

**1 GENERAL****1.01 REFERENCE STANDARDS**

- .1 American National Standards Institute (ANSI)
  - .1 ANSI/ASME 18.6.1 1981 (R2012) Wood Screws (Inch Series).
  - .2 ANSI/BHMA A156.9-2010, Cabinet Hardware.
  - .3 ANSI/BHMA A156.11-2014, Cabinet Locks.
  - .4 ANSI/BHMA A156.16-2013, Auxiliary Hardware.
  - .5 ANSI/BHMA A156.18-2012, Materials and Finishes.
  - .6 ANSI/BHMA A156.20-2006, Strap and Tee Hinges and Hasps.
  - .7 ANSI A208.1-09, Particleboard.
  - .8 ANSI A208.2-09, Medium Density Fiberboard (MDF) for Interior Applications.
  - .9 ANSI/HPVA HP-1-10, Standard for Hardwood and Decorative Plywood.
- .2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
  - .1 Architectural Woodwork Standards-31. (AWMAC AWS), 2017.
- .3 ASTM International
  - .1 ASTM A 153/A 153M-16, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - .2 ASTM E 1333-14, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.
  - .3 ASTM F 1667-13 Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
- .4 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-11.3-M87, Hardboard.
  - .2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
  - .3 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.
- .5 CSA International
  - .1 CSA O112-M Series 1977 (R2006) Standards for Wood Adhesives.
  - .2 CSA O121-08(R2013), Douglas Fir Plywood.
  - .3 CSA O141-05 (R2014), Softwood Lumber.
  - .4 CSA O151-14, Canadian Softwood Plywood.
  - .5 CSA O153-M1980 (R2014), Poplar Plywood.
  - .6 CAN/CSA-Z809-08(R2013), Sustainable Forest Management.
- .6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .7 National Electrical Manufacturers Association (NEMA)
  - .1 ANSI/NEMA LD-3-05, High-Pressure Decorative Laminates (HPDL).

**1.02 PRE-INSTALLATION MEETING**

- .1 Prior to enclosing framing, convene a meeting of contractor, casework fabricator, casework installer, framing subcontractor and Departmental Representative.
  - .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.

**1.03 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 two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements 01 35 43 - Environmental Procedures.
- .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 two sets of shop drawings for initial review in accordance with requirements of Division 01. Revise as directed, submit six 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 Apply sample finishes to specified substrate or core material minimum 300 x 300 mm to match designer sample. For veneers with transparent finish submit three samples to illustrate range and colour of grain expected.
  - .3 Shop applied coatings:
    - .1 For transparent finish, submit triplicate samples of each species and cut of wood to be used, finished to match project sample as specified.
    - .2 For opaque finish, submit triplicate samples for each colour selection, finished to match project sample as specified.
  - .4 Submit duplicate samples of laminated plastic for each specified colour selection.
  - .5 Submit duplicate samples of laminated plastic joints, edging, cutouts and post-formed profiles.
  - .6 Furnish four samples of each lumber and composite panel material to Contractor for preparation of field applied finish samples in accordance with Section 09 91 23 Interior Painting.
  - .7 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .8 Submit statement of experience and qualifications of architectural wood casework fabricator.

#### 1.04 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.

#### 1.05 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 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 dry location 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 19 - Waste Management and Disposal.

## **2 PRODUCTS**

### **2.01 QUALITY GRADE**

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

### **2.02 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.
- .3 Face framing, pulls, trims, molding, edge-banding in profiles indicated.

### **2.03 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, having no added urea formaldehyde.
  - .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 , 19 mm thick unless indicated otherwise; formaldehyde emissions shall be 0.30 ppm or less per 0.424m<sup>2</sup>/m<sup>3</sup> of room volume.
  - .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 CHPA grading rules ANSI/HPVA HP-1.
- .5 Canadian softwood plywood (CSP): to CSA O151, standard construction.
- .6 Poplar plywood (PP): to CSA O153, standard construction.
- .7 Hardboard: To CAN/CGSB-11.3.

