or exceed 400 cycles (Minimum standard for HPL abrasion test).
  - .4 Edge finishing for doors, drawer fronts, shelves and false fronts:
    - .1 HPDL to match face.
    - .2 PVC: solid colour to match face.
  - .5 Laminated plastic adhesive:
    - .1 Adhesive: contact adhesive to CAN/CGSB-71.20.

## **2.6 DECORATIVE METAL LAMINATE**

- .1 Decorative Metal Laminate: stainless steel sheet with a phenolic back to prevent creasing and allow improved adhesion to substrates; engineered for vertical applications.
  - .1 Sheet Thickness: 0.8 mm
  - .2 Finish: brushed.

## **2.7 CASEWORK FABRICATION - GENERAL**

- .1 Fabricate casework of specified core and surface finish materials to specified AWMAC AWS quality grade.
  - .1 Construction type: frameless.
  - .2 Door-cabinet interface: flush overlay.
- .2 Set nails and countersink screws apply plain wood filler to indentations, sand smooth and leave ready to receive finish.
- .3 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.
- .4 Shelving to cabinetwork to be adjustable unless otherwise noted.
- .5 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.
- .6 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.
- .7 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

## **2.8 LAMINATED PLASTIC CASEWORK FABRICATION**

- .1 Do laminated plastic fabrication in compliance with NEMA LD3, Annex A and specified AWMAC AWS quality grade.
- .2 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- .3 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.
- .4 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 mitre laminate edges.
- .5 Apply laminate backing sheet to reverse side of core of plastic laminate work.
- .6 Drawer Construction:
  - .1 Sides:
    - .1 Custom grade: LPDL (melamine) or HPDL on MDF or particleboard, thickness 16 mm.
    - .2 Premium grade: 7-ply veneer core with HPDL faces.
  - .2 Bottoms: match side construction, thickness 6 mm.
  - .3 Joinery: Meeting requirements of AWMAC for Grade specified.
  - .4 Drawer bottoms fully housed into sides and sub front and mechanically fastened to back or plowed into back.

## **2.9 CABINET HARDWARE**

- .1 Cabinet hardware: to AWMAC AWS quality grade specified and to ANSI/BHMA A156.9, designated by letter B and numeral identifiers as listed below.

- .2 Finish:
  - .1 Exposed hardware: brushed stainless steel.
  - .2 Semi-exposed hardware: manufacturer's standard finish.
- .3 Casework door hinges: concealed European style Grade II hinges minimum 120° opening type.
- .4 Pulls: back mounted pull, type B02011, brushed nickel.
- .5 Catches: magnetic catch, type B03141.
- .6 Shelf rests and standards: shelf rest installed in holes drilled, type adjustable shelf standards, type B04013, with closed shelf rests.
- .7 Drawer slides:
  - .1 Slide type: side mounted drawer slides, type B05051.
  - .2 Extension and capacity: full extension meeting requirements of AWMAC AWS for type and size of drawer.
  - .3 File drawer slides: full extension.
- .8 Coat Hook (HK1 – interview rooms): refer to drawings for quantity, Hafele 842.34.000 or approved equal.
- .9 Cable Entries (Grommets): 80 mm diameter, plastic, grey with flexible brush seal.

## **2.10 ACCESSORIES**

- .1 Wood screws: type and size to suit application.
- .2 Nails and staples: to CSA B111 and ASTM F1667.
- .3 Splines: type and size to suit application.
- .4 Sealant: in accordance with Section 07 92 00- Joint Sealants.

## **2.11 LAMINATED PLASTIC COUNTERTOPS**

- .1 Laminated plastic for flatwork: to NEMA LD3.
  - .1 Type: general purpose.
  - .2 Grade: HGS.
  - .3 Size: 1.2 mm thick.
  - .4 Colour: as indicated.
  - .5 Pattern: as indicated.
  - .6 Finish: as indicated.
- .2 Core material: particleboard.
  - .1 Countertops to receive plumbing fixtures: water resistant particle board..
- .3 Back splashes: per drawings.
- .4 Front edges: As shown on plans.

## **2.12 POLYCARBONATE SHEET GLAZING**

- .1 High Impact Uncoated Polycarbonate Transparent Sheet Glazing:
  - .1 Thickness: 12 mm.
  - .2 Colour: clear.
  - .3 Size and openings: as indicated on drawings.
  - .4 Installation: with glazing tape.
- .2 Maple Plywood Wall Panel:
  - .1 Softwood and poplar plywood DFP or CSP or PP Grade A, square edge, 13 mm thick.
    - .1 Exposed surfaces to receive maple wood veneer.
  - .2 Finish to match existing.

## **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.

### **3.2 INSTALLATION**

- .1 Install architectural wood casework in accordance with AWMAC AWS grade for respective items.
- .2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.
- .3 Install prefinished millwork at locations shown on drawings.
  - .1 Position accurately, level, plumb straight.
- .4 Fasten and anchor millwork securely.
  - .1 Supply and install heavy duty fixture attachments for wall mounted cabinets.
- .5 Countersink mechanical fasteners at exposed and semi-exposed surfaces, excluding installation attachment screws and screws securing cabinets end to end.
- .6 Use draw bolts in countertop joints.
- .7 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.

- .8 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.
- .9 Apply moisture barrier between wood framing members and masonry or cementitious construction.
- .10 Fit hardware accurately and securely in accordance with manufacturer's written instructions.
- .11 Make cutouts for inset equipment and fixtures using templates provided.

### **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, pencil and ink marks from surfaces.
- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

### **3.4 PROTECTION**

- .1 Protect millwork from damage until final inspection.
- .2 Protect installed products and components from damage during construction.
- .3 Repair damage to adjacent materials caused by architectural woodwork installation.

**END OF SECTION**