

1 General

1.1 **SECTION INCLUDES**

- .1 Labour, Products equipment and services necessary for the finish carpentry work in accordance with the Contract Documents.

1.2 **REFERENCES**

- .1 ANSI A208.1, Particleboard.
- .2 ANSI/HPVA HP-1, Hardwood and Decorative Plywood.
- .3 ANSI A208.2, Medium Density Fibreboard for Interior Use.
- .4 ANSI/NEMA LD 3, High-Pressure Decorative Laminates.
- .5 APA - The Engineered Wood Association.
- .6 ASTM F1667, Driven Fasteners: Nails, Spikes and Staples.
- .7 Architectural Woodwork Manufacturers Association of Canada (AWMAC).
- .8 Architectural Woodwork Standards (AWS) - Quality Standards for Architectural Woodwork.
- .9 CAN/CSA O141, Softwood Lumber.
- .10 CSA O151-M, Canadian Softwood Plywood.
- .11 National Hardwood Lumber Association (NHLA) Rules for the Measurement and Inspection of Hardwood and Cypress.
- .12 National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber.

1.3 **SUBMITTALS**

- .1 Shop drawings: Submit shop drawings of finish carpentry work in accordance with Section 01 33 00 indicating:
 - .1 Materials, thicknesses, sizes, finishes, wood species, grades, profiles, connection attachments, shop jointing, field jointing, reinforcing, anchorage, fastener types and sizes, location of exposed fastenings, mechanical and electrical service routes, service outlets, cutout locations, and sizes.
 - .2 Include erection drawings, plans, elevations, sections, and details as applicable.

- .2 Samples: Submit samples of the following in accordance with the requirements of Section 01 33 00:
 - .1 Two representative pieces of each type of wood to receive a stained or natural finish.
 - .2 Two representative pieces of each type of wood finished as specified.
 - .3 Two of each colour, pattern, gloss, and texture of compact and plastic laminate, in manufacturer's standard tag size.
 - .4 Two samples of laminated plastic joints, edging, cutouts and postformed profiles.
 - .5 Two of each solid surface, in 100 x 75 x 19 mm samples and with edge profiles.
 - .6 Two samples of melamine surfaced board, edging and postformed profiles.
 - .7 One of each item of finish carpentry hardware.
- .3 Extended warranty: Submit extended warranty signed and registered by the manufacturer providing the warranty in the name of the Owner for the timeframe and coverage specified in this Section.

1.4 **QUALITY ASSURANCE**

- .1 Execute work of this Section by member of AWMAC, with 5 years experience in finish carpentry work of comparable complexity and scope. Submit proof of experience upon Consultant's request.
- .2 Fabricate finish carpentry work in accordance with AWS Quality Standards, Premium Quality materials and installation unless otherwise indicated. Perform work in accordance with the definition of Good Workmanship as defined in the AWS Quality Standards.
- .3 Remove and replace finish carpentry work which does not conform to the AWS Quality standards or as amended by these Specifications.
- .4 Mock-up:
 - .1 Shop fabricate one mock-up of a base cabinet, wall cabinet, and counter top and other items as requested for each type of surfacing specified, complete with hardware and shop applied finishes, installed in location acceptable to Consultant.
 - .2 Arrange for Consultant's review and acceptance, allow 48 hours after acceptance before proceeding with work.
 - .3 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of Work if accepted by Consultant. Remove and dispose of mock-ups which do not form part of Work.

1.5 **DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, store, and handle finish carpentry in accordance with the AWS Quality Standards. Control the temperature and humidity in accordance with the AWS recommendations, before, during, and after finish carpentry delivery, and also during storage and installation.

- .2 Cover finished work with heavy kraft paper or put in cartons during shipment. Protect installed surfaces by approved means. Do not remove until immediately before final inspection.