**2.04 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 HGL to suit application, 1.0 1.2 mm thick.
    - .3 Vertical Surfaces: VDS VGL to suit application, 0.5 0.71 mm thick.
    - .4 Colour: integral colour throughout , multilayered.
    - .5 Pattern: solid woodgrain printed pattern metallic.
    - .6 Finish: gloss satin furniture matt textured embossed.
  - .2 Laminated plastic for postforming work: to NEMA LD3.
    - .1 Type: postforming.
    - .2 Grade: HGP VGP.
    - .3 Size: 0.7 1.0 mm thick.
    - .4 Colour: integral colour throughout , multilayered.
    - .5 Pattern: solid woodgrain printed pattern metallic.
    - .6 Finish: gloss satin furniture matt textured embossed.
  - .3 Laminated plastic for backing sheet:
    - .1 Type: backer.
    - .2 Grade: BKH BKM BKV BKL.
    - .3 Thickness: not less than 0.5 mm thick or same thickness as face laminate.
    - .4 Colour: same colour as face laminate.
  - .4 Laminated plastic liner sheet: CLS grade, mm thick, white almond colour.
  - .5 Thermofused Melamine: to NEMA LD3 Grade LPDL, .
    - .1 High wear resistant thermofused melamine: equal or exceed 400 cycles (Minimum standard for HPL abrasion test).
  - .6 Laminated plastic fire retardant: to NEMA LD3.
    - .1 Type: flame retardant.
    - .2 Grade: SGF HGF VGF.
    - .3 Size: 0.76 1.016 1.27 mm thick.
    - .4 Colour: integral colour throughout , multilayered.
    - .5 Pattern: solid woodgrain printed pattern metallic.
    - .6 Finish: gloss satin furniture matt textured embossed.
  - .7 Edge finishing for doors, drawer fronts, shelves and false fronts:
    - .1 HPDL to match face.
    - .2 PVC ABS: solid colour to match face , mm thick.
    - .3 Matching melamine and polyester overlay edge strip with thermoplastic adhesive.
    - .4 Edges dadoed or saw kerfed to take plastic "T" moulding in width and colour to match face.
  - .8 Laminated plastic adhesive:
    - .1 Adhesive: , urea resin adhesive to CSA O112 contact adhesive to CAN/CGSB-71.20 resorcinol resin adhesive to CSA O112.10 polyvinyl adhesive to CSA O112-M two component epoxy thermosetting adhesive.

**2.05 CASEWORK FABRICATION - GENERAL**

- .1 Fabricate casework of specified core and surface finish materials to specified AWMAC AWS quality grade.
  - .1 Construction type: frameless face frame.
  - .2 Door-cabinet interface: flush overlay reveal overlay with mm gap lipped flush flush inset.
- .2 Set nails and countersink screws apply stained 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.

**2.06 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 2400 3000 mm. Keep joints 600 mm from sink cutouts.
- .4 Form shaped profiles and bends as indicated, using post-forming grade laminate to laminate manufacturer's instructions.
- .5 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.
- .6 Apply laminate backing sheet to reverse side of core of plastic laminate work.
- .7 Apply laminated plastic liner sheet to interior of cabinetry where indicated.
- .8 Drawer Construction:
  - .1 Sides:
    - .1 Custom grade: LPDL (melamine) or HPDL on particleboard MDF, thickness 12 16 mm.

.2 Premium grade: 7-ply veneer core with HPDL faces.

- .2 Bottoms: Tempered hardboard MDF with melamine surfaces Hardwood plywood of same species as drawer sides, thickness 6 mm.
- .3 Joinery: Meeting requirements of AWMAC for Grade specified.
  - .1 Sides, front and back: Miter fold Doweled Dowel screwed Nailed lock joints Biscuit splined Multiple dovetailed.
- .4 Drawer bottoms held in place with drawer hardware to sides and mechanically fastened to back and sub front fully housed into sides and sub front and mechanically fastened to back or plowed into back

## 2.07 WOOD CASEWORK FABRICATION

- .1 Fabricate casework bodies of specified veneered plywood panel materials of specified veneers laid up as specified in accordance with AWMAC AWS requirements for grade specified and as follows.
  - .1 Exposed interior surfaces: Veneer of same species and cut and grade as exposed exterior surfaces.
  - .2 Semi-exposed surfaces: Veneer of same species as exposed exterior surfaces low pressure melamine overlay in solid woodgrain colour.
- .2 Fabricate door, drawer and panel surfaces of specified veneered plywood panel materials of specified veneers laid up as specified.
- .3 Drawer construction:
  - .1 Sides:
    - .1 AWMAC AWS Custom grade: solid wood of manufacturer's species option LPDL melamine surface.
    - .2 AWMAC AWS Premium grade: prefinished seven or nine ply hardwood veneer core with no internal voids prefinished solid hardwood, 12 16 thickness.
  - .2 Bottoms: Tempered hardboard MDF with melamine surfaces Hardwood plywood of same species as drawer sides, 6 mm thick.
  - .3 Joinery: Meeting requirements of AWMAC AWS for Grade specified.
    - .1 Sides, front and back: Miter fold Doweled Dowel screwed Nailed lock joints Biscuit splined Multiple dovetailed
    - .2 Drawer bottoms held in place with drawer hardware to sides and mechanically fastened to back and sub front fully housed into sides and sub front and mechanically fastened to back or plowed into back.