1.6 **EXTENDED WARRANTY**

- .1 Submit an extended warranty for compact and plastic laminate work of this Section in accordance with General Conditions, except that warranty period is extended to 2 years from date of Substantial Performance of the Work.
 - .1 Warrant against defects in material and workmanship including but not limited to opening of joints, cracking, shrinkage, warpage, and delamination of compact laminate.
 - .2 Coverage: Complete replacement including affected adjacent Work.

2 Products

2.1 **MATERIALS**

- .1 General:
 - .1 Materials used for work of this Section are to include, but not be limited to the following criteria:
 - .1 Regionally sourced materials.
 - .2 Certified wood.
 - .3 Low VOC content limits.
 - .2 Adhesives - Urea-formaldehyde-free glues.
 - .3 All dimensional lumber and plywood to be FSC certified.
 - .4 All composite wood and/or agrifibre products (including core materials) and adhesives used to fabricate laminated assemblies used in building must not contain added urea-formaldehyde.
- .2 Concealed framing lumber and plywood:
 - .1 Eastern Spruce, Balsam Fir, or Jack Pine, to CAN/CSA O141, NLGA, and AWS Custom Grade, S4S, average moisture content 7% +/- 2% at installation.
 - .2 Softwood plywood: CSA O151-M; 19 mm unless indicated otherwise, (G2S).
 - .3 Marine grade plywood: CSA O151-M, G1S, T & G, composed entirely of Douglas Fir or Western Larch, laminated with structural waterproof adhesive, exterior grade. Thickness and locations as indicated on the Drawings.
- .3 Hardwood lumber: Conforming to NHLA and NAAWS Premium Grade, S4S, average moisture content 7% +/- 2% at installation.
- .4 Wood veneer:
 - .1 White Oak on veneer core plywood, conforming to ANSI/HPVA HP-1 having finishes and meeting grades as follows:
 - .1 Opaque finish, Grade B.
 - .2 (Window sills, benches, wall and locker caps): Transparent finish, Grade AA.

- .2 Face veneer cut: Rift Cut.
 - .3 Sizes, thickness, and shapes as indicated.
 - .4 Match solid wood for edging, as per Drawings and details.
- .5 Marine grade plywood (where shown): APA, Grade A-A, T & G, composed entirely of Douglas Fir or Western Larch, laminated with structural waterproof adhesive, exterior grade. Thickness as indicated on drawings.
- .6 Plastic laminate: Provide plastic laminates conforming to ANSI/NEMA LD 3 as follows:
 - .1 Flatwork face sheet: 1.2 mm thick, heavy wear resistance.
 - .2 Vertical interior face sheets: 0.8 mm thick.
 - .3 Postformed face sheet: 0.8 mm thick.
 - .4 Backing sheet: thickness to match face sheet, high pressure laminate, manufactured by same manufacturer as face sheet.
 - .5 Plastic laminate: As manufactured by Arborite, Formica, Forbo, Nevamar, Pionite and Wilsonart.
 - .6 Colours: To the later selection of the Consultant from manufacturer's standard colour range.
7. Melamine Surfaced Particleboard: ANSI A208.1, Grade M2 particleboard with a melamine impregnated decorative paper thermofused onto the surface. Edging to be done in minimum 3 mm thick PVC to match melamine colour. 'Panval Thermofused Melamine Panels' by Uniboard Canada Inc. or approved alternative Colours as follows:
 - .1 Interior millwork surfaces: To be later selected by the Consultant.
 - .2 Exterior millwork surfaces: Colour and pattern as selected by Consultant.
- .8 Medium Density Fibreboard (MDF), core or panel: ANSI A208.2; SCS and EPP certified, no-added formaldehyde, moisture resistant MDF panels engineered for interior high moisture areas, 'Medex' by SierraPine, 'Arauco MDF' by Flakeboard Company Limited or approved alternative; meeting the following minimum criteria:
 - .1 Density: 769 kg/m³.
 - .2 Internal bond: 1.38 N/mm².
 - .3 Modulus of rupture: 41.34 N/mm².
 - .4 Modulus of elasticity: 4134 N/mm².
 - .5 Moisture content: 4-6%.
- .9 Particle board core: ANSI A208.1, no-added formaldehyde, FSC certified particleboard containing recycled content, 'Purekor Platinum Particleboard' by Panel Source or approved alternative by SierraPine; meeting the following minimum criteria:
 - .1 Density: 720 kg/m³.
 - .2 Internal bond: 0.76 N/mm².
 - .3 Modulus of rupture: 25.4 N/mm².
 - .4 Modulus of elasticity: 2861 N/mm².

- .10 Solid surfacing (SS):
 - .1 Minimum 12 **20** mm thick sheet stock, provide with edge as per architectural drawings details and all cutouts as required.
 - .2 Installation and seam adhesives to be as recommended by solid surfacing manufacturer, colour matched to solid surfacing.
 - .3 Solid surfacing manufacturer: Caesar Stone **by CaesarStone**, and Silestone **by Cosentino or 'Corian' by Dupont** or approved alternative.
 - .4 Colours: To the later selection of the Consultant from manufacturer's standard colour range.
- .11 Engineered quartz: 93% crushed quartz combined with polyester resins and pigments formed into minimum 20 mm thick dense non-porous slabs with polished finish. Colour: To be selected by Consultant; 'CaesarStone' by CaesarStone Quartz Surfaces or approved alternative.
- .12 Laminating adhesive: CSA O112 Series, water resistant type, low VOC content, selected by laminate manufacturer for intended end use.
- .13 Draw bolts and splines: Type as recommended by fabricator.
- .14 Nails and staples: Conforming to ASTM F1667; Size and type to suit application, galvanized for exterior work, interior humid areas and for treated lumber; plain finish elsewhere.
- .15 Bolts, nuts, washers, blind fasteners, lags and screws: Size and type to suit application. Stapling is not acceptable.
- .16 Adhesive and bituminous mastic: Selected by the millwork fabricator with low VOC content.
- .17 Miscellaneous metals: In accordance with Section 05 50 00.
- .18 Glass and glazing materials: In accordance with Section 08 80 00.
- .19 Finishing: In accordance with Section 09 91 00.

2.2 **HARDWARE**

- .1 The following hardware is the minimum quality standard for the work of this Section. Alternatives may be considered provided they are approved by Consultant prior to ordering of products.
- .2 Drawer slides:
 - .1 Full extension with soft-closing feature.
 - .2 Acceptable Product:
 - .1 '8400 Series' with '8450FM Soft-Close Drawer Slide' by Knappe & Vogt.
 - .2 Or approved equivalent by Accuride or approved equivalent manufacturer.

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- .3 Pilasters: Clear anodized aluminum recessed shelf standards with 12 mm divisions, Model 233 by Knappe & Vogt.
 - .4 Clips: Bright zinc plated, adjustable height shelf supports, Model 256 by Knappe & Vogt.
 - .5 Cabinet hinges: Heavy duty, concealed, 100 degree, clip, self closing, Model 'Blumotion' by Blum.
 - .6 Piano hinge: Heavy duty, continuous, 100 mm wide piano hinge with nickel-plated finish. Provide recessed and cut to size.
 - .7 Drawer and cabinet pulls:
 - .1 (Type -1): 35 mm deep x 106 mm wide, stainless steel with brushed finish; Handle, round, stainless steel, 'Häfele Déco, 155.01.240' by Häfele.
 - .2 (Type -2): 17 mm x x 76 mm long, Aluminum pull system, 'Elite Slim Collection, 111.95.250' by Häfele.
 - .8 Magnetic catches: Model 918 by Knappe & Vogt.
 - .9 Locks: Cam locks/deadbolt locks complete with lock core by Häfele, type to suit application and installation. Provide locks in locations as indicated on drawings.
 - .10 Child-Proof Locks (At All Childcare Lower Cabinets): Totlok latch door lock with magnetic key, 'T20130' And 'T20330' by Richelieu or approved alternative.
 - .11 Downward-opening doors:
 - .1 Hinge: Continuous stainless steel piano hinge.
 - .2 Suspension arms: Left and right hand doors stays to hold door open or closed, soft-opening, 90 degrees, white plastic with steel stays; '28100330' by Richelieu or approved alternative.
 - .12 Rectangular grommets: 240 x 120 mm, aluminum cable outlet with straight flap cover and brushed seal, with manufacturer's standard finish in colour 'Silver; '2135206100' by Richelieu or approved alternative.
 - .13 Clothes/Coat hooks: Anodized aluminum with matte finish, 'Model 842.01 909' by Häfele or approved alternative.
 - .14 Display cabinet system: All components required for a complete display glass system indicated on the drawings, including but not limited to the following components:
 - .1 Provide black felt with minimal seams.
 - .2 Shelf standards/brackets: 'Kaiman Glass and Wood Wall Shelf Support' in satin Nickel, by Richelieu or approved alternative.
 - .3 Track system: 'HAWA CLIPO 36 GPPK' by Richelieu or approved alternative.
 - .4 Locking mechanism for sliding glass doors: 'HAWA CLIPO 36 GPPK locking system' by Richelieu or approved alternative.
 - .5 Sliding glass doors and glass shelves to be 6 mm tempered glass.
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.15 Aluminum shoe guard: In accordance with Section 05 73 13.