## 2.08 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: .
  - .2 Semi-exposed hardware: Manufacturer's standard finish .
- .3 Casework door hinges: five knuckle Grade 1 hinges concealed European style Grade II hinges minimum 120° 170° opening type ,



- .4 Other hinges: butt concealed continuous full surface olive knuckle pivot self-closing semi-concealed hinge, type , .
- .5 Pulls: back mounted surface mounted flush pull, type , design (describe), with back plate, type B02191, finished to .
- .6 Knobs: back mounted surface mounted knob, type , design (describe), with back plate, type B02181, finished to .
- .7 Latches: elbow thumb bar turn child resistant touch or secret panel latch, type , finished to .
- .8 Catches: friction roller spring magnetic touch or secret panel catch, type , finished to .
- .9 Shelf rests and standards: shelf rest installed in holes drilled, type B04013 adjustable shelf standards, type , with open closed shelf rests, type , finished to .
- .10 Shelf brackets and standards: ornamental shelf support, design (describe), type vertical slotted shelf standard, type , with shelf brackets, type , for mm wide shelves, finished to .
- .11 Drawer slides:
  - .1 Slide type: bottom edge mounted bottom center mounted center top mounted side mounted drawer slides, type .
  - .2 Extension and capacity: 6 extension full extension over extension meeting requirements of AWMAC AWS for type and size of drawer.
  - .3 File drawer slides: full extension.
- .12 Rotating shelves: full round notched rotating shelves, type , size, with 180-degree rotatable shelf mechanism, type .
- .13 Pull up shelf supports: adjustable tension, lock in up position self supports, type B06033.
- .14 Track and guides for sliding panels: surface or recessed mounted with anti-friction inserts, type .
- .15 Sliding glass door hardware: Top-hung Bottom rollers.

## 2.09 CABINET LOCKS

- .1 Provide locks as shown on elevations at all cabinet doors and drawers.
- .2 Cabinet locks: to ANSI/BHMA A156.11, designated by letter E and numeral identifiers as listed below.
  - .1 Door or drawer locks: surface mounted half mortised into back of door or drawer, type , grade .
  - .2 Sliding door locks: type , grade .
  - .3 Glass door locks: type , grade .
  - .4 Elbow catches: at all double doors with locks.

- .3 Keying: All locks keyed alike Each room keyed alike Keyed as scheduled.
  - .1 Provide keys per lock.
  - .2 Provide master keys.
  - .3 Stamp keying code numbers on keys and cylinders.

## 2.10 ACCESSORIES

- .1 Wood screws: copper brass stainless steel steel plain, type and size to suit application.
- .2 Nails and staples: to CSA B111 and ASTM F 1667.
- .3 Splines: wood plastic metal.
- .4 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

## 2.11 LAMINATED PLASTIC COUNTERTOPS

- .1 Laminated plastic for flatwork: to NEMA LD3.
  - .2 Type: general purpose.
  - .3 Grade: HGS HGL.
  - .4 Size: 1.0 1.2 mm thick.
  - .5 Colour: integral colour throughout, multilayered.
  - .6 Pattern: solid woodgrain printed pattern metallic.
  - .7 Finish: gloss satin furniture matt textured embossed.
- .2 Laminated plastic for post-forming work: to NEMA LD3.
  - .1 Type: post-forming.
  - .2 Grade: HGS HGL.
  - .3 Size: 0.76 1.016 mm thick.
  - .4 Colour: integral colour throughout, multilayered.
  - .5 Pattern: solid woodgrain printed pattern metallic.
  - .6 Finish: gloss satin furniture matt textured embossed.
- .3 Core material: particleboard MDF exterior grade hardwood plywood with a non-telegraphing grain.
  - .1 Countertops to receive plumbing fixtures: Water resistant particle board Water resistant MDF Veneer core plywood with type II adhesive.
- .4 Back splashes: butt joint cove per drawings, mm high.
- .5 Front edges: self-edge no drip bullnose edge waterfall edge no drip tilt edge 3 mm PVC edge wood edge As shown on plans.

## 3 EXECUTION

### 3.01 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.

**3.02 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.

**3.03 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.
  - .1 Clean millwork and cabinet work inside cupboards and drawers and outside surfaces.
  - .2 Remove excess glue, pencil and ink marks from surfaces.

- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

**3.04 PROTECTION**

- .1 Protect millwork and cabinet work 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**