2.3 PLASTIC LAMINATE WORK

- .1 Perform plastic laminate work in accordance with NAAWS and ANSI/NEMA LD 3.
- .2 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- .3 Unless otherwise indicated or specified, laminate plastic laminates to veneer core plywood in accordance with manufacturer's written instructions, excluding items such as cabinet doors, drawer front components, and wall and ceiling panels which shall use moisture resistant MDF as the core substrate.
- .4 Laminate postformed laminates to MDF or particleboard core in accordance with manufacturer's written instructions.
- .5 Fabricate core surfaces and profiles with continuous support and bond over entire surface to receive plastic laminate.
- .6 Apply plastic laminate backing sheets to balance shrinkage stresses induced by plastic laminate face sheets.
- .7 Joints:
 - .1 Install joints in accordance with reviewed shop drawings.
 - .2 Jointing shall be placed at logical locations in intended millwork item and shall meet the overall aesthetic intent of the Consultant.
 - .3 Minimize joints in plastic laminate work.
 - .4 Do not install joints in plastic laminate work in less than 2400 mm o.c.
 - .5 Locate joints minimum 610 mm from cut-outs.
 - .6 Offset core and plastic laminate facing joints.
- .8 Form shaped profiles and bends as indicated, using postformed grade laminate to laminate manufacturer's instructions.
- .9 Edging to be done using 3 mm thick PVC to match plastic laminate colour to cover exposed edge of core material. Square exposed edges. Do not mitre laminate edges.
- .10 Apply laminated plastic liner sheet to interior of cabinetry and where indicated.
- .11 Fabricate units by solid surfacing manufacturer's certified or approved fabricator/installer. Fabricate built-up profiles as indicated.

2.4 FABRICATION

- .1 Be responsible for methods of construction and for ensuring that materials are rigidly and securely attached and will not be loosened by the work of other sections.

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- .2 Coordinate locations of concealed supports and blocking with other parts of work. Provide cutouts for outlet boxes and other fixtures.
 - .3 Fabricate work in a manner which will permit expansion and contraction of the materials without visible open joints. Conceal joints and connections in wherever possible.
 - .4 Set nails and countersink screws, apply wood filler to indentations, sand smooth and leave ready to receive finish.
 - .5 Mitre exposed corners or as shown on Architectural Drawings, no end grain shall be visible in completed installation.
 - .6 Finished millwork shall be free from bruises, blemishes, mineral marks, knots, shakes and other defects and shall be selected for uniformity of colour, grain and texture.
 - .7 Shelving to cabinetwork to be adjustable unless otherwise noted.
 - .8 Recess shelf standards, unless noted otherwise. Stagger recessed shelf standards on opposite sides of divider.
 - .9 Do not exceed maximum 760 mm unsupported span for 19 mm thick shelving. House fixed shelving into gables and divisions.
 - .10 Shop assemble finish carpentry to accommodate delivery and handling and to ensure passage through building openings.
 - .11 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.
 - .12 Fabricate sills, screens, frames, and moldings to profiles shown.
 - .13 Fabricate millwork cabinets of compact laminate for all millwork box (body), doors and drawers of compact laminate and all interior components such as shelves of white melamine.
 - .14 Window sills:
 - .1 Provide all wood window sills where indicated and as detailed.
 - .2 Construct sills and aprons of White Oak veneer hardwood. All sills with plywood at openings are to be marine grade plywood.
 - .3 Conceal all fixings.
 - .4 Include all hardwood trim.
 - .5 Provide all solid continuous blocking and shims required for installation. (Where indicated, secure sills to steel supports.)

3 Execution

3.1 **EXAMINATION**

- .1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 **INSTALLATION**

- .1 Install finish carpentry work in accordance with AWS Quality Standards and tolerances for Architectural Woodwork and reviewed shop drawings.
- .2 Set and secure finish carpentry in place, rigid, plumb, square, and level.
- .3 Cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate columns, fixtures, outlets, or other projecting, intersecting or penetrating objects leaving a 0.8 mm gap maximum. Typically provide reveals between millwork and wall and ceiling surfaces in accordance with Architectural details.
- .4 Coordinate cutouts for plumbing fixtures, inserts, appliances, outlet boxes, and other fixtures, in finish carpentry. Round internal corners of cut-outs and seal exposed cores.
- .5 Form joints to conceal shrinkage.
- .6 Install draw bolts and splines in compact laminate counter top joints at maximum spacing 450 mm o.c., and 75 mm from edge. Make joints flush, hairline butt joints.
- .7 Install finishing hardware accurately and securely in accordance with manufacturer's directions, adjust and clean.
- .8 Install prefinished millwork at locations shown on drawings. Position accurately, level, plumb straight.
- .9 Apply bituminous coating over wood framing members in contact with masonry or cementitious construction.
- .10 Melamine panels: Assemble melamine millwork using dowelled/wafered-and-glue construction. Installed melamine panels shall not show any exposed fasteners on finished/exposed surfaces.
- .11 Solid surfacing:
 - .1 Install solid surfacing in accordance with manufacturer's instructions.
 - .2 Align work plumb and level.
 - .3 Seal perimeter of fabrication to adjacent construction in accordance with Section 07 92 00.

- .12 Engineered quartz:
 - .1 Construct countertops of sizes and details as noted.
 - .2 Accurately and neatly cut, drill and fit stone as required for fixtures, fittings, and other appurtenances abutting or extending through stone and repair all stone after other Sections have finished.
 - .3 In cutting and fitting, the edges shall be carefully cut and ground to a perfect fit and all cutting shall be done in such a manner as not to impair the strength or appearance of the material.
- .13 Wood Panels: Install wood paneling in locations indicated on drawings. Ensure that panels are securely fastened in true vertical and horizontal manner.
- .14 Door frames:
 - .1 Butt and cope internal joints of door frames to make snug, tight, joint. Cut right angle joints with mitred joints.
 - .2 Fit backs of frames snugly to wall surfaces to eliminate cracks at junction of frame with walls.
- .15 Benches:
 - .1 Construct wood benches of white oak wood veneer with ~~stain finish~~ of sizes and details as noted.
 - .2 Anchor wood to supports in a concealed manner.
 - .3 Keep joints to a minimum.
 - .4 Install bench brackets and supports supplied under work of Section 05 50 00.
 - .5 Apply finish under work of Section 09 91 00.
- .16 Fastening:
 - .1 Coordinate wall securement, anchorage, and blocking for finish carpentry items.
 - .2 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
 - .3 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
 - .4 Provide heavy duty fixture attachments for wall mounted cabinets.
 - .5 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round cleanly cut hole and plug with wood plug to match material being secured.
- .17 Remove and replace damaged, marked, or stained finish carpentry.

END OF SECTION